

IMPACT OF SUPPLIER DIGITAL LITERACY ON E-PROCUREMENT SYSTEM UTILIZATION IN LOCAL GOVERNMENT ENTITIES

KATHYLEN CYNTHIA NAMATOVU

M23B12/037

**A DISSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE AWARD OF A DEGREE OF BACHELOR OF
PROCUREMENT AND LOGISTICS MANAGEMENT OF UGANDA CHRISTIAN UNIVERSITY**

May, 2026



**UGANDA CHRISTIAN
UNIVERSITY**

A Centre of Excellence in the Heart of Africa

DECLARATION

I, NAMATOVU KATHYLEN CYNTHIA, hereby declare that this research report titled “Impact of Supplier Digital Literacy on E-Procurement System Utilization in Local Government Entities” is my original work and has not been submitted for any academic award in any university or institution of higher learning. All sources of information used in this study have been acknowledged and properly cited in accordance with academic requirements.

Name: NAMATOVU KATHYLEN CYNTHIA

Name: NAMATOVU KATHYLEN CYNTHIA
Signature: Kathy
Date: 11 / 05 / 2026

APPROVAL OF THE SUPERVISOR

This research report titled “Impact of Supplier Digital Literacy on E-Procurement System Utilization in Local Government Entities” has been prepared under my supervision and submitted for approval as the supervisor.

Supervisor’s Name: Mr. Muloosi Pascal

Sign:.....

Date:.....

DEDICATION

This work is humbly dedicated to myself for having the courage to push and work hard despite everything and my family for believing that I could handle the stress and being cheerful.

ACKNOWLEDGEMENT

First and foremost, I thank God for the strength, wisdom, and resilience He granted me throughout this journey. Without His grace, this work would not have been possible.

I would like to express my sincere gratitude to my supervisor for her constant guidance, patience and constructive feedback received from the early stages to completion of this research. It was your academic support and encouragement which sustained me particularly in difficult times moments of this process.

I would also like to thank all the faculty and staff of my institution for I owe a debt to dedication and the preparation I received for this type of research. I am thankful to my classmates for their discussions, debates and moral support along the way.

Lastly, to my family and friends who have been with me for all these hours and the stress and the moments of self-doubt, thank you for your love and patience. You are my building block. You're my brick in my wall.

ABSTRACT

Though, the Electronic Government Procurement (e-GP) systems are becoming popular, In Uganda, notably in small scale, the involvement of suppliers from the local government level is low in small and medium sized enterprises (SMEs). This study investigated the effect of local suppliers' digital literacy on the use of the e-procurement system in Uganda. government D seventh entities were guided by the Technology Acceptance Model (TAM). The Technology Acceptance Model (TAM) has been developed by government entities guided by it, Davis (1989).

The study pursued three specific objectives: to assess the current levels of digital literacy among registered suppliers, to measure suppliers' actual system use, and to determine the relationship between digital literacy and e-GP system utilization. The survey approach involved a cross-sectional study design. Data were gathered from 31 individuals, including suppliers, vendors, and procurement officers from local government agencies in Uganda. Digital literacy was gauged through a five-item tool, which evaluated operational capability, navigation, documentation, technical competence, and digital literacy awareness. System use was gauged through behavioral measures such as system use frequency, ease of use ratings, and online task completion.

The study recommends that PPDA adopts to structured, tier-based digital literacy training for suppliers. The local governments are recommended to put in place appropriate measures for supporting suppliers. A usability redesign of the e-GP system based on user experience principles is proposed. Future studies should consider employing large sample sizes and long-term designs, and performance indicators to assess e-procurement use.

Table of Contents

DECLARATION.....	ii
APPROVAL OF THE SUPERVISOR.....	iii
DEDICATION.....	iv
ACKNOWLEDGEMENT.....	v
ABSTRACT	vi
CHAPTER ONE; INTRODUCTION.....	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	3
1.3 Objectives of the Study	3
1.4 Research Questions and Hypotheses	4
1.5 Scope of the Study.....	4
1.6 Justification.....	5
1.7 Significance of the Study.....	5
1.8 Limitations and Delimitations	6
1.9 Theoretical Framework and Conceptual Framework	7
CHAPTER TWO: LITERATURE REVIEW.....	8
2.0 Introduction.....	8
2.1 Key Definitions	8
2.2 Theoretical Review	9
2.3 Conceptual Review	10
2.4 Objective One: To assess the current levels of digital literacy among suppliers registered with local government entities' e-procurement systems in Uganda.	10
2.5 Objective Two: To measure suppliers' actual system use in local government entities in Uganda.....	12
2.6 Objective Three: To determine the relationship between supplier digital literacy levels and their utilization of e-procurement systems in local government entities.....	14
2.7 Research Gap.....	16
CHAPTER THREE: RESEARCH METHODOLOGY.....	17
3.0 Introduction.....	17
3.1 Research Design.....	17
3.2 Study Population.....	18
3.3 Sample Size and Sampling Techniques.....	19

3.3.1 Sample Size Determination	19
3.3.2 Sampling Technique	19
3.4 Data Collection Methods	19
3.4.1 Questionnaire Structure.....	20
3.4.2 Operationalization of Variables	20
3.4.3 Questionnaire Administration.....	21
3.5 Validity and Reliability	21
3.5.1 Validity.....	21
3.5.2 Reliability.....	22
3.6 Data Analysis	22
3.6.1 Inferential Statistics	22
3.7 Ethical Considerations	23
3.8 Summary of the Methodology.....	23
CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION	24
4.0 Introduction.....	24
4.1 Response Rate.....	24
4.2 Background Characteristics of Respondents	24
4.3 Levels of Digital Literacy Among Respondents.....	26
4.3.1 Reliability Analysis: Cronbach's Alpha for Digital Literacy Scale	28
4.4 E-GP System Utilization Patterns	29
4.5 Challenges Encountered in Using the e-GP System	31
4.6 Inferential Statistics	32
4.6.1 Pearson Correlation Analysis.....	32
4.6.2 Simple Linear Regression Analysis	32
4.7 Qualitative Findings from Open-Ended Questions.....	33
4.7.1 Perceived Advantages	33
4.7.2 Perceived Challenges	34
4.7.3 Suggestions for Improvement.....	34
CHAPTER FIVE; DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS	34
5.0 Introduction.....	34
5.1 Discussion of Findings	34
5.1.1 Objective One: Digital Literacy Levels Among Suppliers in Uganda's e-GP System	34

5.1.2 Objective Two: Suppliers' Actual System Use in Uganda's Local Government Entities	36
5.1.3 Objective Three: Relationship Between Digital Literacy and e-GP System Utilization	37
5.2 Conclusions.....	38
Digital Literacy Among Suppliers is Moderate to High but Uneven	38
System Utilization is Growing but Remains Incomplete.....	38
A Positive Relationship Exists but Could Not Be Confirmed at this Sample Size	39
5.3 Limitations of the Study	39
5.3.1 Small Sample Size.....	39
5.3.2 Measurement Limitations of the Utilization Scale	39
5.3.3 Self-Report Bias	39
5.3.4 Cross-Sectional Design	40
5.3.5 Infrastructure Confounding	40
5.4 Recommendations	40
5.4.1 For PPDA and National Procurement Authorities	40
5.4.2 For Local Government Entities.....	41
5.4.3 For System Design and the Ministry of Finance	41
5.4.4 For Infrastructure Investment	41
5.4.5 For Policy Frameworks	42
5.5 Chapter Summary	42
References	42

CHAPTER ONE; INTRODUCTION

1.1 Background of the Study

The use of the E procurement system is defined as the degree of active E procurement platform use by both the public buyers and suppliers to accomplish functions like registration, tender search, bid submission, contract award, e catalogue transactions and post award management (Vaidya and Campbell, 2016). The use of e-procurement systems has become an important aspect of the contemporary supply chain management whose rates of adoption have been rapidly increasing over the past few years (Bienhaus and Haddud, 2023; Nasir et al., 2023). Digitization of procurement has been more acute in developed economies like the United States, the United Kingdom, Singapore, South Korea and the European Union as governments have been able to adopt extensive e-procurement solutions to increase transparency, lower costs and improve service provision (Vaidya and Campbell, 2016). These countries have shown that successful implementation of e-procurement can deliver considerable benefits such as the decline of administrative costs, development of procurement efficiency, decreased risks of corruption and better relationships with suppliers (Apio & Asiimwe, 2024). Nevertheless, even though the advantages of e-procurement systems have been proven all over the world, not every area is using them (North America is the leader with more than 70% of organizations implementing them (Global Digital Procurement Survey, 2023) and adoption rates in African COMESA countries are between 30% (2020) and 70% (2024) (Govern

Uganda has embarked on a digital transformation initiative to modernize its public procurement using Electronic Government Procurement (e-GP) system. The Ministry of Finance, Planning and Public Procurement and Disposal Authority (PPDA) together with the Ministry of Finance Planning and Economic Development and the National Information Technology Authority of Uganda (NITA-U), introduced e-GP to minimize inefficiencies, delays, and corruption risks of using traditional procurement methods

(NITA-U, 2025). The system has functions in Ministries, Departments, Agencies and pilot local governments. Nevertheless, the use of e-procurement by local government agencies is still less than optimal. The local governments work under different environments with different internet access, electricity access, and technical infrastructure, which impact their ability to utilize e-procurement systems (Adebayo and Evans, 2015). The local government is decentralized thus the officials responsible in making the procurement decisions have different educational backgrounds and are not computer literate. The local governments also need to liaise with suppliers, such as SMEs, contractors, and other community organizations, most of which have limited digital capacity (Williams-Elegbe, 2014). This forms a complicated ecosystem in which the capacity of procuring entities and digital readiness of suppliers are important factors in successful implementation.

Supplier digital literacy is characterized by the ability to effectively utilize digital tools and platforms to execute procurement tasks. This includes skills in (i) operating e-procurement interfaces and workflows, (ii) effectively maintaining digital communications and documentation, and (iii) making secure online transactions as per procedural requirements (e.g., SCIRP, 2025; Frontiers in Education, 2025). The hypotheses of the research are as follows: it is believed that better supplier digital literacy is associated with a higher and more efficient use of the e-procurement system.

The research will be based on the Technology Acceptance Model (TAM) invented by Davis (1989). Technology Acceptance Model (TAM) is a handy theoretical framework that I can apply in this study because it clarifies the reasons behind technology acceptance behaviors via two key constructs: perceived usefulness the extent to which an individual believes that the use of a certain technology will positively impact his or her performance, and perceived ease of use the extent to which an individual believes that using the technology will be effort free (Venkatesh and Davis, 20 Supplier digital literacy, in the framework of the present study, does have an impact on the perceived ease of use of the e-procurement system, whereas the perceived usefulness is directly connected to actual use of the system. The more suppliers are digitally literate, and find the system convenient to their procurement process, the higher the chances they are to

interact with the system effectively, thus making the utilization rates higher (Brandon-Jones & Kauppi, 2018).

1.2 Statement of the Problem

Public procurement aims at attaining extensive supplier involvement on e-procurement platforms to promote competition, transparency and efficiency. In numerous developing contexts, such as in Uganda, supplier-side utilization is inconsistent and low, with SMEs lagging even after registration. The local governments report insufficiently onboarding, non-regular logins, and low rates of bid-submission compared to registered suppliers (UN DESA, 2022; OECD, 2023; PPDA Uganda, 2022; World Bank, 2021). A key constraint supplier digital literacy including ability to find opportunity, manage, prepare compliant, digital, documents, submit online bids and administer after award. Research links digital skills, ICT self-efficacy, and perceived ease of use to platform utilization patterns affecting SMEs disproportionately (Aboelmaged, 2021; UNCTAD, 2021; UNESCO, 2023; Van Laar et al., 2020). Evidence from Uganda and similar settings shows that perceived ease of use and digital capabilities predict utilization behaviors (Ssebugwawo et al., 2021; Venkatesh et al., 2021). Limited literacy reduces perceived ease and usefulness, lowering intention and usage, which narrows competition, perpetuates inefficiencies, and risks excluding SMEs from public contracts, undermining value-for-money and development objectives (OECD, 2020; Open Contracting Partnership, 2022; UN DESA, 2022). Despite e-procurement implementation, supplier engagement particularly among SMEs in local governments remains suboptimal, and supplier digital literacy's role in this utilization gap is under-examined. This study investigates how supplier digital literacy influences supplier utilization of e-procurement systems in Ugandan local government entities.

1.3 Objectives of the Study

General Objective

To examine the impact of supplier digital literacy on e-procurement system utilization in local government entities in Uganda.

Specific Objectives

To assess the current levels of digital literacy among suppliers registered with local government entities' e-procurement systems in Uganda.

To measure suppliers' actual system use in local government entities in Uganda.

To determine the relationship between supplier digital literacy levels and their utilization of e-procurement systems in local government entities.

1.4 Research Questions and Hypotheses

Research Questions;

What are the current levels of digital literacy among suppliers registered with local government entities' e-procurement systems in Uganda?

To what extent do suppliers utilize e-procurement systems in local government entities in Uganda?

What is the relationship between supplier digital literacy levels and their utilization of e-procurement systems in local government entities?

What factors moderate the relationship between supplier digital literacy and e-procurement system utilization in local government entities in Uganda?

1.5 Scope of the Study

The study focuses on two main constructs supplier digital literacy and e-procurement system utilization. Digital literacy will be measured through technical skills assessment, digital confidence evaluation and e-procurement process understanding. System utilization will be assessed through behavioural metrics including registration completion, bid submission frequency, feature usage and engagement duration. The study will also examine moderating factors including supplier characteristics such as business size, sector, location, government support mechanisms and system related factors that may influence the primary relationship between digital literacy and system utilization.

1.6 Justification

This research can be added to the accumulating knowledge on the subject of digital governance and technology adoption in developing nations. The proposed model has good explanatory power and confirms its robustness, with a reasonably strong empirical support, in predicting users' intentions to use e-procurement technology (Teo et al., 2009). The research fills a gap in existing procurement and digital governance literature by concentrating on the human capital aspect of e-procurement success that has been received lack of attention as compared to technical and policy. Practically, this research offers evidence-based information necessary for enhancing e-procurement in Uganda. Digital procurement is continuing to transform intensively as a business hub and developing new business models (Bag et al., 2023). The findings will be used to guide the procurement authorities and the local governments to specify (e.g. train portal, digital document clinics) the capacity building platform of the supplier's usability, and prioritize connectivity support. The findings will guide the decisions the policy will make in the development of supplier capacity, improvement of the design of the system and implementation of support mechanism. Local government will get the benefit of learning how to enhance the engagement with suppliers in digital procurement systems with the potential of enhanced competition, cost savings and procurement efficiency.

1.7 Significance of the Study

This research will produce multidimensional positive effects throughout the e-procurement ecosystem, producing a holistic effect that spans beyond the theoretical development to its practical application. Academic scholars will not only have empirical sources on the patterns of technology adoption in African context of public sector that are inadequately represented in current literature but will also have established methodological strategies to investigate the effects of digital literacy and conceptual knowledge that may inform future studies in the ever-changing sphere of digital governance and e-procurement. The results will be made available to the procurement authorities at the national and local levels and will be used to provide evidence-based information on how to design specific interventions that help increase e-procurement effectiveness, develop comprehensive digital literacy programs that are specifically designed to meet suppliers needs, and create supportive policy frameworks that can

systematically increase system utilization rates in various settings. Local government organizations will know what exactly and practically they need to do to improve supplier engagement, minimize the procurement process inefficiencies that currently mar manual systems, and realize the best returns on the large investments of e-procurement systems through measurably improved utilization rates that will vindicate the cost of the initial digital transformation. Suppliers, especially small and medium enterprises which constitute the largest portion of the supplier base will have important information about their particular skill development requirements, practical system use best practices, which can directly increase their involvement in profitable public procurement opportunities, as well as their general business competitiveness as an ever-digitizing marketplace. Lastly, the development partners of the digital governance projects across Uganda and the East African region will have useful lessons on how to better design programs of capacity development, specific technical assistance interventions, and systematic policy assistance programs to fill the identified gaps in digital procurement participation, so that future investments in e-government systems can deliver the desired developmental results.

1.8 Limitations and Delimitations

Limitations

Differences in internet connectivity and technical infrastructure among the regions might affect study results and it can be difficult to isolate the pure effect of digital literacy and infrastructure-related limitations.

The research can be limited by the inability to access full-fledged system usage data because of privacy protection policies and technical constraints of government procurement sites. Not all suppliers will be willing to provide specific information on their digital capabilities and business models.

The research might be limited to accessing full system use information because of the privacy regulations and technical limitations of government procurement systems. Certain suppliers might not readily provide information on their business practices and digital competencies.

Delimitations

The research concentrates on registered suppliers within the government procurement system, and leaves out participants in the informal sector, which could be a large part of the potential suppliers.

It only analyses the Government Procurement Portal and no other digital tools and platforms that suppliers might employ in their overall operation of the business.

1.9 Theoretical Framework and Conceptual Framework

Theoretical Framework

The present study will be based largely on the Technology Acceptance Model (TAM) derived by Davis (1989). Framed within the technology acceptance model (TAM), which is a key model in understanding the predictors of human behaviour toward the potential acceptance or rejection of the technology (Mkhize & Dube, 2023). TAM provides a robust theoretical foundation for understanding why individuals adopt or reject information technology systems. Behavioural intention toward e-procurement technology is mainly determined by user's attitude and additionally influenced by perceived usefulness and ease of use (Teo et al., 2009). In this study's context, supplier digital literacy directly influences Perceived Ease of Use of e-procurement systems.

Conceptual Framework

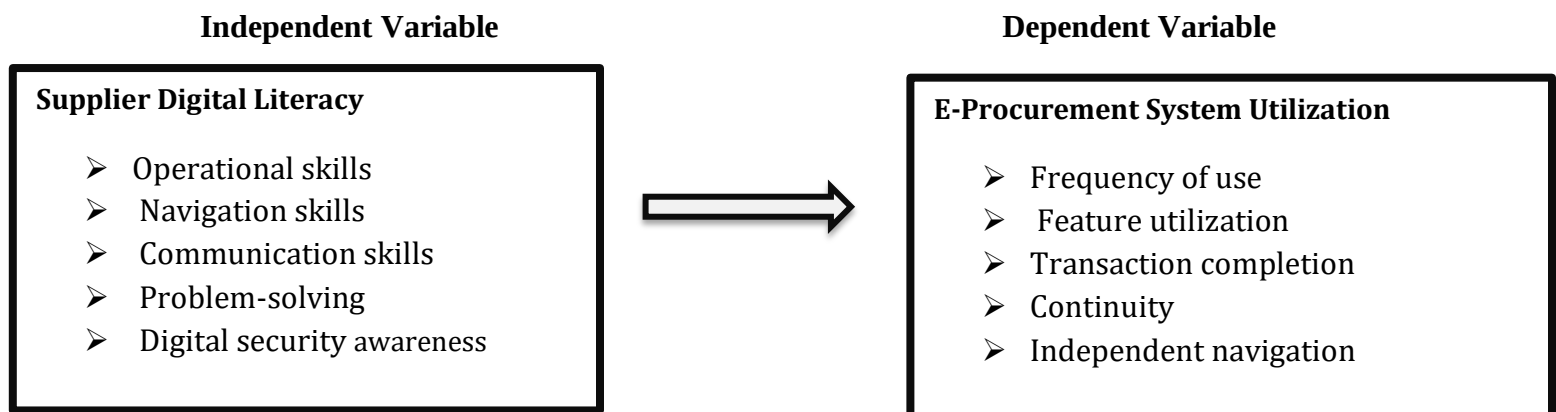


Figure 1. The above conceptual framework illustrates supplier digital literacy as the independent variable and e-procurement system utilization as the dependent variable. The independent variable encompasses five key dimensions: operational skills, information

navigation skills, communication skills, problem-solving skills and digital security awareness while the dependent variable includes frequency of use, depth of feature use, transaction completion, continuity over time and independent navigation (Davis, 1989; Vaidya & Campbell, 2016; Brandon-Jones & Kauppi, 2018). Supplier digital literacy impacts a variety of major factors of using an e-procurement system by deciding how ability suppliers are able to negotiate the digital platform, decipher electronic needs, full online dealings and interact with purchasing parties online (Bwalya & Mutula, 2016; Costa et al., 2018). Through improving digital capabilities of local government, suppliers can enhance the adoption of platforms, expand supplier involvement, enhance the visibility of procurement, decrease transaction costs and eventually achieve the maximum e-procurement investment returns (Apio & Asiimwe, 2024; OECD, 2023). Supplier digital literacy development is thus crucial to make a significant transformation in e-procurement in local governments in Uganda and make sure that there is participation of all suppliers especially small and medium businesses within the digital procurement ecosystem (PPDA, 2022; Nanyonga and Basheka, 2021).

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

In this chapter, a critical review of the existing literature that is pertinent to the impact of is presented digital literacy of the supplier, regarding the use of e-procurement system, in Ugandan local governments. It explains important definitions; theoretical bases such as the Technology Acceptance Model (TAM) and empirical research were consistent with each particular study objective of Chapter One. The review highlights existing knowledge, identifies gaps and connects the study to prior scholarly work.

2.1 Key Definitions

E-procurement System: E-procurement refers to the use of internet-based technologies and electronic platforms to conduct procurement activities including requisitioning, ordering, purchasing, payment and contract management (Croom & Brandon-Jones, 2007). For this study, e-procurement specifically refers to Uganda's Electronic

Government Procurement (e-GP) system used by local government entities to conduct procurement transactions.

Digital Literacy: Defined as the ability to use digital technology, communication tools and networks to access, manage, integrate, evaluate and create information safely and appropriately (Van Laar et al., 2020). It includes operational, navigation, communication, problem-solving and security skills relevant to e-procurement tasks (SCIRP, 2025; Frontiers in Education, 2025).

System Utilization: System utilization refers to the actual use of information technology by target users measured through behavioural indicators rather than just access or intention to use (DeLone & McLean, 2003). This study, refers to the extent of actual use of electronic procurement platforms by suppliers and procuring entities for tasks such as registration, bidding, contract award, and post-award management (Vaidya & Campbell, 2016; PPDA Uganda, 2022). It involves engagement frequency, transaction completion, and depth of feature use.

Supplier Participation: The involvement and active engagement of suppliers, particularly SMEs, in public procurement activities through digital platforms, which influences competition, transparency, and procurement efficiency (OECD, 2023; Williams-Elegbe, 2014).

Local Government Entities: In the context of Uganda, these are decentralized sub-national government bodies, including districts, municipalities, and sub-counties, which are empowered to conduct their own procurement processes in accordance with national laws and regulations, such as those stipulated by the Public Procurement and Disposal of Public Assets Authority (PPDA) (Nanyonga & Basheka, 2021).

2.2 Theoretical Review

This study is primarily anchored on the **Technology Acceptance Model (TAM)** developed by Fred Davis in 1989. TAM is one of the most influential and parsimonious models for predicting the adoption of information technology. It posits that an individual's behavioural intention to use a system is determined by two primary factors: **Perceived Usefulness (PU)** and **Perceived Ease of Use (PEOU)**. Perceived

Usefulness directly affects adoption intentions, while Perceived Ease of Use influences both Perceived Usefulness and behavioural intention directly (Venkatesh & Davis, 2000).

In the context of this research, TAM provides a robust lens for understanding supplier utilization of e-procurement systems. A supplier's digital literacy is theorized to be a key external factor that has a direct impact on Perceived Ease of Use. Suppliers with high digital literacy are more likely to find the e-GP platform effortless to navigate, which in turn gives them a better idea of its Applicability to winning contracts and smoothing out their business processes. In turn, this positive image is boosted their behavioural intention and system use (Brandon-Jones & Kauppi, 2018). The model is useful in understanding why suppliers, although objective advantages of e-procurement exist, do not adopt e-procurement low-digital literate persons might find the system challenging and not helpful, resulting in low utilization rates- one of the key issues that the study in question is exploring.

2.3 Conceptual Review

This section reviews literature structured around the specific objectives of the study.

2.4 Objective One: To assess the current levels of digital literacy among suppliers registered with local government entities' e-procurement systems in Uganda.

The first goal aims to set the minimum insight into the digital capabilities of the supplier base. Digital Literacy is a multilevel and multidimensional construct that is more than just about using computers; it is about a wide range of skills required to function in digital space effectively. The various competencies that suppliers need to make use of e-procurement systems requires a multi-layered understanding, which is conceptualized as a set of technical skills, a set of navigation skills, a set of communication skills and a set of problem-solving skills in digital environments, and finally, a set of digital awareness and application of digital security behaviors to protect information and privacy (Van Laar et al., 2020).

These digital competencies are central in the context of public procurement, especially when it comes to developing countries such as Uganda. Suppliers need to confidently navigate e-procurement portals, comprehend and respond to digital tender notices,

compile compliant electronic documents, submit bids online, and manage post-award contract requirements digitally (SCIRP, 2025; PPDA Uganda, 2022). Nevertheless, consistent gaps in the digital literacy of suppliers have been observed in African contexts and have made it difficult to engage constructively on these platforms. Adusei and Awunyo-Vitor (2015) discovered that poor ICT skills among suppliers hinder the use of e-procurement opportunities, which should improve transparency and competition using digital solutions. On the same note, Ssebugwawo et al. (2021) note that the lack of digital training and literacy is one of the key limitations that do not allow suppliers to transition to active use of the platform instead of simple registration.

These challenges are aggravated by several structural and contextual factors. To begin with, the digital divide, i.e. the inequality in internet connectivity, unstable power supply and inefficient technical infrastructure particularly in rural or resource-poor local government jurisdictions of Uganda is a common occurrence (Adebayo & Evans, 2015; Oketch, 2016). This type of infrastructural limitation prevents suppliers not only from using e-procurement systems but also to build and sustain digital skills with practice and training. Second, even local government procurement officials are not equally digital, impacting the process of supplier support and onboarding (Williams-Elegbe, 2014). Third, a large number of suppliers, in general, and small and medium enterprises (SMEs) in particular do not have organised capacity-building programs to meet their specific requirements which often leads to low digital confidence and unwillingness to switch to electronic procurement practices (UNESCO, 2023; UNCTAD, 2021).

The correlation between digital literacy and technology acceptance as theorized in TAM, is proven in practice in various settings. Yoon and Kim (2007) discovered that computer self-efficacy as part of digital literacy had a significant positive effect on perceived ease of use of e-government services among South Korean citizens. Applying this to the procurement contexts, Ssebugwawo et al. (2021) determined that the ICT competencies of Ugandan suppliers had a direct relationship with their perceptions of the e-procurement systems usability with the suppliers with better digital skills reporting lower levels of effort expectancy. This is in line with the argument of TAM that external factors like digital literacy can mediate technology acceptance via perceived ease of use.

Although research by Adusei and Awunyo-Vitor (2015) and Ssebugwawo et al. (2021) unanimously recognizes low digital literacy as a hindrance to e-procurement in Africa, the question of which aspects of literacy to focus on is controversial. Others are focused on technical competence whereas others are focused on navigation or security awareness. Moreover, current studies tend to view digital literacy as a unidimensional concept that does not reflect its multifaceted character when it comes to procurements. This deficiency of a context-sensitive evaluation establishes a disconnect in the understanding of the particular digital literacy profile of the Ugandan suppliers that this study fills, through the use of a multidimensional measurement model. This gives way to the next aim that quantifies the real use of e-procurement systems by suppliers based on how these digital literacy rates are translated into the real world and procurement performance.

2.5 Objective Two: To measure suppliers' actual system use in local government entities in Uganda.

The second objective moves beyond registration to quantify actual engagement with the e-procurement system. Real use of e-procurement systems by suppliers incorporates various behavioral measures indicating the intensity and recurrence of use of the electronic platform. The completeness of supplier registration profiles, the frequency of system logins, and active participation in bidding processes by submitting bids on time and correctly and the degree to which suppliers explore and use platform features like e-catalogues, contract management tools and post-award transaction tracking are key indicators (Vaidya & Campbell, 2016; PPDA Uganda, 2022). All of these metrics give a holistic view of supplier engagement and show how the platforms are no longer accessed, but are being utilized in a meaningful way.

Although formally registered in e-procurement websites, a number of studies highlight a chronic lack of supplier registration and substantial utilization especially among the small and medium enterprises (SMEs). Both OECD (2020) and UN DESA (2022) reports note that most of the suppliers are registered, but their activity is still sporadic in nature, with low levels of bid submissions, and little use of more sophisticated system features. This is explained by numerous factors such as the complexity of e-procurement processes, fears

of navigating online procurement processes, and security of online transactions (Williams-Elegbe, 2014).

Empirical research in Uganda reveals that regional and infrastructural differences are substantial in the country, which affects patterns of system use among suppliers in local government organizations. Ahimbisibwe et al. (2018) and Nanyonga and Basheka (2021) unveil that the more trustworthy internet connection, the higher quality of electricity supply, and the better the technical support, the greater the activity on e-procurement portals by suppliers. On the other hand, suppliers in the districts with infrastructural deficits experience high barriers to frequent access and a completion of transaction, which results in uneven engagement. These differences are further compounded by differences in the size of supplier businesses, the sectoral focus and the degree of previous digital experience all of which influence utilization behaviors.

In addition, suppliers are usually faced with psychological and operational challenges due to the perceived complexity of e-procurement systems. The various steps involved in preparing bids, uploading documents, and electronic certifications may overwhelm less digitally adept suppliers or those who do not know the peculiarities of the regulations of the public procurement process (Apio and Asiimwe, 2024). The anxiety of technical issues, the loss of information, or unintentional non-compliance is another disincentive to consistent and guaranteed regular compliance with the use of the system. The poor user support exacerbates these usability problems. The World Bank (2021) and UNESCO (2023) both have explanatory materials and responsive help desks.

From the perspective of the Technology Acceptance Model (TAM), the use of the system is directly related to perceived usefulness, which is the extent to which suppliers feel that using the e-procurement system will improve their procurement performance and simplify their transaction processes (Davis, 1989; Venkatesh and Davis, 2000). Lack of or poor use of the platform is an indicator of a low perception of such benefits and may be caused by a lack of digital literacy, negative past experiences, or skepticism about the authenticity and fairness of digital processes. It is noticeable that perceived ease of use can be enhanced by increased digital capabilities of suppliers, which has a positive

impact on perceived usefulness, which, in turn, leads to higher real utilization rates (Brandon-Jones and Kauppi, 2018).

The studies by the OECD (2020), UN DESA (2022) and Ahimbisibwe et al. (2018) meet in a common conclusion of a considerable difference between the registration of the supplier and the active use of the system. These studies however differ in their definition of utilization whereby some of them measure utilization in terms of frequency of logins and others measure utilization in terms of the bid submission rates. This inconsistency renders it challenging to compare the level of utilization across studies or regions. Additionally, the majority of the metrics are based on the system logs which do not provide information about the quality or completeness of use. This paper aims to fill this gap by using a wider range of behavioral indicators such as feature usage and transaction completion to give a more fine-tuning view of realistic system use in local governments in Uganda. The connection between digital literacy and utilization will be examined subsequently, touching upon the role of supplier competencies in impacting their behaviour in e-procurement systems and the moderating variables, which might positively or negatively affect the relationship.

2.6 Objective Three: To determine the relationship between supplier digital literacy levels and their utilization of e-procurement systems in local government entities.

The main focus of this research is to draw the connection between digital literacy. The existing academic literature trusts that there is always a positive and significant relationship between supplier digital literacy and their proper use of e-procurement systems. Digital literacy, including operational skills, navigation, and communication skills, problem solving and security awareness are a key enabling factor that can directly determine the ease and efficiency with which the suppliers interact with digital procurement solutions (Brandon-Jones and Kauppi, 2018; Ssebugwawo et al., 2021). Improved digital literacy enhances the perceived ease of use as a core construct of Technology Acceptance Model (TAM) in turn leading to increased intentions to use the e-procurement system and invigorating continued active usage (Ramkumar, 2019; Venkatesh and Davis, 2000).

Moreover, greater digital skills also lead to less anxious interactions with system functionalities that allow suppliers to execute complex procurement functions like electronic document submissions, bid monitoring, and compliance with regulations with increased efficiency and reduced frustration. This enhanced user experiences up scores this perceived usefulness, how much the suppliers think that the system helps them. A recurring success of procurement, a further reinforcement of the ongoing use of the system (Brandon-Jones & Kauppi, 2018; Teo et al., 2009). Therefore, digital literacy has a positive impact on behavior. Purposeful and positive interaction with the system which establishes a virtuous circle of participation and enhancement of skills.

The use of systems and digital literacy are not a simple linear event, however, but are mediated by certain distinguishing characteristics. The size of the business seems to be relevant as larger businesses usually have more resources to invest in digital infrastructure and capacity building to allow them to take advantage of e-procurement services more efficiently than most SMEs (OECD, 2023; UNCTAD, 2021). The differences among sectors also have an effect on adoption patterns; certain sectors may have particular procurement procedures or even specialized digital tools, which may or may not facilitate supplier interaction based on their expertise (Williams-Elegbe, 2014).

Further, this relationship is highly moderated by the availability and quality of support systems like, supplier training programs, help desks and mentorship programs. Such supports are able to offset the lower baseline digital literacy through just-in-time support and user confidence and increase the rates of system use (UNESCO, 2023; Apio and Asimwe, 2024). On the contrary, the lack of such supports complicates the possibility of suppliers without advanced digital capabilities to gain a significant engagement, further increasing the utilization gaps.

In the context of decentralized local government frameworks, especially in developing nations such as Uganda, this relationship is more complicated. The digital divide that is expressed in unequal access to quality internet connectivity and electricity, and unequal educational and technical resource distribution impacts the readiness of suppliers as well as the capacity of local government to deliver consistent digital onboarding and support (Nabafu, 2019; Ahimbisibwe et al., 2018). The challenges of bridging the digital literacy-

utilization gap are even complicated by policy and institutional constraints such as the inconsistent implementation of e-procurement requirements and insufficient investment in supplier development (PPDA Uganda, 2022; Nanyonga and Basheka, 2021).

These subtle dynamics creates a patchwork of high supplier engagement with patches of underutilization, with SMEs and rural suppliers frequently marginalized despite official inclusion. It implies that the context-sensitive interventions are necessary, which should be holistic and focus on the development of supplier digital skills, infrastructural advances, industry-specific training, and specific government support mechanisms.

Most of the literature available (e.g., Brandon-Jones and Kauppi, 2018; Ssebugwawo et al., 2021) tends to support a positive correlation between digital literacy and system use which is frequently attributed to TAM. Nevertheless, the evidence about the existence of this relationship and its strength and nature is not consistent, especially in decentralized, resource-limited contexts such as Ugandan local governments. There are also few studies that investigate the moderating effect of factors like business size, sector or support mechanisms on this relationship that results in simplified perception. This leaves a gap when the direct relationship is recognized, the conditional and contextual determinants that influence this relationship within the local government procurement system in Uganda are not well explored which this research study specifically explores.

2.7 Research Gap

Although e-procurement is increasingly being used in public sector organizations, there are still considerable gaps stay in empirical knowledge of how supplier digital literacy has tangible effects on use of systems especially among the local governments in Uganda. Existing studies often are focused on technical infrastructure or policy frameworks, without considering the human capital dimension particularly the overall digital literacy of suppliers and their direct influence on engagement behaviors (Ahimbisibwe et al., 2016; Patrick & Robert,2025).

To begin with, research has established that low levels of digital literacy are a limiting factor to e-procurement adoption they vary in the conceptualization and measure of digital literacy producing discrepancies in results and reducing comparative

transferability of results across settings. Second, research has documented the registration-utilization gap but without standardized behavioral measures that assess useful interaction beyond simple access especially in resource constrained local government settings. Third, despite the TAM-based research establishing, theoretical connections between technology acceptance and digital competencies none use a systematic analysis to understand the differentiation in predicting particular dimensions of digital literacy utilization behaviors in procurement situations of suppliers that are decentralized defined by inadequate infrastructure and diverse institutional assistance.

This paper fills this unexplored nexus by methodically evaluating digital literacy level among suppliers with validated multidimensional measures, gauging real-world system use by extensive indicators of behavior and empirically testing the connection between literacy and utilization and controlling moderating factors.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the research methodology that will be employed to investigate the influence of supplier digital literacy on the use of the e-procurement system in Ugandan local government entities. It outlines the study population, research design, sampling methods, data collection methods and procedures for ensuring data validity and reliability. In addition, it outlines the data analysis methods and ethical considerations that will guide the study. It also offers a systematized roadmap to collect, interpret and process empirical evidence to address research questions and to meet objectives for this research.

3.1 Research Design

In conducting this research project, a quantitative research approach was adopted. This is appropriate for digital literacy and procurement systems usage among suppliers because a systematic approach is necessary in quantifying and analyzing the relationship between the adoption and the increased usage of the e-procurement system. In a quantitative approach, data is collected numerically and then subjected to statistical analysis to determine correlations and predictive determinants. These determinants will include digital literacy and skills competencies as well as the usage of e-procurement systems by suppliers. The cross-sectional survey method was adopted for collecting data on the

current status of the relationship between the two variables. This survey's objective is to capture up-to-date supplier experiences and utilization levels at any point in time, giving a snapshot of the role of digital literacy in the use of systems in local the government organizations (Kumar et al., 2023; Mutangili, 2014). In addition, the quantitative cross-sectional approach is more useful for extrapolation of results to other suppliers who are in the same decentralized environment procurement contexts. This quantification is critical to inform desired capacity-building policies and policy interventions to increase the adoption of e-procurement and effectiveness (Bryman, 2016; Field, 2018).

3.2 Study Population

The population of the study will be all formally registered suppliers on the Electronic Government Procurement (e-GP) system in Uganda who have or can engage with local government bodies. The Public Procurement and Disposal of Public Assets Authority (PPDA) notes that in the Ugandan procurement regime, some 15,000 suppliers are registered (including those with local governments that make up a huge part of procurement transactions) (PPDA Uganda, 2022). The suppliers involved in the population are categorized under different business types, small and medium enterprises (SMEs), large corporations, individual contractors and community-based organizations, which operate in different industries like construction, goods supply, consultancy and works.

The sample targeted in the study is limited to suppliers who are registered and those who have tried to procure through e-procurement systems in the selected districts which represent the various geographic regions of Uganda. This population is pertinent since local government organizations have distinct e-procurement implementation issues relative to central government ministries, such as the different infrastructure capacity, a diverse base of suppliers and decentralized procurement decision-making frameworks (Nanyonga and Basheka, 2021). The target population will also involve the procurement officers of local government organizations whose views will give complementary data on supplier usage patterns and difficulties. Targeting this group will guarantee that the results can be applied directly to enhance the effectiveness of e-procurement in the local government setting, where the issues of capacity and digital literacy rate are the most significant (Ssebugwawo et al., 2021).

3.3 Sample Size and Sampling Techniques

3.3.1 Sample Size Determination

Considering that there are limitations to the resources like limited time, the study will be based on the Krejcie and Morgan table, which is cited in Amin (2005) to determine the sample size. The number of respondents will be 30 people who will consist of 20 suppliers and 10 procurement officers.

CATEGORY	SAMPLE SIZE
Suppliers	20
Procurement officers	10

3.3.2 Sampling Technique

Simple random sampling will be used in the study to sample suppliers among the study population. Simple random sampling is suitable as it provides all eligible suppliers with an equal and independent opportunity to be selected thus reducing selection bias and enhancing internal validity of the study (Cochran, 1977; Kothari, 2004). The method is especially appropriate when there is an extensive sampling frame of e GP-registered suppliers who deal with selected locally based government organizations.

A simple random sampling will enable the researcher to obtain a sample that is statistically representative of the larger population of suppliers without systematic bias towards specific business size, industry or geographic features. This method assists in the objective estimation of population parameters and promotes valid statistical deduction on the connection between supplier digital literacy and use of e procurement system.

3.4 Data Collection Methods

This study will involve the use of structured questionnaire as primary data collection method constructed on the basis of validated measurements scales that measure various aspects of digital literacy. The multifaceted concept of digital literacy can be properly

measured in this way questionnaire gathers all the range of skills required to be active in e-procurement systems.

3.4.1 Questionnaire Structure

The questionnaire will be divided into four major parts:

Section A: Demographic Information in which the supplier characteristics such as are captured size of business, industry, years in operation, location, and previous experience with digital.

Section B: Supplier Digital Literacy with the independent variable measured using five dimensions based on previous tested digital literacy frameworks.

Section C: E-Procurement System Utilization which measures the dependent variable using behavioural indicators were consistent with e-procurement literature.

Section D: Support and Contextual Factors that include moderating factors like raining, availability of technical support and access to infrastructure.

3.4.2 Operationalization of Variables

Independent Variable: Supplier Digital Literacy

The measure of this construct is in dimensions with a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree):

Operational Skills-Simple use of digital tools.

Example: I can confidently upload and download documents from the e-procurement portal.

Information Navigation Skills – Finding and evaluating procurement information.

Example: I can confidently upload and download documents from the e-procurement portal.

Communication Skills - Online communication with the procurement officers.

All composite score is the mean of all dimensions, with higher scores indicating greater digital literacy (Van Laar et al., 2020).

Dependent Variable: E-Procurement System Utilization

Measured using behavioural indicators via Likert and frequency scales:

Registration Completion – Profile/document completeness.

Example: My supplier profile is fully updated with all required documents

Frequency of Use– Login and interaction rate.

Example: How often have you logged into the portal in the past 3 months

Depth of Feature Use – Use of advanced functions.

Example: I use portal or email messages to explain bid requirements.

The overall utilization score is the average of all dimensions; and higher scores indicate a greater use of the system (Vaidya and Campbell, 2016, DeLone and McLean, 2003).

Lone & McLean, 2003).

3.4.3 Questionnaire Administration

The questionnaire will be distributed to the suppliers mainly online where they have sufficient internet access facilitating coverage, cost-effectiveness and timeliness of data gathering. Simultaneously, acknowledging the infrastructural constraints of certain Ugandan localities, the additional paper-based surveys will be handed to the suppliers with little or no Internet access. This mixed methodology will help reduce coverage bias and enhance the representativeness of the sample to the entire target population (Dillman, Smyth, and Christian, 2014).

3.5 Validity and Reliability

3.5.1 Validity

Validity refers to the extent to which a research instrument accurately measures what it is intended to measure. To ensure the validity of the questionnaire and other research tools in this study, an expert review will be conducted involving academics and procurement practitioners knowledgeable in e-procurement and digital literacy. Their role is to assess the relevance, clarity, and comprehensiveness of the questionnaire items to ensure that

they adequately capture the constructs under study, such as digital literacy dimensions and e-procurement system utilization indicators. Additionally, a pilot test with a small group of 20 suppliers will help identify and correct ambiguities or inconsistencies, further refining the instrument to improve content validity and response accuracy. This careful development process aligns with established practices for building validity through expert judgment, pretesting, and constructive feedback (Sullivan, 2011; Repke, Birkenmaier, & Lechner, 2024).

3.5.2 Reliability

The concept of reliability focuses on the consistency and stability of the information gathered using the research instrument. To establish reliability, especially the internal consistency of the scales that will measure digital literacy and system usage, the Cronbach's Alpha coefficient will be computed after the piloting phase of the questionnaire and main survey. This value needs to be at least 0.7 since it indicates the reliability of items in measuring the same construct. With consistent responses on each item of the questionnaire, one can be sure that the research tool will provide reliable data for analysis. If certain scales fall below the accepted level, modifications will be made to increase reliability.

3.5 Data Analysis

Data analysis in this study will involve the use of Statistical Package of Social Science (SPSS). The data collected will also be enhanced using Microsoft Excel for data analysis using SPSS. The above procedure is one which is specific to the small sample ($n = 30$) and exploratory research design. Data analysis will involve the calculation of descriptive statistics (mean, standard deviation, frequencies and percentages). These will be used to describe the sample, levels of digital literacy by demographics, and the differences between the different levels of digital literacy in different demographics. Utilization patterns were also described across the indicators for dimensions statistics, directly responding to Research Questions 1 and 2, and giving a background of the existing digital literacy and use of the systems by suppliers.

3.6.1 Inferential Statistics

Since the sample is relatively small ($N=30$), the study will use suitable inferential techniques:

Correlation Analysis: Pearson correlation coefficient will measure the strength and direction of correlations between the digital literacy composite scores and e-procurement utilization composite scores. This is analysed under Research Question 3 on the correlation of supplier digital literacy and system use.

Simple Regression Analysis: Due to the small sample size, simple regression will be used to test the predictive effect of overall digital literacy on overall system utilization. This is the parsimonious method to be used in small samples and is consistent with the exploratory aims of the study (Field, 2013; Tabachnick and Fidell, 2013).

3.7 Ethical Considerations

In this study, ethical considerations will be strictly followed by seeking ethical consent from a known institutional review board before data collection.

The participants will be well informed of the purpose of the study, the voluntary nature of the study participation, and their right to privacy and to withdraw without being punished. Anonymity will be ensured by anonymizing all the data of participants and safely keep it in password-protected files, which can only be accessed by the research team. Informed consent will be obtained beforehand, making sure that the respondents are informed of how their information will be utilized and safeguarded. These actions are in line with the laid ethical standards principles include respect for persons, beneficence, and justice, and adhere to institutional and international standards to safeguard human subjects during the research process (National Institutes of Health, 2022; Scribbr, 2024; Kaiser, 2009).

3.8 Summary of the Methodology

This chapter outlines the quantitative research methodology employed to study the impact of supplier digital literacy on e-procurement system utilization in Ugandan local governments. It details the population, sample size, and stratified random sampling technique to ensure representativeness. Data collection, utilizing validated structured questionnaires, is among the most essential research processes globally. The researchers implement these instruments due to their focus on the way digital literacy and system use appear within the study. The process involves the verification of instrument validity and reliability, and the expert review of the tools reflects the researcher's idea of the connection between pilot testing and Cronbach's alpha analysis. The thorough and systematic data analysis contains various elements of statistics, such as descriptive and inferential statistics, as well as the principles, for instance, SPSS and Excel. Ethical protocols involve various standards, such as informed consent, confidentiality, and institutional review board approval (Bryman, 2016; Hair et al., 2010; Amin et al., 2023; Sullivan, 2011; Arkkelin, 2014; National Institutes of Health, 2022).

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.0 Introduction

This chapter presents and interprets primary data collected from 31 respondents, comprising 20 suppliers/vendors and 11 procurement officers in local Ugandan government agencies. The study aimed to investigate the effects of supplier digital literacy regarding the use of the e-procurement system (e-GP). Data were collected with a structured self-administered questionnaire and analyzed statistically using procedures such as frequency distributions, descriptive statistics, reliability analysis (Cronbach's alpha), Pearson correlation, and simple linear regression analysis.

4.1 Response Rate

Within the documentation of Chapter Three, the study aimed to gather information from 30 individuals by providing answers. Because one extra person chose to join the group of their own will, the total group size increased to 31. Every one of the 31 inquiry forms was filled out and given back by the individuals, which represents a 100% response rate. Experts claim that a response rate of 70% or more is enough for numerical investigations, which Mugenda and Mugenda (2003) support in their writing. This 100% response rate reached in this work is viewed as very good because the 100% response rate gives a strong base for calculating the results.

Table 4.1: Response Rate

Category	Targeted	Obtained	Response Rate (%)
Suppliers / Vendors	20	20	100.0%
Procurement Officers	11	11	100.0%
Total	31	31	100.0%

4.2 Background Characteristics of Respondents

The first section of the questionnaire provides a background of the respondent. For example, their role in procurement, the type of organization, years of procurement experience, training in a procurement system, and internet reliability. The tabulate

command prepares frequency distributions and cumulative percentages for categorical variables. Here is what you get when you run this command.

Table 4.2: Background Characteristics of Respondents (n = 31)

Variable	Category	Freq.	Pct. (%)
Role	Supplier / Vendor / Business	20	64.5%
	Procurement Officer / Govt Official	11	35.5%
Organisation Type	Small / Medium Enterprise	12	38.7%
	Large Enterprise	9	29.0%
	Government Entity	6	19.4%
	Non-Governmental Organisation	3	9.7%
	Individual Contractor	1	3.2%
Years of Experience	Less than 1 year	5	16.1%
	1 - 3 years	16	51.6%
	4 - 6 years	9	29.0%
	More than 6 years	1	3.2%
Training Received	Yes	28	90.3%
	No	3	9.7%

Variable	Category	Freq.	Pct. (%)
Internet Reliability	Very Reliable	5	16.1%
	Reliable	16	51.6%
	Fair	8	25.8%
	Unreliable	1	3.2%
	Very Unreliable	1	3.2%

Looking at Table 4.2, the bulk of respondents identified as suppliers, vendors, or businesses (n=20, 64.5%), whereas 35.5% (n=11) were from government as procurement officers, reflecting the dual nature of e - procurement as it depends on both active suppliers and those who procure. As illustrated in Table 4.3, most respondents' organizations were identified as small and medium enterprises (38.7%). This is also consistent with the general focus of this research on how small and medium enterprises can participate in the Uganda e - GP system.

51.6% have 1-3 years of government procurement experience. The 90.3% (28 respondents) received training on the use of the e - GP system. As the use of the e - GP system requires the availability of the internet, this research investigated the connectivity available to suppliers and the frequency with which they utilized the system. The 67.7% described internet connectivity as "reliable" or "unreliable" in their workplace. On the contrary, 25.8% indicated that connectivity was only fair, whereas 6.4% claimed that their connectivity was "unreliable" or "unreliable". This situation could contribute to the results of Section 4.5.

4.3 Levels of Digital Literacy Among Respondents

The second part evaluated the self-rated digital literacy of the respondents in operational skill, navigating a web portal, managing digital documents, technical trouble, and digital

security awareness using a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Table 4.3: Descriptive Statistics — Digital Literacy Scale Items

I am comfortable using digital devices for procurement tasks (skill1)	30	3.67	1.21	1	5
I can navigate the e-GP portal to find information easily (skill2)	29	3.52	1.35	1	5
I can complete electronic forms and upload documents (skill3)	30	3.67	1.18	1	5
I can troubleshoot basic technical issues when using digital systems (skill4)	30	3.33	1.37	1	5
I understand how to protect sensitive information online (skill5)	31	3.65	1.31	1	5
Digital Literacy Composite Score (all 5 items)	31	3.54	1.18	1.00	5.00

Note. Scale: 1 = Strongly Disagree, 5 = Strongly Agree.

The digital literacy composite mean was $M = 3.54$ ($SD = 1.18$), placing the average respondent in the moderately high range of self-rated digital competence. Comfort with digital devices and the ability to complete electronic forms were the highest-scoring items (both $M = 3.67$), suggesting that core operational skills are established. The lowest-

scoring item was technical troubleshooting ($M = 3.33$, $SD = 1.37$), indicating less confidence when technical problems arise. The wide standard deviations across all items reflect the heterogeneous mix of SMEs, large enterprises, NGOs, and government entities in the sample.

4.3.1 Reliability Analysis: Cronbach's Alpha for Digital Literacy Scale

To determine internal consistency, Cronbach's alpha was computed for the five-item digital literacy scale using the Stata alpha command with the item option. Using a threshold of $\alpha \geq 0.70$ is the minimum reliably acceptable standard (Field, 2013).

Table 4.3.1: Item-Level Reliability Statistics — Digital Literacy Scale

Item	n	Item-Total r	Alpha if deleted	Scale Alpha
Comfortable using digital devices (skill1)	30	0.926	0.946	0.957
Can navigate the e-GP portal (skill2)	29	0.942	0.942	
Complete forms and upload documents (skill3)	30	0.942	0.941	
Troubleshoot technical issues (skill4)	30	0.859	0.962	
Understands online data protection (skill5)	31	0.910	0.948	

Note. Overall Cronbach's alpha = 0.957, $n = 29$ complete cases.

The internal consistency of the digital literacy scale was evaluated using Cronbach's alpha, which produced a high value of 0.957, suggesting excellent reliability. The item

total correlations were all high, ranging from $r = 0.859$ to $r = 0.942$, indicating that each item strongly correlates with the overall scale and contributes to its internal consistency. Based on these results, no item deletion would improve the overall reliability. Therefore, the composite digital literacy score is considered reliable for further inferential analyses.

4.4 E-GP System Utilization Patterns

This section examines how respondents interact with the e-GP system, frequency of use, ease of use, change in usage over the past year, and extent of electronic process completion.

Table 4.4: e-GP System Utilization Patterns (n = 30–31)

Variable	Category	Freq.	Pct. (%)
Usage Frequency	Rarely	2	6.5%
	Monthly	3	9.7%
	Weekly	6	19.4%
	Several times per week	12	38.7%
	Daily	8	25.8%
Ease of Use Rating	Difficult	1	3.2%
	Neutral	16	51.6%
	Easy	10	32.3%
Change in Usage (past year)	Very Easy	4	12.9%
	Decreased Significantly	1	3.2%
	Decreased Slightly	1	3.2%

Variable	Category	Freq.	Pct. (%)
	Stayed the Same	2	6.5%
	Increased Slightly	11	35.5%
	Increased Significantly	15	48.4%
Electronic Completion	Mostly Manual	4	13.3%
	Half Electronic, Half Manual	7	23.3%
	Mostly Electronic (a few manual steps)	11	36.7%
	Fully Electronic (all steps online)	8	26.7%

Note. n = 31 for Usage Frequency and Ease of Use; n = 30 for Change in Usage and Electronic Completion.

This indicates that 64.5 percent of respondents are using the e-GP system almost every day in their procurement work. Regardless of using the system daily, 51.6% rated it neutral in terms of ease of use. Only 45.2% found it easy or very easy to use. This shows that they have adapted to the system but find it not fully intuitive. The trend in usage is very positive: 83.9% reported it had gone up over the past twelve months, with 48.4% reporting it had gone up a lot. Most received entirely electronic procurement completion; full digitalization in this area is yet to be achieved. Only 26.7% reported full completion, while 36.7% was mostly electronic but partially manual.

4.5 Challenges Encountered in Using the e-GP System

Respondents rated how frequently they encountered six challenges on a five-point scale (1 = Rarely/Never, 5 = Very Often).

Table 4.5: Frequency of Challenges in Using the e-GP System

Challenge	n	Mean	SD	Scale	Frequency Level
Preference for familiar manual processes	30	3.07	1.41	3.07/5	Moderate
System errors or downtime	29	3.00	1.39	3.00/5	Moderate
Unreliable internet connection	29	3.00	1.44	3.00/5	Moderate
Document upload / technical issues	29	2.83	1.42	2.83/5	Low-Moderate
System navigation difficulties	31	2.58	1.31	2.58/5	Low-Moderate
Lack of digital skills or knowledge	31	2.48	1.29	2.48/5	Low-Moderate

Note. Scale: 1 = Rarely/Never, 5 = Very Often.

All challenges fell in the moderate to low-moderate range (means 2.48 to 3.07). Preference for manual processes topped the list ($M = 3.07$), reflecting cultural and behavioral inertia against digital adoption. Infrastructure barriers system errors ($M = 3.00$) and internet unreliability ($M = 3.00$) were jointly the second highest and represent systemic constraints outside individual users' control. Notably, lack of digital skills ranked lowest ($M = 2.48$), though as the regression in Section 4.6 suggests, actual skill levels may exert a more subtle influence than respondents perceive in self-assessment.

4.6 Inferential Statistics

4.6.1 Pearson correlation analysis

Pearson's correlation coefficient was computed to assess the strength and direction of the relationship between the digital literacy composite and the system utilization composite, addressing Research Question 3.

Table 4.6: Pearson correlation digital literacy and system utilization

Variables	R	r ²	p-value	n	Interpretation
Digital Literacy x System Utilization	0.252	0.064	0.171	31	Weak positive; not significant

The results of the analysis showed a positive relationship between digital literacy and system use ($r = 0.252$, $p = 0.171$, $n = 31$), although this was not statistically significant. The positive direction of this result is in line with the TAM's theoretical assumptions (Davis, 1989), as well as with previous research (Brandon-Jones and Kauppi, 2018; Ssebugwawo et al., 2021). (2021). However, the coefficient of determination ($r^2 = 0.064$) indicates that digital literacy accounts for only 6.4% of the variance in utilization. The absence of significance is most plausibly explained by the small sample size ($n = 31$), which limits statistical power, and by the poor internal consistency of the utilization composite scale (Cronbach's $\alpha = 0.455$), which introduces measurement error that attenuates the observed correlation

4.6.2 Simple linear regression analysis

Simple linear regression examined whether digital literacy predicts system utilization. Digital literacy composite was the predictor, and system utilization composite was the outcome. The Stata regress command was used.

Table 4.7: Simple linear regression digital literacy predicting system utilization

Variable	B (Coef.)	Std. Err.	Beta	t	p	R2
Constant (intercept)	2.477	0.380	—	6.515	< .001	—
Digital Literacy	0.146	0.104	0.252	1.404	0.171	0.064

Note. Dependent variable: System Utilization composite. $F(1, 29) = 1.972$, $p = 0.171$. $R^2 = 0.064$; Adjusted $R^2 = 0.031$. $n = 31$.

The regression model was not statistically significant overall, $F(1, 29) = 1.972$, $p = 0.171$. Digital literacy explained 6.4% of variance in system utilization ($R^2 = 0.064$, Adj. $R^2 = 0.031$). The regression coefficient $B = 0.146$ ($SE = 0.104$, $t = 1.404$, $p = 0.171$) was positive in direction but not significant, yielding the equation: System Utilization = $2.477 + 0.146$ (Digital Literacy). These results do not confirm the hypothesis of a significant predictive relationship, though the positive direction is consistent with theory. Methodological limitations, specifically the small sample and weak utilization scale reliability, are primary explanations and are addressed fully in Chapter Five.

4.7 Qualitative findings from open-ended questions

Three open-ended questions asked respondents to identify the biggest advantage of the e-GP system, its biggest challenge, and suggestions for improvement. Responses were analyzed thematically.

4.7.1 Perceived advantages

Three themes emerged. Efficiency and speed were most frequently cited as quickening procurement processes, reducing paperwork, simplifies the procurement process. Transparency and accountability were the second theme, with responses including improved transparency, enhanced accountability, and transparent and fair, since every piece of information is recorded in the system. A third theme of cost and error reduction was also evident less costly compared to manual procurement, with no manual errors.

4.7.2 Perceived challenges

Infrastructure and connectivity dominated internet disruptions, including network breakdown, frequent power outages, and slow internet connections. System complexity was a second theme: complicated to understand, the system doesn't give room for making corrections once the procurement is approved. Capacity and knowledge gaps formed the third theme, a lack of sufficient sensitization, especially for suppliers, insufficient knowledge, and limited user capacity.

4.7.3 Suggestions for improvement

Training and capacity building were by far the most frequent suggestions, including more emphasis on training for suppliers and procurement officers, comprehensive training for all staff, early involvement of suppliers, and e-training. System redesign suggestions included simplifying the interface, a friendly user interface, and notably re-engineering the e-GP system to accommodate offline features. Infrastructure investment suggestions included installing cloud systems for internet connectivity and reliable internet services.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This chapter discusses the findings presented in Chapter Four in relation to the study objectives, the theoretical framework, and the existing body of literature reviewed in Chapter Two. It draws conclusions based on the evidence gathered, identifies the limitations of the study, and offers practical recommendations for policy and practice. The chapter also proposes directions for future research that could build on and extend this study.

5.1 Discussion of findings

5.1.1 Objective one: Digital literacy levels among suppliers in Uganda's e-gp system

The first objective sought to assess the current levels of digital literacy among suppliers registered with local government entities' e-procurement systems in Uganda. The study found a composite digital literacy mean of $M = 3.54$ ($SD = 1.18$) out of a maximum of 5.00, indicating moderately high self-rated digital competence across the sample. The

strongest competencies were in operational device use and electronic document management (both $M = 3.67$), while technical troubleshooting was relatively weaker ($M = 3.33$).

These findings are broadly consistent with prior literature. Ssebugwawo et al. (2021) reported that Ugandan procurement stakeholders possessed adequate foundational digital skills but demonstrated significant gaps in higher-order technical capabilities, particularly problem-solving under system failure conditions. Similarly, Adusei and Awunyo-Vitor (2015) found that while basic ICT familiarity has improved among African supplier communities, the specific competencies required for complex e-procurement workflows, such as compliant document preparation, electronic submission, and post-award digital management, remain underdeveloped. The finding that troubleshooting was the weakest item in this study is consistent with these observations and highlights a gap in system-specific technical training.

From the TAM perspective (Davis, 1989), digital literacy functions as an external variable that shapes Perceived Ease of Use. The moderately high literacy scores suggest that, on average, respondents have sufficient competence to reduce the perceived effort of basic e-GP tasks. However, the wide standard deviations across all items (1.18 to 1.37) reveal substantial heterogeneity within the sample, indicating that a significant minority of users, particularly those with less than one year of experience (16.1% of the sample), may perceive the system as considerably more difficult to use. This heterogeneity reinforces the importance of differentiated rather than uniform training approaches.

The excellent Cronbach's alpha of 0.957 for the digital literacy scale confirms that the five items consistently and reliably measure the same underlying construct, lending methodological confidence to the findings of this objective. The high item-total correlations (0.859 to 0.942) further confirm that all five dimensions of operational skills, navigation, document management, troubleshooting, and security awareness are genuinely integral to digital literacy in this context, supporting the multidimensional conceptualization adopted from Van Laar et al. (2020).

5.1.2 Objective two: Suppliers' actual system use in Uganda's local government entities

The second objective aimed to measure suppliers' actual e-GP system utilization. Findings revealed that 64.5% of respondents use the system on a near-daily basis (several times per week or daily) and 83.9% reported increased usage over the past year. These figures suggest meaningful and growing adoption, which contrasts with earlier literature characterizing e-procurement utilization in developing countries as sporadic and shallow (OECD, 2020; UN DESA, 2022).

However, important caveats qualify this positive picture. Only 26.7% of respondents reported fully electronic procurement completion, while the majority (60.0%) described their processes as either mostly or half electronic with some manual steps remaining. This gap between frequency of system access and depth of electronic process completion echoes the distinction drawn by Vaidya and Campbell (2016) between surface-level platform access and substantive operational use. The fact that most users log in regularly but have not yet fully digitalized their procurement workflows suggests that the system is being used for specific tasks, possibly bid searches or registration, while more complex processes such as document preparation, contract management, and post-award tracking remain partially or wholly manual.

The neutral ease-of-use rating from 51.6% of respondents is particularly instructive. Within TAM, perceived ease of use is a direct predictor of both perceived usefulness and behavioural intention (Venkatesh & Davis, 2000). Neutral ease ratings suggest that the system has crossed the threshold of basic usability but has not yet achieved the ease level that would drive autonomous, confident, and comprehensive use. Qualitative responses reinforcing system complexity, particularly the inability to make corrections after the procurement approval point, point to specific interface and workflow design issues that constrain fuller utilization.

These findings align with Nanyonga and Basheka (2021), who documented significant discrepancies between supplier registration rates and actual active participation in Uganda's local government e-procurement context. They also resonate with World Bank (2021) evidence that hybrid manual-digital workflows persist as the dominant mode of operation

in Sub-Saharan African e-procurement environments, suggesting that the transition to fully digital procurement is gradual and non-linear.

5.1.3 Objective three: Relationship between digital literacy and e-gp system utilization

The third and core objective examined the relationship between supplier digital literacy and e-procurement system utilization. The Pearson correlation yielded $r = 0.252$ ($p = 0.171$, $n = 31$) and the simple linear regression produced $B = 0.146$ ($p = 0.171$, $R^2 = 0.064$). Both analyses showed a positive direction consistent with TAM and prior literature, but neither reached statistical significance at the conventional 5% level.

These results require careful, nuanced interpretation. The non-significant finding does not necessarily mean that no relationship exists between digital literacy and system utilization; rather, it means that this study was unable to detect a statistically significant relationship at this sample size. With $n = 31$, the study had approximately 28% power, far below the accepted minimum of 80%, meaning the probability of failing to detect a real effect was substantial. This is a Type II error risk, not evidence of a null relationship.

This interpretation is further supported by the positive direction and moderate magnitude of the correlation. The $r = 0.252$ is consistent with the small-to-moderate effect sizes reported in comparable studies. Brandon-Jones and Kauppi (2018) found that digital competencies had indirect effects on e-procurement use through perceived ease of use, a mediated rather than direct relationship that a simple bivariate correlation may underestimate. Ssebugwawo et al. (2021) reported a significant positive relationship between ICT competencies and e-procurement utilization in Uganda, though with a considerably larger sample.

The poor internal consistency of the system utilization composite scale (Cronbach's $\alpha = 0.455$) is a second critical methodological factor. The three items used to construct the utilization composite frequency of use, ease of use rating, and electronic completion level may not have measured the same underlying utilization construct with sufficient consistency, introducing random measurement error that attenuates observed correlations. DeLone and McLean (2003) note that system use is inherently multidimensional and that

measures capturing only surface-level frequency may miss the depth and quality dimensions of utilization. Had the utilization scale achieved acceptable reliability, the relationship may well have reached significance.

Taken together, the findings neither confirm nor refute the hypothesis of a positive relationship between digital literacy and e-GP utilization. The direction is consistent with TAM and prior literature; the statistical significance is constrained by the study's methodological limitations. This is an honest and important finding that has direct implications for how this study should be extended.

5.2 Conclusions

Based on the analysis and discussion presented above, the following conclusions are drawn in relation to the study's objectives.

Digital literacy among suppliers is moderate to high but uneven

Suppliers and procurement officers engaged with Uganda's e-GP system possess moderately high levels of self-rated digital literacy ($M = 3.54/5.00$), with strength in basic operational skills and document management and relative weakness in technical troubleshooting. However, considerable variation within the sample indicates that digital literacy is unevenly distributed across the supplier base, with SMEs and less experienced users likely facing greater barriers. The digital literacy scale demonstrated excellent reliability ($\alpha = 0.957$), confirming the validity of the five-dimensional measurement approach.

System utilization is growing but remains incomplete

e-GP system utilization is increasing, with 83.9% of respondents reporting growth in usage over the past year and 64.5% engaging near-daily. However, full digitalisation of procurement processes is not yet the norm; only 26.7% reported fully electronic completion and the majority still rely on hybrid workflows. The dominant ease-of-use perception is neutral rather than positive, suggesting the system functions adequately but not intuitively enough to drive autonomous, comprehensive use. Infrastructure barriers, internet unreliability, system downtime, and cultural resistance to change remain the most frequently encountered operational challenges.

A positive relationship exists, but could not be confirmed at this sample size

There was a positive correlation between digital literacy and utilization of the system, although it was not statistically significant ($r = 0.252$, $p = 0.171$). The sign of the correlation is consistent with the Technology Acceptance Model and previous studies. There are two main reasons for this lack of significance: first, due to insufficient power, and second, measurement problems in the utilization index ($\alpha = 0.455$). Therefore, this study suggests that digital literacy is a theoretically consistent predictor of e-GP system utilization, but further research is necessary.

5.3 Limitations of the Study

This study was conducted with rigorous intent but is subject to several limitations that must be acknowledged when interpreting its findings.

5.3.1 Small Sample Size

The key weakness is the sample size of $n = 31$ participants, where there was inadequate power to detect effect sizes. Power analysis after the study indicated that the test had only about 28% power to detect the obtained correlation of $r = 0.252$, well below the minimum threshold of 80% (Cohen, 1988). This would lead to an increased likelihood of a Type II error. The main reason for this was due to the study's limited constraints and geographic focus on a limited number of local government entities, as stated in the delimitations in Chapter One.

5.3.2 Measurement Limitations of the Utilization Scale

On the other hand, the Cronbach's alpha for the system utilization index was 0.455, which is well under the minimum threshold of 0.70 (Field, 2013). This means that the three questions, namely the frequency of usage, level of ease in usage, and electronic use, were unable to capture a common underlying construct. This means that there were errors in measurement of the dependent variable, thus reducing the accuracy of both the correlation and regression analyses.

5.3.3 Self-Report Bias

Any data on digital literacy was self-reported as opposed to objective competency assessments. Cognitive psychology studies have proven repeatedly which is that people

have an exaggerated view of their own skills, the Dunning-Kruger effect (Kruger, Dunning, 1999), especially in areas where they are not well exposed to the experts or benchmarks. This means the digital literacy reported in this study may be inflated relative to actual competence levels, which could also partially explain why the self-reported literacy-utilization relationship was weaker than predicted.

5.3.4 Cross-Sectional Design

The cross-sectional survey design captures a snapshot at a single point in time and cannot establish causal directionality. While TAM theorises that digital literacy (via ease of use) causes system utilization, this study's design can only speak to association, not causation. Longitudinal designs would be more appropriate for testing causal claims.

5.3.5 Infrastructure Confounding

Variations in internet connectivity and power supply across respondents' locations represent an uncontrolled confounding variable. Infrastructure constraints independently affect system utilization regardless of digital literacy levels making it difficult to isolate the pure effect of literacy from infrastructure-related barriers.

5.4 Recommendations

Based on the findings, conclusions, and limitations, the following recommendations are made to procurement authorities, local government entities, policymakers, and future researchers.

5.4.1 For PPDA and National Procurement Authorities

The PPDA should ensure that there is a structured and tiered approach towards the training of users of the e-GP system, especially among suppliers and SMEs since these constitute the largest percentage of users. The training should involve training on all five dimensions of digital literacy as discovered from this research operational skills, navigation of the portal, document management, troubleshooting and digital security rather than just involving basic registration in the system. Considering that 16.1% of the participants had procurement experience of one year or less, all newcomers must receive induction training as part of their supplier registration process. This suggestion is supported by the fact that

the almost universal call to train in the qualitative responses of this study gives good evidence-based support to the recommendation.

5.4.2 For Local Government Entities

Procurement units of the local governments are to develop special supplier support mechanisms such as peer mentoring programs, help desk services, and frequent digital procurement clinics. These targeted support mechanisms can compensate for lower baseline digital literacy through ad hoc support that enhances user confidence gradually. Early and sustained involvement of suppliers in the digitalization process, as recommended by multiple respondents in this study, should be institutionalized through structured onboarding programs at the beginning of each procurement cycle. Local governments should also develop context-specific offline or low-connectivity procurement workflows for suppliers operating in areas with unreliable internet, as suggested by respondents who recommended re-engineering the system to accommodate offline features.

5.4.3 For System Design and the Ministry of Finance

The findings that 51.6% of respondents rated the system as only neutral in ease of use and that system complexity was a recurring qualitative theme indicate a clear need for interface redesign guided by user experience principles. The Ministry of Finance, Planning and Economic Development, in conjunction with NITA-U, should initiate an audit on the usability of the e-GP system, which will include feedback from suppliers and procurement officers, especially small medium enterprises and novice users. Issues that have been pointed out by respondents, such as not being able to correct mistakes once the procurement process has been approved, should be addressed in the next system upgrade. This will enhance the user experience directly, and indirectly through the TAM model, increase system usage.

5.4.4 For Infrastructure Investment

The government and development partners should consider accelerating their investments in digital infrastructure, specifically in areas such as broadband internet and electricity infrastructure within the local government areas that contain e-GP users. Together, these two components of infrastructure are the second most reported barrier to utilizing the e-GP system (both $M = 3.00$). Cloud-based solutions and system functionality that can be

utilized even when the software is offline should be explored as medium-term solutions to these identified problems.

5.4.5 For Policy Frameworks

Policymakers can include digital literacy as a criterion to qualify suppliers for government purchases. Including this criterion will incentivize suppliers to improve their digital skills. A standard level of digital literacy for government procurement officials can be established nationally and in alignment with international standards, such as the Dig Comp framework (European Commission, 2022).

5.5 Chapter Summary

The chapter presents the findings of the study in relation to the three specific objectives of the study, the Technology Acceptance Model, and existing literature. The findings indicated that the digital literacy of the respondents was relatively high, that the utilization of the e-procurement system was growing, but not yet fully realized by all organizations that have the system in place, and that there was a relationship between digital literacy and system utilization, albeit one that was not statistically significant. Conclusions are drawn as a result of each of the study objectives, as well as limitations to the study. Finally, recommendations are made to the PPDA, the local government entities, the system designers, and the policymakers regarding the development of digital literacy among sub-Saharan African e-procurement system staff and the improvement of the usability of that system. Furthermore, conclusions are drawn about the extent to which this study has contributed to the existing literature on the topic, as well as recommendations for future research in this same area.

References

Ahimbisibwe, A., Tusiime, W., & Tumuhairwe, R. (2016). Adoption of e-procurement technology in Uganda: Migrating from the manual public procurement systems to the internet. *Researchjournali's Journal of Supply Chain Management*, 3(1), 1–23.

Apio, S., & Asiimwe, J. (2024). The electronic government procurement system in Uganda: Challenges and benefits. *International Journal of Research and Innovation in Social Science*, 8(6), 2598–2606. <https://doi.org/10.47772/IJRISS.2024.806199>

- Arkkelin, D. (2014).** *Using SPSS to understand research and data analysis*. Valparaiso University.
- Babbie, E. (2020).** *The practice of social research* (14th ed.). Cengage Learning.
- Basheka, B. C. (2008).** Procurement planning and accountability of local government procurement systems in developing countries: Evidence from Uganda. *Journal of Public Procurement*, 8(3), 379–406. <https://doi.org/10.1108/JOPP-08-03-2008-B005>
- Bienhaus, F., & Haddud, A. (2018).** Procurement 4.0: Factors influencing the digitisation of procurement and supply chains. *Business Process Management Journal*, 24(4), 965–984. <https://doi.org/10.1108/BPMJ-06-2017-0139>
- Brandon-Jones, A., & Kauppi, K. (2018).** Examining the antecedents of the technology acceptance model within e-procurement. *International Journal of Operations & Production Management*, 38(1), 22–42. <https://doi.org/10.1108/IJOPM-06-2015-0346>
- Bryman, A. (2016).** *Social research methods* (5th ed.). Oxford University Press.
- Croom, S., & Brandon-Jones, A. (2007).** Impact of e-procurement: Experiences from implementation in the UK public sector. *Journal of Purchasing and Supply Management*, 13(4), 294–303. <https://doi.org/10.1016/j.pursup.2007.09.015>
- Davis, F. D. (1989).** Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- DeLone, W. H., & McLean, E. R. (2003).** The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9–30. <https://doi.org/10.1080/07421222.2003.11045748>
- Field, A. (2013).** *Discovering statistics using IBM SPSS Statistics* (4th ed.). Sage.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010).** *Multivariate data analysis* (7th ed.). Pearson.

- Kaiser, K. (2009).** Protecting respondent confidentiality in qualitative research. *Qualitative Health Research*, 19(11), 1632–1641.
<https://doi.org/10.1177/1049732309350879>
- Muijs, D. (2010).** *Doing quantitative research in education with SPSS* (2nd ed.). Sage.
- National Institutes of Health. (2022).** Research ethics.
- Teo, T. S. H., Lin, S., & Lai, K. H. (2009).** Adopters and non-adopters of e-procurement in Singapore: An empirical study. *Omega*, 37(5), 972–987.
<https://doi.org/10.1016/j.omega.2008.11.001>
- Tumuhairwe, R., & Ahimbisibwe, A. (2016).** Procurement records compliance, effective risk management and records management performance: Evidence from Ugandan public procuring and disposing entities. *Records Management Journal*, 26(1), 83–101. <https://doi.org/10.1108/RMJ-06-2015-0024>
- Vaidya, K., & Campbell, J. (2016).** Multidisciplinary approach to defining public e-procurement and evaluating its impact on procurement efficiency. *Information Systems Frontiers*, 18(2), 333–348. <https://doi.org/10.1007/s10796-014-9536-z>
- van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2017).** The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior*, 72, 577–588. <https://doi.org/10.1016/j.chb.2017.03.010>
- van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2020).** Determinants of 21st-century skills and 21st-century digital skills for workers: A systematic literature review. *SAGE Open*, 10(1), 1–14.
<https://doi.org/10.1177/2158244019900176>
- Venkatesh, V., & Davis, F. D. (2000).** A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.
<https://doi.org/10.1287/mnsc.46.2.186.11926>