An Exploratory Study on the Status Of Procurement Knowledge Management in the Energy and Mineral Sector of Uganda

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Abstract: The aim of the study was to describe the status of procurement knowledge management in the energy and mineral sector of Uganda. An exploratory case study design adopting a qualitative approach to gain primary data was considered. The study found that Public procurement KM is in infancy stage given the lack of awareness of the need to manage procurement knowledge. There is no deliberate formal effort to pursue KM in energy and mineral sector of Uganda due to lack of central government initiative to promote and mainstream KM. There are opportunities to entrench procurement KM in the sector operations given the prevailing efforts to capture, store, preserve, and share and apply procurement knowledge in routine procurement operations. It is recommended that the responsible ministry should develop an enabling KM policy, and attendant strategies, build awareness and engage KM champions in each unit to promote and cascade KM. Benchmarking initiatives should be sought to mainstream procurement KM. Future research should focus on empirical examination of procurement KM and procurement performance, challenges and critical success factors for mainstreaming procurement KM in the energy and other public sector entities in Uganda.

Keywords: Procurement Knowledge management, Energy and mineral Sector, KM in Uganda

INTRODUCTION

The advent of information and communication technologies (ICT) in the 1980s to 1990s saw a paradigm shift in ways organizations in the public and private sectors became organized for enhanced service delivery by re-engineering and automating their processes Koc, et.al., 2019; Okolie & Oyise, 2021). In the 1990s to 2000, public sector organizations embraced knowledge management (KM) with Information communication and technology (ICT) following the realization that effective service delivery depended on possession and retaining competitive skills and know-how in strategic key units-SKU (Gaviria-Marin, Merigo&Popa, 2018; Gutierrez& Sequeda, 2020). Strategic Human resource management strategies of talent attraction, development and retention complemented with business process re-engineering (BPR) were promoted for enhanced service delivery. In embracing systems

thinking for effective service delivery, contemporary public sector organizations consider KM as an integral public sector organizational management approach where managers seek to harness knowledge possessed internally and in its external environment through knowledge gathering, organization and sharing (Gaviria-Marin, et al., 2018).

Available survey reports indicate an increase in embracing KM in developing economies but more prominently in most OECD countries. This is so amidst challenges of building awareness, understanding and applying KM in the public sector (Yuen, 2007). More recent studies report of further renewed interest and adoption of KM in the developing countries world over albeit with varying levels of implementation and scope (Laihonen, H. and Mäntylä, 2018; Ahbabi, Singh, Balasubramanian and Gaur 2019; Cajkova, Jankelova and Masar, 2021). In Africa and in Uganda which a reference for this study, it cannot be an exception and hence the reason to study the status of KM implementation in the energy and mineral sector which is a public sector ministry.

A CASE OF KNOWLEDGE MANAGEMENT AND RATIONALE FOR PUBLIC PROCUREMENT IN THE ENERGY AND MINERAL SECTOR OF UGANDA

There is an increasing support gained from research that effective and efficient service delivery rests on possession, sharing and utilization of knowledge among government human resources distributed in different agencies, functions and hierarchies (Agrifoglio, et al., 2020; Karagoz, et al., 2020; Yami et al., 2019; Abu-Shanab & Shehabat, 2018). The management of the public procurement function in the public sector of Uganda involves a wide range of tacit and explicit knowledge held between internal and external stakeholders making knowledge creation, storage, sharing and application complex. There is quite a number of inter-linked stakeholders in the procurement cycle according to the public procurement and disposal of public assets Act of Uganda of 2003 as amended. Under the internal arrangement, there are End-user departments who have diverse knowledge on requirements including their specifications. The procurement and disposal unit possess strategic and operational supply chain management knowledge for acquisition of supplies, services and works. The Accounting Officers have knowledge for overall procurement management and accountability in the public procuring and disposing entity (PPDA Act 2003 amended). Among the external stakeholders, the Public procurement and disposal of public assets Authority possesses regulatory and policy knowledge to guide all entities on procurement operations in the public sector. The contractors and suppliers have tacit and explicit knowledge on products, goods, works and services that are required by the Procuring and disposing Entinty.

The strategic energy and mineral sector of Uganda like other entities in the country is faced with a constrained procurement performance. Based on the Procurement Authority of Uganda procurement performance metrics of efficacy, competition, efficiency, effectiveness, and economy which form the basis for ascertaining if value for money was achieved in public procurement process (PPDA Audit Manual, 2007), the ministry of energy and mineral development experienced lengthy procurement process leadtime of 180 days against a standard of 100 days. The entity also posted unsatisfactory procurement plan implementation of between 59% and 44.7% respectively (PPDA Annual reports, 2018). These report findings are in contraction with the set performance standards of procurement performance.

The energy and mineral sector in Uganda takes 5.5% of the total national budget and is mandated to ensure adequate and sustainable exploitation, management and utilization of energy and mineral

resources for the inclusion and benefit of all people of Uganda. This mandate would ordinarily require knowledge management especially in aspects of procurement. However, there is uncertainty on the implementation of procurement knowledge management practices in the energy and mineral sector yet there is need for evidence-based interventions to harness internal and external procurement knowledge for enhanced service delivery in the sector. A study exploring the status of procurement KM in the energy and mineral sector serves to document a baseline analysis on procurement KM practices not only to guide KM policy and managerial interventions for enhanced KM in the procurement function but also to cover knowledge gaps on KM in the public sector strategic key units.

OBJECTIVES OF THE STUDY

The general objective of the study was to undertake an exploratory study to describe the status of procurement KM in the energy and mineral sector of Uganda. The specific objectives related to describing the procurement knowledge gathering practices, knowledge storage and organization processes in the energy and mineral sector of Uganda.

LITERATURE REVIEW

The Concept and KM and KM process

To appreciate the concept of knowledge management one needs to appreciate the meaning of knowledge which in itself has no unified definition. In this paper characteristics of knowledge will be used and include justified beliefs that guide action in task execution, information possessed that guide an individual's capacity into act and can be classified into tacit and explicit knowledge (Nonaka, 1994). Tacit knowledge is a form of undocumented knowledge possessed in the minds of individual employees majorly comprising of the skills, expertise, thought or experiences that requires a learning process to be transferred to others. Explicit knowledge is more operant in form as it is expressed in words, numbers, artifacts, data bases, documents, regulations, and the like and therefore can easily be communicated and shared (Nonaka,von Krogh&Voelpel, 2006; Desouza&Paquette,2011).

Knowledge management equally has varied definitions but what is common among widely used definitions is that it is an integrated approach in nature for gathering, storage and sharing and applying/use of knowledge for enhance organizational outcomes (Nonaka, et al., 2006; Desouza&Paquette,2011).

As an integrated approach, KM takes a holistic approach involving harnessing knowledge from multi-disciplines (ICT, Library science, HRM etc) and managerial levels and functions for its effectiveness in problem solving (Nonaka, et al., 2006; Desouza&Paquette,2011). KM also takes a process approach and of interest in paper is the Oluic-Vukovic (2001) knowledge gathering, and knowledge storage and organization processes aa illustrated in Figure 1 below.
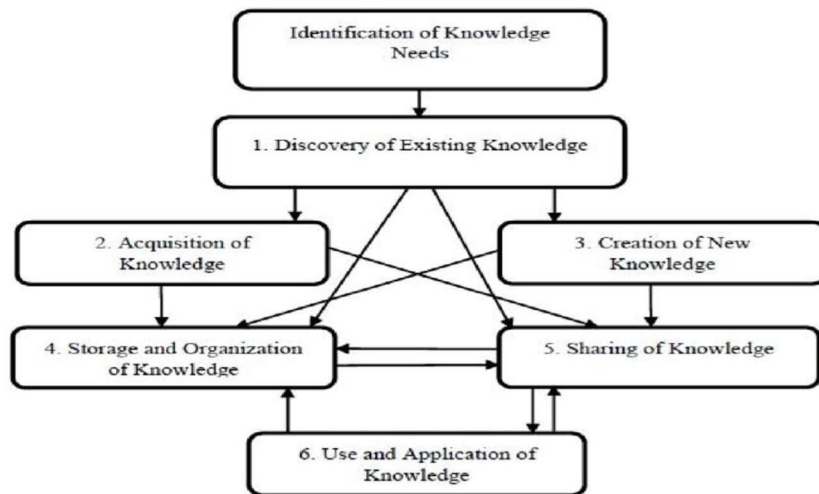
Figure 1: Knowledge management process model
Source: Oluic-Vukovic (2001)

In reference to figure 1 above, identification of knowledge needs is the starting point in knowledge-based organization and in practice involves effort to identify organisation wide functional unit knowledge needs at the strategic, operational and tactical levels and documenting them for effective and efficient service deliver (Oluic-Vukovic, 2001; Nonaka, et al., 2006). The strategic, operational and tactical knowledge needs identification should guide discovery of existing organisation wide and functional unit knowledge possessed by existing employees and retiring employees (Oluic-Vukovic, 2001; Ugwu, Okere and Okere, 2014).

Identification of knowledge needs, informs the existing knowledge identification in the organization through discovery of existing organisation wide and functional unit knowledge possessed by existing employees and retiring employees (Oluic-Vukovic, 2001; Nonaka, et al., 2006; Ugwu, et. al., 2014). Acquisition of knowledge involves effort to acquire knowledge into the agency from external sources such as individuals, documents, research and development.

Knowledge creation in the KM process in organisations pursing KM involves efforts to combine internal and external knowledge to create new knowledge through use of technologies for information analysis to create knew knowledge. In practice knowledge creation involves use of techniques that connect people to people through communities of practice, peer practice, social networking and use of knowledge cafes (Oluic-Vukovic, 2001, Nonaka, et al., 2006; Bratianu, 2015); knowledge is further created by connecting people to knowledge using knowledge banks, learning portals and social network techniques. Best practices in knowledge creation involve effort to connect people to practices using lessons learned, storytelling, communities of practice, professional forum techniques. Other techniques used in knowledge creation include helping people to keep upto-date and common practices include policy briefing, online portals, news bulletin; sharing learning through avenues such as after the action review and exit reviews/appraisals; and connecting people to corporate knowledge through induction, mentoring, and mapping knowledge assets (Oluic-Vukovic, 2001; Bratianu, 2015; Abdoulaye and Chennupati, 2020).

Knowledge Storage and organization processes consider key decisions on manuals or electronic knowledge storage forms, knowledge preservation policies and guidelines and written procedures for knowledge preservation/storage. Knowledge can only useful if shared and applied. Common avenues

in knowledge sharing include consultations, employee training and development, meetings, workshops, information systems, manuals and others (OluicVukovic, 2001; Nonaka, et al., 2006; Desouza &Paquette, 2011). Knowledge use and application involves application of the acquired knowledge by the personnel for problem solving at the strategic, operational and tactical levels.

The knowledge management process model in figure 1 above was adopted in this paper to explore the status of procurement KM in the energy and mineral sector of Uganda.

Status of KM in the public sector

There is enormous Public sector KM research (Laihonen, H. and Mäntylä, 2018; Ahbabi, Singh, Balasubramanian and Gaur 2019; Cajkova, et al., 2021) but this subsection presents some studies on KM in the public sector to give an indicative status of KM in the public sector World over.

In the EU, Mitrović, Obradović and suknović (2018) used a literature review and a questionnaire survey to establish the existence of KM in Serbia's decentralised local governments and reports of high a favourable and positive attitude to KM and top management commitment to KM; high reliance on technology for KM activities, KM is perceived as a management priority. An astonishing finding was that although local government employees appreciated the importance of knowledge sharing, they were not to formally share knowledge. The study however found no formal responsibility lines for KM and no formal plan for capacity building in the local government plans in preparation for the digital economy.

In complement, Cajkova, Jankelova and Masar (2021) employs an exploratory survey design to establish the state of KM and specifically the perceptions, application and barriers to KM Slovakia Municipalities and noted a weak status in systematic KM attributed to confusion in the KM concepts and lack of emphasis knowledge sharing but a high reliance on technology. In Asia, a study by Siami-Namini (2018) using a case study design on a public education and research institute in Iran report that although knowledge application depended on knowledge sharing in the institute, challenges of lack of awareness, ability to understand and apply KM best practices, management support, organisational culture and providing for business case for KM were significant challenges to the KM initiatives. Siami-Namini (2018) recommends incentives such as promotion of e-governance, online technology and connectivity investment, collaboration between public and private organisations, enabling digital legislation and policies, innovation programs stimulants to spur KM implementation. A related Asia study by Ashok, Al Dhaheri, Madan and Dzandu (2021) employing a qualitative case study to explore the status and forces to KM in UAE public sector found that although IT was central in promoting knowledge creation, access, adoption and sharing, organisational culture equally fostered KM adoption. The study concluded that transformation leadership, along with and organisational culture significantly explain KM adoption in UAE public sector majorly as mediators for to organisational inertia.

In the Americas, a study by Urpia, Sartori and Machado (2020) employing a quantitative and descriptive research approach to explore the implementation and coverage on KM practices in Brazilian Municipalities reports of a low level of implementation, coverage and use of competency banks, institutional memory and talent management, knowledge mapping and audit as well as benchmarking in the municipalities work processes.

In Africa, a study by Wamitu (2015) employs a literature un planned interactions and observations. The study contends that there was no clearly defined platform for tacit knowledge sharing due to the un favourable organisational culture, poor communication, low motivations and functional boundaries. As such Wamitu (2015) recommends voluntary tacit knowledge sharing , creation of flatter organizations to reduce on functional barriers to knowledge sharing, bottom up, top down and horizontal open communication, motivating employees to share knowledge by providing for their hierarchy of needs and use of communities of practice to breed a corporate culture for knowledge sharing.

Status of Procurement KM research in the public sector

Empirical studies on the status of KM in public sector procurement function in developing countries are limited. A decade ago, Al-Karaghouli, Ghoneim, Sharif and Dwivedi (2013) employed a qualitative study design to assess the effect of KM in enhancing the procurement process in the UK Healthcare Supply Chain and report that communication constrained knowledge sharing and transfer at requirements stage and the entire supply chain. AlKaraghouli, Ghoneim, et al. (2003) recommend conducting similar studies on KM in different health supply chain context using a quantitative or mixed approach to address the limitation of a qualitative approach.

Wyrwicka, et al. (2014) writes a position paper to sound the need for knowledge management in Poland public procurement sector and opines that polish public sector still has a lot to integrate KM in its procurement operations and there was need for behavior change to create a favorable attitude for knowledge sharing among procurement employees. Wyrwicka, et al. (2014) opines that the public procurement sector strengthen activities to build intellectual capital and overcame barriers to KM by building on the present gains on methods, tools and understanding of KM.

Recent studies such as by Anike, Njideka and Ukamaka (2020) report of high awareness against a low application of KM among university library officials in Nigeria and recommend KM strategy formulation, capacity building to address KM needs for enhanced library service delivery in public university libraries.

Nenungwi and Garaba (2022) rely on a survey design where a questionnaire was used to collect data and report a high prevalence of KM awareness among employers in a physical works department in Kwazulu Natal. However, KM initiatives were still informal with no formal KM unit and there were no deployed KM coordinators in the department. Nenungwi and Garaba (2022) key recommendations were awareness building to enlighten employees on KM, establishment of a KM unit staffed with professionals, and aligning KM with the public sector entity's mission. The study further recommends conducting other studies in other South Africa's provinces.

METHODOLOGY

An exploratory case study design adopting a qualitative approach to gain primary data was considered to establish the status of procurement KM in the energy and mineral sector of Uganda. As justified by Yin (2014) case study research design provides opportunity for an indepth investigation of the "how" and "what" of a phenomenon which is not clearly known with no need for definitive conclusions but sets precedence for future research here we should connect and show relevancy to our study. Exploratory case study designs were used by SiamiNamini (2018) and Al Dhaheri, et al. (2021) KM studies in public sector.

Yin (2014) defines target population as the group of individuals or participants with the specific attributes of interest and relevance to the study. Accessible population (sample frame) on the other hand consists of the individuals who can easily be accessed at the time of data collection

(Yin, 2014). The study target population included energy sector employees in the parent Ministry of Energy and Mineral Development (MEMD) Uganda under the Directorates of Geological survey and mines (210), Petroleum exploration and development (150), Energy development (30) and line agencies of Rural Electrification Agency (55), Electricity Generation Company (85), electricity transmission company (79), Electricity regulation Authority (30) and procurement personnel in the energy agencies (25) as tabulated below.

Table 1: Energy and minerals sector study population and sample

Population category	Target population	Sample	Sampling technique
Directorates of Geological survey and mines	210	2	Purposive
Petroleum exploration and development	150	2	Purposive
Energy development	30	2	Purposive
Rural Electrification Agency	55	2	Purposive
Electricity Generation Company	85	2	Purposive
Electricity transmission company	79	2	Purposive
Electricity regulation Authority	30	2	Purposive
Procurement personnel in the energy agencies	25	2	Purposive
Total	664	16	

The study purposively sampled 16 key informants (two from each category) considering their strategic position in the procurement function as a Head User Department/Unit or Procurement unit and therefore deemed knowledgeable in procurement operations in the agency. The study relied on primary data on KM processes collected using key informant interviewing methods with help of an interview guide. In total 13/16 interviews were successfully conducted yielding a response rate of 65% which is adequate for a qualitative study as supported by Yin (2014).

Qualitative data was analyzed using four step conceptual qualitative content analysis technique which include four stages of initialization, construction, rectification, and formalization (Vaismoradi, Jones, Turunen, and Snelgrove 2016). Initialization involved reading and developing abstractions on respondents accounts into KM conceptual codes and writing reflective notes. Construction stage involved reflecting and organizing codes based on their similarity culminating to development of cluster within the KM process. The rectification phase involved verification and reflection of the identified themes in relation to the six stages of;-Knowledge needs identification, discovery, acquisition, creation, storage and organization, sharing and utilization major themes (cf. fig. 1). The finalization stage involved developing story lines based on a respondent's account substantiating/validating the identified theme and sub theme.

PRESENTATION OF FINDINGS

The objective of the paper was to establish the status of procurement KM in the Energy sector of Uganda. The study preliminary finding was that there was no formally written initiative and strategy on KM. However, government of Uganda has adopted e-governance policy in virtually all its Ministries, Departments and Agencies (MDAs) albeit in varying levels of implementation. The Government of Uganda has a policy to automate its functions using esystems such as integrated financial management system (IFMIS), integrated personnel and payroll system (IPPS) and e-government procurement (eGP) among others.

Procurement knowledge gathering practices in the energy sector

The first objective of the study was to establish the procurement knowledge gathering practices in the energy sector. The Oluic-Vukovic (2001) KM process model contends that knowledge based organisation undertake to first identify organisation wide and function units knowledge needs, discover, acquisition and create new knowledge. It emerged from the interviews that there was no awareness and therefore no formal procurement KM policy or strategy in all the energy sector agencies. What is on ground are the routine traditional procurement management practices for seeking and developing procurement capabilities guided by the public procurement management and legal framework.

Otherwise, the interviews reveal efforts to conduct job analysis to identify knowledge and skills for strategic, operational and tactical procurement job design by the Ministry of Public Service (MoPS) a practice akin to identify procurement knowledge needs. To substantiate the practice, KI-1 noted:

> The Ministry of Public Service (MoPS) has developed Job Description (JDs) which they use to staff the procurement function. A procurement professional at my level must possess knowledge in strategic pprocurement research on areas such as sustainable procurement, and e-procurement amongst others.

Energy sector agencies identified procurement knowledge possesses by existing employees within the user departments and retired employees majorly in user departments for requirements and specifications development and for institutional memory a practice that is akin to knowledge discovery. In the verbatims of KI-V:

> We undertake to identify individuals who possess the energy sector related knowledge majorly at the level of user departments who can contribute to the requirements development in strategic areas of power dams, geology surveys, upstream and downstream oil personnel.

It was also revealed that energy agencies solicited for knowledge from individual consultant, and explicit knowledge from government, donor and internal procurement documents, universities and other sources a practice comparable to solicitation of external tacit knowledge. KI-X louds the above position:

> The energy sector has identified cconsultants to support the sector development. For example, for development of hydro-power dams, the MEMD has list of local and international hyropower dams transactional advisers in the deferent units in the sector who advise on where we the ministry does not have expertise including procurement. Locally, Makerere University, Wenreco, Local independent power producers, UEGCL Engineers among other have been identified as external sources.

The agencies undertook to tap in outsourced service providers' knowledge through knowledge transfer clauses in the contracts a management practice that is akin to effort to combine internal and external procurement knowledge to create new knowledge. This is substantiated in the verbatims of KI-V:

> The Terms of Reference for consultancies and key civil works contracts provide for among others criteria for knowledge transfer clause and a requirement for subcontracting 30% of civil works of a given threshold to develop local capacity and transfer knowledge and skills.

It emerged from the themes that different user departments/functional hold regular meeting, workshops, sector wide collaborations, lessons learnt sessions, after the procurement action reviews along internal and external audits a practice that is akin to KM ttechniques such as cconnecting people to people, cconnecting people to knowledge, cconnecting people to practices, helping people to keep up to-date, cconnecting people to corporate knowledge. In the verbatim KI-XII had this to say on the internal arrangements to create knowledge:

> Workplace meetings are regularly held for staff to share experiences on assigned/performed tasks and challenges of which procurement takes center stage since it involves users, contracts committees and procurement unit staff. There is also effort to engage functional unit staff in local and international procurement workshops, conferences, seminars and work-place meetings.

Procurement Knowledge Storage and organization processes

The second specific objective of the study was to establish the procurement knowledge storage and organization processes in the energy sector. The Oluic-Vukovic (2001) KM process model contends that knowledge-based organisation undertakes to store and preserve knowledge, share and apply the acquired knowledge to gain competitive advantage. It emerged from the interviews that as standard all agencies store files in manual and electronic forms a practice that is akin to knowledge storage. To substantiate on document storage, KI-1 observed:

Procurement operations knowledge is available in form of laws like the PPDA Act (2003) as amended, PPDA Regulations and guidelines, procurement audit reports, procurement administrative review reports, contract management files among others.

On electronic storage KI-II put it:

> Procurement information is available as word files and data-bases at mainly at Procurement Units. Project procurement related information also exists on portals for the on-going and executed projects.

At emerged from the interview that meetings, internal consultations, coaching, meeting, seminars/workshops, formal education, information system, and manual records where widely used to share knowledge. To substantiate on meetings, K-XII noted:

> Meetings within the procurement unit and with user department heads and contract managers is a norm here. Other avenues for knowledge sharing include training in new procurement operations like electronic procurement.

On Formal education KI-III observed:

Procurement staff are sponsored or self-sponsor for internationally accredited professional courses in procurement and supply chain related areas.

The interviews further revealed wide use of computers and software, data bases, websites and reference to the electronic government procurement-EGP system for procurement knowledge sharing.

As a practice procurement knowledge was widely applied by personnel for problem solving at the strategic procurement planning and management operational and tactical levels. To substantiate on strategic knowledge sharing KI-1 put it:

Strategic knowledge sharing involves planning for the entity procurement activities is mainly a function of the procurement Unit. This involves consolidating the requirements of the entity and estimated lead-times for the related activities including costing. The plans become tools to enable implementation and monitoring performance.

KI-II had this to say:

Operational knowledge sharing practices here involve generating solicitation documents and issuing them out and eventual evaluation to come up with the Best evaluated offers for contracting. Tactical procurement knowledge involves day to day contract administration and reporting. It involves capturing contract performance details and feedback.

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

The study aim was to establish the status of procurement knowledge management in the energy sector of Uganda by exploring the knowledge gathering, storage and sharing practices. The findings reveal lack of awareness and no formal procurement KM policy or strategy to guide knowledge gathering in the energy sector. However, there was un conscious effort to identify procurement knowledge need, discover, acquire and create new knowledge indicative of an initial status (level 1) in the knowledge management maturity continuum pointed by Paulzen and Perc (2002) Knowledge Process Quality Model (KPQM).

Organization in the initial stage of KM are characterized with lack of awareness for a formal KM framework, have no conscious control on knowledge processes. As such KM is random and not formally planned (Paulzen & Perc, 2002). Studies elsewhere also point to a high level of informal KM in Nigerian public university libraries (Anike, et al., 2020) and a South African Provincial government department (Nenungwi & Garaba, 2022), moreover, a study in EU by Cajkova, et al., (2021) found a weak status in systematic KM attributed to among other, lack of clear understanding of KM concepts.

It was also found that energy sector agencies in Uganda undertook to store, preserve and share knowledge as part of the procurement operations demanding generation and preservation of procurement records for future use and reference albeit not in the spirit of KM. The study findings echo previous public sector procurement KM practice. Mitrović, Obradović and suknović (2018) found that although Serbia's local government employees appreciated the importance of knowledge sharing, there were no formal responsibility lines for KM and capacity building in preparation for the digital economy. Wyrwicka, et al. (2014) recommends overcame barriers to knowledge sharing by building on the present gains on methods and tool for KM maturity in public procurement.

The paper concludes that there is no deliberate formal effort to pursue KM in energy sector of Uganda due to lack of central government initiative to promote and mainstream KM as tool for enhanced service delivery. However, there are opportunities to entrench procurement KM in the sector operations given the prevailing efforts to capture, store, preserve, share and apply procurement knowledge in their routine operations.

It is recommended that the responsible ministry should develop an enabling KM policy, and associated strategies, build awareness and gain KM champions in each unit to promote and cascade KM in procurement operations. Benchmarking initiative with the public sector or other public sector agencies with proven KM practices should be sought to mainstream procurement KM for enhanced procurement function performance and overall service delivery in the energy and mineral sector. Future research should focus on empirical examination of procurement KM and procurement performance , challenges and critical success factors for mainstreaming procurement KM in the energy and other public sector entities in Uganda.

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