

## FRAMEWORK TO MITIGATE THE CHALLENGES AFFECTING CONSTRUCTION SECTOR SMES READINESS TO ADOPT GHANEPS

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### ABSTRACT

The Government of Ghana is leveraging the growth of Information and Communication Technology (ICT) to launch the Ghana Electronic Procurement System (GHANEPS) to improve the quality of public procurement delivery for the socio-economic development of the country. Despite the benefits promised by e-procurement systems, their adoption remains a challenge in the construction industry, especially in comparison to other sectors in developing countries. This study aims to develop a proposed framework that could be adopted to improve the readiness of the construction sector, Small and Medium Enterprises (SMEs) to adopt GHANEPS. The study adopted a qualitative multiple-case study research design. Six cases were purposively selected based on pre-determined criteria. Twenty-eight (28) participants, comprising eighteen (18) respondents from SME construction firms in the Upper West Region and ten (10) public procurement practitioners from Municipal/District assemblies were also purposively selected. Data obtained through the interview guide from the participants were transcribed and analysed using the thematic analysis method. The study found challenges such as inadequate IT infrastructure, limited office space, lack of trained personnel, poor internet connectivity, absence of government contracts, PPA requirement etc. to be inhibiting the readiness of SMEs to adopt GHANEPS. The adoption and implementation of the interventions in the developed framework such as; building robust IT infrastructure, defined roles for staff, recruitment of qualified IT staff, improved internet connectivity and in-service training for personnel, etc. by all stakeholders could mitigate the challenges confronting SMEs in the construction sector.

**Keywords:** Challenges, construction industry, e-procurement, GHANEPS, readiness, framework, SMEs.

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## INTRODUCTION

According to Neupane *et al.* (2014) and Mawenya (2009), the use of manual public procurement procedures by most developing countries for the procurement of projects is occasionally rife with inefficiencies such as unjustified delays, fraud, dishonesty, and a disregard for social and environmental effects. Hassan *et al.* (2024) argued that the procurement steps and legal/regulatory frameworks of most African countries are very robust, however, risks and corruption still significantly affect e-procurement adoption and the award of contracts. This threat impedes national development by undermining domestic institutions, raising corporate expenses, eroding public confidence, and deterring foreign investment (Neupane *et al.*, 2014). Goukens & Brussel (2014) argued that the use of e-procurement to deliver building construction projects in place of the manual system can significantly make the procurement process simpler; contracts can be concluded more quickly with lower costs, offering better quality as well as stimulating competition across the market, therefore contributing to delivering more efficient services.

E-procurement refers to activities such as the acquisition of construction works, services, materials, and equipment by the use of internet-supported or web-based tools, apps, and processes (Aduwo *et al.*, 2020). Taking into account the progress made in the area of ICT (Network Readiness Index, 2022), the Government of Ghana (GoG) launched an electronic procurement system dubbed the Ghana Electronic Procurement System (GHANEPS). All public entities, according to the Public Procurement Authority (PPA), are expected to adopt the e-procurement system (PPA, 2022). A total of eight hundred and sixty-seven public institutions and thirty-three thousand nine hundred and eighty-seven contractors/suppliers have been successfully onboarded onto the GHANEPS platform (PPA, 2025).

E-procurement usage in supply chain management is no longer a novel concept. However, factors such as; technological infrastructure limitations, lack of skilled personnel, cultural resistance to change and high cost of investment significantly affect the behavioural intentions to accept and use e-procurement in the construction sector (Addy *et al.* 2024; Zulkarnain *et al.* 2023). Maghsoudi *et al.* (2016) argued that the one-off character of projects and the need for cooperation from numerous partners are the frequent reasons given for the construction industry's slow rate of technology adoption. The risky nature of technology adoption in the construction sector (i.e. information leakages/hacking, lack of standardization, high initial cost etc.) and the fact that its benefits are frequently recognised over a long period rather than immediately can also be blamed for the construction industry's poor rate of innovation (Makoba *et al.* 2017; Ozorhon & Oral 2017). It is reported on the one hand, that the majority of construction companies are small and medium-sized enterprises (SMEs) and lack the human resources and capital to adopt new technology (Meng & Brown, 2018). On the other hand, SMEs are acknowledged as the cornerstone of the economic development and expansion of many nations (Imam Ibrahim, 2019). SMEs are also crucial for the industrialisation and social advancement of many nations (Abisuga-Oyekunle *et al.*, 2020). Considering the significant contributions of SMEs to employment, GDP, and economic growth, the growing significance of SMEs in any given economy, including Ghana, cannot be overstated (Numanovich & Abbosxonovich, 2020).

In both developed and developing countries, e-procurement offers an opportunity for the expansion of SMEs. Unfortunately, the adoption of e-procurement by SMEs in developing nations, especially in Ghana, is still in the early stages and isn't progressing (Ocloo *et al.*, 2018). However, for construction

sector SMEs to reap the rewards of the Ghana e-procurement system, they must first evaluate their internal environments to determine the possibility of adopting the Ghana e-procurement system, because internal variables like organisation, policy, culture, resources, etc. make it possible for construction sector SMEs to adopt innovation (Panuwatwanich & Stewart, 2012; Radicic & Petkovic, 2023).

According to Gudergan *et al.* (2015), an organisation's efforts to innovate are likely to fail if there is insufficient pre-planning or strategy to ensure that the organisation is ready for the transition. Readiness is the measure of the extent to which the SMEs are prepared, ready and willing to adopt GHANEPS and harness the benefits of the new technology (Akunyumu *et al.* 2021a). A considerable number of scholars have investigated the adoption of e-procurement systems in the construction industry (e.g., Aduwo *et al.*, 2017, 2020; Adzroe & Awuzie, 2018; Afolabi *et al.*, 2022; Alzarrad *et al.*, 2022; Ibem *et al.*, 2021; Sánchez-Rodríguez *et al.*, 2020). However, very little research has been directed towards the challenges affecting the readiness of SMEs globally and in developing countries to adopt e-procurement systems.

In Ghana, the few studies conducted on the adoption and implementation of the e-procurement system have focused a lot of their emphasis on examining the critical success factors, level of adoption, and benefits of the implementation of the e-procurement system in several sectors (e.g., Abagna Azanlerigu & Akay, 2015; Addo, 2019; Adzroe & Awuzie, 2018; Asare & Prempeh, 2017; Desmond *et al.*, 2019; Ofori & Fuseini, 2020; Opoku-fofie *et al.*, 2022). For example, Ofori & Fuseini (2020) investigated the critical success factors for the adoption of e-procurement by public sector procurement institutions in Ghana, while Adjei-Bamfo *et al.* (2020) examined the readiness of public

sector agencies to adopt the e-procurement system. Furthermore, Opoku-Fofie *et al.* (2022) examined the drivers and barriers to e-procurement adoption in the banking industry of Ghana.

Only a few of the studies conducted in Ghana (e.g., Adzroe & Awuzie, 2018) proposed solutions to improve the adoption of e-business tools by the construction sector. Although Adzroe & Awuzie (2018) recommended solutions to improve the adoption of e-business tools by the construction industry, the focus of their study was not to develop a framework to improve the readiness of SMEs to adopt GHANEPS. Moreover, the study was conducted before the Ghana e-procurement system was launched. To the best of the author's knowledge, no study conducted in Ghana specifically focused on developing a framework to improve the readiness of the building construction industry to adopt GHANEPS. This study seeks to: (1) examine the challenges inhibiting the readiness of construction sector SMEs to adopt the Ghana e-procurement system; and (2) develop a framework that could be adopted by stakeholders to improve the readiness of construction sector SMEs to fully adopt GHANEPS for the procurement of construction projects in Ghana.

## **Literature Review**

This section discusses SMEs in Ghana, challenges to e-procurement adoption in SMEs, and strategies to mitigate the challenges to the e-procurement system.

### **The Concept of SMEs in Ghana**

The Ghana Statistical Service (GSS) classifies businesses with fewer than 10 employees as small-scale enterprises and those with more than 10 employees as medium- and large-sized organisations in its Industrial Statistics (GSS, 2016). On the other hand, the National

Board for Small Scale Industries (NBSSI) defined what constitutes an SME by taking into account both the number of employees and fixed assets. It defined an SME as a business that employs at least 29 employees. Specifically, microbusinesses are defined as those with 1–5 employees and fixed assets under USD 10,000, while small businesses typically have 6–29 employees and fixed assets worth not more than USD 100,000, not including land, buildings, or vehicles (Kwaku Amoah, 2018).

In a wider view, the Venture Capital Fund Act 2004 (Act 680) defined SME as a business, enterprise, or economic activity that employs not more than 100 people and whose entire asset base, excluding land and buildings, does not exceed the cedi equivalent of \$1 million in value (Oppong *et al.*, 2014). Small and medium enterprises (SMEs) are extremely important to the economic development of any country, whether developed or developing (Kapurubandara & Lawson, 2014). Construction sector SMEs play a significant role in Ghana's economy. Over 80 percent of construction firms in the country are SMEs (Owoo & Lambon-Quayefio, 2020). Moreover, they contribute to around 80 percent of the total employment in Ghana and also account for some 60 percent of the country's GDP (Ocloo *et al.*, 2018). Sasu (2022) revealed that, in 2020 alone, the construction industry in Ghana contributed more than 12.8 billion Ghanaian cedis (GHS), or approximately 2.1 billion U.S. dollars, to the country's gross domestic product (GDP).

According to Olusegun (2017), the utilisation of e-procurement in public contracts has been promoted as a beneficial means of expanding SMEs' access to the public procurement market since it ensures quick information access, openness in the public procurement process, and eliminates the bureaucratic bottleneck typical of government contracts. However, research has indicated that

construction sector SMEs have a poor level of acceptability of the automated procurement system (Adzroe & Awuzie, 2018; Ocloo *et al.*, 2018; Olusegun, 2017). Awiagah *et al.* (2016) and Ocloo *et al.* (2018) asserted that the low adoption of e-procurement systems among construction sector SMEs is a result of environmental, organisational, technological, and individual factors.

### **The Ghana e-procurement system (GHANEPS)**

The Government of Ghana warmly embraced ICT as a tool for economic growth and development with the introduction of ICT for Accelerated Development (ICT4AD) policy (Kubuga *et al.* 2021). As a result, the e-Government Interoperability Framework (e-GIF) was introduced in 2007. The National Information Technology Agency (NITA) built websites for almost all government Ministries, Departments and Agencies (MDAs) with the goal of carrying out national e-services (Adjei-Bamfo *et al.*, 2020). The adoption of mobile devices in Ghana's telecoms sector increased dramatically by a staggering 76.22% in January 2017 from a mere 4.7% in 2004 (Tchao *et al.*, 2018). However, the five northern regions face a digital divide compared to the more developed coastal and middle belt regions in Ghana (Dabalen & Mensah, 2023; Adams, 2023).

But nationally, Ghana's ICT readiness level expanded at an average yearly rate of 1.29%. Thus, Ghana's index improved from 3 in 2010 to 4 in 2016 (Network Readiness Index, 2022). Taking into account this level of readiness, the Government of Ghana (GoG) launched a centralised electronic procurement system dubbed "Ghana's Electronic Procurement System (GHANEPS)" in Accra on Tuesday, April 30, 2019, for the procurement of all government contracts by public sector institutions. Ghana, therefore, became the first country in West Africa

to launch a centralised e-procurement system (PPA, 2019). GHANEPS is a modular program featuring modules for contract administration, auctions, planning, tendering, and cataloguing, among others (PPA, 2022).

### **Challenges of e-procurement adoption in SMEs**

Evidence from extant literature reveals important benefits of e-procurement implementation for the delivery of public building projects (Nawi *et al.*, 2017). According to the PPA, the implementation of a centralized e-procurement system will considerably reduce the time and risks associated with tender submissions, reduce the use of paper associated with tendering, provide greater ease in monitoring and audit, increase accuracy in reporting and statistics, and increase the number of participating suppliers and contractors in public procurement (PPA, 2022).

Högel *et al.* (2018) estimated that e-procurement adoption in the construction industry “could render material cost savings of 5 to 10 percent, productivity increases of 30 to 50 percent, and substantial improvements in innovation, quality, speed, and risk management.” Despite the progress made in the acceptance of information technology by large organisations, the same level of adoption is not evident in SMEs (Zeller & Drescher, 2017). This lack of adoption may suggest that SMEs face significant and unique challenges in adopting ICT and e-commerce tools (Adzroe & Awuzie, 2018).

E-procurement challenges represent those factors that inhibit the adoption and smooth implementation of e-procurement tools, technologies, and processes by firms in the construction industry (Aduwo *et al.*, 2016). The review of literature reveals that several authors from various nations have made an effort to categorise and identify the

challenges to the adoption of e-procurement in the construction sector. For instance, Eei *et al.* (2012), in a study to identify the challenges of e-procurement in Malaysian construction SMEs, noted that e-procurement was not commonly used by Malaysian construction SMEs due to internal and external challenges. Technology, infrastructure and regulation, and the environment were the three groups of external challenges found in that study, while resource limitations and organisational characteristics were the two groups of internal challenges affecting SMEs in that country.

Rumanyika & Mashenene (2014) conducted a study to determine the barriers preventing Tanzanian SMEs from adopting e-commerce. The study suggested that the lack of IT education and training, poor e-readiness and socio-cultural beliefs, poor e-commerce security systems, poor telecommunication infrastructure, and a lack of IT experts were the most significant challenges limiting SMEs from adopting e-procurement systems. Saif-Ur-Rehman & Alam (2016) revealed that legal and regulatory challenges (i.e., the requirement to undertake additional training and skill development) and technical challenges (i.e., the lack of internet security) inhibited the implementation of e-procurement by SMEs in the UAE.

Hamma-Adama & Ahmad (2021) stated that the lack of technical expertise, the lack of commitment by top management, the lack of compliance by most engineering firms, and the lack of legislation were the most significant challenges hampering the adoption of e-procurement in the Nigerian construction industry. According to Bamini & Sandhya (2023), the cost of implementing e-procurement, the size of the organisation, fear of security threats and confidentiality of information, lack of e-procurement standards, inadequacy or absence of IT infrastructure, and lack of government support were the major challenges inhibiting

the adoption of e-procurement by SMEs in India.

In Ghana, Agboh (2015) explored the key challenges of information and communication technology (ICT) adoption by SMEs in the Accra Metropolis. The study identified the key challenges to ICT's adoption as the lack of internal capabilities, high cost of ICT equipment, poor IT infrastructure, financial constraints, lack of information about suitable ICT solutions, and lack of time to implement the system. Adzroe & Awuzie (2018) investigated e-business technology adoption among Ghanaian construction micro and small businesses (GCMSBs). The study reveals that the capability of the GCMSBs to adopt e-business solutions was low due to non-investment in capability development and inadequate training and education of staff. Mitigating the challenges inhibiting the adoption of e-procurement systems requires the development of a strategy and framework that will improve the readiness of construction sector SMEs to adopt the centralised e-procurement system launched by the government of Ghana.

### **Strategies to improve GHANEPS adoption**

To mitigate the challenges confronting SMEs, the government, through its implementing agencies (i.e., MMDAs and PPA), has a role in developing policies, initiatives, and laws to assist SMEs in dealing with limited resources and poor capabilities (Eniola & Entebang, 2015; Kraja *et al.*, 2014; Park *et al.*, 2020). As policymakers, the government and its agencies can create particular policies, support and counselling activities, customised training programs, and collaboration ecosystems to help SMEs with their digital transformation objectives (Pelletier & Cloutier, 2019). Many studies have been undertaken to explore the government's involvement in enhancing the productivity

and growth of small firms, and they have found that the government's role in helping small businesses to digitalise is vital. Small firms rely heavily on government policies and programs. It is argued that every SME digital transformation study must incorporate government role and support services to provide a holistic picture of the SMEs (Chen *et al.*, 2021). Specifically, governments can enhance the digital transformation of SMEs by: building digital platforms; promoting mobile and digital payment systems; providing digital training programs; building a digital collaboration ecosystem; developing policies and legislation; offering tax incentives on technology devices; protecting customers against hacking and fraud; and improving the internet infrastructure of the country (Chen *et al.*, 2021; Ocloo *et al.*, 2018; Tutu *et al.*, 2019).

## **RESEARCH METHODOLOGY**

This study aims to examine the challenges inhibiting the readiness of construction sector SMEs to adopt the Ghana e-procurement system and develop a proposed framework that could be instituted by stakeholders to improve the e-readiness of the SMEs. The qualitative research, using the multiple-case research design, was adopted. The case study strategy is listed among some of the most commonly mentioned qualitative research strategies in the literature (Glette, 2022; Lavarda & Bellucci, 2022; Rashid *et al.*, 2019). The case study approach is recommended when research questions require an extensive and 'in-depth' description of a phenomenon (Yin, 2014). It was essential to conduct exploratory case study research as the primary means of data collection due to the fact that, e-procurement adoption among SMEs is an emerging issue which has not been extensively studied in Ghana. According to Glette (2022) and Yin (2018) there are many interpretations of what

constitutes a case study. However, the objective of case studies is generally to thoroughly examine one or more cases (bounded areas of interest) within their respective contexts to determine their uniqueness, complexity, and/or similarity, as well as to arrive at a comprehensive, in-depth understanding of the case(s). The multiple-case study research design is used to closely examine several cases linked together in one study (Stake, 2006). The case consists of construction sector SMEs in the Upper West Region of Ghana. This sector is known to face a series of problems with adopting e-business and e-procurement systems (Adzroe & Awuzie, 2018) and, thus, may highly benefit from a framework that could improve their readiness to adopt GHANEPS. To reduce biases and also ensure representativeness, six (6) cases were purposively selected in six (6) different municipalities or districts with three (3) interviews each. To improve the credibility of the findings, the construction firms included in the study were required to: (1) have intentions to bid for or have executed a building construction project for the government of Ghana; (2) be a registered construction or consulting SME firms in Ghana; and (3) be willing to participate in the study.

The use of six cases and 18 respondents provided a rich basis for identifying the similarities and differences in the challenges inhibiting SME firms. Data was collected through semi-structured interviews. To provide a balanced insight into the phenomenon, ten more interviews were sought and obtained from procurement officers and engineers within the municipal and district assemblies. This made it possible to seek opinions from a policy standpoint. Each case was examined using a semi-structured interview protocol. The telephone interview lasted for an average of 35 minutes with three officials responsible for a significant area of public procurement or

having insights into all procurement-related decisions with the firms. As a result, officials with different backgrounds and competencies were interviewed. Interviews were taped, recorded, and transcribed verbatim.

Coding of all interviews was undertaken and then cross-compared for final coding and identification of core themes (Akinyode, 2018; Braun & Clarke, 2019). Themes salient across all cases were kept, as well as those that were extremely different. For the thematic analysis, the researcher followed Braun & Clarke's (2012) step-by-step guidelines. These guidelines are: (1) familiarise yourself with your data; (2) generate initial codes; (3) search for themes; (4) review themes; (5) define and name themes; and (6) produce a report. This study developed codes that were grounded in the research questions.

## **FINDINGS AND DISCUSSION**

### **Organization's profile**

The majority of the selected SME firms have practiced in the Ghanaian construction industry for more than 10 years. Again, the majority of the cases were D4K4-classified construction companies in Ghana. These classes of companies are considered to be SMEs. Construction sector SMEs are predominantly found in the most deprived districts in Ghana and are particularly responsible for the provision of building and infrastructural facilities for municipal and district assemblies (Offei *et al.*, 2019). It was, therefore, not surprising that all the SME firms examined have executed both building and infrastructure projects for the Government of Ghana. The majority of the cases had an employee strength of over 25 but less than 100 staff. Regarding the awareness of the construction sector SMEs of the launch of GHANEPS, Cases 2, 3, 4, and 5 answered in the affirmative, while Cases 1 and 6 were not aware of the existence of

the new system and none of the Cases were onboarded onto the GHANEPS platform. Since this study was interested in the challenges the firms were likely to face if they were to adopt GHANEPS and not their experience in the use of GHANEPS platform, C1 and C6 were allowed to continue with the rest of the study. As expected, all the procurement officers and district engineers within the municipal and district assemblies were aware of the existence of the new system but had no experience with the operations of the GHANEPS platform.

### Challenges of SMEs in adopting GHANEPS

The findings from the case studies (CS) showed that different factors were affecting the readiness of the SMEs to adopt GHANEPS. These factors were grouped into two broad categories namely: internal-related challenges and external-related challenges.

#### Internal Challenges

The comparison of the data from the participants indicates that internal factors inhibit the readiness of all SME firms to adopt GHANEPS. The analysis of the data as shown in Table 1 and 2 revealed six (6) key internal challenges. These challenges are explained in the next subheadings.

**Table 1: Statements from participants (internal challenges)**

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- *“Due to the small nature of our firm, good office for administrative work and IT facilities are major problems for us, we don’t have most of the computer hardware and software that can be used to support online procurement/transactions here” (Contractor 1).*
- *“You see, most of these construction sector SMEs do not have good IT infrastructure, they virtually lack computers and computer accessories and this will affect their readiness level to adopt GHANEPS” (Public Officer 1).*
- *SME procurement practitioners are generally not well trained; they lack basic skills in computing and the handling of general day-day project management issues” (Public Officer 9).*
- *“SME firms lack staff/employees with digital skills to be able to implement GHANEPS successfully” (Public Officer 4).*
- *“ Our firms lack basic administrative structures (Project Manager 2)*

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**Table 2: Internal related challenges identified**

S/N	Identified Internal Challenges	Frequency of response		
		SMEs	Public Officers	Total
1	Lack of spacious office space	14	6	20
2	Insufficient resources to hire staff	15	7	22
3	Lack of IT infrastructure	17	10	27
4	Firm size	4	3	7
5	Perceive job loss due to use of technology	12	N/A	12

6	Cost of creating own website	9	N/A	9
7	Poor administrative structures	12	9	21

**Lack of IT Infrastructure**

The most frequently mentioned internal challenge that affected the readiness of SMEs to adopt GHANEPS was the lack of IT infrastructure. As indicated in Table 2, both construction sector SMEs and public procurement practitioners highlighted the lack of computers and computer accessories. This finding corresponds with previous studies which highlighted the extent to which the advancement of e-procurement adoption is impeded by the lack of or inadequate IT infrastructure, especially among SMEs (Aday et al., 2023; Adzroe & Awuzie, 2018). This suggests that the decision of the SMEs to adopt the Ghana e-procurement system will depend on the available IT facilities in the firms.

**Insufficient Resources to hire Professionals**

The second most mentioned internal challenge which affected the construction sector SMEs readiness to adopt GHANEPS was the lack of resources to hire qualified professionals or the lack of trained professionals. Meanwhile, according to Awiagah et al. (2016), managers of firm’s technological literacy is not necessarily influential in e-commerce adoption and use in Ghana, but rather, computer skills and staff attitudes are vital to the successful adoption of e-procurement. Consequently, SMEs with staff knowledgeable in ICT are more likely to adopt the Ghana e-procurement system than those with little or no knowledge at all. This finding is consistent with previous studies, which found the lack of skilled

personnel to affect the capability of SMEs to engage with and benefit from the adoption of e-business technologies in the Ghanaian construction sector (Adzroe & Awuzie 2018; Addy et al. 2024).

**Poor administrative structures**

An additional internal challenge of notable importance pertains to the inadequate administrative structures within construction sector SMEs. These administrative issues stand out as critical concerns for construction sector SME managers, frequently posing formidable challenges in their leadership roles. This is consistent with the findings of Subramanyam & Haridharan (2017), which identified the leadership styles of SMEs as a critical problem. The participants particularly mentioned challenges related to the absence of well-designed and active boards, the establishment of effective management teams, the recruitment and retention of qualified staff, the assignment of roles and responsibilities to staff, and the clarification of owners’ roles. Kindström et al. (2022) revealed that managers of SMEs often face difficulties in leadership and people management and may struggle to determine how best to address these challenges.

**External Challenges**

The comparison of the data revealed seven (7) key external challenges as shown in Table 3 and 4 that have negative effects on the readiness of the SMEs to adopt GHANEPS. For example;

**Table 3: Some statements from participants**

- “The state of internet connectivity in most of the districts we operate in is very poor and also very expensive, sometimes you need to wake up in the middle of the night to send ordinary email messages” (**Procurement Officer 8**).
- “Due to the unstable internet connectivity in most parts of the north, there is a possibility that some firms may not be able to submit bids on time” (**Public Officer 1**).
- “Government contracts are not readily available, so it doesn’t motivate us to invest in the adoption of GHANEPS that will not be beneficial to the firm” (**Contractor 3**).
- “The major external challenge our firm will grapple with is the PPA requirement the firm must meet before we are hooked on to the GHANEPS platform” (**Project Manager 4**).
- “I still have a strong believe that politicians may still interfere in the operations of this new system, building contracts may still be awarded to only party contractors who belong to the governing party of the day” (**Project Manager 5**).

**Table 4: Identified external challenges**

S/N	Identified External Challenges	Frequency of response		
		SMEs	Public Officers	Total
1	High cost of Computers/data	12	5	17
2	Absence of Government Contracts	14	7	21
3	Frequent breakdowns of national digital platforms	11	7	18
4	Perceive political manipulations	16	3	19
5	Public Procurement Authority requirements	15	5	20
6	Poor internet connectivity	16	9	25
7	The lack of a policy manual for e-procurement adoption	5	4	9

**Poor Internet Connectivity**

The predominant external challenge hindering the readiness of SMEs to adopt GHANEPS is the poor quality of internet connectivity in most rural districts within the northern part of Ghana. These findings align with those of Kissi *et al.* (2022) and Tahiru *et al.* (2020). Their research identified that the reliability and cost of internet services impact users’ willingness to engage in e-government services.

Despite the penetration of the internet in Ghana, the cost of internet data is a deterrent factor for most construction sector SMEs to participate in online services.

Tahiru *et al.* (2020) further revealed that the participation in e-government services is predominant in urban areas, and this can be attributed to the high and reliable internet accessibility in those areas. The lack of readiness of the construction sector SMEs can therefore be attributed to the deprived nature of the districts in the upper west region

### **Inadequate/Lack of Government Contracts**

The second most frequently mentioned external challenge was the absence of government contracts. This lack of government contracts may primarily be attributed to the macroeconomic instability, global financial tightening, and the spillover effects of Russia's invasion of Ukraine (African Economic Outlook, 2023). The government's inability to sustain ongoing projects or initiate new development projects is heavily impacting on construction sector SMEs especially those in the Upper West Region of Ghana. Participants particularly alleged that most government contracts intended for the region end up being awarded to politicians in Accra. SME contractors in the region would have no choice but to purchase these contracts from the politicians in order to sustain their businesses. Participants argued that if this situation continues, it may undermine the benefits of the GHANEPS platform

### **Perceive Political Manipulation**

The third most significant external challenge highlighted by the participants is the potential for political manipulation of the GHANEPS platform to favour party insiders.

According to the OECD (2016), public procurement stands as one of the government activities most susceptible to corruption, which can occur at both the national and subnational levels. Various forms of corrupt practices can exploit these vulnerabilities, including embezzlement, exerting undue influence during needs assessments, bribing public officials involved in the award process, or engaging in fraudulent activities related to bid evaluations, invoices, or contract obligations.

### **Public Procurement Authority Requirement**

Another frequently mentioned external challenge for SMEs is the requirement that all construction sector SMEs must meet before they can be onboarded to the GHANEPS platform. As per the provisions of the PPA Act 663, as amended, all suppliers, consultants, and contractors interested in government tenders are legally obligated to register with valid documents and also adhere to the supplier qualification requirements. The documents submitted by suppliers, consultants, and contractors undergo a rigorous vetting process to verify their credibility and eligibility to participate in government tenders and execute contracts. Contractors who are not approved and listed in the PPA's database will be unable to participate in any bidding process on the GHANEPS platform (PPA, 2019).

### **Strategies to improve the readiness of construction sector SMEs to adopt GHANEPS**

The SMEs, MMDAs, and central government have a role to play in improving the readiness of construction sector SMEs to adopt GHANEPS. Thus, the strategies were perceived from these three perspectives.

#### **Strategies to be instituted by SMEs**

The analysed data revealed that construction sector SMEs should implement several key measures to effectively adopt GHANEPS and realise the full benefits of the new technology. Below are excerpts of the statements from the participants:

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- “All SME firms need to purchase computers, printers, copiers and also install internet facility” **(Public Officer 2)**
  - “Proper administrative structures should be put in place by all firms” **(Public Officer 1).**
  - “SME firms should recruit qualified IT and procurement staff” **(Project Manager 3).**
  - “SME firms should provide training on digital transactions to all staff” **(Contractor 2).**
  - “Management of SMEs should provide funds to cover the cost of implementing GHANEPS” **(Site Supervisor 1).**
  - “Construction firms should create own websites and email addresses” **(Project Manager 6).**
  - “The IT infrastructure of SME firms should be immediately upgraded by management” **(Project Manager 4).**
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One essential measure is the building of a robust IT infrastructure with stable internet facilities. ICT facilities serve as the foundation of any e-procurement system, making it crucial for SMEs to establish a technologically advanced environment conducive to adopting GHANEPS. Top management within these firms should prioritise substantial investments in physical infrastructure and the recruitment of employees with the necessary technical expertise.

Another important measure involves the development of training plans for all employees, particularly those directly involved in the procurement of building materials. These officers require proficiency in ICT tools and an understanding of why and how to use electronic procurement services effectively (Vaidya *et al.*, 2006). Additionally, construction sector SMEs should establish the requisite administrative structures, delineating rules, roles, and responsibilities,

to achieve their firm’s goals effectively.

Lastly, SME firms should align their business practices with digital processes, including the creation of their websites. While only one of the six selected SMEs currently has a website, the majority of participants believe that owning a website would positively influence the adoption of the Ghana e-procurement system. Laryea & Ibem (2014) opined that websites are network technologies that facilitate the transfer and exchange of data and information in building construction projects among stakeholders. Therefore, this strategy proposed by the study participants aligns with previous studies in South Africa by Ibem & Laryea (2015) and Nigeria by Oyediran & Akintola (2011), which highlight the extensive use of company websites for communication and the exchange of building construction project information.

## Strategies to be instituted by MMDAs

Below are excerpts of the statements from the participants;

- 
- “MMDAs should collaborate with the PPA to organise sensitisation programmes, refresher courses and in-service trainings on the operations of GHANEPS” **(Contractor1).**
  - “MMDAs and PPA should demonstrate impartiality in awarding contracts” **(Project Manager 4).**
  - “PPA should create GHANEPS support units at the MMDAs level” **(Project Manager 2).**
  - “MMDAs should procure building contracts only through the GHANEPS platform” **(Project Manager 3).**
-

The study participants emphasised that the MMDAs should arrange in-service training programs aimed at educating all stakeholders on the technicalities of the GHANEPS platform and how SMEs can utilise it to procure government projects. Staff training is identified as a key area of success for the implementation of new programs (Yau *et al.*, 2017). Participants raised concerns regarding

the lack of training since the launch of the GHANEPS platform, prompting them to recommend thorough training sessions for top and middle-level management within SME construction firms. Dadzie *et al* (2024) noted that there is a pressing need for procurement officials at all levels to undergo rigorous training and education to maximise public value.

## Strategies to be instituted by the Central Government

Below are excerpts of statements from the participants;

- 
- *“Central government should work towards protecting SMEs against hacking and frauding which is mostly associated with online transactions” (FO2)*
  - *“The government should work towards drafting policies and legislations for the operations of the Ghana e-procurement system” (DE1).*
  - *“The government can offer tax incentives on technology devices such as computers, servers and website designs” (PO5).*
  - *“The government should eliminate all forms of political manipulations of the GHANEPS platform to favour party contractors” (CEO2).*
- 

Regarding the measures to be instituted by the government, the participants suggested that the government should enhance the country’s telecommunication network, provide subsidised Wi-Fi service to all registered SMEs on the GHANEPS platform, and decentralise the operations of GHANEPS to regional or district levels. This move would enable the PPA to address the challenges that SMEs may encounter when interacting with the GHANEPS platform. The study participants also suggested that the government should provide tax incentives to SMEs to facilitate their adoption of GHANEPS.

As noted by Tahiru *et al.* (2020; Wresch, 2013), the reliability and cost of telecommunication services and equipment significantly influence the adoption of e-procurement by SMEs. Government policies and initiatives should play a supportive role through subsidies and tax incentives to promote the exposure of construction sector SMEs to information technology and encourage their adoption

and use of e-procurement services (Awiagah *et al.*, 2016). Participants particularly emphasised the need for the government to prevent all forms of political manipulation in the operation of the GHANEPS platform. They suggested that the government should develop e-procurement policy guidelines that will clearly outline the procedures for electronically procuring building construction projects and consulting services. Figure 1 below shows the proposed framework developed based on the suggestions of the participants that, if adopted, could improve the readiness of the SMEs to successfully adopt GHANEPS.

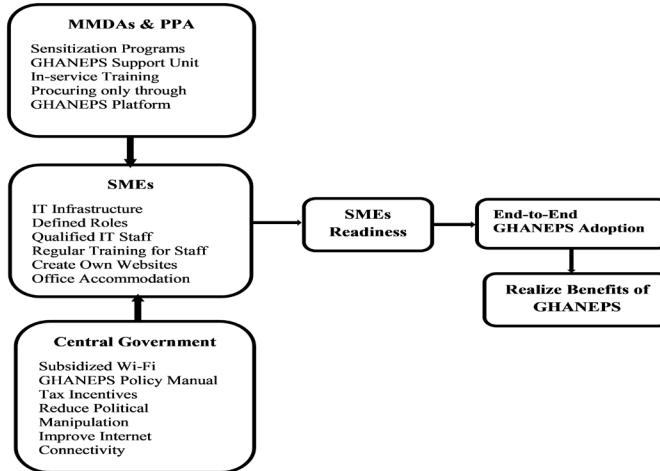


Figure 1: Proposed Framework to Improve the Readiness of SMEs

## CONCLUSION AND RECOMMENDATIONS

The Government of Ghana launched an e-procurement system for the procurement of government contracts and supplies. The construction sector, especially SMEs, are expected to adopt the new technology to be able to do business with the government. This study therefore examined the challenges inhibiting the readiness of construction sector SMEs to adopt GHANEPS in order to develop a framework that could improve the SMEs' readiness. It became evident from the interviews conducted among participants that several internal challenges, such as the lack of IT infrastructure, the lack of trained or experienced personnel, inadequate administrative structures, etc., and external challenges, such as poor internet connectivity in districts, the absence of government

contracts, PPA requirements for onboarding onto the GHANEPS platform, etc., inhibit the readiness of SMEs to adopt GHANEPS. . These challenges affect the successful rollout and sustainability of e-procurement systems. This study recommended the adoption of the proposed framework (see Figure 1) by all stakeholders. Especially, the management of the SMEs should build IT facilities, install stable internet service, establish the necessary administrative structures, provide internal training for employees, and recruit qualified IT and procurement professionals. In addition, the MMDAs and PPAs should support the efforts of the SMEs with GHANEPS awareness creation programs, organise regular refresher courses on the use of the GHANEPS platform, and establish GHANEPS district support units. These support units will help address SMEs' complaints and feedback associated with the use of the

Ghana e-procurement system. Furthermore, the central government should support SMEs by providing subsidised Wi-Fi to registered SMEs, providing tax incentives, improving the country's telecommunication network, providing policy guidelines or manuals for e-procurement, and minimising or eliminating all forms of political interference or manipulation of the GHANEPS platform. These measures, if implemented, would improve the readiness of SMEs to adopt and sustain the use of the GHANEPS platform. The main limitation of this study is the fact that it was limited to construction sector SMEs in the Upper West Region of Ghana. For purposes of generalisation, future researchers are urged to replicate this study in other parts of Ghana. Further studies on the topic may also employ quantitative approaches to test the challenges affecting MMDAs that have already adopted GHANEPS.

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## REFERENCE

- Abagna Azanlerigu, J., & Akay, E. (2015). Prospects and Challenges of E-Procurement in Some Selected Public Institutions in Ghana. In *European Journal of Business and Management (Vol. 7, Issue 29)*.
- Abisuga-Oyekunle, O. A., Patra, S. K., & Muchie, M. (2020). SMEs in sustainable development: Their role in poverty reduction and employment generation in sub-Saharan Africa. *African Journal of Science, Technology, Innovation and Development, 12(4)*, 405–419. DOI:10.1080/20421338.2019.1656428
- Abrell-Vogel, C., & Rowold, J. (2014). Leaders' commitment to change and their effectiveness in change – A multilevel investigation. *Journal of Organizational Change Management, 27(6)*, 900–921. DOI:10.1108/JOCM-07-2012-0111
- Adae, Eric Kwame; Twum, Kojo Kakra; Hinson, Robert Ebo; Duh, Helen Inseng & Odame, D. A. (2023). Catalysts for Social Media Adoption in the Public Sector in Africa. *Springer, 65–83*. DOI:10.1007/978-3-031-22642-74
- Addo, S. K. (2019). Challenges of E-Procurement Adoption in the Ghana Public Sector: A Survey of in the Ministry of Finance. *Scholarly Journal of Arts & Humanities, 1(7)*, 44–80. DOI:10.15373/22501991
- Adjei-Bamfo, P., Domfeh, K. A., Bawole, J. N., Ahenkan, A., Maloreh-Nyamekye, T., Adjei-Bamfo, S., & Darkwah, S. A. (2020). An e-government framework for assessing readiness for public sector e-procurement in a lower-middle income country. *Information Technology for Development, 26(4)*, 742–761. DOI:10.1080/02681102.2020.1769542
- Aduwo, E. B., Ibem, E. O., Ayo-Vaughan, E. A., Afolabi, A. O., Uwakonye, U. O., & Oluwunmi, A. A. (2020). Determinants of e-procurement implementation in construction in Nigeria. *International Journal on Emerging Technologies, 11(2)*, 746–755.
- Aduwo, E. B., Ibem, E. O., Ayo-Vaughan, E. A., Uwakonye, U. O., & Owolabi, J. D. (2017). E-procurement use in the nigerian building industry. *International Journal of Electronic Commerce Studies, 8(2)*, 219–254. DOI:10.7903/ijecs.1524

- Aduwo, E. B., Ibem, E. O., Uwakonye, O., Tunji-Olayeni, P., & Ayo-Vuaghan, E. K. (2016). Barriers to the uptake of E-procurement in the Nigerian building industry. *Journal of Theoretical and Applied Information Technology*, 89(1), 115–129. [www.jatit.org](http://www.jatit.org)
- Adzroe, E. K., & Awuzie, B. O. (2018). Leveraging e-business technology for construction procurement improvement: Qualitative perspectives from Ghana. *International Journal of Construction Supply Chain Management*, 8(1), 43–59. DOI:10.14424/ijcscm801018-43-59
- Afees O. H., Oluwaseyi I. A., Muslim A. A., Hayatullah B. H., Adesoji E. A. (2024) Towards transparency and efficiency: Assessing Public Procurement in Sub-Saharan Africa vis-à-vis Global best Practices, *Asian Journal of Multidisciplinary Research & Review*, 5(3) pp. 88-107
- Afolabi, A., Ibem, E., Aduwo, E., Tunji-Olayeni, P., Oluwunmi, O., & Ayo-Vaughan, E. (2022). Gauging parameters for e-procurement acquisition in construction businesses in Nigeria. *International Journal of Construction Management*, 22(3), 426–435. DOI:10.1080/15623599.2019.1627504
- African Economic Outlook. (2023). *Ghana 2023 Economic Outlook*. AEO. <https://www.afdb.org>
- Agboh, D. K. (2015). Drivers and challenges of ICT adoption by SMES in Accra metropolis , Ghana. *Journal of Technology Research*, 6, 1–16.
- Akinyode, B. F. (2018). *The Context of Qualitative Research Technique*. 5(3), 163–174. DOI:10.11113/ijbes.v5.n3.267
- Akunyumu, S., Fugar, F. D. K., & Adinyira, E. (2021). An assessment of the readiness of construction firms for international construction joint ventures (ICJVs) using the VERDICT model. *Journal of Engineering, Design and Technology*. DOI: 10.1108/JEDT-04-2021-0198
- Alzarrad, A., Akbar, H., Awolusi, I., & Song, S. (2022). *E-procurement Practices in the U.S. Construction Industry*. 3, 200–190. DOI:10.29007/2vlj
- Asare, E. N., & Prempeh, K. B. (2017). An empirical assessment of factors that influence the implementation of e-procurement in technical universities in Ghana. *Journal of Logistics Management*, 6(2), 52–60. DOI:10.5923/j.logistics.20170602.03
- Awiagah, R., Kang, J., & Lim, J. I. (2016). Factors affecting e-commerce adoption among SMEs in Ghana. *Information Development*, 32(4), 815–836. DOI:10.1177/0266666915571427
- Bamini, J; Sandhya, A. (2023). Challenges And Barriers To Adoption In E- Procurement Among Select Smes In Coimbatore City. *Researchgate*, 4778–4784. DOI:10.48047/ecb/2023.12.si5a.03852023.06/06/2023
- Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, 2, 8–14. DOI:10.1016/j.npls.2016.01.001
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis to appear in Qualitative Research in Sport. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597.
- Chen, C. L., Lin, Y. C., Chen, W. H., Chao, C. F., & Pandia, H. (2021). Role of government to enhance digital transformation in small service business. *Sustainability (Switzerland)*, 13(3), 1–26. DOI:10.3390/su13031028
- Dabalen A., Mensah J., T. (2023) Ten facts about digital technology adoption in

- Ghana, World Bank Report, Published, Africa can End Poverty
- Dadzie E. B., Amoah J., Egala S. B., Keelson S. A., Jibril A. B. (2024) The impact of procurement training on procurement process efficiency and organisational performance: A PLS-Sem analysis. *International Journal of Entrepreneurial Knowledge*, 1(12), 24-42. doi:10.37335/ijek.v12i1.228
- Dragana R., Sasa P. (2023) Impact of digitalization on technological innovations in SMEs, *Technological Forecasting & Social Change*, pp. 1-16
- D.Rumanyika, J., & Mashenene, R. G. (2014). Impediments of E-Commerce adoption among small and medium enterprises in Tanzania : A review. *International Journal of Information Technology and Business Management*, 32(1), 45–55.
- Eei, K. S., Husain, W., & Mustaffa, N. (2012). Survey on Benefits and Barriers of E-Procurement: Malaysian SMEs Perspective. *International Journal on Advanced Science, Engineering and Information Technology*, 2(6), 424. DOI:10.18517/ijaseit.2.6.238
- Eniola, A. A., & Entebang, H. (2015). Government Policy and Performance of Small and Medium Business Management. *International Journal of Academic Research in Business and Social Sciences*, 5(2), 237–248. DOI:10.6007/ijarbss/v5-i2/1481
- Glette, M. K. (2022). *The Headaches of Case Study Research : A Discussion of Emerging Challenges and Possible Ways Out of the Pain The Headaches of Case Study Research : A Discussion of Emerging Challenges*. 27(5), 1377–1392.
- Goukens, L., & Brussel, V. U. (2014). *E-Procurement savings in Europe*. July.
- Gudergan, G., Buschmeyer, A., Krechting, D., & Feige, B. (2015). Evaluating the readiness to transform towards a product-service system provider by a capability maturity modelling approach. *Procedia CIRP*, 30, 384–389. DOI:10.1016/j.procir.2015.02.134
- Hamma-adama, M., & Ahmad, A.-B. S. (2021). Challenges and Opportunities of E-Procurement in the Construction Industry. *Journal of Construction Materials*, 2(4), 4–7. DOI:10.36756/jcm.v2.4.7
- Haridharan\*, K. S. and M. K. (2017). Examining the Challenging Hindrances facing in the Construction Projects : South India ' s Perspective Examining the Challenging Hindrances facing in the Construction Projects : South India ' s Perspective. *Earth and Environment Science*, 1–11. DOI:10.1088/1755-1315/80/1/012045
- Högel, M., Schnellbacher, W., Tevelson, R., & Weise, D. (2018). Delivering on Digital Procurement's Promise. *Boston Consulting Group*, 1(June), 1–7.
- Ibem, E. O., Aduwo, E. B., Afolabi, A. O., Oluwunmi, A. O., Tunji-Olayeni, P. F., Ayo-Vaughan, E. A., & Uwakonye, U. O. (2021). Electronic Procurement Adoption and Users' Experience in the Nigerian Construction Sector. *International Journal of Construction Education and Research*, 17(3), 258–276. DOI:10.1080/15578771.2020.1730527
- Ibem, E. O., & Laryea, S. (2015). E-procurement use in the South African construction industry. *Journal of Information Technology in Construction*, 20(4), 364–384. DOI:10.1080/15623599.2016.1222666
- Imam Ibrahim, M. (2019). Determinants of Small and Medium Enterprises Performance in Nigeria: The Role of

- Government Support Policy. *International Journal of Business and Economics Research*, 8(2), 41. DOI:10.11648/j.ijber.20190802.11
- Kapurubandara, M., & Lawson, R. (2014). Barriers to Adopting ICT and e-commerce with SMEs in Developing Countries : An Exploratory study in Sri Lanka. *Researchgate*, 1(1), 1–12.
- Kindström, D., Carlborg, P., & Nord, T. (2022). Challenges for growing SMEs : A managerial perspective Challenges for growing SMEs : A managerial perspective. *Journal of Small Business Management*, 00(00), 1–24. DOI:10.1080/00472778.2022.2082456
- Kissi, Ernest, Ewald Kuoribo, C. A. (2022). Emerging technologies in the construction industry : challenges and strategies in Ghana. *Researchgate*. DOI: 10.1108/CI-11-2021-0215
- Kraja, Y. B., Osmani, E., & Molla, F. (2014). The Role of the Government Policy for Support the SME-s. *Academic Journal of Interdisciplinary Studies*, 3(2), 391–396. DOI:10.5901/ajis.2014.v3n2p391
- Kwaku Amoah, S. (2018). The Role of Small and Medium Enterprises (SMEs) to Employment in Ghana. *International Journal of Business and Economics Research*, 7(5), 151. DOI:10.11648/j.ijber.20180705.14
- Lavarda, R., & Bellucci, C. (2022). *Case Study as a Suitable Method to Research Strategy as Practice Perspective Case Study as a Suitable Method to Research Strategy as Practice Perspective*. 27(2), 539–555.
- Lukman M. A. (2023) Digital literacy and inclusion in the northern region of Ghana: A comprehensive analysis of the impact of Tamale ICT Centre and Tolon MTN Centre, *Journal of Information Systems and Digital Technologies*, 5(2) pp. 60-68
- Maghsoudi, S., Duffield, C., & Wilson, D. (2016). In pursuit of innovation value in building projects. *International Journal of Innovation Science*, 8(1), 39–70. DOI:10.1108/IJIS-03-2016-003
- Meng, X., & Brown, A. (2018). Innovation in construction firms of different sizes: drivers and strategies. *Engineering, Construction and Architectural Management*, 25(9), 1210–1225. DOI:10.1108/ECAM-04-2017-0067
- Michael N. A., Evans T. A., Sulemana F. A., Titus E. K., Clinton O. A., Anita O. A. (2024) E-procurement acceptance in the Ghanaian construction public sector: An application of TAM, *Journal of Engineering, Design and Technology*. <https://doi.org/10.1108/JEDT-08-2023-0373>
- Nawi, M. N. M., Deraman, R., Bamgbade, J. A., Zulhumadi, F., & Riazi, S. R. M. (2017). E-procurement in Malaysian construction industry: Benefits and challenges in implementation. *International Journal of Supply Chain Management*, 6(1), 209–213.
- Network Readiness Index. (2022). *Norway – Network Readiness Index. 2022*(Figure 2), 1–7. <https://networkreadinessindex.org>
- Neupane, A., Soar, J., & Vaidya, K. (2014). An empirical evaluation of the potential of public e-procurement to reduce corruption. *Australasian Journal of Information Systems*, 18(2), 21–44. DOI:10.3127/ajis.v18i2.780
- Numanovich, A. I., & Abbasxonovich, M. A. (2020). The Analysis of Lands in Security Zones of High-Voltage Power Lines. *EPRA International Journal of Multidisciplinary Research (IJMR)-Peer Reviewed Journal*, 2, 198–210. DOI:10.36713/epra2013
- Ocloo, C. E., Xuhua, H., Akaba, S., Addai, M., Worwui-Brown, D., & Spio-Kwofie,

- A. (2018). B2B E-commerce Adoption amongst manufacturing SMEs: Evidence from Ghana. *Australian Journal of Economics and Management Science* © 2018 Open Archives Initiative |, 1(8), 126–146.
- Ofori, D., & Fuseini, O. I. (2020). Electronic Government Procurement Adoption in Ghana: Critical Success Factors. *Advances in Research*, 18–34. DOI:10.9734/air/2020/v21i330191
- Olusegun, S. (2017). Investigating Factors Affecting E-Government Procurement (E-GP) Acceptance Decision Among Nigerian Small And Medium Enterprises. *International Journal of Innovative Research and ...*, 4(2).
- Opoku-fofie, I., Asare-bediako, E., & Asamoah, K. (2022). *Barriers and Drivers of Electronic Procurement adoption and Firm Performance : The case of Universal Banks in Ghana Available Online : 30 th September , 2022 URL : https://journals.adrri.org/index.19(3), 58–82.*
- Opong, M., Owiredu, A., & Churchill, R. Q. (2014). Micro and Small Scale Enterprises Development in Ghana. *European Journal of Accounting Auditing and Finance Research*, 2(6), 84–97.
- Owoo, N. S., & Lambon-Quayefio, M. P. (2020). The Construction Sector in Ghana. *Mining for Change*, 119–138. DOI:10.1093/oso/9780198851172.003.0006
- Oyediran, O. S., & Akintola, A. A. (2011). A Survey of the State of the Art of E-Tendering In Nigeria. *Journal of Information Technology in Construction*, 557–576.
- Ozorhon, B., & Oral, K. (2017). Drivers of Innovation in Construction Projects. *Journal of Construction Engineering and Management*, 143(4), 1–9. DOI:10.1061/(asce)co.1943-7862.0001234
- Panuwatwanich, K., & Stewart, R. A. (2012). Evaluating innovation diffusion readiness among architectural and engineering design firms: Empirical evidence from Australia. *Automation in Construction*, 27, 50–59. DOI:10.1016/j.autcon.2012.05.009
- Park, S., Lee, I. H., & Kim, J. E. (2020). Government support and small-and medium-sized enterprise (SME) performance: the moderating effects of diagnostic and support services. *Asian Business and Management*, 19(2), 213–238. DOI:10.1057/s41291-019-00061-7
- Pelletier, C., & Cloutier, L. M. (2019). Conceptualising digital transformation in SMEs: an ecosystemic perspective. *Journal of Small Business and Enterprise Development*, 26(6–7), 855–876. DOI:10.1108/JSBED-05-2019-0144
- PPA. (2019). PPA News. *Ghana Rolls Out E-Procurement*, 1–2. www.ppaghana.gov.gh
- PPA. (2022, 2025). Implementation of the Ghana;s Electronic Procurement System (GHANEPS). *Public Procurement Authority*, 1–11. www.ppa.gov.gh
- Rashid, Y., Rashid, A., & Warraich, M. A. (2019). *Case Study Method : A Step-by-Step Guide for Business Researchers*. 18, 1–13. DOI:10.1177/1609406919862424
- Saif-Ur-Rehman, & Alam, R. (2016). A Study of Barriers to E-Commerce Adoption among SMEs in Malaysia. *Gulf-Pacific Journal of Business Administration*, 45-. <http://www.ums.ae>
- Sánchez-Rodríguez, C., Martínez-Lorente, A. R., & Hemsworth, D. (2020). E-procurement in small and medium sized enterprises; facilitators, obstacles and effect on performance. *Benchmarking*, 27(2), 839–866. DOI:10.1108/BIJ-12-2018-0413

- Sasu, D. D. (2022). *Annual Contribution of Construction to Ghana GDP 2013-2020*. Statista. <https://www.statista.com>
- Stake, R. E. (2006). Multiple Case Study Analysis. In *The Guilford Press (Vol. 1, Issue 1)*. DOI:10.1007/s40315-013-0039-6
- Tahiru, F., Asare, B. T., Asante, G., & Agbesi, S. (2020). Internet Access and Cost and Its Impact on Citizens Engagement on E- Government Services. *SSRN Electronic Journal, J, 1–16*. DOI:10.2139/ssrn.3748400
- Tchao, E. T., Keelson, E., Aggor, C., & Amankwa, G. A. M. (2018). E-Government Services in Ghana - Current State and Future Perspective. *Proceedings - 2017 International Conference on Computational Science and Computational Intelligence, 624–631*. DOI:10.1109/CSCI.2017.108
- Thomas, G. (2011). A typology for the case study in social science following a review of definition, discourse, and structure. *Qualitative Inquiry, 17(6), 511–521*. DOI:10.1177/1077800411409884
- Tutu, S. ., Kissi, E., Osei-Tutu, E., & Desmond, A. (2019). Evaluating critical factors for the implementation of e-procurement in Ghana. *International Journal of Procurement Management, 12(1), 1*. DOI:10.1504/ijpm.2019.10018011
- Vaidya, K., Sajeev, A. S. M., & Callender, G. (2006). e-Procurement Initiatives in the Public Sector: A Literature Review of the Critical Success Factors. *6, 70–99*.
- Wresch, W. (2013). A Longitudinal Study of Efforts by Caribbean Companies Persistent Barriers to E-Commerce in Developing Countries : *IGI Global, 205–207*. DOI:10.4018/978-1-4666-2142-8.ch009
- Yau, Y., Chi, D., Ho, W., & Li, R. (2017). Benchmarking property management agents ' performance in Hong Kong. *Internation Journal of Development and Sustainability, 6(8), 650–666*.
- Yin, R. K. (2014). Case study research: Design and methods. In *SAGE Publications, Inc (Vol. 9, Issue 4)*. DOI:10.1016/0149-7189(86)90052-2
- Yin, R. K. (2018). Case study research and applications: Design and methods. In *Journal of Hospitality & Tourism Research (Vol. 53, Issue 5)*. DOI:10.1177/109634809702100108
- Zeller, M., & Drescher, F. (2017). Procurement Management in the German Restaurant Industry : A Comparison Between Top 100 Restaurants and Smaller Restaurants. *Journal of Culinary Science & Technology, 00(00), 1–20*. DOI:10.1080/15428052.2017.1310072
- Zulkarnain, Muda I., Kesuma S. A. (2023) Factors determining the adoption of e-procurement in developing countries: A systemstic Literature Review: *IJSSR, 3(2), pp 2807-8691*