

Examining Critical Barriers Impeding E-procurement Adoption and Implementation in Public Sector Organisations

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Abstract

E-procurement is now standard in many developed countries' public procurement systems, reflecting its maturity and impact. This study examines the critical barriers impeding e-procurement adoption and implementation in public sector organisations and determines the actionable strategies that need to be devised to overcome the profiled critical challenges. The research study adopted descriptive research design which permitted detailed description of the analysed variables. A total of 51 journal articles on e-procurement adoption and implementation published from 2015 to 2024 were collected and analysed using systematic literature review (SLR). The results of the study were presented using descriptive statistics and qualitative content analysis. The findings reveal that lack of technological infrastructure and limited human capacity are the most critical challenges that militate against smooth e-procurement adoption in the public sector. The study recommends public sector organisations to guard against the identified challenges and institute measures such as investing in acquisition of robust, secure and user-friendly e-procurement platforms which can streamline procurement processes and ensure operational efficiency; improve speed and reliability of the e-procurement systems to ensure seamless information flow among stakeholders and provide continuous training for all stakeholders including employees on e-procurement systems to ensure consistent and effective usage across all departments.

Keywords: Public procurement, Electronic procurement, Barriers, Adoption, Implementation

1.0 Introduction

1.1 Background to the Study

This study investigates the critical barriers impeding e-procurement adoption and implementation in public sector organisations and determines the actionable strategies that need to be devised to overcome the profiled critical challenges. Public procurement is a function that assists the government in carrying out its responsibilities and attaining its goals (Matebese-Notsulwana, 2021) and it plays a direct role in ensuring the efficiency of the public sector expenditures (OECD, 2017). The procurement process ensures efficiency through adherence to fundamental procurement principles such as quality, cost and timelines (Badenhorst-Weiss et al., 2017). Public procurement accounts for 18.42% of global gross domestic

product (GDP) and public spending sums up to about 14% of the European Union (EU) GDP which equals to roughly EUR 2000 billion - making it one of the most substantial components of public budgets (Gabela & Okeke-Uzodike, 2020). According to Andhov (2019), approximately 19% of the EU GDP is spent by over 25,000 public authorities purchasing services, works and supplies. Kim (2016) pointed out that public procurement in developing countries, accounts for over 30% of GDP and between 10% and 15% in developed countries, highlighting the excessive amount of money expended in public procurement.

According to Ibem et al., (2021), electronic procurement is the application of the internet and digital technological systems for the purchasing function of the organization. E-procurement replaces the traditional procurement function and covers all stages of the procurement process, such as search, sourcing, negotiation, ordering, receipt and post-purchase review (Chen et al., 2021). Compared to the traditional paper-based tendering, e-tendering reduces effort for procurement entities and bidders, enhances transparency, increases bidder participation and speeds up processes (Kaleshovska et al., 2015); increase the productivity of the business organization translating to high economic growth and facilitates corporate buying (Shukla et al., 2016).

1.2 Problem Statement

Despite the growing digital adoption, a consolidated understanding of e-procurement benefits in public sector organisations remains lacking. This review addresses that gap. According to Weber (2024), the disparity in e-procurement adoption and implementation maturity across different sectors raises concerns about the overall effectiveness of these systems in driving performance improvements. The author further avers that this situation triggers a serious investigation into the critical barriers to successful e-procurement implementation and their impact on organisational performance.

In the present study, the barriers to adoption and implementation of e-procurement in public sector organisations are identified and evaluated for the purpose of easing the transition from traditional procurement to e-procurement. Ranking barriers to e-procurement by importance helps supply chain practitioners and procurement practitioners focus on the key barriers that need to be overcome. In this regard, the expectation is that the uncertainties and deficiencies of traditional procurement can be reduced thereby boosting supply chain efficiency and eventually improve supply chain procurement performance. The study shall ultimately profile actionable strategies for overcoming the identified challenges. The results of such studies allow managers to focus on the key barriers for specific performance criteria by developing appropriate supply chain strategies that promote better procurement (Gurgun et al., 2024).

1.3 Research Questions

To achieve the present study's intended purpose, this research study analyses a body of literature and answers the following research questions:

Research Question 1 (RQ1): What critical barriers impede the successful adoption and implementation of e-procurement in public sector organisations?

Research Question 2 (RQ2): Which actionable strategies can be devised to overcome the profiled critical challenges that thwart successful adoption and implementation of e-procurement in public sector organisations.

1.4 Study Significance

The current study bears theoretical, policy and practical implications to researchers, academicians and procurement practitioners as regards critical barriers hampering e-procurement adoption and implementation in public sector organisations. The study also bears potential for future research.

First, the research study bears theoretical implications by filling a lacuna in the existing literature by providing state-of-the-art systematic literature review (SLR) on e-procurement critical barriers hampering proper adoption and implementation of digital procurement in the public sector and the associated policy strategies that can be devised to mitigate the impact of the barriers. Overall, this research study expands the current body of knowledge on e-procurement adoption and implementation and forms a basis for future research.

Second, from the policy perspective, the study advocates for development and enforcement of various legal and regulatory e-procurement frameworks and policies that support digital procurement for the public sector. This includes updating procurement legal framework to accommodate digital transactions and ensuring that the system complies with international standards for transparency and accountability. Further, the present study promotes the development and implementation of policies that guide top leadership commitment in the public sector and provide financial support to public sector organisations for adopting e-procurement systems. Additionally, the study guides on development and implementation of regular and comprehensive training programs for all stakeholders (procurement and ICT officials, end-users, senior management and suppliers) to sharpen skills and enhance competency and confidence in using e-procurement systems.

Third, the present research study provides guidance to public procurement practitioners in establishment of contingency plans that will aid alleviation of the associated barriers through creation of dedicated support teams to provide technical support through assisting users during the implementation and ongoing operation of e-procurement systems. Further, the study shall guide public sector managers in creating strategic investments in reliable technological infrastructure by prioritizing the development of robust infrastructure to support e-procurement adoption and implementation. instituting change management mechanisms and preparing employees and suppliers for new technologies and developing frameworks for continuous monitoring and evaluation of the e-procurement system which can help identify and address emerging issues promptly.

1.5 Study Outline

In this introductory section, the research field encompassing public procurement and e-procurement in general is presented through study background, problem statement, the main research questions followed by study significance. Section two presents the systematic literature review methodology engaged to achieve the research goals, and the findings are presented in section three. The results are deciphered through utilization of content analysis and ultimately organized through descriptive and qualitative analysis, each presented in a separate sub-section. Discussion of the study findings are enshrined in section four and section five presents the conclusion of the present study whilst Section 6 depicts the research study recommendations.

2.0 Theoretical Frameworks

A theoretical review constitutes an appraisal of existing theories that serves as a roadmap to coming up with arguments to be used in one's own study (Vinz, 2022). The implementation of e-procurement in public sector organisations can be analysed through many theoretical frameworks that address technical transformation, organisational behavioural shifts and policy adoption in the public sector. The research study was grounded in three robust theoretical frameworks for analysing the critical barriers for e-procurement adoption and implementation in public sector organisations: The Technology Acceptance

Model (TAM), the Diffusion of Innovation (DOI) Theory and the Technology-Organisation-Environment (TOE) Framework.

2.1 Technology Acceptance Model (TAM)

The TAM was developed by Fred Davis in 1986 to explain user acceptance of new technologies in organisations (LaiPC, 2016). The core tenets of TAM include perceived usefulness and the perceived ease of use which influence an individual's intention to adopt technology (Vogel & Cheung, 2013; LaiPC & Zainal, 2015; Efremenko et al., 2017). According to Venkatesh & Davis (2000), perceived usefulness is the likelihood of the potential user to use a given system whilst perceived ease of use is the extent to which potential users expect a system to work effortlessly. When people using a product observe that the technology they are using is working and that it is friendly to use, these people become interested in using it (Ndei & Mutuki, 2021). The TAM is widely applied in public procurement studies, helping explain how government agencies perceive and perceive and integrate e-procurement systems (Aboelmaged, 2022). One of its TAM's strengths is its predictive ability in assessing technology adoption behaviour, making it highly relevant in digital procurement transactions (Oliveira et al., 2023). However, its limitation lies in its lack of consideration for external influences such as organizational culture and regulatory constraints (Dwivedi et al., 2021). The model still, has a sound theoretical assumption and practical effectiveness due to its thoughtful connection between human and technology (Chuttur, 2009) and it assists in identifying environmental and organisational factors that influence e-procurement adoption (Isango, 2024). The model is particularly useful in this study as it provides a framework to evaluate public officials' acceptance of e-procurement and how system usability influences its success across different public sector organisations.

2.2 Diffusion of Innovation (DOI) Theory

The DOI theory was initiated by Everett Rogers in 1962 which explains changes in technological acceptance over time as individuals gain experience, embrace and adopt the targeted technology (Lamorte, 2019). According to Mutuku (2020), this model has assisted organisations to better understand how purchasers implement and engage with new technologies over time and it also explains how an idea can pass through several stages of adoption by different players in the community. The model classifies adopters into five categories: innovators, early adopters, early majority, late majority and laggards (Rogers, 2003). Further, the author intimated that DOI theory gauges an innovation's influence, its diffusion and adoption by using the following five attributes: (a) relative advantage (the extent to which the innovation is viewed to be better than the existing idea, practice, knowledge or toll by users i.e. perceived cost and benefits); (b) compatibility (the degree to which an innovation is consistent with the existing practice, experience, norms, needs, and value system of the potential adapters; (c) complexity (the degree to which an innovation is perceived as difficult to understand and use; (d) trialability (the degree to which an innovation may be experimented with on a limited basis; and (e) observability (the degree to which the results of adoption of innovation are visible to others. Ibem & Laryea (2015) posited that out of these five attributes, the three consistent attributes that are found to be relevant to innovation adoption are relative advantage, compatibility and complexity.

DOI is particularly relevant to this study as it helps to assess how e-procurement adoption progresses across public institutions at different technological maturity levels (Al-Jabri & Roztock, 2022). However, the DOI theory's weakness is the assumption that adoption is linear and does not account for contextual barriers such as political resistance and financial constraints (Alshamaila & Papagianiddis, 2021). Nevertheless, the DOI theory was found to be appropriate to the current research study to aid in explaining

and interpreting the findings on the critical barriers impeding of e-procurement adoption in public sector organisations.

2.3 Technology-Organisation-Environment (TOE) Framework

Technology-Organisation-Environment Framework of Tornatzky and Fleischer (1990) assumes a generic set of factors to predict the likelihood of IT adoption. The theory suggests that IT adoption is influenced by technology development (Kauffman & Walden, 2001), organizational conditions, business and organizational reconfiguration (Chatterjee et al., 2002) and industry environment (Kowtha & Choon, 2001). Technological context describes that adoption depends on the pool of technologies inside and outside the firm as well as the application's perceived relative advantage (gains), compatibility (both technical and organizational), complexity (learning curve), trialability (pilot test/experimentation) and observability (visibility/imagination) (Mambo, 2015). Organizational context captures firm's business scope, top management support, organization culture, complexity of managerial structure measured in terms of centralization, formalization and vertical differentiation, the quality of human resource and size-related issues such as internal slack resources and specialization (Jeyaraj et al., 2006; Tornatzky & Fleischer, 1990). According to Scupola (2009), environmental context relates to facilitating and inhibiting factors in areas of operations and significant among them encompass competitive pressure, trading partners' readiness, socio-cultural issues, government encouragement and technological support infrastructures.

The TOE Framework was applicable in the current study to assist in explaining and interpreting the study results with respect to the technological or organizational or environmental factors that contributed to the critical barriers impeding electronic procurement adoption and implementation in public sector organisations.

3.0 Materials and Methods

The Systematic Literature Review (SLR) method was utilized in this study to recognize, organize and report on previous research findings in a methodical manner so that the SLR provides the expected results. Thus, in the next parts in this section, the complete process of searching and analyzing the existing literature will be described: the keywords used, the search bases and the selection of articles.

3.1 Systematic Literature Review

The section focusses on the review methodology that was employed to examine the searched extant literature based on the study topic. The objective of the study was to investigate the critical barriers that bedevil proper e-procurement adoption in public sector organisations and propose actionable strategies that can be devised to overcome the profiled critical challenges that thwart successful adoption and implementation of e-procurement in public sector organisations.

According to Munn et al., (2018), SLR is recognized as a rigorous and transparent method, especially for supporting future studies and decision-making. Gough et al., (2017) posit that this method builds theories and other relevant concepts by consolidating knowledge after evaluating several studies in a knowledge domain, establishing new knowledge and documenting the state of the art. The current study, in selection and analysis of research journal articles pursued the steps of SLR as defined by Kitchenham et al., (2009) known as PRISMA statement methodology (Moher et al., 2010), where PRISMA stands for "Preferred Reporting Items for Systematic Reviews and Meta-analyses." According to Prebanic & Vukomanovic (2021), the PRISMA statement is a checklist covering all critical issues that should be reported and

consists of a flow diagram that presents the research procedure. The present study adopts the PRISMA statement to avoid errors and bias and provide high-quality results.

3.2 Research Procedure

Initially, five steps were followed to conduct the SLR and then synthesise the collected data and finally report the findings as follows: Formulating research objectives, identifying the search process and inclusion and exclusion criteria, conducting data collection, performing quality assessment and conducting the descriptive analysis were considered when conducting the SLR (Kitchenham et al., 2009). In particular, the present study adopted a PRISMA procedure which contains four main stages (as presented in Figure 1) and provides a clear method for the retrieval of a final set of papers, which were then analysed.

3.2.1 Identification of the Search Process and the Inclusion and Exclusion Criteria

The study conducted a comprehensive manual exploratory desktop literature search through four major databases of scientific literature, namely “Emerald Insight,” “ScienceDirect Library,” “Elsevier,” “ProQuest” and “Google Scholar.” These databases are some of the largest citation and abstract databases of peer-reviewed literature that deliver an overview of some of the world’s search output in the field of technology, science etc. (Alaloul et al., 2019) and this stage was executed through sub-stages of computer search and filtering. According to Zulkarnain et al., (2023), researchers use various combination of keywords to find a comprehensive list of all relevant papers.

A computer database search was carried out using keywords such as “e-procurement adoption,” “e-procurement barriers,” “public sector e-procurement” and “government public procurement.” For this research, the data collection sample consisted of peer-reviewed journal papers related to e-procurement adoption that were published in English in the last 10 years from 2015 to 2024, a period where electronic public procurement has visibly matured. Articles such as reports, books, book reviews, book chapters, review papers, data articles and conference papers were excluded from the study during the screening process. According to Papadonikolaki et al., (2020), this exclusion can be recognized as a common exclusion in SLR. According to Hosseini et al., (2019), paper review, refinement and sorting not only describe in-depth coverage but also capture critical aspects of the literature.

3.2.2 Search Outcomes

An initial search yielded 237 research publications from all databases. Filtering was manually done to exclude 126 articles that were remotely related to the field of e-procurement and those which were not journal articles. Finally, the study removed 60 duplicates and also 5 that fell outside the prescribed age range of 2015 to 2024. In addition, the studies added 5 reverse journal articles that were eligible but sourced in the course of filtering the journal articles. Finally, the study came up with 53 research articles that were ultimately subjected to review. All the journals were searched in the month of November, 2024. Additionally, during the content analysis, a performance quality assessment was conducted on each and every selected article was read to decipher the title, abstract, introduction, methodology, theoretical and empirical reviews applied, findings, discussion, conclusion and recommendations including areas for further research. The performance quality assessment conducted followed Kitchenham et al.’s (2009) quality assessment steps stipulated as follows:

1. Does the study define the research aim?
2. Does the study describe the research methodology?
3. Does the study describe the data collection method?
4. Does the study discuss the research findings?

5. Does the study discuss the limitations of the study?
6. Does the study discuss future research focus?

Collected studies, using qualitative content analysis, were evaluated according to these quality criteria, the study's reliability and validity. Table 1 presents the summary of the results for the quality assessment that was conducted on the reviewed journal articles.

Table 1: Quality Assessment Results of the Reviewed Journal Articles

No.	Quality Assessment Question through the Assessment Question	Percentage of Qualified Articles
01.	Does the study define the research aim?	100%
02.	Does the study describe the research methodology?	100%
03.	Does the study describe the data collection method?	100%
04.	Does the study discuss the research findings?	65%
05.	Does the study discuss the limitations of the study?	51%
06.	Does the study discuss future research focus?	55%

The research study finally ended up with 51 resultant research publications that were screened by reading the article titles and abstracts. The final batch of journal articles was analysed using descriptive analysis and qualitative content analysis to determine the major facets of a set of data by counting the number of articles that elaborate a specific process or topic (Fellows & Liu, 2008). Additionally, the reviewed papers were identified based on journal name, author(s), title and publication year. Figure 1 presents the entire SLR process pursued to come up with the resultant journal articles.

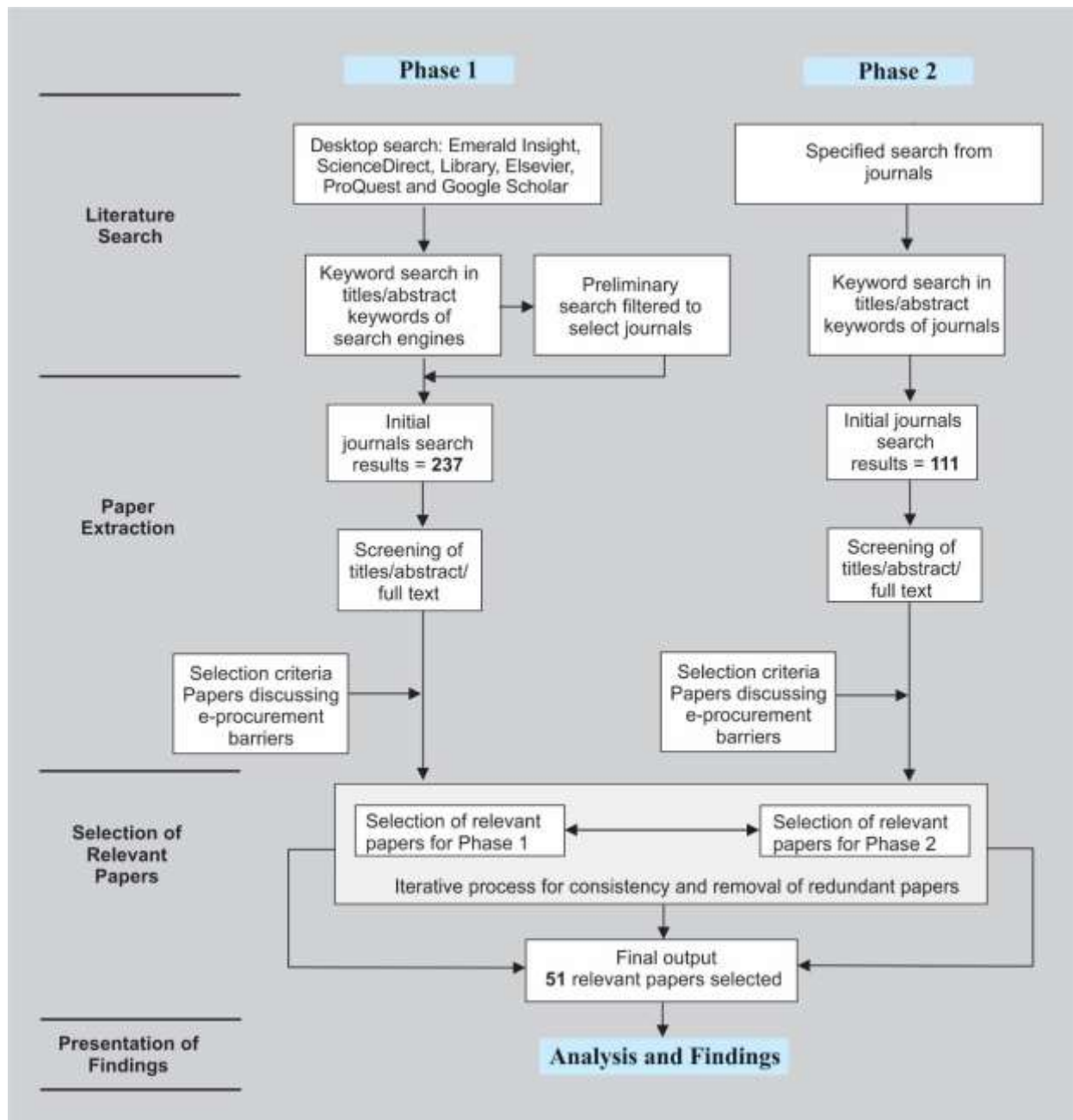


Figure 1: Systematic literature review process (Source: Adapted from Yevu & Yu, 2019)

3.2.3 Bias Mitigation

The research study addressed bias in every sense during research study design, location of the articles, selection of the publications and synthesis. During research design, the study addressed bias by developing clearly defined, structured and objective research questions before engaging with the academic databases and Google searches (Smith & Noble, 2014). Further, the research questions were framed so as not to be leading nor indicative of any specific study conclusion. According to Galvao & Pereira (2022), a guiding research question is formulated and is to be answered using a standardized and transparent method in order to identify and summarise relevant studies. Additionally, all the barriers for e-procurement adoption were catalogued from studies conducted in both developed and developing countries and from any region. These

were analysed and the findings were cross-referenced to refrain from one-sided conclusions (Hendricks & Mwapwele, 2024).

Location bias of the articles was addressed through limiting the search to the set inclusion criteria and admitting only peer-reviewed journal articles written in English and published between 2015 and 2024. Multiple and relevant databases were also searched to locate and avail a wide range of literature for use (Hendricks & Mwapwele, 2024).

Article selection bias was addressed through objectively focusing on explicitly defined key concepts to avoid ambiguity in their meanings. Additionally, review of this paper was conducted by all the three authors so that the content was not limited to the understanding of any single author alone (Smith & Noble, 2014).

Synthesis bias was addressed by specifying protocol to be used and considering all the relevant types of statistics, theories, models, methods, samples and sample sizes (Hendricks & Mwapwele, 2024). Further, all outcomes were considered bearing in mind that different types of findings enhance the argument of the research questions and enables response to every angle of the questions (Seo & Kim, 2012; Smith & Noble, 2014). The use of thematic analysis also assisted application of the identified themes across several papers and authors which eliminated author-centricity (Hendricks & Mwapwele, 2024). Finally, to ensure objectivity in coding and synthesis, the research study engaged two independent reviewers who coded the themes and analysed the final set of articles and disagreements were resolved through consensus.

4.0 Findings

In this section, the research study presents the findings of the descriptive and qualitative content analyses. After collecting a final total of 51 research publications, the articles were subjected to rigorous content analysis and classified into various categories for better information analysis. Information from each research publication was thoroughly evaluated to concisely record data for each set category. For better information analysis, Microsoft Excel was utilized to record content. The present study initially involved 248 research publications for the SLR process and out of that, some research papers were filtered after abstract reading. Among the filtered research papers, 51 were selected after the full-text reading and a total of 202 papers were excluded due to the reasons depicted in Table 2.

Table 2: Excluded papers in the SLR and associated reasons

No.	Reasons for Exclusion	No. of Papers Excluded
01.	Out of the defined time frame (2015-2024)	5
02.	No critical focus on e-procurement adoption	90
03.	Literature considered grey literature from sources such as websites, blogs, social network posts etc., reports, books, book reviews, book chapters, review papers, data articles and conference papers	36
04.	Duplicates	60

From Table 2, out of the five (5) articles that were out of the defined time frame, one (1) was published in 2005, another in 2011, two (2) in 2012 and one in 2014. Ninety (90) papers were excluded as they were not directly focused on the topic under study therefore had to be removed from the study. Additionally,

thirty-six (36) papers in form of reports, books, book reviews, book chapters, review papers, data articles and conference papers were excluded as they could not meet the prescribed criterion of only admitting peer-reviewed journal articles. Finally, during the filtering process, seventy-one (71) papers were determined as duplicates and therefore automatically excluded. The remaining fifty-one (51) articles including five (5) reverse research publications were then objectively reviewed and relevant data were extracted and presented in the analysis into two streams of descriptive and qualitative analyses.

4.1 Descriptive Analysis

Descriptive analysis was employed to examine the sampled research publications through various points of analyses such as the distribution of the selected articles based on journals in which they were published, distribution of the selected papers based on publication year, research design, instruments and approaches employed in the sampled articles. The descriptive analysis further presents the underpinning theories of the research publications, author contribution and collaboration, article distribution among different countries and published articles based on geographical regions.

4.1.1 Distribution Based on Journal Types

The resultant research publications were analysed to decipher the journals in which they were published. Table 3 depicts the list of the identified journals where the sampled research publications were published.

Table 3: List of Journals that Contributed Research Publications

No.	Journal Name	No. of Articles
1.	ADDRI Journal of Arts and Social Sciences	1
2.	African Journal of Commercial Studies	1
3.	AIMA Journal of Management & Research	1
4.	Alvan Journal of Social Sciences	1
5.	American Journal of Supply Chain Management (AJSCM)	1
6.	Asian Journal of Economics, Business and Accounting	1
7.	Buildings	
8.	Built Environmental Journal	1
9.	Canadian Social Science	1
10.	Dutch Journal of Finance and Management	1
11.	European Journal of Business and Management	2
12.	Global Journal of Purchasing and Procurement Management (GJPPM)	1
13.	IJARIE	1
14.	International Journal of Construction Education and Research	1
15.	International Journal of Economics and Financial Issues	1
16.	International Journal of Economics and Management Studies	1
17.	International Journal of e-Education, e-Business, e-Management and e-Learning	1
18.	International Journal of Engineering Trends and Technology	1
19.	International Journal of Human Resources and Procurement	1
20.	International Journal of Procurement Management	1

21. International Journal of Public Sector Management	1
22. International Journal of Research and Innovation in Social Sciences (IJRISS)	1
23. International Journal of Science and Research (IJSR)	1
24. International Journal of Supply Chain Logistics	1
25. International Journal of Supply Chain Management	2
26. Journal of Business & Change Management	1
27. Journal of Economics, Finance and Management Studies	1
28. Journal of eDemocracy (JeDEM)	1
29. Journal of Hotel & Business Management	1
30. Journal of Information Engineering and Applications	1
31. Journal of Logistics Management	1
32. Journal of Physics: Conference Series	1
33. Journal of Procurement & Supply Chain	1
34. Journal of Research in Humanities and Social Science	1
35. Journal of Supply Chain and Procurement	1
36. Journal of Transport and Supply Chain Management	1
37. Jurnal Manajemen Bisnis	1
38. Law, Democracy and Development	1
39. Management Review: International Journal	1
40. Multidisciplinary Science Journal	1
41. Open Journal of Business and Management	1
42. PM World Journal	1
43. Quest Journal of Research in Business and Management	1
44. Scholarly Journal of Arts & Humanities	1
45. Sustainability	1
46. The African Journal of Information Systems	1
47. The Strategic Journal of Business & Change Management	3
48. World Academy of Science, Engineering and Technology International Journal of Civil and Environmental Engineering	1

From Table 3, the Strategic Journal of Business & Change Management published the highest number of articles.

4.1.2 Distribution Based on Publication Year

The sample articles on e-procurement adoption barriers demonstrate that the years 2023 and 2024 experienced the highest number of research publications with both years publishing nine research articles, followed by the years 2017 and 2022 with each publishing six research publications on the research topic. Further, during the years 2015, 2018 and 2019, five papers were published in each year whilst in the year 2016, four papers were published. Finally, in the years 2020 and 2021, a paper got published in each of the two journals. The distribution of the selected publications based on publication year is illustrated in Figure 2.

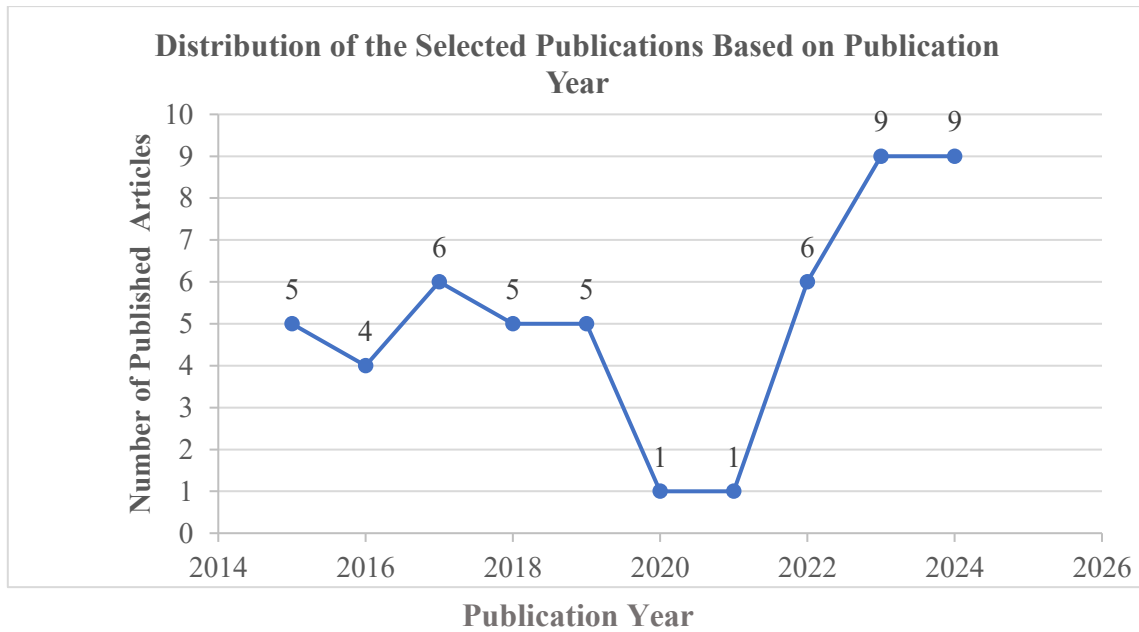


Figure 2: Research Publications based on Publication Year

Based on Figure 2, publishing of the peer reviewed journal articles experienced exponential growth and experienced an upward surge in the years 2023 and 2024. These results depict the cruciality of the subject matter in the recent times.

4.1.3 Research Design, Instruments and Approaches of the Selected Publications

Based on an analysis of the papers in the sample literature on e-procurement adoption barriers, the research designs that got utilized encompass descriptive research design and case study research design. It was discovered that the most dominant research design on the topic is the descriptive research design. Refer to Figure 3 on the distribution of the research publications based on research design.



Figure 3: Research Publications Based on Research Design

From Figure 3, it can be deciphered that the descriptive research design was the most dominant research design that got employed in the sampled research publications.

Additionally, the analysis demonstrated that the sampled research publications utilized three types of research approaches: Quantitative, qualitative and mixed methods research approaches as shown in Figure 4.

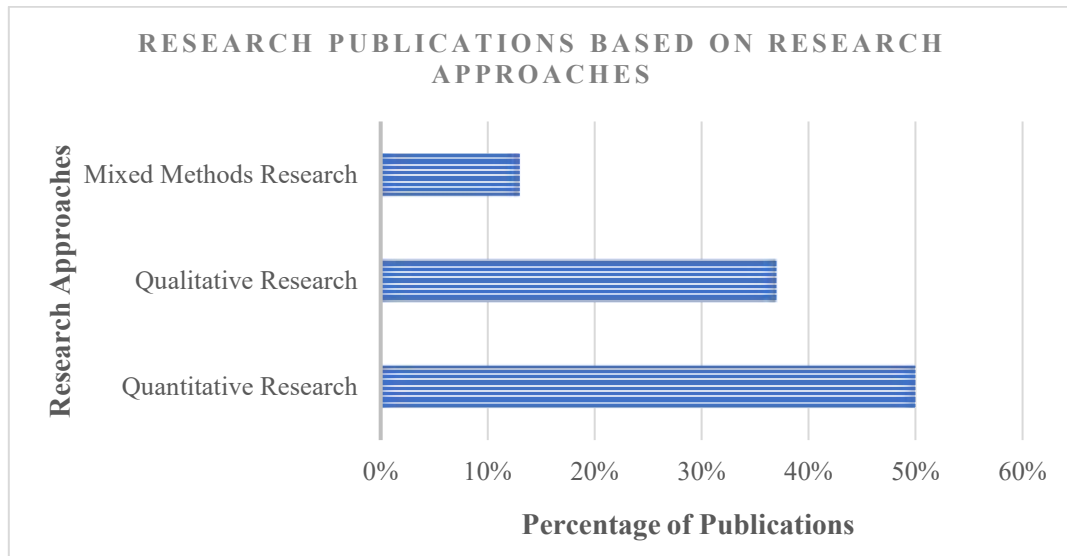


Figure 4: Research Publications Based on Research Approaches

The results depicted in Figure 4 demonstrate that quantitative research approach was the highly employed research approach.

4.1.4 Author Contribution and Collaboration of the Selected Publications

According to Rathnayake et al., (2022), the importance of a research paper depends on the quality of the research work. The authors further postulate that whilst the number of authors is not an indicator of quality, it does demonstrate collaborative research work. Based on the review of the sampled research publications, the results demonstrate that the studies had single author, two authors, three authors, four authors, five authors and seven authors. Figure 5 depicts the study’s author contribution and collaboration of the reviewed publications.

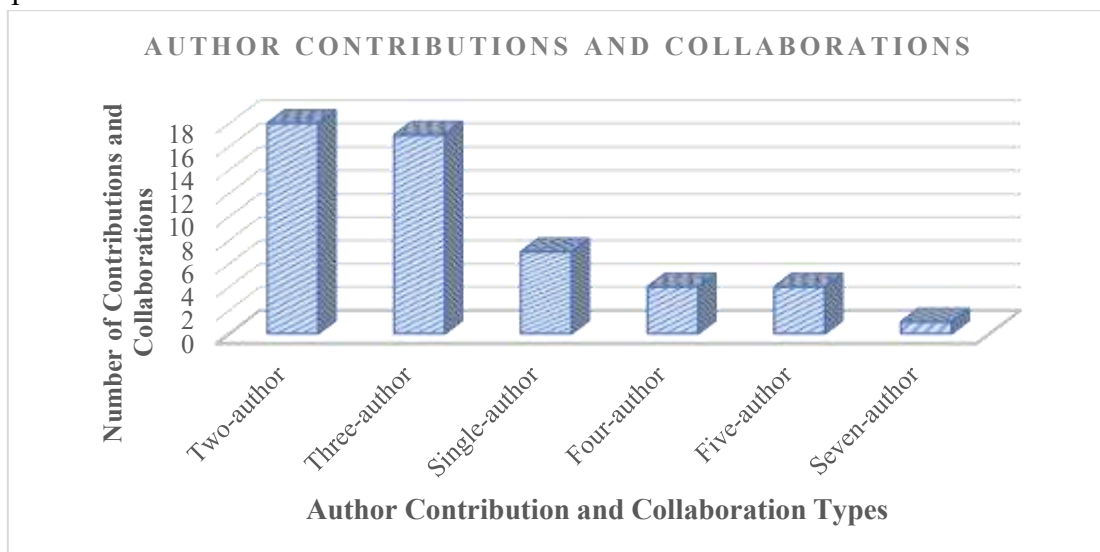


Figure 5: Author Contributions and Collaborations

Based on results depicted by Figure 5, two-author studies dominated the research publications used by the research study.

4.1.5 Article Distribution among Different Countries

The sampled publications were reviewed to identify the knowledge distribution among different countries. Table 4 displays article distribution among different countries.

Table 4: List of Countries and the Contributed Research Publications

No.	Journal Name	No. of Articles
1.	Argentina	1
2.	Bahrain	1
3.	Bangladesh	1
4.	Egypt	1
5.	Germany	1
6.	Ghana	10
7.	India	2
8.	Indonesia	4
9.	Jordan	1
10.	Kenya	4
11.	Lesotho	1
12.	Malaysia	3
13.	Malawi	1
14.	Nigeria	4
15.	Pakistan	1
16.	South Africa	3
17.	South Sudan	2
18.	Sub-Saharan African Countries	1
19.	Tanzania	2
20.	Thailand	1
21.	Turkey	1
22.	Uganda	1
23.	Zambia	2
24.	Zimbabwe	2

According to Table 4, results demonstrate that the respective studies were conducted in 24 countries and e-procurement adoption barriers studies have been mostly conducted in Ghana. According to Yang et al., (2022), the overall number of papers illustrates a country’s impact on a particular field of study, therefore Ghana has highly impacted on e-procurement adoption barriers in the present research study.

4.1.6 Article Distribution Based on Geographical Regions

An analysis was further conducted to ascertain the number of research publications based on geographical regions across the globe. Figure 6 depicts the results of this assessment.

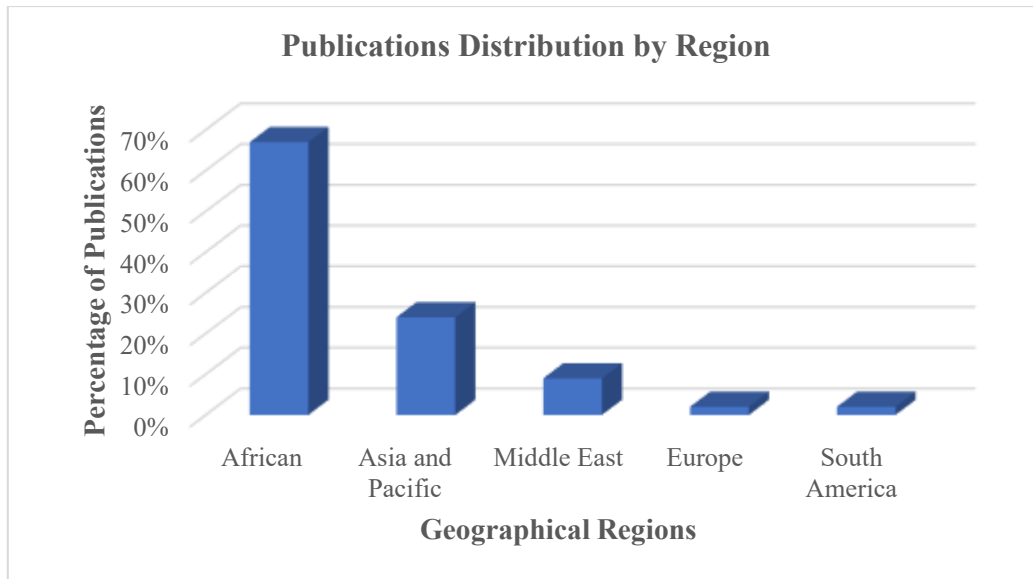


Figure 6: Publications Distribution by Region

Using the yardstick of number of publications per region, the results of the study demonstrate that the African region contributed the highest number of articles on e-procurement adoption barriers.

Basing on regional comparisons, the African region has demonstrated concern for studying e-procurement as compared to the other regions. This depicts eagerness for achievement of efficiency and transparency when conducting public procurement in the low-income countries. This finding can be attributed to the fact that developing countries such as those in the African region may have adopting the e-procurement doctrine late. According to Waithaka & Kimani (2021), the concept of e-procurement in African public sector is just gaining popularity. The authors further posit that to deal with problems of lack accountability and transparency in public procurement activities, most African countries have resorted to e-procurement and legal reforms. Developed countries in may have been early and successful adopters of the e-procurement doctrine and that it is no longer a priority in their execution of public procurement. For instance, in United States of America (USA), rapid development of e-procurement was reported in early 2000 just before the recession (Reddick, 2004). The author further intimated that by the end of the same year, it was reported that all state functions were maintaining web presence in at least some stage of their procurement processes with some participating in online bidding. Similarly in Malaysia, Kaliannan et al., (2009) pointed out that the Malaysian public sector was going through a rapid change as far as adoption of technology is concerned. Further, a review conducted by Commonwealth of Australia revealed that the national governments of Italy, New Zealand, Scotland, New South Wales and Western Australia were already using e-procurement systems for public procurement activities in 2005 (Waithaka and Kimani, 2021).

4.2 Qualitative Analysis

The sampled articles were reviewed using qualitative content analysis to decipher the critical barriers bedeviling proper e-procurement adoption and implementation. The results of this analysis demonstrate a total of 12 barriers that bedevil e-procurement adoption and implementation in public sector organisations as follows: Lack of technological infrastructure, limited human capacity, lack of support from top management and government, unreliable legal framework governing e-procurement, lack of commitment

among trading partners, bureaucracy, unreliable power supply, fear of redundancy, corruption of public officials, poor implementation management, lack of funding and complacency. These are summarized in Figure 7.

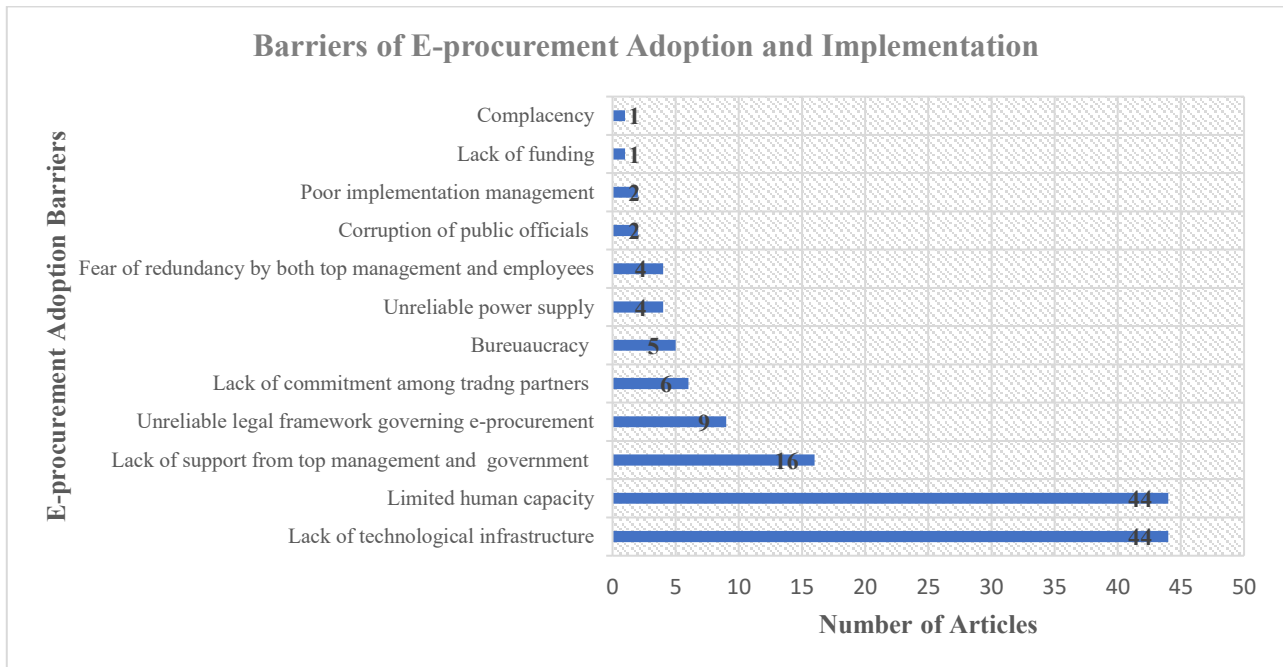


Figure 7: Barriers of E-procurement Adoption and Implementation

4.2.1 Critical Barriers impeding E-procurement Adoption in Public Organisations

The research study assessed the barriers presented in Figure 2 to decipher critical barriers that hamper successful adoption and implementation of e-procurement in public sector organisations. The research study set a pre-condition that the barriers to e-procurement adoption that will be considered ‘critical’ shall be those cited by 50% of the reviewed publications or above. In this regard, the most frequently barriers fall into two categories: Infrastructural (e.g. limited technological infrastructure such as poor connectivity and systems); and human capital (e.g. limited human capacity such as lack of digital literacy). Together, these account for over 70% of the total references, indicating that capacity and tools – not policy – are the main obstacles that thwart successful adoption and implementation of e-procurement in the public sector.

4.2.2 Actionable Strategies to be Devised to Overcome the Profiled Critical Challenges

The research study aimed at profiling the actionable strategies that can be devised to overcome all the identified barriers impeding successful adoption and implementation of e-procurement in public sector organisations. Researchers have developed several techniques and tools to overcome the myriad barriers that hamper proper e-procurement adoption and implementation by public sector organisations. Table 5 presents a summary of the findings of the barriers that thwart proper e-procurement adoption and implementation and the relevant strategies to overcome the identified barriers plus the corresponding author (s).

Table 5: Summary of the Study Findings on Strategies to Overcome the Identified Barriers

No.	Barrier	Strategy	Author (s)
01	Lack of employee competency or limited technical expertise, knowledge and skills	<ul style="list-style-type: none"> - There is need for regular trainings, seminars and workshops to be organized to equip employees with the requisite knowledge about e-procurement processes and procedures and IT issues - Public sector organisations should be staffed with well-qualified professionals to manage the available ICT infrastructure 	Azanlerigu & Akay (2015); Korir <i>et al.</i> (2015); Muoki & Muturi (2016); Chintengo <i>et al.</i> , (2016); Asare & Prempeh (2017); Ibrahim <i>et al.</i> , (2017); Githinji & Were (2018); Dlakuseni <i>et al.</i> , (2018); Addo (2019); Osei-Tutu <i>et al.</i> , (2019); Hamma-adama & Ahmad (2021); Salifu <i>et al.</i> , (2023); Chilunjika <i>et al.</i> , (2023); Maepa <i>et al.</i> , (2023); Okoro <i>et al.</i> , (2023); Egwim <i>et al.</i> , (2024); Jama <i>et al.</i> , (2024); Mwangata & Hapompwe (2024); Scovia & Jonath (2024); Weber (2024)
02	Inadequate, unreliable or poor technological infrastructure	<ul style="list-style-type: none"> - Government must make conscious efforts to develop and prioritise ICT needs of the public organisations through massive investment and upgrade of ICT infrastructure. This includes regular updating of websites of public organisations - Government must assess pre-technical requirements for e-procurement implementation to help develop a robust e-procurement system - Government should engage development partners to provide them with the much-needed technical support to facilitate the full implementation of e-procurement architecture 	Korir <i>et al.</i> , (2015); Nawi <i>et al.</i> , (2016); Asare & Prempeh (2017); Nawi <i>et al.</i> , (2017); Ngunjiri <i>et al.</i> , (2018); Dlakuseni <i>et al.</i> , (2018); Osei-Tutu <i>et al.</i> , (2019); Abdulatif <i>et al.</i> , (2022); Chilunjika <i>et al.</i> , (2023); Maepa <i>et al.</i> , (2023); Mwangata & Hapompwe (2024); Scovia & Jonath (2024); Weber (2024);
03	Data system insecurity	<ul style="list-style-type: none"> - Public organisations must put in place mechanisms that ensure system securities to minimize vulnerabilities 	Azanlerigu & Akay (2015); Githinji & Were (2018); Addo (2019); Osei-Tutu <i>et al.</i> , (2019); Jama <i>et al.</i> , (2024); Mwangata & Hapompwe (2024); Scovia & Jonath (2024)
04	Inadequate or lack of eligible legal and regulatory framework governing e-procurement	<ul style="list-style-type: none"> - Government should amend pieces of legislation to make an inclusion of elements of e-procurement processes defining the processes and procedures of electronic procurement - Government should provide policy support and incentives for adopting e-procurement across all public sector organisations. - Government should establish clear guidelines and standards for e-procurement can help harmonise practices and enhance overall efficiency and transparency 	Azanlerigu & Akay (2015); Korir <i>et al.</i> , (2015); Chintengo <i>et al.</i> , (2016); Awadallah & Saad (2017); Githinji & Were (2018); Dlakuseni <i>et al.</i> , (2018); Addo (2019); Billal <i>et al.</i> , (2019); Osei-Tutu (2019); Chilunjika <i>et al.</i> , (2023); Okoro <i>et al.</i> , (2023); Maepa <i>et al.</i> , (2023); Egwim <i>et al.</i> , (2024); Jama <i>et al.</i> , (2024); Mwangata & Hapompwe (2024); Weber (2024)
05	Lack of staff training	<ul style="list-style-type: none"> - Conduct regular and comprehensive training, development and capacity development programs to enable employees become techno-literate - Conduct training and capacity building focusing on both technical skills and change management skills to address resistance to new technology 	Azanlerigu & Akay (2015); Korir <i>et al.</i> , (2015); Chintengo <i>et al.</i> , (2016); Muoki & Muturi (2016); Asare & Prempeh (2017); Githinji & Were (2018); Addo (2019); Osei-Tutu <i>et al.</i> , (2019); Chilunjika <i>et al.</i> , (2023); Maepa <i>et al.</i> , (2023); Jama <i>et al.</i> , (2024); Mwangata & Hapompwe (2024); Scovia & Jonath (2024); Weber (2024)
06	Resource constraints (Lack of resource support and such as inadequate funding and human resource)	<ul style="list-style-type: none"> - Government should develop sustainable funding strategies to source resources and funding of comprehensive e-procurement system through engagement of development partners to provide them with financial resource support 	Chintengo <i>et al.</i> , (2016); Muoki & Muturi (2016); Abdulatif <i>et al.</i> , (2022); Chilunjika <i>et al.</i> , (2023); Maepa <i>et al.</i> , (2023); Okoro <i>et al.</i> , (2023); Mwangata & Hapompwe (2024); Weber (2024)
07	Lack of top management support or commitment	<ul style="list-style-type: none"> - There is need for commitment in public organisations to implementation of e-procurement to ensure ease of implementation 	Korir <i>et al.</i> , (2015); Chintengo <i>et al.</i> , (2016); Asare & Prempeh (2017); Maepa <i>et al.</i> , (2023); Egwim <i>et al.</i> , (2024); Mwangata & Hapompwe (2024)

08	Poor system integration with other systems	<ul style="list-style-type: none"> - Public sector organisations should ensure meaningful integration of the institutions' e-procurement systems with the existing systems and those of suppliers - There is need to develop robust integration mechanisms and strategic planning to ensure seamless data synchronisation and operational consistency 	Azanlerigu & Akay (2015); Korir <i>et al.</i> , (2015); Githinji & Were (2018); Addo (2019); Candela & Ulises (2022); Mwangata & Hapompwe (2024)
09	Resistance to change	<ul style="list-style-type: none"> - There is need to develop change management strategies that address resistance and engage stakeholders early 	Egwim <i>et al.</i> , (2024); Scovia & Jonath (2024); Weber (2024)
10	Complexity and lack of user-friendliness of the new e-procurement system	<ul style="list-style-type: none"> - There is need for awareness creation with business seminars and social media to resolve the complexities underpinning low publicity - Public sector organisations should simplify e-procurement systems to make them more user-friendly and intuitive which can increase their adoption and effectiveness 	Egwim <i>et al.</i> (2024); Jama <i>et al.</i> , (2024) Mwangata & Hapompwe (2024)
11	Lack of knowledge about the benefits of e-procurement adoption and use	<ul style="list-style-type: none"> - Public sector organisations should demonstrate the positive impact of the e-procurement system to stakeholders - There is need for conducting awareness campaigns to educate users about the benefits of e-procurement system and dispel any misconceptions 	Azanlerigu & Akay (2015); Egwim <i>et al.</i> , (2024); Scovia & Jonath (2024)
12	Lack of government support	<ul style="list-style-type: none"> - There is need for Government to foster leadership and strong commitment for driving e-procurement initiatives and ensure that political resistance is addressed. 	Osei-Tutu <i>et al.</i> , (2019); Egwim <i>et al.</i> , (2024)
13	Corruption of public Official	<ul style="list-style-type: none"> - Government should intensify efforts to increase transparency procedures to help prevent malicious acts including corruption which has become 'hot spot' in procurement cycles 	Boladale & Olasunkanmi (2022); Chilunjika <i>et al.</i> , (2023), Kelechi <i>et al.</i> , (2024)
14	Fear of technology by both Top management and employees	<ul style="list-style-type: none"> - Public sector organisations should demonstrate the positive impact of the system to all stakeholders - There is need for change management strategies to prepare employees for new technologies and address any fears or resistance to change before 	Azanlerigu & Akay (2015); Addo (2019) Egwin <i>et al.</i> , (2024)
15	Poor e-procurement system implementation management	<ul style="list-style-type: none"> - Public sector organisations should adopt more innovative practices to their daily endeavors in e-procurement strategy implementation and also incorporate continuous product improvement to cope with the changing business trends. 	Muoki & Muturi (2016)
16	Bureaucracy	<ul style="list-style-type: none"> - There is need for unwavering commitment of top leadership as regards success of e-procurement as leadership is critical for overcoming bureaucratic hurdles 	Egwim <i>et al.</i> , (2024)
17	Limited vendor Relationship	<ul style="list-style-type: none"> - There is need for public sector organisations to devise ways and means for collaboration enhancement with the private sector to ensure successful e-procurement adoption and implementation 	Scovia & Jonath (2024)

5.0 Discussion

The research study sought to determine the critical barriers militating against proper adoption and implementation of e-procurement in the public sector. Based on the findings of the research study, the critical barriers that hinder full e-procurement adoption and operational effectiveness by public sector organisations constitute inadequate, unreliable or poor technological infrastructure and lack of employee competency or limited technical expertise, knowledge and skills.

5.1 Inadequate, unreliable or poor technological infrastructure

Despite the benefits of e-procurement adoption and implementation in the public sector, one of the critical

barriers militating against proper e-procurement adoption by public sector organisations is inadequate, unreliable or poor technological infrastructure. According to Mahlangu & Ruhode (2021), some components of a robust information and communication technology (ICT) infrastructure include hardware systems, computers, satellite scanners, printers as well as software systems such as firewalls, application servers and web servers. Magaya & Chidhawu (2016) posited that the absence of a robust information, communication and technology (ICT) infrastructure has been one of the main impediments facing most developing countries in their efforts to adopt and fully utilize ICT-enabled governance systems.

The challenge of inadequate, unreliable or poor technological infrastructure identified in the current study consistently resonates with findings of myriad empirical research studies that discovered inadequate ICT infrastructure as the major impediment in the implementation of e-procurement systems (Siita, 2014; Kaliu, 2015; Mambo, 2015; Apio & Asiimwe, 2024; Inusah et al., 2025; Mbao et al., 2025; Nimako-Boateng, 2025; Tandian et al., 2025; Twishime & Mbonigaba, 2025). Specifically, several studies revealed inadequate or poor internet connectivity emanating from poor network infrastructure (Phiri, 2014; Ivambi, 2016; Ibem, & Laryea, 2017; Mbwayo, 2017; Mushi, 2018; Mangana & Katundu, 2018; Longe & Tella, 2019; Mwafy & Oduour, 2019; Osei-Tutu et al., 2019; Mohungoo et al., 2020; Hayatullah et al., 2022; Oniyangi & Ibrahim, 2024; Sakutemba et al., 2024; Bangura & Qutieshat, 2025; Mbao et al., 2025; Twishime & Mbonigaba, 2025); inadequate technological infrastructure (Longe & Tella, 2019; Mwafy & Oduour, 2019; Osei-Tutu et al., 2019; Addo, 2019); and outdated technology that do not support seamless integration with e-procurement platforms (Twishime & Mbonigaba, 2025) as some of the barriers impeding e-procurement adoption and implementation in public sector organisations. Further, system problems and outdated infrastructure were also discovered as one of the internal barriers to the realization of full potential of public e-procurement adoption and implementation (Hustad & Vikstol, 2014; Dewah, 2016; Mohungoo et al., 2020; Oniyangi & Ibrahim, 2024; Mbao et al., 2025). Additionally, lack of information, communication and technology (ICT) system maintenance and upgrade was also discovered as an impediment hampering the noble reform initiative of e-procurement adoption and implementation (Tsara & Maiwasha, 2023). Additionally, lack of systems integration and standardization within the organisations and suppliers is also one of the obstacles that can impede the modernization of the traditional procurement system to a technologically-powered electronic procurement system (Ujkapa et al., 2016; Mushi, 2018; Daoud & Ibrahim, 2019; Isikdag, 2019; Mbao et al., 2025).

On the one hand, the challenges identified in the current study contradict most of those discovered by Chimtengo et al., (2016), who conducted a study to identify factors hindering the adoption of electronic procurement systems in public sector organisations in Malawi. The study established that poor supplier preparedness, lack of end-user training, resistance to change, lack of political will, inadequate legal framework and lack of data security were the major factors impeding the adoption of electronic procurement systems in Malawi in Malawian public sector organisations.

The research study has revealed limited technological infrastructure as the most frequently cited barrier emanating from technological factors such as lack of technology compatibility, complexity and lack of user-friendliness of the e-procurement system to be adopted. This aligns with Technology-Organisation-Environment (TOE) Framework which reiterated that assumes a generic set of factors to predict the likelihood of IT adoption. The theory suggests that IT adoption is influenced by technology development (Kauffman & Walden, 2001), organizational conditions, business and organizational reconfiguration (Chatterjee et al., 2002) and industry environment (Kowtha & Choon, 2001). The technological context describes that adoption depends on the pool of technologies inside and outside the firm as well as the

application's perceived relative advantage (gains), compatibility (both technical and organizational), complexity (learning curve), trialability (pilot test/experimentation) and observability (visibility/imagination) (Mambo, 2015). Further, this finding of the present study syncs with the Diffusion of Innovation Theory which posits that the attributes of an innovation influence its diffusion and adoption and it is gauged by attributes such as relative advantage, compatibility and complexity (Rogers, 2003; Iben & Laryea, 2015).

Additionally, the current study results discovered that strategies for overcoming the barrier of lack of employee competency or limited technical expertise, knowledge and skills dominated the rest. The runner-up barrier in terms of number of studies proposing various strategies for surmounting the barrier is lack of staff training. From the foregoing, it can be deciphered that the results corroborate each other as the two barriers are related in that lack of employee competence or limited technical expertise, knowledge and skills can resultantly emanate from lack of employee training. To overcome the barrier of lack of competency, devising and implementing comprehensive and regular trainings, education, workshops and seminars can ameliorate the situation.

There is a raging debate over the desirability of implementing an e-procurement system that is aimed to revamp public procurement (Tsara & Maiwasha, 2023). According to Daoud & Ibrahim (2019), e-procurement might not necessarily address the challenges affecting the public procurement systems without effective and supportive structural, policy and legal frameworks that support the functionality of the initiative. This calls for recognition of the transformative power and the impact of technologies on organizational management in enhancing viability while also the risks of technology adoption should not be ignored. It is therefore evident from extant literature that regardless of the benefits and opportunities that accrue from the implementation of the e-procurement systems, the innovation is coupled with risks and challenges which can undermine the viability of the reform initiative (Tsara & Maiwasha, 2023).

5.2 Limited employee competency

Further, the present study's finding is consistent with those of several studies who discovered that an internal barrier to the realization of full potential of e-procurement adoption and implementation include limited employee competency (Hustad & Vikstol, 2014; Kaliu, 2015; Mambo, 2015; Dewah, 2016; Tran et al., 2021; Sakutemba et al., 2024; Inusah et al., 2025; Nimako-Boateng, 2025; Njoku et al., 2025; Tandian et al., 2025).

The frequent citation of limited human capacity emanates from employee resistance, lack of training and lack of skills and knowledge about the benefits of e-procurement adoption and use. For instance, several empirical studies discovered lack of ICT skilled expertise among many leading to underutilization of available systems (Gasco et al., 2018; Mwangi, 2020; Pradhananga et al., 2021; Ojo-Fafore & Laryea, 2024; Bangura & Qutieshat, 2025). Additionally, Ivambi (2016) and Wimalasena & Gunatilake (2018) noted insufficient knowledge among senior management and employees; Patrucco et al., (2017) and Hayatullah et al., (2022) identified resistance of users to changes in business processes; and Apio & Asiiimwe, (2024) found lack of training and skilled personnel. Further, this finding aligns with Technology Acceptance Model's assertion that perceived ease of use and perceived usefulness of technology to be adopted significantly influence adoption behaviour (Vogel & Cheung, 2013; Efremenko et al., 2017). Further, perceived usefulness is the likelihood of the potential user to use a given system whilst perceived ease of use is the extent to which potential users expect a system to work effortlessly (Venkatesh & Davis, 2000). When people using a product observe that the technology they are using is working and that it is

friendly to use, these people become interested in using it (Ndei & Mutuki, 2021). This study finding contravenes with the one discovered by Kademaunga & Phiri (2019) who found a positive perceived ease of use and intention to use implying that the personnel in most government institutions in Zambia were ready to embrace electronic procurement implementation reforms largely due to ease of use and usefulness of the electronic system.

The finding of limited human capacity resulting from lack of technical expertise and inadequate human resource aligns with Technology-Organisation-Environment (TOE) Framework's assertion that the organizational context of the theoretical framework captures the quality of human resource and size-related issues such as internal slack resources and specialization among others (Tornatzky & Fleischer, 1990; Jeyaraj et al., 2006). The study finding further resonates with that of Twishime & Mbonigaba (2025) who discovered that resistance to change among procurement officers remains a critical challenge in COMESA countries' public organisations. The authors further posit that traditional procurement methods have long been entrenched in public institutions, and many other officials are reluctant to transition to digital systems due to a lack of familiarity with technology, fear of job redundancy and concerns over system complexity. This resistance is further compounded by limited training opportunities, which leave procurement officers ill-equipped to handle e-procurement tools effectively. This finding can further be expounded from the perspective of Technology Acceptance Model (TAM) to explain user acceptance of new technologies in organisations based on its tenets of perceived usefulness and the perceived ease of use which influence an individual's intention to adopt technology (LaiPC & Zainal, 2015; Efremenko et al., 2017).

On one hand, the limited human capacity challenge identified in the current study contradicts most of those discovered by Chimtengo et al., (2016), who conducted a study to identify factors hindering the adoption of electronic procurement systems in public sector organisations in Malawi. The study established that poor supplier preparedness, lack of end-user training, resistance to change, lack of political will, inadequate legal framework and lack of data security were the major factors impeding the adoption of electronic procurement systems in Malawi in Malawian public sector organisations. On the other hand, the present study agrees with some of the findings such as lack of the benefits about of the system and lack of employee motivation.

However, most of the studies on how lack of employee competency affects e-procurement adoption and implementation did not put into consideration some aspects like level of education or age. These have been determined to be key aspects of behaviour change since they influence how acceptance is achieved and also influence the willingness of a person to use technology (Ndei & Mutuki, 2021). In the same vein, a study by Charness & Boot (2010) on the potential and obstacles of aging and information technology use found that some of the strongest indicators of technology use were attitudes and skills. The authors concluded that while implementing technology and training programmes, relevant changes in ability might be taken into consideration.

6.0 Conclusion

The research study examined the critical barriers that militate proper adoption and implementation of e-procurement by public sector organisations. Further, the study aimed to identify the associated policies and strategies that can be devised to mitigate the impact of the barriers.

Based on the findings obtained, the study concludes that lack of technological infrastructure and limited human capacity are the main barriers that bedevil proper adoption and implementation of e-procurement

in public sector organisations. This study further proposes that e-procurement adoption and implementation in the public sector hinges on the following triad: robust digital infrastructure, digitally competent staff and adaptive governance. Further interventions should be prioritized accordingly.

7.0 Recommendations

This study sought to investigate the critical barriers impeding e-procurement adoption and implementation in public sector organisations and further determined the actionable strategies that need to be devised to overcome the profiled critical challenges. Based on the findings, the study recommends a multifaceted approach to deal with the determined barriers hampering proper e-procurement adoption and implementation in the public sector. According to Maiyaki et al., (2025), the conceptual domain of e-procurement is intricate and multifaceted, encompassing technological, institutional, legal and human dimensions. The potential is substantial yet implementation involves more than just software installation but requires a comprehensive transformation strategy addressing policy, personnel and procedural matters. From the forgoing, the recommendations these have been grouped into three categories: Technology solutions, human capital development and policy and governance.

7.1 Technology Solutions

Government must address the limited technological infrastructure barrier through strategic public and private sector investments in scalable digital infrastructure and integration middleware. Government. This involves prioritization of the expansion of broadband networks, upgrade of information technology (IT) systems and integration of cloud-based e-procurement platforms to enhance efficiency and accessibility (Twishime & Mbonigaba, 2025).

7.2 Human Capital Development

Government should enhance capacity building and trainings by introducing and implementing continuous training programs to equip procurement officers, suppliers and all the requisite stakeholders with the necessary digital skills, reducing resistance to change and improving adoption rates (Twishime & Mbonigaba, 2025). This will ultimately develop seasoned professionals who are well-versed in procurement legislation and proficient in digital tools, irrespective of the quality of the technology and policies in place (Maiyaki et al., 2025).

Further, public sector organisations should develop increased investment in tailored and continuous training programs addressing digital procurement systems usage, system errors and regulatory compliance and follow-up support such as refresher courses and troubleshooting workshops are recommended to reinforce learning (Mbao et al., 2025). Such initiatives lead to cultivation of proficient personnel adept in managing digital procurement systems through continuous professional development and institutional support (Heeks, 2003).

Public sector organizations should also come up with a standard checklist showing the skills and competency levels needed by all personnel undertaking e-procurement adoption and implementation. Promotion of competence of employees in all departments with emphasis on the procurement department employees to acquire knowledge, skills and experience for e-procurement adoption and implementation should then be undertaken (Kitaka & Moronge, 2024).

7.3 Policy and Governance

E-procurement must be implemented through policy alignment as the presence of a fragmented regulatory environment where procurement regulations, information communication and technology (ICT) policies and financial management rules are not harmonized, may lead to confusion and adversely affect

integration (Maiyaki et al., 2025). In this regard, there is need to update procurement laws to mandate system interoperability by establishing harmonized regulatory frameworks, aligning public procurement laws with digital governance strategies to streamline e-procurement implementation and enhance procurement performance which ultimately reduces regulatory inconsistencies within the public sector and improves cyber attacks and unauthorized access to procurement data (Twishime & Mbonigaba, 2025). The system interoperability is required for successful implementation of e-procurement system in the public sector as it delas with network infrastructure challenges through sharing of network infrastructure between the telecommunication providers for uninterrupted access of stakeholders to the e-procurement system (Tsara & Maiwasha, 2023),

Governments must enhance financial sustainability by allocating dedicated budgets to e-procurement projects and encouraging public-private partnerships (PPPs). Such collaboration with the private sector stakeholders provides technical expertise, financial support and innovative solutions to facilitate the development and maintenance of digital procurement platforms while ensuring long-term cost effectiveness (Twishime & Mbonigaba, 2025) and ultimately lowers access costs (Njoku et al., 2025)

Using the New Public Management (NPM) paradigm, as an interpretive framework, the government should reform the public procurement through technologies so as to introduce efficiency and effectiveness in the delivery of public goods, works and services. As such, there is need for the realization that the systems and practices for public sector management should be in line with new management paradigms for effectiveness and viability of public sector management (Tsara & Maiwasha, 2023).

Finally, government needs to develop regulatory reforms that incentivize supplier participation through simplified digital onboarding processes and financial support programs to increase inclusivity in public procurement. Public organisations can go further to provide training, financial assistance and technical support to small and medium enterprises (SMEs) to improve supplier engagement and promote fair competition in government contracts (Twishime & Mbonigaba, 2025).

7.4 Limitations and Future Research Studies Direction

The review was limited to English language and peer-reviewed journal articles, potentially omitting relevant insights from grey literature and non-English contexts. Additionally, no weighting was applied to account for methodological rigor across included studies.

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