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# Procurement Staff Familiarity and Sustainable Public Procurement in Uganda: The Mediating Role of Procurement Ethical Behaviour

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## Abstract

This study focused on the influence of procurement staff familiarity on sustainable public procurement adoption in Uganda factoring in the mediation effect of procurement ethical behavior. A quantitative descriptive cross-sectional research design was used in line with the ontology of objectivism and epistemology of positivism. Through the use of stratified sampling design, 259 respondents were selected to form a sample of the study out of the population of 790 civil servants. The respondents comprised of Chief Procurement Officers, Senior Procurement Officers, Assistant Procurement Officers, Inventory Management Officers, and Assistant Inventory Management Officers. A self-administered questionnaire approach was used to collect data from these respondents. The Structural Equation Model was used as the appropriate approach to analyze the data. Within this approach, factor as well as regression analyses were incorporated to ascertain the predictors and their level of prediction on the dependent variable. Additionally, the mediation analysis was carried out to establish the quality of the mediation effect that procurement ethical behavior has on the relationship between procurement staff familiarity and sustainable public procurement adoption. Results from the analysis indicate that procurement staff familiarity has significant direct and indirect influence on sustainable public procurement adoption. The indirect effect is through procurement ethical behavior. This further means that procurement ethical behavior has a significant mediation effect in the influence of procurement staff familiarity on sustainable public procurement adoption in Uganda. Based on these results, it is recommended that, the government of Uganda and the PDEs should invest and support procurement staff training programs to build the competence and confidence of the staff to adopt and participate in sustainable public procurement practices.

**Keywords:** Procurement; Public procurement; Procurement staff familiarity; Procurement ethical behaviour sustainable public procurement adoption; Uganda

## 1 Introduction

Public procurement performance has attracted a wide range of research from different angles across the globe (Musewe & Gekara, 2021). This is because public procurement accounts for an average of 12% of GDP in OECD-developed nations and up to 30% in poor countries (OECD, 2023). As a result, the public is becoming increasingly interested in the impact of public procurement on the economy, the environment, and society, compelling countries to adopt sustainable procurement methods (Sönnichsen & Clement, 2020). Sustainable public procurement, a process by which public organizations meet their needs for goods, services, works, and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits, not only to the organization but also to society and the economy, while minimizing damage to the environment, has been identified by researchers and practitioners as the surest way of achieving the national development goals, sustainable development goals and Uganda's Vision 2040 (Obicci, 2017).

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In that spirit, most countries globally are moving away from the traditional way of focusing only on their procurements' profits and economic aspects, to accommodate two more vital facets of social and ecological benefits (Delprato & Antequera, 2021). Governments, commercial enterprises, and international organizations are increasingly incorporating social and environmental criteria into their procurement processes to help achieve broader organizational goals of sustainable development (Nabiswa, 2011; Etse et al., 2022; Santos et al., 2024). For instance, to promote the execution of sustainable public procurement, the United Kingdom's public sector procurement strategy was considered. The strategy is based on a set of guiding principles such as competitiveness, openness, efficiency, accountability, legality, and integrity (Selviaridis et al., 2023). This is happening because business people have learned that focusing solely on economic gains while ignoring environmental concerns is unsustainable and unethical (Lăzăroiu et al., 2020; Ayarkwa et al., 2020). The importance of sustainability in procurement has grown significantly in practice and research, driving many organizations to implement sustainable procurement methods (Basheka & Bisangabasaija, 2019). This has prompted enterprise leaders and their management teams to make more efforts to guarantee that their operations meet the critical sustainability pillars of environment, social, and economics, while also aiming for organizational success (Mirembe, 2019).

Uganda, one of the developing countries in the Southern Africa part of the continent, has not been successful in joining the rest of the world to transition to green procurement (Pastor et al., 2022). What is visible in the context of Uganda is the establishment of a complex system of institutions, policies, laws, and regulations geared towards enhancing responsible use of public resources. For instance, currently, the government of Uganda charges an environmental tax (Namanya, 2023), bans the procurement of old vehicles (Salmon, 2023), and even introduced solar streetlights in different streets of the municipalities of the country (Nduhura et al., 2023; Sundararajan et al., 2021). A law has also been passed to include the “eco-friendly” aspect in the statement of works for the different bidders. These measures are put in place to promote sustainable public procurement in the country – Uganda (Pastor et al., 2022). Though this is the case, it is only the environmental tax that has been implementable. The solar street lights have also been implemented but with little success. For instance, when there is a notable breakdown in any of the lights, it takes long for a placement to be made. These events manifest the fact that there is still low transition to sustainable public procurement in Uganda (Nduhura et al., 2023). This is despite the fact that the country has been allocating close to 70% of public spending towards public procurement in the years 2015 to 2020 (Gumisiriza, 2022).

Focusing on the key characteristics of sustainable public procurement, tendencies of low implementation and hence low adoption are still existent (Hamiza et al., 2025). For instance, the public procurement and disposal of public assets authority (PPDA) issued the National Sustainable Public Procurement Action Plan with the intention of ensuring that all public procurement activities have a sustainability component (MoFPED, 2023). Unfortunately, todate, this has not yet been realized. The main challenge cited for the failure of realizing this requirement and hence failure to implement the plan has been the difficulty in incorporating the social and environmental considerations within public procurement activities. This presents a clear implementational challenge (Pastor et al., 2022).

In addition to the implementation challenge is the resistance emanating from public procurement practitioners in the country. Most of these practitioners indicated their preference towards the traditional public procurement practices. This is mainly attributed to the cultural issue as far as practitioners wanting to stick to what they are familiar with . Though this is the case, the government of Uganda introduced the e-procurement portal as one of the measures to implement the sustainable public procurement practices. The adoption to the use of this portal is still low though encouraging (Hassan et al., 2024).

The events surrounding public procurement in Uganda suggest that the leadership of the country is ready to transit to sustainable public procurement (MoFPED, 2023) but the practitioners are still dragging their feet (Hassan et al., 2024). The readiness of the country, through its leadership is manifested by the establishment of the legal framework as stipulated in the revised PPDA Act (PPDA, 2022), the operationalization of e-procurement as well as putting in place plans to realize sustainable public procurement. The challenge remains the implementation of all these measures. This challenge is directly associated with the willingness of the practitioners to implement the sustainable public procurement practices. This willingness is behavioral in nature (Pastor et al., 2022; Hassan et al., 2024). It is for this reason that, in this study, the focus is on assessing whether procurement staff familiarity has influence on adoption of sustainable public procurement through the mediation of the exhibition of the procurement ethical behavior in an organizational setting.

### 1.1 Problem Statement

Public procurement is carried out with the aim of facilitating flow of goods and services from those intending to sell to those intending to buy (Siyal & Xin, 2019). In Uganda, this process has been carried out solely following the financial aspects as well as the individual benefits of those buying and selling (The Inspectorate of Government, 2021). The

formulation of the National Sustainable Public Procurement Action Plan through the Ministry of Finance in Uganda, presented an opportunity to transform procurement practices in Uganda, to those that are sustainable (MoFPED, 2023). This, has, however, been a challenge todate (Olupot, 2023; Kalinzi et al., 2023). The failure to practice sustainable public procurement in Uganda has resulted into significant environmental evils such as the case of the loss of natural biodiversity and disruption of the ecosystem at Mabira Forest due to unsustainable procurement of timber for construction projects (Hönig, 2014; Bamwesigye et al., 2022), mismanagement of about Ugandan Shillings 11 billion meant for peace building initiatives in 2023, in Karamoja, leading to extreme hunger of the people in the area (Karamoja) (The Independent, 2023), and even gender disparity where only 1% of women owned business access public procurement tenders yet the women control about 38% of the businesses in the country (Akankwatsa, 2023). This status quo is worrying. It has caused and may continue to cause human suffering and jeopardize the achievement of the SDGs, and Uganda Vision 2040 to transform the Ugandan society from a peasant to a modern and prosperous country within 30 years. This unease could be attributed to a lack of information about the decisive variables of sustainable public procurement adoption, such as procurement staff familiarity and procurement ethical behaviour, a gap this study addresses.

### 1.2 The Purpose of the study and research objectives

To establish whether a PDE in Uganda can adopt sustainable public procurement practices through the direct influence of procurement staff familiarity as well as through its indirect influence as mediated by procurement ethical behavior.

In line with the purpose of the study, the research objectives below were followed when conducting this research study.

- To establish the influence of procurement staff familiarity on procurement ethical behaviour
- To determine the influence of procurement staff familiarity on sustainable public procurement adoption.
- To establish the mediating effect of procurement ethical behaviour on the relationship between procurement staff familiarity and sustainable public procurement adoption.

### 1.3 Study Significance

The carrying out of this study was necessary because of its theoretical and practical significance. Theoretically, the study adds to the knowledge of the determinants of sustainable public procurement adoption. Scholars and academicians may also find this study to be an essential resource for future research and discussions on sustainable procurement. Practically, the study informs those in charge of procurement work at the government level (*managers directors, professionals, practitioners and policymakers*) in Uganda, how to realize the successful adoption of the much needed sustainable public procurement. If properly applied, the findings in this study have the potential of transforming the public procurement in Uganda leading to enhancement of social and environmental contributions emanating from the works of public procurement practitioners.

## 2 Literature Review and Hypotheses Development

### 2.1 Theoretical Review

Freemans's stakeholder theory (Freeman 1984) and the Waring's sustainability theory (Waring et al., 2021) are the two theories that were selected to form the theoretical foundation of this study. Their selection is based on their ability to provide guidance towards rewarding adequately, all those involved in creating value for a community or a group of people as well as indicating how best to realize sustainability in an organizational setting. Details of these aspects of the theories are provided in the subsections below.

### 2.2 The stakeholder theory

This theory was propounded by Edward Freeman in 1984 through his book titled "Strategic Management: A Stakeholder Approach". Through this book, Freeman acknowledges the importance of stakeholders in an organizational setting as well as the relevance of these stakeholders towards the overall management of an entity. The stakeholders in question are all those people and entities that directly or indirectly contribute to the success of an organization. When they contribute to this success, they expect to be rewarded adequately as a way of encouraging them to continue providing the support. In the context of an organization, stakeholders include but are not limited to customers, suppliers, government agencies, competitors, funders, and even members of a community in which an organization operates. When all these stakeholders feel the presence of an organization, they will get motivated to contribute further to the success of the organization (Freeman 1984).

Relating the concept of stakeholder engagement, as presented in the stakeholder theory by Edward Freeman, to the aspect of sustainable public procurement, the different stakeholders are reported to be present in the procurement engagement. Through the guidance of the theory, suppliers are expected to supply good quality products and the products must be those that can be traded without causing any harm, socially or otherwise to the stakeholders that are indirectly involved in a transaction (Donaldson & Preston, 1995). For instance, when buying medicine from a supplier, the medicine must be of good quality and which will be able to promote health to those that use them. In a similar manner, when government issues money to purchase food for refugees, the money has to be used to purchase that food with no portion of the funds getting diverted to other uses (Akankwatsa, 2023). Similarly, money issued to purchase land for resettlement, should be used to purchase land that is good quality with no characteristics of a swampy area (Office of the Auditor General, 2022). All these incidences indicate sustainable procurement where all stakeholders involved, directly or indirectly, get to appreciate its existence, through experiencing the social, environmental and other forms of benefits that emanate from its practice. In this way, the stakeholder theory provides guidance towards the realization of sustainable public procurement.

The stakeholder theory of Freeman (1984) that has been widely applied in a variety of disciplines, such as law, healthcare, public administration, environmental policy, business and ethics. The stakeholder theory proposes that if we adopt a unit of analysis of the interactions between the business (in our opinion, the entities) and the organizations and persons who affect or are affected by it, we will have a better chance of dealing with organizational challenges. It is about how customers, suppliers, employees, financiers, communities, and managers collaborate to generate and exchange value (Freeman, 1984).

The theory provides a comprehensive perspective on a company's position in society, since the organization is accountable not just to its shareholders but also to other stakeholders such as the public or society, that are directly or indirectly influenced by the company's actions (Freeman 1984; Mathur 1997). An organization is viewed as a corporate citizen that must care for and be accountable to a diverse variety of stakeholder groups in society (Freeman, 1984). The requirement for this increased responsibility stems from the reality that business operations frequently generate externalities such as harmful social and environmental consequences that affect internal and external stakeholder groups (Freeman,1984). As a result, stakeholders put pressure on a firm to eliminate negative externalities and play a beneficial role that improves the natural environment while also improving society (Farr, 2020).

The public sector, in particular, has to consider and involve stakeholders such as employees and suppliers, especially when ecological issues are introduced. The government usually creates environmental regulators as government agencies that have the autonomy to formulate environmental requirements and inspect the firm’s compliance with those requirements, and those that fail to comply risk incurring non-compliance penalties. In aggregate, the above views point to the fact that there is a positive relationship between stakeholder pressures and sustainable public procurement practices. Integrating sustainability is primarily motivated by rising stakeholder expectations of greater ethical, transparent, accountable, and responsible responsibilities for organizations and corporations in society (Bansal & Roth, 2000).

According to Eja and Ramegowda (2020), numerous stakeholders can play a significant role in implementing the sustainable public procurement. Similarly, analysts believe that a political settlement is critical to all changes, and one that excludes prominent people is more likely to stall development. Furthermore, because studies demonstrate that power is the most significant part of any stakeholder relationship, considerable vigilance and monitoring are required when working with the most powerful stakeholders, who are typically elites. Finally, it is clear that engaging stakeholders is key to success, and establishing an engagement plan is essential (Jeffery 2009).

It is vital to notice that "stakeholder engagement is an inexpensive and efficient way of creating a better operational environment for sustainable public procurement." The consultation process lowers risks and increases the likelihood of success (Ystems et al., 2008). Stakeholder engagement focuses on ensuring that all types of contact amongst government players, both interactive and non-interactive, are properly and efficiently managed in order to promote successful sustainable public procurement adoption. Engaging stakeholders has become a common practice in effective sustainable public procurement implementation, with the only optional part being the 'choice of when and how to successfully' carry out the engagement. Successful engagement is dependent on knowing why an organization is engaging (the goal), what issues to engage on (the scope), and who should be included in the engagement. Stakeholder involvement should be managed similarly to any other company function, with clearly stated objectives and targets, professional, dedicated people, and fixed timetables (Eja & Ramegowda, 2020).

The diversity of stakeholders and their ability for identifying and prioritizing conflicting requirements rejuvenates interest in the literature of the possibilities of sustainable public procurement adoption (Kivits & Sawang, 2021). The

stakeholder theory thus provides insight into stakeholders' relevance when integrating sustainability during procurement. In this case, stakeholders in PDEs that are likely to be involved in a procurement assignment include but are not limited to the members of the user departments, the accounting officer, the contract committee, and the board (or council) members as internal stakeholders. On the side of external stakeholders, the members may include suppliers, investors, customers, government media, NGOs, and environmentalists. It is for this reason that the theory was considered relevant to provide theoretical foundation to this study (Kovács, 2022).

## 3 The sustainability theory

Though the stakeholder theory provided great support towards ensuring that all the stakeholders are adequately compensated, it did not capture the aspect of sustainability of a business transaction and whether mere compensation guarantees sustainability (Huber & Hirsch, 2015). It was, therefore, necessary to provide an additional theory to complement the stakeholder theory in the area of sustainability. The sustainability theory was identified and established to be the relevant theory to provide guidance on the aspect of sustainability (Harrington, 2016), as far as the continuity of correct procurement practices that ensure all stakeholders are attended to, are concerned (Behravesh et al., 2022).

Sustainability theory was propounded by Marilyn Waring in 2015 as she advanced the aspects of ensuring that the economic activities and their attached value should be advanced in line with the social and environmental development so that the future generations can also have economic benefits to rely on (Brundtland, 1987; Lélé, 1991). According to her, relying on the economic benefits of today is good. But if the economics of today do not guarantee the existence of economics of tomorrow that can benefit the future generations, then the economics of today should not be enjoyed. The enjoyment should only be acceptable if the future generations are also given an avenue to enjoy the same or even better economics. This can only be realized if all the economic decisions are taken alongside social and environmental decisions, such that as the economic benefits are realized, the social and environmental benefits are also realized. This way, sustainability can be guaranteed (Bakir et al., 2018).

Proponents of this theory argue that in order to address the global sustainability dilemma, societies require credible and generalizable understanding of how economic and social-ecological systems work and how to govern them. To solve many global issues within a coherent, long-term, and moral societal vision, economic health, ecological integrity, social fairness, and future responsibility must all be interwoven. That inclusive scope and prospective vision make sustainability ideologically absorptive and politically popular (Childers et al., 2014).

Over the last few decades, human activities have resulted in increasingly unfavourable climate changes, natural disasters, and socioeconomic instability, prompting a shift in behaviour towards more rational and efficient resource management that will reduce pressure and have a lower environmental impact (Peter & Swilling, 2014). The immediacy of this need raises both the stakes and the uncertainty of the science. It is at this point that the aspect of sustainability becomes relevant to balance the economics and the other aspects that help to realize economic benefits in a community or country (Luna-Nemecio et al., 2020; Sheehy & Farneti, 2021). Sustainability is important for understanding and developing our society (including business, government, and NGOs). Henceforth, public procurers must integrate social, economic, and ecological aspects into their procurement systems. These aspects form other dimensions of sustainability besides the economic sustainability (Adjei-Bamfo et al., 2022).

Environmental sustainability refers to the measurement of change in the resource base that supports existing population (Russell et al., 1995). It focuses on sustaining environmental quality, which is required for people to engage in economic activities and live a decent life. For example, use of energy-saving lighting systems, renewable energies, alternative energies such as solar, wind and water, maintaining fossil fuel levels, carbon dioxide ($CO_2$) reduction, protection of ecosystems, pollution and even waste management (Brammer et al., 2007).

Relatedly, social sustainability relates to the soundness, richness and flexibility of organizations that govern access to and transmission of resources (Waring et al., 2015). It works to protect human rights and equality, the preservation of cultural identity, respect for cultural diversity, ethnicity, as well as religion. Further into protection of human rights, it is important to consider health and safety for publicly contracted construction workers, fair pay and labour law protections, ensuring that the people with disability have access into public buildings as the case of special walk ways, employment opportunities for marginalized groups, working against child labour, gender equality, fair trade, and healthy lives as well as well-being for all (Brown, 2014).

Economic sustainability complements the concept of sustainability in line with social and environmental sustainability. It is the ability of a population and or organization to generate revenue to maintain itself in the economy and society (Russell et al., 1995). It focuses on preserving the environmental, social, and human capital necessary for enhancing

income and living standards. For instance, procurement includes usage costs of electricity and water consumption, economic regeneration, value for money, poverty reduction, maintenance expenditures, and disposal costs at the end of the product's life. Incurring these costs should be geared towards improving life in a community where a procurement takes place (Adjei, 2010).

Balancing the social, environmental, and economic forms of sustainability forms the gist of the sustainability theory. It emphasizes the need to ensure that the gains of the generation of today do not affect the gains of the generation of tomorrow. Instead, they should guarantee the gains of tomorrow so that the future generation can realize more benefits from government procurement. By doing this, as the economic gains are realized, the social and environmental gains shall also be realized. Eventually, sustainability in procurement activities shall be realized. These gains further reinforce the relevance of sustainability theory in this study (Vaezzadeh, 2014).

### 3.1 Theoretical analysis

The theoretical review carried out presents potential aspects that need to be focused on to realize sustainable procurement in Uganda. From the stakeholder theory, the aspect of stakeholders understanding how best to balance the gains from procurement with the costs of engaging in procurement presents the need to have competent procurement staff members. This suggests that when procurement staff members are well grounded in the procurement process, they are able to successfully identify the key stakeholders in every procurement assignment (Bansal & Roth, 2000; Eja & Ramegowda, 2020).

Identifying the key stakeholders is good but not sufficient if the procurement officers are not able to act ethically to ensure successful completion of a procurement assignment. For this reason, it is important to ensure that procurement ethical behavior is practiced whenever a procurement assignment is carried out. The aspect of procurement ethical behavior is derived from the theory of sustainability indicating the need to ensure that there is a balance between the social, environmental and economic forms of sustainability in a procurement assignment (Brundtland, 1987; Lélé, 1991; Behravesh et al., 2022).

Considering the two theories that form the theoretical foundation of this research study, competence of procurement staff as well as their ethical behavior formed the two potential determinants of sustainable public procurement (Adjei-Bamfo et al., 2022) that got explored further in the case of public procurement in Uganda. Their relevance as key determinants had to be explored further through a detailed review of literature to clearly establish the ways in which the aspects identified through the theoretical review may enhance sustainable public procurement.

### 3.2 Empirical Review

#### *3.2.1 Procurement Staff Familiarity and Procurement Ethical Behaviour*

Procurement staff members get involved in procurement work on a regular basis. Procurement is generally their work making them competent in what they do. This kind of competence is derived from them doing the same thing over a period of time, making them familiar with the procurement work (Sönnichsen & Clement, 2020). It is from this position that procurement staff members are expected to be familiar with the procurement work after working in the procurement field. It is expected that, when a procurement staff is familiar with the work of procurement, he (or she) shall be able to carry out the procurement work effectively (Hamiza et al., 2025).

A staff member can express familiarity with procurement work through the knowledge that one possesses (Giménez & Sierra, 2020). Though there are many forms of knowledge, the legal knowledge stands out as key to protecting a procurement officer entering into a procurement contract. It is this contract that ushers in a procurement engagement. It is, therefore, expected that a procurement officer who is familiar with procurement work and hence competent in it, to have a good legal knowledge of procurement engagement. Apart from knowing how to enter into a legal procurement contract, being grounded in legal knowledge enables a procurement officer to advocate for the rights of all parties in a procurement contract and thereby advance ethical behavior in a procurement engagement (Ogbu et al., 2024). This makes it necessary for a procurement officer to have legal knowledge if that officer is expected to execute procurement assignments in a procurement contract successfully (Blind et al., 2019).

A procurement staff with good legal knowledge is not expected to operate in isolation of the other team members who work together in a procurement field. This means that there is a need to have a good management support if a procurement officer is to execute his (or her) procurement assignment successfully (Changalima et al., 2020). The competence part of a procurement officer is, therefore, hinged on a strong support from the management team that a procurement officer is attached to. Management support is, therefore, an important aspect of procurement staff familiarity (Nyabuto & Nyakwara, 2024). Additionally, it is difficult for a procurement officer to be familiar with

procurement work if he (or she) is not supported by his (or her) organization to carry out the procurement work effectively (David et al., 2024). This presents another dimension of management support integrated into procurement staff familiarity.

Integrating the legal aspects and management support (Ogbu et al., 2024) enhances the technical competence of a procurement officer. This is key in the actual work of a procurement officer. Technically, a procurement staff is expected to have competence in the procedures of carrying out the different types of procurement as well as the nitty-gritty of the procurement work itself. This exposes a procurement officer to all potential areas that can make a procurement assignment go wrong as well as the potential mitigants that can be put in place to ensure that a procurement assignment is as successful as possible. This further enhances the level of familiarity of a procurement staff member with procurement work (Santos & Cabral, 2021).

The relationship between procurement staff familiarity and ethical behaviour is an important aspect of modern procurement processes. As global supply chains become more complex, procurement workers must comprehend not only their own country's ethical standards, but also international norms and legislation. Staff acquaintance with ethical procurement norms has a considerable impact on their behaviour and decision-making (Tate et al., 2022). When procurement professionals are knowledgeable with ethical norms, corporate social responsibility frameworks, and environmental and social governance requirements, They are more inclined to make ethical procurement decisions. Regular training in ethical procurement techniques increases the likelihood that procurement professionals will identify and resolve ethical conundrums, such as procuring from vendors with dubious labour or environmental standards. This is especially important in industries where purchasing decisions can directly impact environmental and social outcomes (Knight et al., 2022).

Similarly, Giannakis and Louis (2016) posit that procurement personnel who possess a strong grasp of ethical procurement guidelines are better able to carry out initiatives such as supplier audits, environmental assessments, and ethical sourcing strategies. This proactive approach is associated with a decrease in instances of unethical procurement behaviour because staff members are more likely to conduct due diligence and carefully screen suppliers to avoid unethical practices like child labour or environmentally harmful production methods. Additionally, Oluwafunmilayo et. Al., (2024) shows that procurement teams that are familiar with ethical procurement tend to make decisions that are consistent with the organization's broader corporate values and strategic objectives, thereby integrating ethical considerations into every part of the supply chain, from sourcing materials to choosing suppliers who adhere to social and environmental standards. To ensure that procurement decisions are in line with organizational values and external ethical expectations, it is therefore possible to enhance their consistency and quality by being familiar with ethical procurement rules.

On the other hand, Sabat and Krishnamoorthy (2020) contend that procurement personnel who are unfamiliar with ethical norms might not be able to identify the moral risks connected to particular suppliers or materials, which could result in immoral choices. When choosing a supplier, their ignorance or lack of expertise may cause them to ignore important aspects like labour conditions or sustainable practices. This emphasizes how crucial it is to incorporate ethics training into staff development programs for procurement in order to improve decision-making skills. To this end, it is probable that procurement staff familiarity has influence on procurement ethical behavior. In the case of Uganda, therefore, it was hypothesized thus;

$H_1$: Procurement staff familiarity influences procurement ethical behaviour.

### *3.2.2 Procurement Staff Familiarity and Sustainable Public Procurement Adoption.*

Deriving from the theoretical analysis where the aspects of procurement staff familiarity and procurement ethical behavior are highlighted as key determinants of adoption of sustainable public procurement (Ogbu et al., 2024), it is probable that procurement staff familiarity has influence on adoption of sustainable public procurement (Ayarkwa et al., 2020). For instance, Grandia and Voncken (2019) established that individual-level factors, such as knowledge and skills, influenced sustainable public procurement adoption in the Netherlands. De Giacomo et al. (2019) Similarly, procurers must be aware of sustainable public procurement processes and understand how to implement appropriate rules and regulations. Sönnichsen and Clement (2020) discovered that operational and information tools were critical in establishing environmental criteria in public procurement, whereas Walker and Brammer (2009) discovered that the main barrier to the adoption of green public procurement was a lack of information about the true environmental impacts of the products, difficulty in preparing calls for tenders and purchasing, and a lack of guideline. These barriers indicate a direct lack of familiarity with procurement procedures. It further means that those occupying the positions of procurement officers are not as competent as they are expected to be. What is key, however, is the realization that sustainable public procurement has not been practiced in the areas that were singled out (Ayarkwa et al., 2020).

Sustainable public procurement is a broad term to refer to the type of procurement that takes into consideration the economic, social and environmental aspects associated with a procurement assignment (Hsueh et al., 2020). These aspects need to be considered in every procurement activity for the procurement to be considered as sustainable. Their inclusion in a procurement assignment is only possible when those in charge of a procurement assignment are in position to integrate the three key aspects in a procurement work. This possibility signifies knowledge in procurement work which is evidence of a procurement officer who is familiar with procurement work and hence competent. This, once again, points to the fact that there is a relationship between procurement staff familiarity and sustainable public procurement (Kumar, 2023).

Enhancing green procurement is one way of promoting sustainable public procurement. It focuses on engaging in procurement of only eco-friendly products. This means that products that do not adhere to promoting eco-friendliness are not dealt with when engaging in procurement activities. For this to be realized, a policy needs to be passed to clearly define the items that need to be considered as eco-friendly. This is important because different groups of people or community members, may look at green products differently. Having a common standard of what constitutes a green product is therefore necessary for the success of green procurement at government level (Acquah et al., 2022).

An example of a green product may be an electric cooker or even a gas cooker. When compared to a charcoal stove, the former are classified as products that do not pollute the environment. Additionally the fuel used in the latter is based on cutting trees whereas the former use renewable energy which is considered to be clean energy. This means that the former advocates for environmental protection whereas the latter doesn't. Based on this, when promoting green procurement, a procurement officer will prefer procuring a gas cooker or an electric cooker to a charcoal stove. Such a decision enhances the environmental protection. This may not be realized if the procurement is based on the option that is cheap. Being cheap is an economic aspect. Though cheap, the charcoal stove leads to cutting of trees and leads to creation of soot when cooking. This example presents a decision making approach when focusing on green procurement which forms part of the sustainable public procurement (Ansu-Mensah, 2021).

A decision to focus on green products has to be made and get maintained in a procurement arrangement. This, however, require that a procurement officer to be knowledgeable of green products and how they are utilized. Once again, the aspect of competence and or familiarity with green products needs to be considered when determining what to include as a procurement product. Apart from competence, continuous training is also important (Acquah et al., 2022). For instance, Delmonico et al. (2018) argue that well-trained and skilled employees outperform those who are not trained. We believe a comparable mechanism exists in the implementation of sustainable public procurement. We believe there is a comparable method for implementing sustainable public procurement. According to Walker and Brammer (2009), effective communication and knowledge of sustainable procurement are essential for policy implementation. Brammer and Walker (2011) suggest that understanding sustainable procurement concepts and government policies is crucial for effective implementation.

A survey carried out by Delmonico et al. (2018) found that 83 percent of purchasing professionals considered themselves ill-equipped to deliver sustainability through procurement. Studies have also found that purchasing managers are unsure of how to incorporate ethical and social issues in their buying (Sönnichsen & Clement, 2020). This suggests that their level of competence, and hence familiarity with procurement assignments has been low. This, coinciding with the failure to uphold sustainable public procurement, further suggests potential linkage between procurement staff familiarity and sustainable public procurement (Ayarkwa et al., 2020). It is for this reason that it was necessary to test hypothesis two (2) presented below.

$H_2$: Procurement staff familiarity positively influences sustainable public procurement adoption.

#### *3.2.3 Mediation effect of Procurement Ethical Behaviour in the Relationship between Procurement Staff Familiarity and Sustainable Public Procurement Adoption*

Procurement ethical behaviour incorporates a set of behavioral traits that upholds the generally accepted principles when making procurement decisions. These traits include but are not limited to maintaining high level of integrity, finding additional information about sustainable procurement, avoiding potential legal conflicts, favouring best practices and stimulating suppliers to develop sustainable solutions (Ehrgott et al., 2017; Reilly et al., 2018; Islam & Alharthi, 2020). When this kind of behavior is practiced, the level of assurance to realize sustainable public procurement is enhanced (David et al., 2024). This means that the behavior acts like a catalyst to realize the correct type of procurement decision whenever a procurement is carried out. It is considered to be correct based on a set of rules and regulations laid down in a policy document that guides a procurement process (Biazzin, 2023).

A policy document is key in a procurement process (Gumisiriza, 2022). In Uganda, for instance, every public entity is expected to follow the laid down procedures as provided for in the Public Procurement and Disposal of Public Assets (PPDA) Act as revised. This guides all forms of procurement arrangements in Uganda to ensure that there is uniformity in the way procurements are carried out. One of the key principles contained in this PPDA Act is the need to adhere to procurement ethical behaviour. This further presents procurement ethical behavior and instrumental in every procurement arrangement (PPDA, 2022).

Adhering to the PPDA Act requires one to have studied and become grounded in the procurement arrangements in the country – Uganda (MoFPED, 2023). This requirement reignites the need for a procurement officer to be competent in what he (or she) does. It further requires a procurement officer to be familiar with all necessary procurement procedures as far as when and how to invoke the aspect of ethics in a procurement arrangement (Hamiza et al., 2025). Once practiced, all the stakeholders in a procurement arrangement are expected to benefit commensurately from a procurement arrangement (Kalinzi et al., 2023).

The relationship between staff familiarity and ethical behaviour is widely perceived to be useful. Grandia et al. (2014) contend that procurers must do something with their familiarity (knowledge and skills) first. This shows that searching for knowledge or challenging suppliers to provide a sustainable alternative are examples of an ethical procurement activity. Similarly, Sarawa and Mas'ud (2020) found that familiarity with procurement practices and procedures can reduce unintended ethical violations caused by a lack of knowledge, experience, and awareness. This fact stresses the position that procurement ethical behavior draws its strength from the knowledge and skills possessed by a procurement officer. The competence (and hence the familiarity) of a procurement officer when executing procurement assignments, therefore, places a procurement officer at an advantageous position to successfully execute a procurement contract since it also enhances the ability of the officer to behave ethically (Etse et al., 2022; Islam & Alharthi, 2020).

The linkage between staff familiarity of procurement procedures and their ability to realize sustainable public procurement by behaving ethically in a procurement engagement (Kalinzi et al., 2023) suggests that procurement ethical behavior has a mediation effect in the relationship between procurement staff familiarity and adoption of sustainable public procurement. From the behavioral point of view, someone's perceptions significantly contribute to what that person may accomplish. This means that the actions are first conceived in the mind and their execution carefully planned (Lăzăroiu et al., 2020). This is, however, considered when such actions are not guided by existing principles and guidelines. The policies and guidelines help to support the upholding of the ethical behavior that one intends to exhibit while carrying out a procurement assignment (Siyal & Xin, 2019).

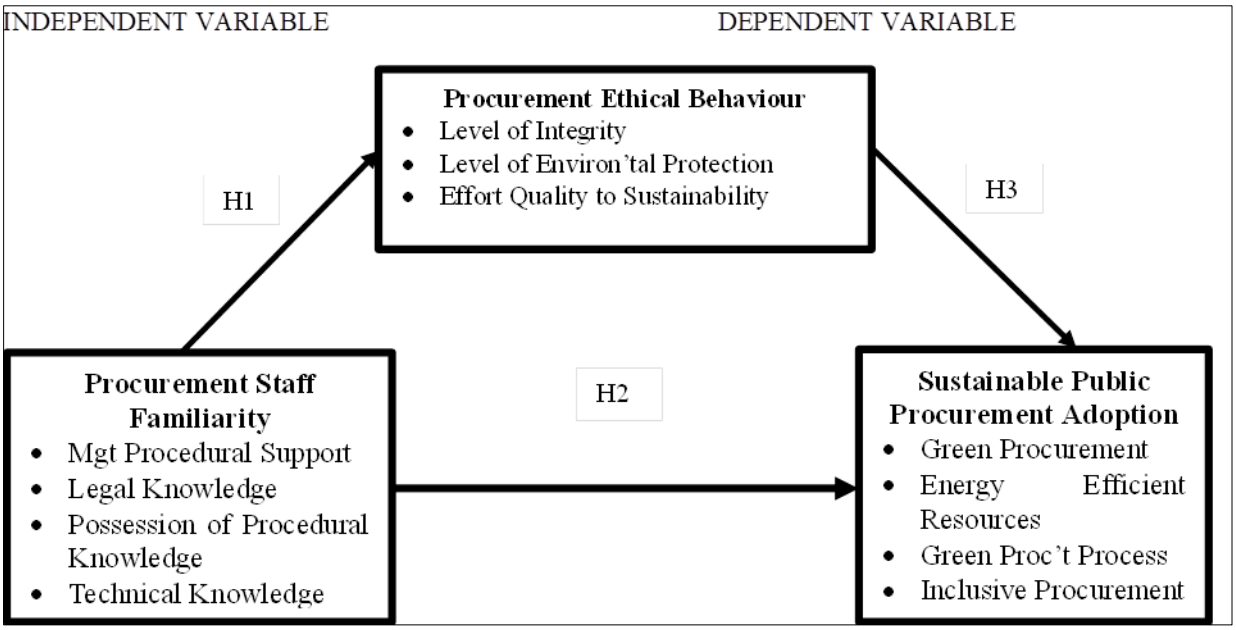
This synthesis, based on the review of literature, indicating a possibility of procurement ethical behavior to mediate a relationship between procurement staff familiarity and adoption of sustainable public procurement (Biazzin, 2023), presents yet one more hypothesis for investigation in this research. It is important to investigate this hypothesis to ascertain whether the knowledge derived from the literature as far the mediation effect is concerned (Olupot, 2023), can be considered as applicable in procurement assignments in Uganda and others parts of the world where procurement assignments are carried out. Based on this need, hypothesis three (3) was formulated for consideration in this study.

$H_3$: Procurement ethical behaviour has a mediating effect on the relationship between procurement staff familiarity and sustainable public procurement adoption

### *3.2.4 The Conceptual Framework*

The review of literature led to the formulation of three key variables for consideration in this study. The dependent variable is the adoption of sustainable public procurement practices (Hamiza et al., 2025). This formed the quest of the researcher. The desire to establish how best this adoption can be realized, synthesis from the literature indicated that procurement staff familiarity is one of the key aspects to consider (Changalima et al., 2020; Etse et al., 2022). This formed the independent variable. The second aspect identified was the procurement ethical behavior (David et al., 2024a). This was established as being influenced by procurement staff familiarity in the sense that, a procurement staff is likely to act ethically if he (or she) is knowledgeable of what is supposed to be done in a procurement assignment. This knowledge and skills give the procurement officer the confidence to act right (Reilly et al., 2018). By doing this procurement ethical behavior becomes exhibited in a procurement engagement. Further to that, acting ethically and hence procurement ethical behavior has the ability to ensure that the adoption of sustainable public procurement is realized. This presents procurement ethical behavior as a dependent variable towards procurement staff familiarity as well as an independent variable towards adoption of sustainable public procurement. Because of this unique position, procurement ethical behavior was considered to be a mediating variable (Olupot, 2023) in the relationship between procurement staff familiarity and adoption of sustainable public procurement.

The key relations derived from the detailed review of literature indicate the presence of three variables in this study. One dependent variable, the other independent variable and the last being a mediating variable. These variables are further presented in Figure 1 below. They are, however, hypothesized and subject to the results from the analysis of data collected based on the conceptual framework.




**Source:** Adopted and modified from Brammer and Walker (2011), Grandia and Voncken (2019), Jaafar et al. (2016) and Raj et al. (2020).

**Figure 1** The mediating effect of procurement ethical behaviour in the procurement staff familiarity and sustainable public procurement adoption

## 4 Methodology

A descriptive cross-sectional research design was adopted in this study. The target population consisted of 790 civil servants from 79 central government procuring and disposing entities (UBOS, 2023). The 79 central government procuring and disposing entities, comprised of ministries, hospitals, commissions, and parastatals, that spend over 75% of the national budget on procurement (MOPFED, 2023). The sample size of 259 employees was determined using Krejicie and Morgan's (1970). The study's required sample was obtained using a stratified sampling technique. The respondents encompassed Principal procurement officers, Senior procurement officers, Procurement officers, Assistant procurement officers, Inventory Managers, Assistant Inventory Managers, and Procurement Committee Members. These civil servants are the ones involved in the procurement activities of their respective public organizations and, hence, were adequate in giving information related to the study. A total of 255 out of 259 questionnaires issued were returned and considered for analysis in this study. This represents a 98% response rate, which is good enough for this study since it enhanced the generalizability of the findings.

A five-point Likert scale questionnaire was used to collect primary data, comprising closed-ended items ranging from "strongly disagree" to "strongly agree". To obtain comprehensive and conclusive results, this study adopted a five-stage analysis process. First, a descriptive analysis was performed to understand the demographic characteristics of the respondents. Second, reliability and validity analyses were carried out to establish whether the questions set for data collection were valid and whether the respondents understood the questions that were given to them in the process of data collection. Third, the Statistical Package for Social Scientists (SPSS) was used to do exploratory factor analysis (EFA). Fourth, confirmatory factor analysis (CFA) using analysis of moment structures (AMOS) was used to determine the dimensionality of the constructs and corroborate the underlying factor structures for future structural analyses. Finally, structural equation modelling was used to determine the predictive power of the independent variables on the dependent variable. This was done to test the hypotheses and make conclusions based on the results of the tests.

# 5 Analysis and results

## 5.1 (a) Descriptive Statistics of the respondents

The characteristics of the respondents were extensively captured. The coverage of the characteristics included gender, age, duration of time served in the entity, education level, and job designations, as presented as part of the findings of this study. These features were captured in order to understand the kind of respondents who participated in the survey (De Vous, 2002). The findings revealed that most of the respondents, 158 (62%), were males, compared to the females who were 38% of the respondents. Respondents belonging to the age category of 25 – 42 years were 170 in number, making 68.5% of all respondents considered in this study. The least represented age group was 55 years and above, with only 1 respondent, making 0.4%. Regarding length of time served, most of the respondents had served between 5 – 9 years, making about 36%. This implied that they had the experience of what is going on in the PDEs. Most of the respondents, 161(63%), possessed a bachelor's degree, thus the basic qualification for performing procurement activities. Master's Degree holders formed 15% of the respondents. Only 3(1.3%) respondents had PhDs. Most of the respondents 169 (66%) occupied managerial positions in procurement-related activities. This means that, they were involved in strategic issues such as procurement planning, sourcing and supplier development. This was followed by assistant procurement managers, who were 73 in number, making 28%. The 5% fall in the category of inventory assistants and contract committee members.

## 5.2 (b) Descriptive characteristics of the entities

To capture the characteristics of the entities that participated in the survey, simple descriptive statistics analysis was performed. The characteristics featured include: physical location of the entity, number of staff in the entity, category of the entity in the central government structure, and sector/industry that the entity belongs to. The statics indicated that most 133(52%) of the entities that participated in the survey are located in the central region of the country - Uganda. Geographically, Uganda's central region lies in the south, but politically, it is considered "central Uganda" because it is where the capital city and central government entities are located. The entities concentrate in the central region to benefit from the good economic infrastructure. With regards to the number of employees, most 143(56%) of the entities have staff numbers ranging from 151 – 200 and above, a typical characteristic of a public procuring and disposing entity (PDE). Those entities with staff ranging from 50-150 made about 31% while, entities with less than 50 staff made 6.5%. As concerns the category of the entities, most of the entities 97(37%) belonged to a ministry, followed by hospitals 72(28%). Parastatals were in 49 in number, making 19%. The least entities (15%) belonged to the commission category.

## 5.3 Reliability and Validity Tests

The validity and reliability results of the study variables are presented in Table 1 below.

**Table 1** Summary of validity and reliability analyses results

| Variable | Validity Coefficient (CAC) | Cronbach's Alpha Coefficient (CAC) |
|---|---|---|
| Procurement Staff Familiarity (PSFM) | 0.510 | 0.686 |
| Procurement Ethical Behaviour (PEB) | 0.568 | 0.708 |
| Sustainable Public Proc Adoption (SPPA) | 0.557 | 0.702 |

Source: Primary data (2024)

The validity and reliability of the study variables tests were conducted on the study variables to ascertain whether the variables were understood by the respondents. The reliability was checked by computing Cronbach's Alpha coefficient. A threshold of 0.7 was considered. Validity was tested using Average Variance Explained (AVE). A threshold of 0.5 was considered. According to results in Table 1 above, all three study variables had AVE and Cronbach's Alpha coefficients above the cut-off points, apart from the reliability analysis of PSFM, which is 0.686 and approximately 0.7. This reliability coefficient is at the borderline but still acceptable (Hair, 2012). This means that the questions that were included in the questionnaire for all three variables were valid and reliable.

## 5.4 Exploratory Factor Analysis

This was carried out to establish the key factors per variable that could be considered by the researcher for further analysis. Based on the detailed review of literature, three variables were identified as points of focus for this study, namely "procurement staff familiarity", "procurement ethical behavior", and "adoption of sustainable public

procurement". A set of questions was developed into a questionnaire based on these three variables, and data was collected based on those questions. It was, therefore, necessary to establish whether the data collected matched the theoretical propositions derived from literature through the exploratory factor analysis (EFA). The results from this analysis per variable are presented in the subsections that follow.

*5.4.1 EFA results – Procurement staff familiarity*

**Table 2** EFA Output – Procurement Staff familiarity

| Code | Questions | Management procedural support | Legal knowledge | Possession of procedural knowledge | Possession of technical knowledge | Familiarity with disposal procedure |
|---|---|---|---|---|---|---|
| FM8 | This entity established objectives for purchases of sustainable products and services. | 0.616 | | | | |
| FM9 | We have documented procedures for sustainable conducting procurement. | 0.692 | | | | |
| FM10 | We conduct awareness training programs on sustainable procurement. | 0.575 | | | | |
| FM11 | My organization assigns responsibility for the routine evaluation of sustainable procurement performance. | 0.761 | | | | |
| FM12 | We provide follow-up action for deficiencies in sustainable procurement. | 0.698 | | | | |
| FM13 | My entity embraces a management review process on sustainable procurement. | 0.731 | | | | |
| FM14 | We have taken action to develop procurement policies that consider sustainability. | 0.578 | | | | |
| FM15 | Our procurement staff receive training on sustainability in procurement decision-making. | 0.694 | | | | |
| FM4 | I am familiar with when procurement laws, regulations, and policies can be applied. | | 0.733 | | | |
| FM5 | I am familiar with the situations under which procurement policies can be exempted. | | 0.600 | | | |
| FM6 | I clearly understand the procurement policies, laws and regulations. | | 0.795 | | | |
| FM1 | I know what sustainable procurement is and how it is conducted | | | 0.603 | | |
| FM19 | The PPDA Act, the main public procurement law, has provisions for sustainable procurement. | | | 0.691 | | |
| FM16 | We have the knowledge, skills and experience in sustainable procurement. | | | | 0.638 | |
| FM17 | We have information about the real environmental impacts of unstainable products. | | | | 0.755 | |
| FM3 | I am aware of the potential liability of disposal of hazardous materials during the procurement process. | | | | | 0.807 |
| *% of Variance* | | *27.482* | *10.746* | *7.085* | *5.858* | *5.284* |

| Code | Questions | Management procedural support | Legal knowledge | Possession of procedural knowledge | Possession of technical knowledge | Familiarity with disposal procedure |
|---|---|---|---|---|---|---|
| *Cumulative %* | | *27.482* | *38.228* | *45.313* | *51.171* | *56.455* |
| *Kaiser-Meyer-Olkin Measure of Sampling Adequacy* | | *0.841* | | | | |
| *Approx. Chi-Square* | | *1319.403* | | | | |
| *Bartlett's Test of Sphericity df* | | *171* | | | | |
| *Sig.* | | *0.000* | | | | |

Extraction Method: Principal Component Analysis; Rotation Method: Promax with Kaiser Normalization;

a. Rotation converged in 7 iterations; **Source:** Primary data

Procurement staff familiarity comprised of 19 items that were measured using five constructs of management procedural support, legal knowledge, possession of procedural knowledge, possession of technical knowledge, and familiarity with disposal procedure. Items with less than 0.5 factor loadings were removed, leaving 16 items. According to the results in Table 2 above, KMO = 0.841, which is an acceptable value depicting sampling adequacy (Kaiser, 1974), Bartlett's test of sphericity $\chi^2$ = 1319.403, Df = 171 p < 0 .000 and was significant. Implying that the factor analysis is appropriate and the correlation matrix is not an identity matrix. The results also indicate that correlations between items were sufficient for factor analysis. The factor loadings for the items ranged between 0.578 and 0.807. The percentage variance explained for all five components is 56.5%, meaning that the items explain 56.5% of the variance in procurement staff familiarity. The 56.5% cumulative percentage of variance was above the recommended 50%, thus, it was acceptable (Dawson, 2016).

### *5.4.2 EFA results – Procurement ethical behaviour*

**Table 3** EFA for Procurement Ethical Behaviour

| | | Level of integrity | Level of environmental protection. | Effort to quality sustainability |
|---|---|---|---|---|
| EB4 | We always avoid potential conflicts of interest. | 0.523 | | |
| EB5 | We interest ourselves in best procurement practices. | 0.793 | | |
| EB8 | We are ready to do the right thing all the time. | 0.793 | | |
| EB7 | Protecting the planet is our top agenda. | | 0.721 | |
| EB11 | This entity preserves the environment. | | 0.896 | |
| EB3 | Skilling about sustainable procurement is a prerequisite now. | | | 0.851 |
| EB6 | We encourage suppliers to develop sustainable procurement solutions. | | | 0.642 |
| ***% of Variance*** | | ***35.304*** | ***14.199*** | ***13.312*** |
| ***Cumulative %*** | | ***35.304*** | ***49.504*** | ***62.815*** |
| ***Kaiser-Meyer-Olkin Measure of Sampling Adequacy*** | | ***0.705*** | | |

| | |
|---|---|
| ***Approx. Chi-Square*** | ***390.194*** |
| ***Bartlett's Test of Sphericity df*** | ***28*** |
| ***Sig.*** | ***0.000*** |

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization; a. Rotation converged in 6 iterations.

Source: Primary data

Procurement ethical behaviour had 11 measured items using three constructs of level of integrity, level of environmental protection and effort quality to sustainability. Items with less than 0.5 factor loadings were removed leaving 7 items. According to results in Table 3, KMO = 0.705 which is an acceptable value of sampling adequacy (Kaiser, 1974), Bartlett's test of sphericity $\chi^2$ = 390.194, Df = 28, p < 0.000 and was significant. Implying that the factor analysis is appropriate and the correlation matrix is not an identity matrix but an indication that correlations between items were sufficient for factor analysis. The factor loadings for the items ranged between 0.523 and 0.896. The percentage variance explained for all the three components is 62.8% meaning that the items explain 62.8% of the variance in procurement ethical behaviour. The 62.8% cumulative percentage of variance was above the recommended 50%, thus, it was acceptable (Dawson, 2016).

*5.4.3 EFA results – Adoption of sustainable public procurement*

**Table 4** Outcome of the EFA - Sustainable Public Procurement Adoption

| Code | Questions | Green procurement | Effective internal resource management | Environmentally friendly process | Staff protection | Energy efficient resources | Green procurement process | Inclusive procurement |
|---|---|---|---|---|---|---|---|---|
| SPA5 | We always protect the flora and fauna in our procurement activities. | 0.699 | | | | | | |
| SPA7 | We routinely maintain our machinery to avoid health hazards. | 0.522 | | | | | | |
| SPA17 | We don't compromise the ability of the future generation to meet their demands. | 0.653 | | | | | | |
| SPA18 | We get value for money from our procurements. | 0.706 | | | | | | |
| SPA20 | We deal with UNBS/ISO-certified suppliers only. | 0.509 | | | | | | |
| SPA10 | This entity pays an attractive salary. | | 0.663 | | | | | |
| SPA15 | This entity recycles products. | | 0.728 | | | | | |
| SPA1 | We procure sustainable products. | | | 0.904 | | | | |
| SPA2 | Our storage systems are environmentally friendly. | | | 0.808 | | | | |
| SPA8 | We have a well-defined disposal policy. | | | | 0.698 | | | |
| SPA9 | We have safety measures to protect our staff. | | | | 0.794 | | | |
| SPA3 | This entity uses renewable energy. | | | | | 0.778 | | |
| SPA4 | We encourage manufacturers to apply total product life-cycle concept | | | | | 0.723 | | |
| SPA6 | Our procurement activities don't pollute the environment. | | | | | | 0.714 | |

| Code | Questions | Green procurement | Effective internal resource management | Environmentally friendly process | Staff protection | Energy efficient resources | Green procurement process | Inclusive procurement |
|---|---|---|---|---|---|---|---|---|
| SPA12 | This entity has a transparent bidding process. | | | | | | .801 | |
| SPA13 | We have bid opportunities for the marginalized groups. | | | | | | | .958 |
| *% of variance* | | *19.460* | *8.471* | *6.710* | *6.577* | *5.958* | *5.224* | *5.057* |
| *Cumulative %* | | *19.460* | *27.930* | *34.640* | *41.217* | *47.176* | *52.400* | *57.457* |
| *Kaiser-Meyer-Olkin* | | *0.733* | | | | | | |
| *Approx. Chi-Square* | | *835.688* | | | | | | |
| *Bartlett's Test of Sphericity df* | | *190* | | | | | | |
| *Sig.* | | *0.000* | | | | | | |

Extraction Method: Principal Component Analysis; Rotation Method: Promax with Kaiser Normalization;

a. Rotation converged in 11 iterations; Source: Primary data

Sustainable Public Procurement Adoption encompassed 20 items measured using seven constructs of green procurement, effective internal resource management, environmentally friendly process, staff protection, energy efficient resources, green procurement process and inclusive procurement. Items with less than 0.5 factor loadings was removed leaving 16 items. According to results in Table 4, KMO = 0.733 which is an acceptable value of sampling adequacy (Kaiser, 1974), Bartlett's test of sphericity $\chi^2 = 835.688$, Df = 190, $p < 0.000$ and was significant. Implying that the factor analysis is appropriate and the correlation matrix is not an identity matrix but an indication that correlations between items were sufficient for factor analysis. The factor loadings for the items ranged between 0.509 and 0.958. The percentage variance explained for all seven components is 57.5%, meaning that the items explain 57.5% of the variance in Sustainable Public Procurement Adoption. The 58% cumulative percentage of variance was above the recommended 50%, thus, it was acceptable (Dawson, 2016).

## 5.5 Confirmatory Factor Analysis

Following the exploratory factor analysis, the extracted factors per latent variable were tested to establish whether they indeed reflect each of the latent variables. This was done by carrying out the confirmatory factor analysis (CFA). The results from this analysis per latent variable are presented in the subsections below.

### *5.5.1 CFA output – Procurement staff familiarity*

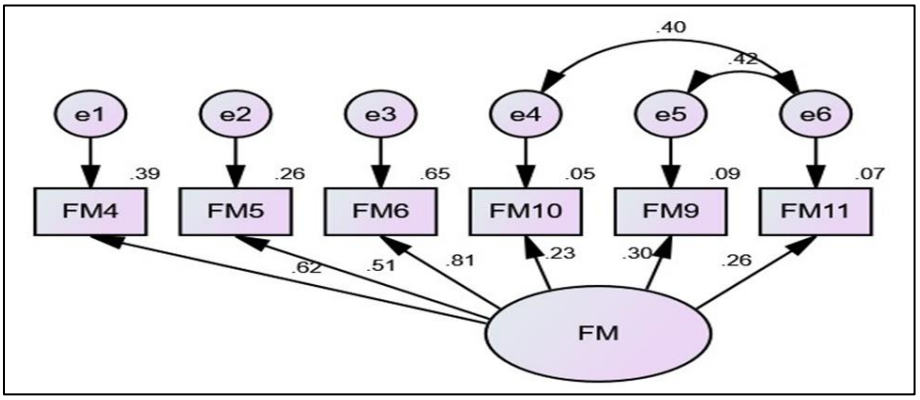



**Figure 2** CFA for Procurement staff familiarity

The results presented in Figure 2 indicate that only six (6) items were maintained to explain the existence of procurement staff familiarity. This is out of the twelve (12) items that were extracted from the EFA analysis. The six (6) items were, therefore, confirmed as the items that truly represent the existence of procurement staff familiarity from the statistical point of view. This confirmation is further reflected in Table 5, which contains the model fit indices.

**Table 5** Model Fit Indices - Procurer/staff familiarity

| CMIN/DF | GFI | AGFI | RFI | IFI | TLI | CFI | RMSEA |
|---|---|---|---|---|---|---|---|
| 2.844 | 0.975 | 0.926 | 0.864 | 0.958 | 0.907 | 0.957 | 0.085 |

**Source:** Primary data

Statistically unreliable indicators were removed from the model, and only statistically significant indicators with P values of <.05 were retained. Results in Table 5 above indicate the model for procurement staff familiarity was fit following the fact that all the measurement indices exhibited goodness-of-fit like CMIN/DF=2.844, GFI=0.975, AGFI=0.926, RFI=0.864, IFI=0.958, TLI=0.907, CFI=0.957, and RMSEA = 0.085 are all indicators of a good model fit (Schermelleh *et al.,* 2003; Browne & Cudeck, 1993; Hu & Bentler, 1990).

*5.5.2 CFA output – Procurement ethical behaviour*

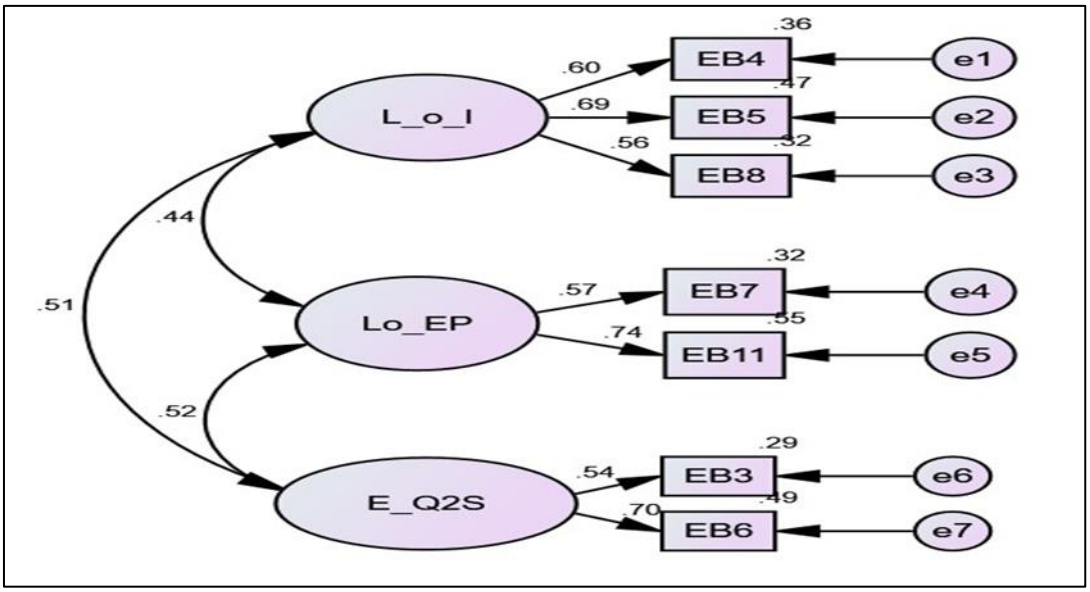



**Figure 3** CFA for Procurement Ethical Behaviour

The results presented in Figure 3 indicate that the items extracted after EFA were all maintained after the CFA. This means that the items were confirmed as the ones that reflect the true existence of procurement ethical behavior from the statistical point of view. This confirmation is also presented in the form of model fit indices reported in Table 6 below.

**Table 6** Model Fit Indices – Procurement Ethical Behaviour

| CMIN/DF | GFI | AGFI | RFI | IFI | TLI | CFI | RMSEA |
|---|---|---|---|---|---|---|---|
| 2.728 | 0.956 | 0.887 | 0.732 | 0.893 | 0.788 | 0.989 | 0.014 |

**Source:** Primary data

Results in Table 6 above indicate the model for Procurement Ethical Behaviour was fit following the fact that all the measurement indices exhibited acceptable goodness-of-fit coefficients. These include CMIN/DF=2.728, GFI=0.956, AGFI=0.887, RFI=0.732, IFI=0.893, TLI=0.788, CFI=.0989, and RMSEA = 0.014. These are all within the acceptable margins and hence the theoretical model is confirmed after the CFA. This confirmation is a reaffirmation of the knowledge presented by previous researchers, especially considering that the knowledge was useful in the development of the theoretical model (Schermelleh *et al.,* 2003; Browne & Cudeck, 1993; Hu & Bentler, 1990).

*5.5.3 CFA output – Adoption of sustainable public procurement*

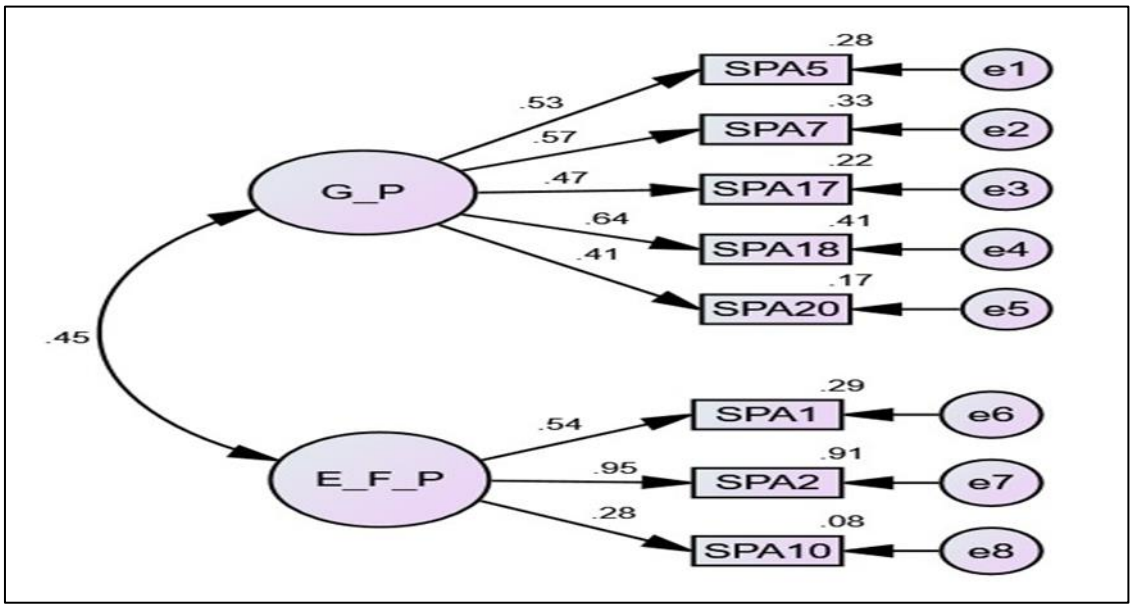



**Figure 4** CFA for Sustainable Public Procurement Adoption

The results presented in Figure 4 indicate that only eight (8) items were maintained after the CFA out of the sixteen (16) items that were extracted after the EFA. These eight (8) items were presented in two constructs (*Green Procurement and Environmentally friendly process*) as reflected in Figure 4. The CFA conducted further revealed that the items extracted were confirmed to represent the existence of sustainable public procurement adoption in Uganda based on the coefficients of the model fit indices presented in Table 7.

**Table 7** Model Fit Indices - Sustainable Public Procurement Adoption

| CMIN/DF | GFI | AGFI | RFI | IFI | TLI | CFI | RMSEA |
|---|---|---|---|---|---|---|---|
| 1.009 | 0.982 | 0.965 | 0.903 | 0.999 | 0.999 | 0.999 | 0.006 |

**Source:** Primary data

A number of statistically unreliable indicators were removed from the model and only statistically significant indicators with P values of <0.05 were retained. Results in Table 7 above indicate the model for Sustainable Public Procurement Adoption was fit following the fact that all the measurement indices exhibited goodness-of-fit like CMIN/DF=1.009, GFI=0.982, AGFI=0.965, RFI=0.903, IFI=0.999, TLI=0.999, CFI=0.999, and RMSEA = 0.006 are indicators of a good model fit (Schermelleh *et al.,* 2003; Browne & Cudeck, 1993; Hu & Bentler, 1990).

## 5.6 Hypothesis testing

After confirmation of the variables through the confirmatory factor analysis, the hypotheses set after the detailed review of literature had to be tested. The test was conducted through the Structural Equation Modelling (SEM) approach to be able to establish the influence of the independent variables on the dependent variables while considering all possible small changes in the relationship of the variables. Through the SEM approach, the researcher was able to successfully test the theoretical model developed through literature. The results from this test are presented in the subsections below.

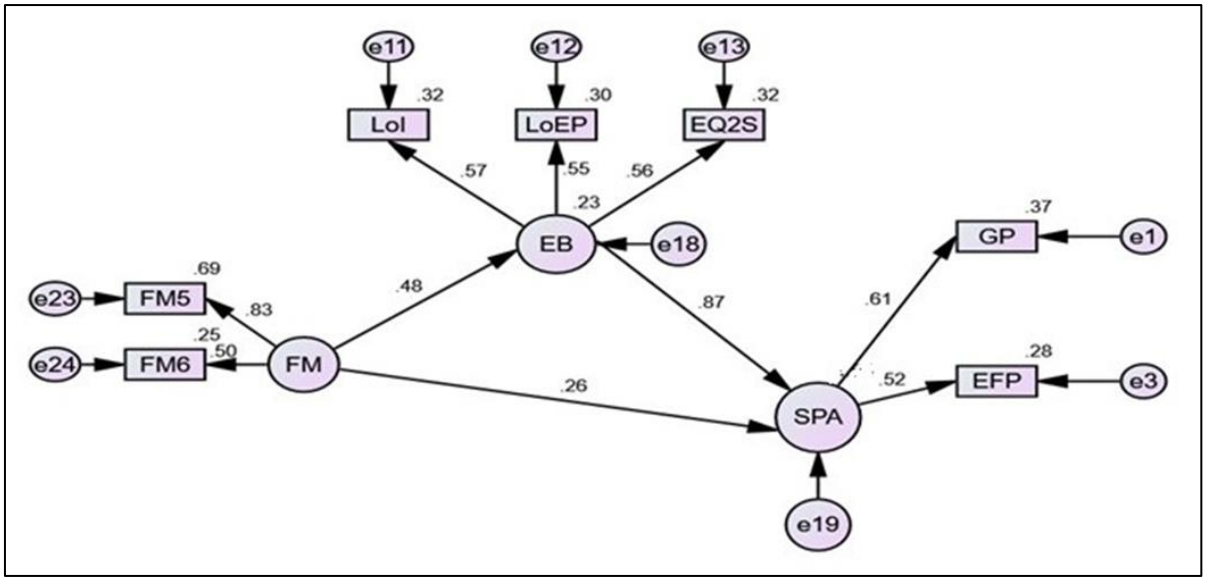



**Figure 5** SEM results – path analysis for the model

Information presented in Figure 5 above indicates that procurement staff familiarity has a direct as well as indirect influence on the level of adoption of sustainable public procurement in Uganda. The indirect influence through procurement ethical behavior is, however, stronger than the direct influence. The details of this influence are presented in Tables 8, 9, 10, and 11.

**Table 8** Regression analysis results through SEM

| Variables | | | Standardized estimates | P | Decision |
|---|---|---|---|---|---|
| PEB | <--- | PFM | 0.480 | *** | Supported |
| SPPA | <--- | PFM | 0.257 | *** | Supported |
| SPPA | <--- | PEB | 0.874 | *** | Supported |

**Source:** Primary data; **Key:** PFM – Procurement staff familiarity; PEB – Procurement ethical behavior; SPPA – Adoption of sustainable public procurement

**Table 9** Model Fit Indices

| Model Fit Index | CMIN/DF | GFI | AGFI | CFI | IFI | RMSEA |
|---|---|---|---|---|---|---|
| Index score | 2.603 | 0.965 | 0.918 | 0.933 | 0.935 | 0.069 |
| Cut – off | < 3.0 | 0.900 | 0.900 | 0.900 | 0.900 | 0.080 |

**Source:** Primary data.

**Table 10** Mediation analysis results

| | Standardized Total Effect | Standardized Direct Effect | Standardized Indirect Effect |
|---|---|---|---|
| Upper Bound | 0.970 | 0.492 | 0.741 |
| Lower Bound | 0.394 | 0.022 | 0.127 |
| Score | 0.676 | 0.257 | 0.419 |

Source: Primary data.

**Table 11** Hypothesis testing results

| Label | Hypothesis | P-Value | Decision |
|---|---|---|---|
| H1 | Procurement staff familiarity influences procurement ethical behavior | β = .0480, P = 0.000 (P < 0.001) | Accept |
| H2 | Procurement staff familiarity positively influences sustainable public procurement adoption | β = .257, P = 0.000 (P < 0.001) | Accept |
| H3 | Procurement ethical behavior has a mediating effect on the relationship between procurement staff familiarity and sustainable public procurement adoption | B = .874, P = 0.000< 0.001 | Accept |

Source: Primary data.

The results from the analysis carried out reveal that there is a significant influence of procurement staff familiarity on adoption of sustainable public procurement in PDEs in Uganda. Additionally, the procurement staff familiarity is reported to have influence on procurement ethical behavior. The influence reported in the analysis results is further indicated to be in line with the theoretical conceptualization presented in the literature review. This is presented in the Model Fit Results reported in Table 9. This means that the propositions presented in the literature were supported by the data collected in Uganda, focusing on government entities in the four regions of the country – Uganda.

One of the hypotheses that was tested was that of mediation. The results presented in Table 10 indicate that procurement ethical behavior has a mediation influence in the relationship between procurement staff familiarity and adoption of sustainable public procurement. This mediation is further reported to be a partial one since procurement staff familiarity has influence on the adoption of sustainable public procurement directly as well as through procurement ethical behavior.

## 6 Discussion of Findings

The analysis conducted revealed that procurement staff familiarity has influence on sustainable public procurement adoption in public organizations in Uganda. This means that, when the procurement staff members who work in government organizations in Uganda, become competent enough as far as practicing sustainable public procurement (*green procurement*) is concerned, they increase the chances of these PDEs to adopt the sustainable public procurement (*green procurement*). These findings are in line with the findings that were obtained by Tate et al. (2022) who contend that when procurement professionals are knowledgeable with ethical norms, corporate social responsibility frameworks, and environmental as well as social governance requirements, they are more likely to make ethical procurement decisions leading to realization of sustainable public procurement adoption.

Building from the literature on adoption of sustainable public procurement, it is recommended that procurement staff members have to have legal Knowledge, procedural knowledge and technical Knowledge in order to embrace sustainable public procurement adoption (Grandia and Voncken 2019). This position is also emphasized in this study through the findings that stress the need to have competent procurement officers in terms of knowledge and skills to carry out sustainable public procurement. From the literature point of view, the individual factors of knowledge and skills leading to procurement effectiveness are also emphasized by De Giacomo et al. (2019) and Sönnichsen and Clement (2020). Their emphasis stems from the fact that the knowledge and skills enhance the competence of procurement officers in handling sustainable procurement activities and hence enhance the adoption of sustainable public procurement. This same position is presented in the findings of this research study with specific focus on PDEs of Uganda. This means that the approach that was presented in the literature by previous researchers on how to realize sustainable public procurement, is also applicable in Uganda as far as enhancing the competence of procurement officers is concerned.

Though there is direct influence on adoption of sustainable public procurement in Uganda, the results also indicate that the competence of procurement officers helps to boost the existence of ethical behavior in PDEs in Uganda leading to the same end result – adoption of sustainable public procurement activities. These findings mean that ethical behavior in procurement is very important, especially considering that sustainable public procurement reflects a common good rather than an individual good. This means that, in procurement, there is potential for a procurement officer to advance

his (or her) personal interests leading to personal gains commonly referred to as corruption. Emphasizing ethical behavior counters the urge of a procurement officer to act in a corrupt manner, thereby enhancing the realization of sustainable public procurement (Sarawa and Mas'ud, 2020). This indicates the relevance of the mediation of ethical behavior in the realization of sustainable public procurement in PDEs in Uganda, even when the procurement officers are competent enough to ensure that the sustainable public procurement is practiced in government offices in the country – Uganda.

## 7 Conclusion and recommendations

Realizing sustainable public procurement in PDEs in Uganda was the focus of this study. The driving factor is the set of long-term benefits that can be realized by practicing sustainable public procurement in Uganda through the many PDEs in the country that support procurement in Ministries, Departments and Agencies (MDAs) of the government of Uganda. These long-term benefits are already documented in the literature and findings of this study. Based on the literature, it was hypothesized that the realization of sustainable public procurement is possible by enhancing the familiarity of procurement staff members in the practice of sustainable public procurement as well as ensuring that there is adherence to ethical requirements in the practice of sustainable public procurement. These propositions from the literature were found to be valid using data collected from the MDAs of Uganda. Based on this, Ugandan MDAs have the potential to realize sustainable public procurement practice and popularize it to the private sector as well. This is through enhancing the competence of procurement staff members as well as ensuring that the ethical requirements are always adhered to when a procurement engagement is being carried out in any MDA in Uganda through their respective PDEs. This forms the conclusion to this study.

Based on the conclusion, it is recommended that the procurement officers in PDEs of the different MDAs in Uganda, get trained in effective procurement practices leading to the realization of sustainable public procurement. Additionally, the ethical code of conduct governing procurement activities needs to be beefed up to cover the new changes in the procurement field relating to the introduction of sustainable public procurement practices in the country. Consequences for not adhering to such ethical requirements need to also be stressed to act as a motivation to adherence to such ethical requirements. These changes should go a long way to boost the National Sustainable Public Procurement Action Plan of Uganda, further enhancing the realization of sustainable public procurement in Uganda.

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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