UNIVERSITY OF CAPE COAST

PROCUREMENT MANAGEMENT PRACTICES AND SERVICE DELIVERY OF THE PRIVATE HEALTHCARE SECTOR: THE MODERATING ROLE OF DIGITIZATION

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BY

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Thesis submitted to the Department of Marketing and Supply Chain Management of the School of Business, College of Humanities and Legal Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Commerce degree in Procurement and Supply Chain Management

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DECLARATION

Candidates Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature..... Date.....

Name: Habiba Jibril

Supervisor's Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision laid down by the University of Cape Coast.

Principal Supervisor's Signature: ..... Date.....

Name: Professor Daniel Agyapong

Co-Supervisor's Signature: ..... Date.....

Name: Dr. Daniel Ofori

ABSTRACT

Health is a vibrant indicator of a nation's economic development and growth. Therefore, service delivery in the health sector is very important since its outcome directly affects human lives. Notwithstanding that, limited attention has been given to how procurement management activities affect service delivery in this sector, particularly among private hospitals. Employing the information systems theory, and the institutional theory of management, this study examined the relationship between procurement management practices and service delivery of private hospitals in Ghana, and how digitization moderates the relationship. The study employed the explanatory research design and the quantitative research approach. Considering a population size of 319 private hospitals within the Greater Accra region, the census sampling technique was used. Self-administered structured questionnaires were used for data collection and the response rate was 205. The partial least square structural equation modelling was the data analytical technique employed. The SmartPLS v3 software was used for data processing to generate the statistical test results. It was found that procurement management practices have a significant and positive impact on the service delivery of the private hospitals studied. It also proved that hospitals offer better service delivery when procurement management practices are executed digitally. The study concluded that the positive relationship between service delivery and procurement management practices improves with the introduction of digitalization. The study recommends private hospitals in the Greater Accra region of Ghana to prioritize digitization as a strategic resource for better service delivery.

KEYWORDS

Contract Management

Digitization

Inventory Management

Private Hospital

Procurement Management Practices

Service Delivery

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DEDICATION

To my parents and siblings

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

CM – Contract Management

DIG - Digitization

INV – Inventory Management

PLS – Partial Least Square

PLS-SEM - Partial Least Square Structural Equation Model

PMP - Procurement Management Practices

PP – Procurement Planning

SD – Service Delivery

SEM – Structural Equation Model

SP – Supplier Partnering

CHAPTER ONE

INTRODUCTION

The global economy, cultural market, and cultural norms have all been impacted by the COVID-19 pandemic. The pandemic challenged companies to adopt digital technology swiftly, greatly accelerating trends that were emerging much more slowly before the crisis (Song & Zhou, 2020). The pandemic helped in pushing digitization to the forefront where it was formerly given limited attention for policy considerations, and where it was discussed as something that needed public support (Rudolph et al., 2021). In today's competitive market, most organizations in the world are gradually transacting business using information technology. Digitalized business transaction among procurement entities is growing in scope and importance.

Information Systems theory and Institutional theory of management which suggests that procurement management practices could enhance service delivery through digitalization, underpinned the study. Hence, digitalized procurement activities can enhance, procurement negotiation, supplier availability, and fairness, and reduce procurement costs. Digitalization immensely transforms how organizations and governments operate and transact business in the world today (Hallikas et al., 2021). However, most private sector organizations are not keen on technology adoption such as digitalization hence the slow adoption of digitization-based supply chains and largely avoiding it.

Background to the Study

Technology positively impacts organizations by ensuring transparency that calls for a complete view of the supply chain and its functionality. It ensures

that there is communication that facilitates information availability to all supply chain members simultaneously, hence creating a collaboration between buying organization and its suppliers. The migration of procurement processes of buying organizations from the traditional way to the internet-based transaction processes has a significant impact on reducing the prevalent corruption in procurements. The digitization of the supply chain (SC) is being explored increasingly in academic circles and across many industries as it emerges as a fundamental phenomenon in the transformation of companies.

The various aspects of SC digitization and its effects on organizations, however, have not yet been fully recognized (Queiroz et al., 2019). The term "digitization of SC" involves the application of new, modern methods of technology (such as the Internet of Things (IoT), big data, augmented reality, unmanned aerial vehicles, and blockchain) in conjunction with traditional information systems to maximize flexibility and efficiency of various SC's activities. In theory, all industries, including healthcare, must optimize their efficiency and adaptability to both long-term changing demographics and one-off occurrences while containing costs (Viale et al., 2020). Although the healthcare industry also needs to be flexible and cut costs, it has faced challenges incorporating innovative supply chain management techniques (Kusi-Sarpong et al., 2019). Hospital digitization efforts are mostly focused on integrating the supply chain through the use of established technologies like Enterprise Resource Planning (ERP) and Electronic Data Interchange (EDI) (Benzidia et al., 2019). Studies highlight the dispersion of information systems in this industry and the inadequate coordination between internal and external SC participants despite these efforts (Schniederjans et al., 2020). However, Bechtsis

et al. (2017) and Morenza-Cinos et al. (2019) demonstrated the benefits hospitals could accrue by employing cutting-edge technologies like Radio Frequency Identification (RFID), Automated Guided Vehicles (AGVs), and Internet of Things (IoT), although rarely from the view of supply chain management.

However, the challenges SC managers in the healthcare industry encounter when using data in their decision-making processes show that the influence of these technologies may be limited (Kowalski & Sheehan, 2016). The challenges would be minimal if they are resolved by a gradual and organized digital change despite the healthcare SC'ss shortcomings. To fully capitalize on the advantages brought forth by digitization, Hartley and Sawaya (2019) suggested planning for an orderly and leisurely SC digital transition. SC managers are therefore required to put the intended results ahead of urgent technological decisions since digitization encompasses a variety of potential outcomes (Haddud & Khare, 2020). This study's goal is to lay out a path for digitization projects in the field of healthcare that might have a big effect on the industry.

Such technologies could be used to enhance the traditional advantages of supply chain management, such as the real-time synchronization of material and information flows, highly personalized production (Büyükozkan & Goçer, 2018; Zangiacomi et al., 2020), flexibility, and agility (Seyedghorban et al., 2020), during the Covid-19 pandemic. These new technologies would necessitate reorganizing the functions of the many SC actors (Holmstrom et al., 2019; Wang & Wang, 2020). Notwithstanding that, supply chain actors would also need to acquire the necessary skills to master the new technologies and

analyze the massive amounts of data amid the Covid-19 outbreak, resulting from digitization (Kittipanya-Ngam & Tan, 2020; Benzidia et al., 2020). In this regard, Hartley and Sawaya (2019) advised against hastily acquiring these new technologies if it is possible to completely capitalize on their functionality, and create deployment plans for them.

Full adoption of digitization creates best practices in the business transaction with the buying organization as well as assuring suppliers of transparency and integrity in the procurement process. Digitalization enhances collaboration where hospitals publish tenders online and suppliers respond on time (Suleiman & Muhammad 2015). Digitalization fast-tracks document flow from suppliers to hospitals hence ensuring a prompt tender response, order function, online invoicing, and online supplier payments. Additionally, digitalization ensures payments to suppliers are done online, and also helps to reach a larger supplier database that gives all current and prospective suppliers equal opportunities to timely submit tenders and quotations for the supply of goods, works, and services.

Healthcare supply chain strategies frequently prioritize control of supplies and lowering the cost of procurement (Parker & Delay, 2008). The healthcare industry has among the most expensive supplier networks, according to several assessments that show greater costs of logistics for the service sector as opposed to other industries two decades later (Large et al., 2013; Kaur et al., 2019; Beaulieu et al., 2021). These findings affirm that SC in the healthcare industry is still lagging and it is at risk of following suit concerning digitization.

The absence of support for hospital supply managers, which prevents them from making the necessary investments in people and technology to

promote supply chain practices while Covid-19 was in the air, is an example of how hospital top management frequently exhibits little strategic interest in SC management (Primmaz et al., 2020; Ageron et al., 2020; Sanchez-Graells et al., 2020). Generally, this calls for sector-wide adoption of digitalization technology (Gandhi et al., 2016). In both theory and practice, there is still little research on how digitization affects service delivery and procurement management procedures (Ageron et al., 2020).

The procurement function is a pivot in supply chain management since it is in charge of purchasing and supply management. It assesses the availability, price, and quality of materials, as well as the competence of businesses in meeting the expectations and desires of their customers (Ahator & Ayarkwa, 2021). Procurement has been highlighted in several articles in recent years for its strategic importance and competitive potential, as well as the importance of aligning the function with broader company strategy (Pereira et al., 2020). Procurement planning, according to Awanyo (2019), is a key procurement aspect that can make significant contributions to government entities and boost service supply. Procurement planning contributes to the efficient delivery of services in the private industry.

The private sector in Ghana engages in a wide range of tasks related to the manufacturing of products and the provision of services (Ghana Statistical Service, 2010). Through job creation, income generation, and the provision of social amenities, the sector supports economic growth in Ghana (Ghana Statistical Service, 2018). Procurement procedures are distinctive because of the resources that are effectively used to achieve the needed goals while improving the organizational output of private organizations. As stated by Giunipero et al.

(2008), private businesses should monitor performance to assess their situation and formulate measures to achieve their goals and improve organizational performance.

Unlike those in the business sector, an average person may assume that the efficient functioning of hospitals solely depends on doctors and nurses. However, procurement is an essential component in the value chain for service delivery in hospitals and other healthcare sectors. Efficient procurement methods such as lean and agile supply chain operations, were discovered to help hospitals and healthcare systems enhance their performance and competitive advantages (Wang, 2018). Furthermore, according to (Kafumukache, 2019), pharmaceutical product procurement activities can change the level of treatment of patients in the healthcare industry. As a result, high-quality service can be supplied at a reasonable cost when procurement management is effective.

Inventory management is a critical component of procurement that has been highlighted as a key factor in influencing service delivery (Saha & Ray, 2019). Hospital inventory management has far-reaching implications for service delivery systems. Silva-Aravena et al. (2020), for example, stated that procurement processes in a hospital include managing inventory levels, which has an impact on patient service. The authors further stated that reducing inventory just because goods must be ready for immediate use by healthcare personnel is not a sustainable solution (Meyer et al., 2017). They concluded that the procurement function is crucial in guaranteeing the safety of the hospital's medicine inventory and, as a result, service delivery (Moons et al., 2019).

Expanding access to high-quality medical treatment to all other personal and societal objectives is critical. This is explained by the third Sustainable

Development Goal, which attempts to guarantee excellent health and facilitate well-being for all people at every age. As a means of coordinating the shift even more fair and productive society and industries, it implies that all individuals, families, as well as towns around the world, ought to be able to have the provision of top-notch medical care they require. Due to escalating prices, healthcare providers are under stress, tighter government regulations, heightened competition, and global pandemics (Acharyulu & Shekbar, 2012).

Procurement and supply management are important aspects of healthcare delivery since good procurement processes ensure the availability of key medical supplies like drugs and other laboratory items, which have historically impacted service quality (Guyer, 2021). To maintain a balance between supply and demand for health commodities such as crucial medicines, medical consumables, and laboratory supplies, inventory management is usually a challenge (Kaile, 2020). Therefore, healthcare providers maintain sufficient inventory to satisfy the needs of their patients. Healthcare managers also do not want to lose patients to rival healthcare facilities due to inventory shortages.

However, private healthcare facilities want to avoid keeping and holding surplus inventory because of the costs involved (Leaven et al., 2017). This indicates that for healthcare facilities to accomplish their objectives, the amount of inventory retained must be balanced (Govindan, et al., 2020). As a result, efficient procurement methods are required in any service delivery system. Owing to limited empirical studies on the relationship between procurement and service delivery in Ghana's healthcare systems, it is challenging for policymakers to implement protocols and policies that would have a positive impact on the procurement function and its significance to service delivery

(Anane et al., 2019). The study is underpinned by the Information Systems theory and Institutional Theory of Management. As a result, this study aimed at providing empirical evidence on how procurement management practices affect service delivery of private hospitals in the Greater Accra region of Ghana, and digitization influences this outcome.

Statement of the problem

Johnson (2011) states that procurement is an important area of operations where the adoption of innovative technologies can enhance business transactions with various partners. The manual procurement process has shown to be long, tedious, time-consuming, and even sometimes led to document loss between both organization and supplier. It generated mistrust and loss of confidence among suppliers and buyers and at times attracted legal implications. Also, manual onboarding of the supplier's process is known to be a slow and time-consuming process with many small, repetitive tasks. A manual procurement process is typically challenging to manage since it is less controllable, and decreases visibility. It is also frequently intensified by misunderstandings between the purchasing organization and suppliers.

One of the most current issues in Ghana between management teams, practitioners, and researchers in recent years has been the provision of health services in the private sector. The influence of healthcare providers on the sector is a major factor in this trend. To carry out their primary and secondary duties, health service professionals need a wide range of supplies including prescribing of drugs, syringes, pens, gloves, computers, hearing aids, nasal masks, aprons, boots, and hand gloves. The availability of these resources depends heavily on a robust supply chain structure (Kwon et al., 2016), which unavoidably has an

impact on business efficiency, client satisfaction, and the level of treatment provided in Ghana's private hospitals (Nartey et al., 2020).

The interdependence of the functions involved in the supply chain of health resources posed several risks to the delivery of healthcare in the healthcare sector. This is because the failure of one unit or entity could bring down the entire healthcare delivery system, endangering the lives of healthcare workers, and causing avoidable deaths in the healthcare facilities. The use of centralized storage systems may be partly to blame for the apparent problems with Ghana's hospital supply chain. Adu-Poku et al. (2011) pointed out, for instance, that there is a poor synchronization of patient demands during procurement planning, a delay in paying suppliers, a long lead time by suppliers, and drawn-out procurement methods. Similarly, hospital suppliers are not fairly represented in their procurement procedures (Oware et al., 2016). This negatively affects the supply chain for hospital supplies and leaves room for drug piracy, unavailability, and obsolescence.

Sadly, after the emergence of COVID-19, all the aforementioned problems materialized and were compounded by the scope of this worldwide emergency. Buyer competition and supply-side scheming, hijacked supplies, piracy on a global scale, fake and substandard goods, price hikes, and corruption all led to scrutiny of the procurement process (Patrucco & Kahkonen, 2021). As international borders closed and civilizations and economies collapsed, private healthcare providers fought for control of essential supplies (Kamerow, 2020). Prices also increased, leading to a search for new sources of supply. As a result, opportunistic newcomers to the market emerged, raising fraud risks and putting product quality in doubt (Atkinson et al., 2020).

Due to a lack of procurement side responsiveness, these intricate and dynamic healthcare supply chains were unable to properly deal with the effects of the epidemic (Scala & Lindsay, 2021). Private healthcare providers must therefore immediately draw lessons from the COVID-19 experience, reevaluate their procurement processes, and improve their capacity to coordinate, reduce supply disruptions of essential goods and services, and lessen the impact of emergencies.

Health commodities are well-known for being critical to high-quality healthcare delivery and spanning all aspects of effective and efficient healthcare practices (Appleford & RamaRao, 2019). Unfortunately, shortages of health commodities including medications, medical consumables, and laboratory reagents are common, which is a major cause of anxiety for most healthcare providers (Parle, 2019). In the healthcare environment, however, such research is restricted. In underdeveloped countries like Ghana where limited resources inhibit the frequency and breadth of such investigations, the situation is considerably worse (Eyombo & Murray-Bachmann, 2021). Further study is needed to better understand the challenges with procurement management in health systems, given the evidence that the procurement function influences service delivery. The goal of this study was to investigate how procurement management practices affect service delivery at Private Hospitals in the Greater Accra Region of Ghana, and how digitization as a moderator affects the outcome.

Purpose of the Study

The purpose of the study was to investigate the moderating role of digitization on the relationship between procurement management practices and

service delivery in the Private Healthcare Sector in Greater Accra region of Ghana.

Research Objectives

The objectives of this study were to:

1. examine the effect of procurement management practices on service delivery of Private Healthcare Sector in Greater Accra Region.
2. analyze the effect of digitization on service delivery of Private Healthcare Sector in Greater Accra Region.
3. examine the effect of digitization on procurement management practices of Private Healthcare Sector in Greater Accra Region.
4. assess the moderating effect of digitization in the relationship between procurement management practices and service delivery of Private Healthcare Sector in Greater Accra Region.

Research Hypotheses

The following research hypotheses were formulated:

H_1: Procurement management practices significantly affect service delivery of Private Healthcare Sector in Greater Accra Region.

H_2: Digitization significantly affect service delivery of Private Healthcare Sector in Greater Accra Region.

H_3: Digitization significantly affect procurement management practices of Private Healthcare Sector in Greater Accra Region.

H_4: Digitization significantly moderates the relationship between procurement management practices and service delivery of Private Healthcare Sector in Greater Accra Region.

Significance of the Study

The study's results would enable managers of the private hospitals in the Greater Accra region of Ghana and other service delivery organizations to appreciate the existence or otherwise of stock-outs of supplies. It would also highlight the importance of procurement planning and processes in the delivery of improved medical treatment through digitization. Full knowledge of that would provide evidence to health directors and other management staff of health institutions on the need to recognize, support, and motivate the activities of the office of procurement with modern technologies to boost their morale and effectiveness in discharging their duties.

The study's findings would also provide credence for the need to conduct an effective audit and appraisal of the procurement function in healthcare delivery. Finally, this study would be a major addition to literature on the moderating effect of digitization on the relationship between procurement management practices and service delivery in Ghana and Africa as a whole, providing a basis upon which further research studies can be developed.

Delimitations

The study focused on the moderating effect of digitization on the relation between procurement management practices and service delivery. The study was also delineated to the professionals at the private hospitals in the Greater Accra region of Ghana.

Limitations of the Study

Due to voluntary participation in the study, some of the questions were unanswered by some respondents, while others also gave barely a little relevant information. Also, the study was conducted while the COVID-19 epidemic was plaguing the world, for which reason there still is a high demand for health commodities. The results may therefore strongly represent the situation at that material point in time.

Organisation of the Study

Five chapters made up this research. The first chapter introduced the background, problem statement, research objectives, and questions, significance of the study, delimitations, and study organization. This chapter was followed by chapter two which provided comprehensive reviews of relevant literature to the research. It highlighted the theoretical and empirical perspectives and explained concepts and constructs with a conceptual framework. The third chapter demonstrated the research methods that were used in the research. The empirical results collected through the survey questionnaire, analyses, and interpretation were reported in chapter four. The summary, findings, and suggestions were eventually presented in chapter five.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter presented a review of related literature that are relevant to this study. The theoretical and empirical reviews are addressed in this chapter. It focuses on several theoretical and conceptual viewpoints that have been advanced to clarify the effect of procurement practices on service delivery at private hospitals in the Greater Accra region of Ghana. The chapter also presented the conceptual framework underpinning the research.

Theoretical Review

Information Systems theory and the Institutional theory of management were the theories that underpinned the study.

Information Systems Theory (IST)

The theory of Information Systems (IST) describes how users come to accept and use technology. According to this theory, consumers' decisions regarding how and when to employ new technology are influenced by a variety of circumstances. Its objective was to identify design flaws and forecast user approval of an information system before users ever used it. IST is the transdisciplinary study of systems in general to clarify universal principles that may be applied to all system types at all nesting levels in all academic domains (Von Bertalanffy, 1972). The theory focuses on the transformation of information in the form of computer algorithms and programs that could be used to differentiate material objects including a human's thoughts and language, to bridge general systems theory formalism and the world of information technologies (Peffers, 2007).

Inherent characteristics of information system theory in procurement include propagating communication signals among suppliers and consumers across the nation (Bryce, 2009). An information system is a group of procedures that either gather or store data to retrieve it later and provide information or both (Bryce, 2009). According to IST, the perceived usefulness and perceived simplicity of use of any technology will influence whether or not users would adopt it. The degree to which a user thinks that using the system improved someone's performance is known as perceived usefulness. The degree to which the user thinks utilizing the system would be effortless is known as perceived ease of use (EOU).

Information technology is related to this notion since it is essential to use technology in the health sector's procurement. Procurement in the health industry may benefit from e-procurement since it can facilitate work and speed up decision-making. Dujak and Sajter (2019), in one of their first publications to apply information systems theory to supply chain networks, proposed that supply chain networks should be viewed and controlled as a whole, rather than as separate pieces. In a similar vein, Karim et al. (2020) identified that materials travel through a continuous chain of functional domains in businesses, from raw material suppliers to final distributors dealing with end-customers.

Hough, et al. (2018) advanced the conversation by emphasizing the need for system-wide coordination of both material and information flows. They claim that sharing information is a necessary system of indicating a commitment to driving continuing collaborative behavior across the supply chain as a whole. These authors also introduce the concept of supply chain management, which

aims to increase supply chain cost-effectiveness as well as service and quality effectiveness.

Concerning the research problem, this theory suggests that when procurement management is seen as a complete system and managed in its entirety by the healthcare organization, the procurement function would be executed with more efficiency (Eggers et al., 2021). In another application of the same theory, health systems must be seen as a whole, with the procurement function forming an integral part of the whole system. Failing to acknowledge this gives one a very narrow understanding of procurement and supply chain function and its relationship with better health outcomes. Equally, recognizing the implications of the information systems theory to healthcare organizations would ultimately result in high performance and better outcomes for patients.

Institutional Theory

The institutional theory aims to explain the mechanisms of organizational behavior patterns and their underlying causes on a larger and inter-organizational scale. Furthermore, according to the theory, organizational actions are copied and replicated, resulting in accepted norms and broad standardized practices (Inter-Organizational, 2021). Institutional theory, according to Hynes et al. (2020), is the standard way for examining components of government procurement. Institutions are social systems that are extremely resilient.

They consist of normative, regulative, and culturally cognitivist elements that when joined with other events and resources, give social existence steadiness and purpose. (Linnér et al., 2020). Even though they are susceptible to both gradual and abrupt change processes, institutions by definition suggest

stability and discuss the normative, regulatory, and cultural-cognitive underpinnings of institutions in more recent work (Anane et al., 2019). Acquiescence is based on shared responsibility, which suggests standards (means of behaving) and canons (requirements).

The regulation emphasizes the use of penalties, directives, and orders as the method of execution, with decorum serving as the foundation for acquiescence. Mutual understanding and acceptance are the foundations of the cultural-cognitive. This concept is critical to the implementation of policies and practices for sustainable procurement in the service sector organizations such as healthcare systems, according to the research topic. In another sense, it shows the level of strategic organizational support for sustainable procurement, as well as the extent concerning what organizational structures and hierarchy help or hinder ethical procurement (Da Costa & Da Motta, 2019).

Conceptual Review

Digitization

Presently, it has become increasingly and more apparent that the COVID-19 pandemic has completely revolutionized the operational practices of many firms and has also contributed to the global collapse of several businesses (Amankwah-Amoah et al., 2020). Due to a variety of measures including local and national lockdowns, social distancing, government-initiated border closures, and quarantines, many other enterprises have been compelled to hastily change their business models (Sostero et al., 2020). This primarily arose in two areas: internally, where organizations manage people and employer-employee interactions, and externally, where firms interact with customers, suppliers, and other stakeholders (Sostero et al., 2020).

The COVID-19 pandemic, which is characterized by devastating effects on livelihoods and business performance, also draws attention to the enormous digital divide between the wealthy and the poor, between rural and urban areas, and between advanced and developing economies (Beaunoyer, Dupere, & Guitton, 2020). This has had a considerable negative impact on global economic activities. Two possible implications of COVID-19 are the accelerated trend toward the digitization of business models and the shift in the majority of commercial operations from offline shops to online outlets.

The question now is whether this will benefit most firms or just a small number of them. This refers to the issue of whether conventional firms will be able to reclaim lost ground by integrating more digitization into their business models, or if doing so will only expand the dominance of the current internet-enabled platform oligopolies. The epidemic has not only radically changed consumer behavior from in-store to online purchases but it has also expedited the need for reform in other businesses. The position of providers lacking such granular insider knowledge and analytics capabilities is further weakened by the latter, which makes it much easier to obtain far more information on consumers. Digitization, on the other hand, is "the sociotechnical process of leveraging digitized products or systems to generate new organizational procedures, business models, or commercial offerings" (Saarikko et al., 2020).

Digitalization then, refers to the partial or complete conversion of business models and value-chain activities within an organization to digital platforms using emerging technologies like mobile and visual connectivity, cloud computing, robotics, smartphones, artificial intelligence (AI), blockchain, additive manufacturing, 3-D printing, and Internet of Things (IoT) (Soto-

Acosta, 2020). Such transformation might occur as a result of creative business practices or as a component of integrated digital platforms. Websites, social media, mobile devices, content-sharing platforms, e-procurement platforms, blockchain, robotics, and wearable technology have all made it possible for companies to engage in innovation, and research and development (R&D) operations, and take advantage of new market opportunities (Lupton, 2020; Vural et al., 2020). Although businesses have not yet fully tapped into the benefits of digitization, the COVID-19 epidemic is accelerating the use of emerging technology, particularly in the healthcare industry.

Inventory Management

Traditionally, inventory management meant either having too many goods and insufficient management or too little inventory and excessive management. Excessive behaviour in either way can result in serious consequences. As technical advancements have boosted the organization's ability to produce in greater quantities, faster, and with multiple design variations, inventory difficulties have become more prevalent. The public has intensified the situation by being transparent about new ideas and widely known design modifications (Tersine, 2017). Since the middle of the 1980s, it has been evident that inventory management, production planning, and scheduling offer strategic advantages.

Many companies had recently "raised the bar" once again by working with other companies in their supply chains rather than reacting to the unknown. With fluctuating demand, they share knowledge, resulting in a significant reduction in the variability of their perception of demand (Silver, Pyke & Peterson, 2016). Silver et al. (2016) recurrently assert that productivity gain in

the United States and other Western countries was attained by reducing the amount of direct labour in manufacturing expended per output unit. Because many produced products have a large labour content, this was a major method.

The portion of unit cost attributable to labour, however, has been steadily declining in recent years. This means that inventory management of raw materials holds a lot of promise for increasing production. There seems to be room for advancement in work-in-process inventory management, as seen by the huge interest in Just-in-Time manufacturing (JIT) (Silver et al., 2016). The objective of inventory management is to maintain stocks for the lowest price possible while maintaining ongoing supplies for operational needs. When taking decisions about inventory, management must find a synergy between a variety of cost factors, including the costs of supplying inventory, the costs of keeping an inventory, and the costs associated with having insufficient supplies (Hugo et al., 2016).

According to Wild (2018), inventory control is the process that arranges the products' accessibility to customers. It coordinates the purchasing, production, and distribution operations to meet marketing requirements. This role covers all supply, including new products, consumables, replacement parts, obsolete goods, and other commodities. Inventory enables a business to maintain customer service, transportation, or production activities when purchasing or manufacturing commodities that cannot keep up with demand. A delayed purchase or manufacturing process, an inability to deliver quantities without stockpiles, or both could lead to a lack of customer satisfaction.

Contract Management

In today's increasingly connected and competitive world, the majority of individuals work in environments that involve joint ventures, alliances, global sourcing, subcontractors, and vendor relationships (Mutua, Waiganjo & Oteyo, 2014). Relationships with external organizations are governed by contracts. Generally, businesses fulfill orders for goods or services by following the conclusions of direct contract negotiations with customers. Bailey and Francis (2008) posit that contract management entails the actions taken by a buyer during the term of the agreement to make sure that each party is responsible for fulfilling their respective responsibility. The public procurement authority of Ghana (PPA) states that the procurement function and department have the responsibility of ensuring that they monitor the administration of contracts by different sectors in terms of the general guidelines set.

The procurement unit is in charge of ensuring that the contractor complies with the rules and regulations of the acquisition contract and that the project's final product satisfies specifications. Wafula and Makokha (2017) go on to say that under fixed-price agreements, purchasers are required to properly identify the good or service they want to purchase because changes to the scope can only be approved with an increment in the contract price. If parties don not adhere to the agreed-upon terms, reports are made. As a result, the head of the department in charge of procurement makes sure that existing projects are monitored and evaluated. In an essentially united and hostile world, most projects are run via the control of relationships that result from contract management (Cleland & Bidanda, 2009).

To ensure effective management, organizations must understand the many contracts that are given. The implementation of the contract necessitates that the purchasing entities pay close attention to the contract's timeliness, sufficient quality, risk mitigation, and cost containment. The practices of contract management include a variety of tasks that are completed in performance to maintain the smooth operation of the arrangement between the customer and provider. These include delivery management and contract administration. During the contract, any permissible changes to the paperwork are also under the control of contract management.

It also keeps the communication between the two sides open, professional, and constructive to lower tensions and spot any issues early on. Delivery management makes ensuring that everything ordered is delivered per the contract's specified standards for quality and performance (Moffat & Mwangangi, 2019). Both jobs must be successfully managed, and they should be carried out together rather than separately.

Procurement Planning

Procurement planning is a series of obligations that must be done to obtain and establish a good, material, or service to a customer. It includes everything from the initial need to establish, purchase, and delivery to the recipient, as well as storage, as well as monitoring, evaluation, practical experience, and finally disposal (Hugos, 2018). Procurement planning, unlike procurement management, aims to address organizational structures and services while controlling the organization's growth. The capacity of procurement teams to communicate cost, performance, and process improvement to business sectors across the creation of the plan is a common

attribute among procurement teams. Organizations can use procurement planning to set performance criteria, establish general direction, and anticipate and avoid future difficulties. Procurement planning minimizes the risks of uncertainty, identifies, and commits resources to achieve objectives (Kerzner, 2017).

It has been argued in procurement literature that procurement planning generally helps in achieving organizational goals. Procurement planning facilitates the creation and upkeep of procurement sources, as well as cultivating and facilitating the sharing of procurement planning activities and organizational policies (Hastie et al., 2017). Procurement and supply chain management is increasingly being acknowledged as critical business drivers by top managers since organizations are becoming more competitive (Ghadge et al., 2017). Inadequate procurement planning could stem from poor financial planning for rapid organizational expansion.

Procurement planning management is focused on many areas of action to meet these procurement and supply objectives. These often cover sourcing policy, direct and indirect buying, make-or-buy analysis, integration between procurement and other functional areas, procurement information and control systems, centralized and decentralized procurement, and standardization. Managerially controlled procurement planning outcomes include obtaining materials or services of the right quality, and right quantity, from the right source, and also delivering to the right place, at the right time, and at the right price, which are key challenges facing organization managers and researchers (Appiagyei et al., 2016).

A lack of sustainable control grounded in organizational relations and a supportive structure has also been noted by several government organizations as a cause of asset and goodwill leakage (Bryson, 2017). Due to scarce resources, poor time management, and a lack of attention to funding, contracts have become expensive, time-consuming, and insufficiently disputed. Depending on the organization's overall goals, procurement objectives could include lowering costs, reducing the number of suppliers, improving product quality, and shortening lead times (Klünder et al., 2019). The goal enables organizations to direct, manage, and control their supplier relationships and procurement activities.

Supplier Partnering

Maintaining positive, long-term relationships with suppliers helps the organization to reduce costs and increase profits. Supplier partnering allows buying firms to trust suppliers without having to verify purchases after each transaction since the supplier is devoted to upholding the anticipated standards of the partnership (Obal & Gao, 2020). The supplier partnership process is a vital component of procurement management activities because it guarantees that the organization receives the goods and services it needs of the right quality and on time, especially in the event of an unanticipated rise in demand for a product (Cole & Aitken, 2019). Also, at a competitive price, the supplier appears to be a strategic partner and source of competitive advantage which boosts the firm's competitive position and earnings.

To compete effectively and prosper in the global market, a relationship must design an operational plan to guarantee that it maintains and establishes partnerships employing a network of suppliers, as well as extracting high worth

from these connections (Asamoah et al., 2020). The buying firm must engage in supplier partnering to build and sustain a network and increase the capabilities required to overcome its intensifying competitive problems (Kivite, 2015). Order fulfillment, customer relationship management, demand management, product development, production flow management, customer service management, commercialization, and procurement are the seven crucial supply chain operations that must be carried out to efficiently meet consumer needs (Zhang et al., 2009).

Supplier partnering is one of the most important processes in supply chain management because coordination and collaboration among supply chain members have a significant impact on supply chain success. The evaluation of potential supplier performance and the selection of some candidates as strategic partners are critical processes that could substantially affect the supply chain's overall performance. The evaluation of intangible and tangible criteria, as well as the selection of the correct suppliers with multiple goals, are all part of the strategic process for determining decisions. As a result, the issue of Supplier partnering could be viewed as a multi-criteria decision.

Empirical Review

This section explores relevant research literature on the various variables of interest. Studies conducted worldwide are reviewed and analyzed, to identify the need for the current study in contributing to the literature.

Digitalization and Procurement Management Practices

Together with production, sales, and logistics, procurement is one of a company's essential business functions (Kummer et al., 2013). When taking into account the numerous cost elements of industrial sectors or organizations,

material prices make up a sizable share of the final cost. While people's expenses often fall between 20% and 30% of total costs, material costs frequently account for 50% to 70% of those total costs. Hence, to increase profits for a business, procurement must receive top priority. Yet, a procurement department's main duty is to ensure a company's supply of resources and consumables through planning, managing, executing, and supervising. It is in charge of all production-related input components. For a very long period, numerous information technology (IT) systems have been used to support procurement (Krampf, 2012). Despite the creation of operational and analytical systems, future generations will surpass the capabilities of the current models.

Future versions of intelligent systems will possess the connectivity, logic, and processing power necessary to analyze both historical and upcoming data. This will enable procurement to provide comprehensive, autonomous, and immediate task completions (Kleemann & Glas, 2018). Companies today need to be as efficient as possible due to the increased competition and the desire to succeed in the market. Ineffective businesses will eventually fail. Several businesses have discovered that, despite the fast accelerating technological development of innovations and technology, they are not completely profiting. The transfer of raw materials, finished commodities, capital, and information through assets is centered on supply chains.

Digitalization in procurement simply refers to the employment of technology in the procurement process and activities. The best use of digitalization leads to exceptional patient treatment, a quick turn-around, the lowest cost possible, and patient satisfaction. Gathungu (2018) suggests that the use of advanced technologies in private hospitals is influenced by restricted

availability, obsolete machinery, inadequate consumables and accessories, break-down, maintenance delays, lack of skilled workers, and procurement practices used in acquiring the technologies.

Kale and Wield (2018) observed that most of these lifesaving technologies sit unused in low-income countries. As a result of investing in technologies that do not address the top health requirements of a particular group of the population, the management of medical devices has continued to be suboptimal, underutilizing high-investment technology and wasting resources. Again, the under-utilization of medical devices is equated to the investment made in digitization.

Procurement refers to the formal process of acquisition of goods, works, and services from the producer or dealer (Thai, 2017). Procurement involves making buying decisions when there is a need to acquire the item. The procurement process for digitization and services can vary from one hospital to another but some key elements are common throughout. Generally, the procurement process of digitization usually starts with a 'demand' or requirements, and this could be for a physical part (inventory) or a service (Seyedghorban et al., 2020). Procurement of medical devices has become very huge in Ghanaian hospitals because of decentralization that enables all regions to address their health needs. The main purpose of proper procurement planning is to ensure proper maintenance of advanced technologies and ensure that the medical devices are well utilized to the optimum level to cater for the expenses incurred.

Tasnim et al., (2020) reported that digitization had been in poor demand and had very low numbers over 100 years ago until the Covid-19 pandemic.

There were very few people buying equipment inside the company which made it easier to handle their procurement. At that time, it was reasonable for hospital administrators to allow for the purchase of advanced technologies within a negotiated budget. Currently, digitization is key even in hospitals and there exists a standard way to buy supplies. According to Casady, et al., (2017), procurement practices done after consultation with healthcare practitioners result in the acquisition of advanced technologies that meets the needs of the patients and hence meets optimal utilization.

Moyimane et al. (2017) published a study of nurses' perspectives regarding the extreme lack of medical equipment in a South African rural district hospital. The study found that procurement of medical devices is an important exercise that enables healthcare providers to provide critical healthcare services for disease prevention, diagnosis, and treatment as well as for patient recovery. Ease of access to working healthcare devices in countries with low and moderate-income countries can become a problem when the right advanced technologies are not procured.

The World Health Organization (WHO) estimated that 50 to 80 percent of healthcare technologies in developed countries are not functioning, creating an obstacle to the health system's ability to provide patients with health services (Moyimane et al., 2017). Lingg et al. (2016) also postulated that in nations with low and middle incomes, (LMICs) 40- 70% of medical devices and supplies are damaged, unused, or inappropriate for purposes. The ad-hoc and inefficient methods and processes of procurement for advanced technologies contribute to this issue. Patrucco et al. (2016) state that often, main medical stakeholders are not interested in the procurement processes, and therefore their perspectives are

not considered. Similarly, a study conducted in the Gambia and Romania indicated that procurement and utilization of advanced technologies are highly affected by the dynamics of political/cultural practices in the health sector.

In Ghana for instance there is limited electricity to power radiology and surgical equipment supplied by the hospitals, and this clearly shows how much capital private hospitals need to invest. Procurement done without the infrastructure in mind can cost a lot of resources and have machines lying idle at the hospital facilities because some of the hospitals are not even capable of handling the medical devices. Nkrumah and Abekah-Nkrumah (2019) observed that most private hospitals in Ghana have policies to ensure that medical devices are used correctly to ensure the safety of the patient. The policies adopted by private hospitals promote both procurement and utilization of medical equipment, a scenario that is contrary to public hospitals (Mbepera et al., 2022). The policies are key in limiting the wrong use of advanced technologies since there is evidence that patients are sometimes harmed or die because devices are not used correctly.

For effective processes of procurements and utilization of medical devices at private hospitals, there tends to be a series of discussions between the clinicians and nurses involved in the day-to-day use of such technologies. Such discussions are healthy and can lead to a conclusion on specific medical devices that should be procured since there is too wide a variety of technologies within healthcare organizations that do the same job. Oloo et al. (2017) stated that generally, inadequate procurement policies in the health sector always yield no benefits to the hospitals in terms of meeting the needs of the patients. Improper

procurement of medical devices or technologies lowers their profitability while creating an avenue through which funds can be misappropriated.

Oloo et al. (2017) also claimed that procurement policies are intended to maximize the efficiency of the supply chain by delivering the product or service to the ultimate customer on time at a reduced cost, considering their low adoption or acceptance by many hospitals. Medical devices utilization is influenced by not only break-down, maintenance delays, and lack of skilled workers but also procurement practices used in acquiring the medical devices (Kummer et al., 2013; Lingg et al., 2016; Trippoli et al., 2018; Gathungu 2018; Rahmani et al 2021; Kulkarni et al 2022;). In addition, s established that effective procedures for procurement of digitization enable healthcare providers to provide critical healthcare services for disease prevention, diagnosis, and treatment, as well as for patient recovery. Moreover, improper procurement of medical devices lowers their profitability thus creating an avenue through which funds can be misappropriated (Diaconu et al., 2017). The reviewed studies never demonstrated how procurement practices influence medical device utilization and service delivery, therefore, resulting in a gap that the present study aims to address.

Digitalization and Service Delivery

Many sectors are being transformed by digitization, but the health industry is significantly behind. Due to a lack of infrastructure, individuals have difficulty obtaining healthcare treatments in the early stages of illness, and hospital procedures are also more cumbersome. It is very challenging to retrieve information instantaneously using the manual technique. Management, the nurses, the doctors, and the patient are not working together as a team. Hospital

digitization is currently a hot topic in the healthcare industry as a means of giving patients and other stakeholders better, more affordable, and effective services. For the efficient delivery of healthcare services, the healthcare industry's rapid growth has created a need to organize its infrastructure, operations, and patient data.

Today's latest innovative developments are changing how healthcare services are provided to a larger segment of the population in the nation. The healthcare industry is continually absorbing new technology advancements. The medical industry is changing, and, the way healthcare is provided is also changing. This is due to electronic medical records (EMR) and healthcare information communication technologies (ICT) to telemedicine. The healthcare community must utilize technology to deliver effective healthcare services. Major advances in research, information exchange, treatment options, and healthcare provider models of communication have been made because of the increased acceptance of digital technology in the area of healthcare today. It has also permitted the development of new equipment and inventions that expand the scope of healthcare services and present fresh avenues for medical practice. The use of technology in hospitals, however, is incompletely structured or comprehended. A shared framework is required to support all hospital stakeholders.

An evaluation of the needs and gaps in the current procedures for what is and what needs to be done is the first step in implementing the modernization of hospital operations and services. It is necessary to evaluate how much time the employees, patients, and providers spend using the current setup and timeframe saved following digitization. The digitization process needs to be

customized and optimized, and an estimate of the time needed to monitor a functioning system is needed. It is important to do a thorough workflow evaluation to ascertain what needs to be digitized and what results are anticipated. What procedures, such as those in human resources, finance, hospital services, procurement, logistics, and patient records, need to be digitized from an operational perspective? Hospitals should consider what patient records will be preserved or stored there as well as what the patient will be required to create while they are there.

What clinical care is provided by doctors, nurses, and lab reports in the hospital from the user's perspective? What information can patients and their families access? How will patients and their families be an essential part of information exchange throughout patient care in the hospital? What information and how will external healthcare providers be incorporated with the hospital if an outside hospital consultant is required? The healthcare sector will transform as a result of the Internet of Things (IoT). Technology can cut down on oversights committed while providing treatment. The Internet of Things (IoT) may also assist individuals at home, in rural and urban locations, and it can expand the reach of healthcare to wherever people are. All stakeholders must be involved in the advancement of hospital activities and services for their feedback, and all partners must be equipped to undertake digitization.

Hospitals have to assess the level of care digitization could provide to the existing system before it was implemented. Patient-centered care, including feedback on patient satisfaction, efficiency and affordability, real-time and historical access, activity tracking and early warning systems, and conceptualizing all actions under a single framework are among the guiding

principles of digitalization. The digitization of healthcare aims to improve health outcomes and performance indicators by strengthening hospital workers and resource efficiency, saving and minimizing costs, early disease diagnosis, longer patient lives, behavioral change, treatment of illnesses, quick availability of services, and quality of care, among other things.

Considering the positions and obligations of various clients, a dashboard should be built for efficient and continuous observation of hospital operations and services. Reports in digital systems must be genuine, interactive, and simple to read. It should be made very clear who will access the data and who will enter it based on their respective jobs and responsibilities. It is necessary to digitize the patient referral and feedback systems. Patients can offer insightful recommendations to enhance the services and level of performance. RFID tags can be used for inventory control, supply chain management, patient localization, and other applications. Confidentiality and privacy must be upheld to prevent misuse of the digital system.

Although resources are dispersed across numerous places, they can be shared by anybody, at any time, anywhere for individualized care. To combine and distribute the information for this, other communication methods, such as cloud computing, are utilized. Information sharing at various healthcare facilities, including PHCs and CHCs, can be done using virtual hospitals. The primary benefit of a virtual hospital is that it can offer cutting-edge medical care to anyone, whether they live in a city or a rural region. Patients and doctors can communicate via chat, voice and video calls, mobile apps, and remote or residential health monitoring systems. The future of healthcare will be bed-free

hospitals and virtual visits with physicians and nurses seated in front of computers.

The summary of a patient's medical history can be digitally preserved in an electronic health record (HER). It can contain complete and up-to-date information about lab results, allergies, past disease diagnoses, and electronic medical records (EMRs), which are digital versions of patient records and contain information about a patient's diagnosis of a disease, laboratory results, and doctor-administered treatments. The improved surveillance of patient records, authentic and updated data regarding the medication, a decrease in medical errors, prompt treatment, care quality, etc. are all advantages of linking EHR and EMR. Additionally, it improves worker productivity and efficiency and lowers costs all around. Starting with patient registration, patient use of various services, accurate data coding, claim processing, affiliation with third-party insurance providers, and eventually bill payment.

Patient history must be carefully recorded for efficient revenue management for the claim processing to be simple and speedy. Patient's electronic health record to document their medical history. This also covers the patient's swift denial of a claim for which they were ineligible. The patient benefits from this, and the hospital is aware of which medical services are covered by insurance and which are not. Standardizing the collection of patient data can be utilized to enable quick data transfer from the hospital to the insurance company regarding claims and the other way around. The repository denied and approved claim data must be included in the revenue management procedure to be able to verify and manage new patient claim data as soon as it

is received. The hospital personnel can check this repository to discover if the patient qualified for a claim or otherwise.

Future health systems will need information systems and technologies (IST) to support healthcare services since transdisciplinary practice requires effective professional communication (Katz & Moyer 2004). The use of IST to assist the delivery of health services while meeting the demands of citizens, patients, health professionals, and other providers is known as eHealth, which was made possible by the ongoing development of IST (Callens, 2015). The main goal of healthcare digitization has been to enhance administrative management. Yet, the introduction of eHealth services has the potential to inspire healthier lifestyles, greater patient and provider access to information, and an improvement in the standard and safety of healthcare (Bates & Gawande, 2003; Neuhauser & Kreps, 2010; Piot, 2012).

A fundamental and crucial step toward the adoption of new forms of practice is thought to be investing in IST and upgrading the architecture of healthcare services (such as pharmacies) (Rappuoli et al., 2014). In the coming years, eHealth services could emerge to fully utilize the capabilities of healthcare providers, increasing their position in the care network and assisting them in managing chronic diseases (Harland et al., 2021). Nonetheless, implementation issues with eHealth are regularly noted (Kreps & Neuhauser 2010; Kuhn et al., 2007). Frequently, managerial and behavioral variables are blamed for the majority of these challenges (Petrakaki et al., 2012). Several authors suggest promoting a user-centered strategy to overcome these challenges and ensure that eHealth services will meet users' demands (Armstrong & Powell, 2008).

Moreover, the user-centered strategy strengthens users' ownership of the system, resulting in improved compliance and continued system use (Paulo et al. 2017). To provide more responsive healthcare services, the problems confronting health systems around the world are complicated, necessitating innovative approaches (Christensen et al., 2016). Multidisciplinary service models must be implemented with careful planning and administration, especially when there is a lack of innovative experience and patient understanding. For instance, the appraisal of the potential of digitization in the delivery of healthcare services by actively permitting patient involvement and supporting their education was necessary for digital services.

Procurement Management Practices and Service Delivery

Inventory Management and Service Delivery

Inventory is necessary for the organization's manufacturing activities, plant and machinery maintenance, and other operational needs. Inventory management challenges have an influence on income, customer satisfaction, and sales all of which affect how well an organization performs (Schonberger, 2019). By understanding what the client wants, keeping accurate inventory records improves customer service, boosts efficiency by ensuring that resources are available when needed, and maximizes revenue by avoiding holding onto excess inventory that would eventually be written off (Foya, 2021). According to Sunday (2018), any lack of inventory essential for production is taken very seriously by management. Procurement practices are involved in the acquisition of inventory to meet customer requirements and therefore inventory management can have a bearing on quality healthcare delivery.

Procurement Planning and Service Delivery

The whole mandate of procurement management is to acquire products and services from suppliers to guarantee that the company achieves its strategic goals in a timely, cost-effective, and efficient manner (Njoki, 2018). The procurement process is as follows: identification of needs, deciding to buy or make, identification and selection of source, contracting, receipt, verification, inspection, fulfillment, and payment of needs. This cycle, however, does not detail all the activities undertaken by procurement managers such as negotiation, and rating of vendors (Matano, 2019).

The key to ensuring smooth operations for procurement managers is the art of planning. According to Lăzăroiu et al. (2020) one of the main responsibilities of procurement managers is procurement planning, which has the capability of enhancing service delivery and the efficiency of government operations. It is a role that initiates every step of the purchasing process for local governments' products and services. Khan (2018) pointed out that during the procurement planning process, some factors should be duly considered in making decisions regarding bidding and other processes in the procurement cycle.

Touching on the factors that need to be evaluated, Wang et al. (2020) stated that an evaluation team must be set up following relevant regulations, and this team should conduct a preliminary examination of all valid offers received, to determine if they meet the requirements of the solicitation document. The team must also perform a detailed examination of the offer's costs and benefits. In addition, the procurement planning team should evaluate the opportunity's compatibility with the organization's objectives and policies, the contractor's

core business strategy, present work pressure, competition, current market conditions, contract capability, firm financial situations, and others (Kavinya, 2019).

Regarding the contracting stage of the procurement cycle, according to Braulio-Gonzalo and Bovea (2020), if a company makes the correct strategic decisions and prepares the right contracts, it can assess if it is involved in poor contract management. Bataineh (2019) described contracting as the main pillar in the execution of efficient procurement management. Therefore, every contract should clearly state the basic principles, scope, and terms of execution, and provide a clear pathway for successful communication between the parties of the contract.

Said and Reginato (2018) also affirmed that the contracting party should identify the need for and implement needed changes, and evaluate the performance of contractors. They also exercise their right to accept or reject the goods and services delivered by the contractor, handle problems and resolve disputes, approve payments, and finally close the contract process (Hoekman & Mavroidis, 2020). To improve the efficiency of hospitals' supply chain and procurement functions, Senarak and Kritchanchai (2019) noted that digitization has proven to be more useful compared to the manual method. The manual method is relatively less efficient upon the introduction of e-procurement services, and hospitals with manual systems are missing out on the delivery of high-quality services associated with e-procurement systems (Gariba, 2019).

Similarly, Faheem and Siddiqui (2019) found that the development of an information system and technology has influenced procurement strategy practices. They emphasized that traditional procurement is an inefficient and

unsuccessful technique that is connected with high procurement prices and low customer responsiveness. As a result, electronic procurement has become a trend for most businesses, assisting them in achieving important success metrics such as customer satisfaction and large profit (Joghee, 2021). In Ghana, it has been discovered that the e-procurement system addresses fundamental issues influencing hospital performance, such as a lack of information for civil society partners and the general public (Gariba, 2019).

Procurement management, as with other major private sectors, has been associated with perceptions of fraud and corruption. Eryanto, (2020) looked into some of the most typical procurement mistakes. The study discovered bidder collusion, which resulted in higher pricing for purchased pharmaceuticals, kickbacks from suppliers and contractors to decrease competition and influence the selection process, and bribery to public officials who oversee the winning contractors' performance. These improper conducts result in excessive costs and poor quality of services delivered.

The effort to combat these malpractices necessitated the introduction of the Public Procurement Law 2003 (Act 663) in Ghana. Regarding this law, Ndanyu (2019) conducted a study to identify the various challenges and barriers to its implementation. The study used a mixed-methods approach, sampling 49 District, Municipal, and Metropolitan areas in Ghana's Ashanti and Brong Ahafo regions. Low capacity of procurement professionals, minimal interaction between procurement entities and the Public Procurement Authority (PPA), deliberate competition control, non-compliance with legal provisions, contract splitting into smaller lots, lack of funds, and supplier non-cooperation are the major challenges and barriers (Anas, 2020).

To achieve sustainable development in Africa, a transparent public procurement sector is seen as one of the vital factors as it helps to tackle corruption and save funds in the government purse to provide quality service to citizens (Kamath, 2018). Literature has thrown more light on the procurement process, with its key component of planning. The introduction of technology to promote efficiency in the procurement process has also been well explained. Finally, the challenges and malpractices plaguing the procurement system have also been discussed (Gathu, 2018).

In recent years, research has shifted to a more general or organizational level of satisfaction. Satisfaction, from this brand-specific perspective, is an overall rating based on multiple transient encounters with a good or service over time, and may thus be viewed as an ongoing review of a firm's capacity to offer the benefits a customer seeks (Osoro, 2019). Biswas (2021) made a similar observation that customer satisfaction has become a paramount necessity in recent times moving organizations and companies in all sectors globally to employ new innovative strategies and procedures to provide their customers better satisfaction at an effective cost.

Businesses are obligated to cut costs and grow revenue while preserving the best quality of products and services offered to their consumers as a result of the increased focus on customer satisfaction. (Dandis, 2021). Procurement management plays a crucial part in remaining competitive in such a climate by offering strategic and effective inventory management to assure cost control and client expectations, resulting in greater customer satisfaction and financial performance. Procurement management has aided the organization's external efforts by helping to improve internal activities (Naidoo & Gasparatos, 2018).

One of the aspects impacting service delivery is procurement planning which is an important and key procurement practice. Muhwezi et al. (2020) stated that procurement planning has a substantial effect on improving the effectiveness of service delivery. It is therefore vital and sometimes challenging, to set up a professionally competent procurement unit with the right skill mix, to provide technically sound and innovative procurement services to achieve better and satisfying outcomes. Effective procurement planning, according to Liwanag & Wyss (2019), is a crucial step towards making sure the proper public service is provided and strengthening the degree of service delivery that may be reached among the local people. The benefits of good procurement practices, according to Birett (2017), include an effect on quality, savings on cost, and contribution to the advancement in technology.

Ngatuni (2018) conducted a study on the impact of inventory management on customer satisfaction among manufacturing companies in Kenya. It was found that long delays in goods ordered leads to inventory shortage which reduces customer satisfaction. The author concluded that better inventory control increases customer satisfaction. The purpose of another study conducted by Mahuwi and Panga (2020) in Kenya was to determine how procurement planning and controls affected the functioning of the Kenya National Police Service. A descriptive research approach and a sample size of 48 participants were used in the study. After analyzing the data acquired, the study concluded that staff capacity building in procurement processes and planning, controls, and supervision have a significant impact on the performance of the Kenya National Police Service.

In a similar observation, Chalari (2021) posited that organizations with procurement units that exhibit sound procurement policies usually also have excellent service delivery. The transparency, reliability, precision, affordability, and high quality encapsulating the procurement of goods, works, and services enable the organization to provide quality service with ease.

Aduwo et al. (2020) did another study relating to e-procurement and its impact on service delivery levels. In their study, they concluded that the internet and other information technology have sped up communication between suppliers and buyers on transportation, inventory control, and production schedules, which eventually leads to a higher degree of customer satisfaction. Masudin et al. (2018), also affirmed that the implementation of automated and world-class procurement practices like e-product enhances organizational performance.

In addition, according to Sjödin et al. (2021), e-procurement enables firms to cut transaction costs, improve the efficiency of the internal procurement process, and foster supplier coordination. It also increases the efficiency and effectiveness of the business by automating procurement operations, speeding up internal processes, and increasing cross-organizational coordination. Despite this, there are several drawbacks to digitizing procurement systems, including Poor quality of goods and services, lack of prompt supply of delivery and late supplier payments, and funds leaking where systems fail. As a result, management is sometimes forced to revert to manual procedures (Brecht et al., 2020).

De Simone et al. (2018) conducted a study on the impact of clinical quality and process quality on patient satisfaction using a sample of 202

hospitals in the United States of America. According to the research findings, high clinical and process quality are good intermediate outcomes in figuring out patient satisfaction. This emphasizes the importance of procurement practices playing their part in ensuring high-quality clinical care in hospitals. When patients, or customers, are satisfied, healthcare organizations benefit in the long run by keeping clients. The findings of a study by Boshoff and Gray (2004) backed up this claim. Regarding the findings, good service has a positive study on both overall satisfaction and client loyalty. This means that if patients are happy with the care they received, they would most likely return to the same clinic and suggest it to others (Aladwan et al., 2021).

Weinberger et al. (2021) found that having a well-controlled inventory level improves the quality of service provision in the United States. As a result, inventory management, which is part of procurement management, is critical in protecting the hospitals' stock of medicine and other supplies, and thus the service delivery system took up the same issue, stating that understocking of medical supplies leads to physician dissatisfaction, which can lead to patient death (Kaupa & Naude, 2021).

The impact of purchasing actions on service delivery in Malawi's public service delivery system was investigated in a quantitative descriptive study. The study discovered that procurement activities sabotaged service delivery by failing to secure medicine availability. Procurement staff delays, a shortage of cash, and failure on the part of government-approved suppliers have all been mentioned as reasons for repeated stockouts. This non-availability/stock out of pharmaceuticals has been proven to be highly common, affecting service delivery in a variety of ways, including patient death, deterioration of medical

conditions, hospital overcrowding, and patient transfer to other institutions (Collins, 2018).

Quantitative research methods and an explanatory design were employed in a study at the Volta River Authority in Ghana to examine the effects of procurement policy, procurement planning, and sustainable procurement on service delivery. The workers were surveyed using a standardized questionnaire, and the results revealed that procurement policy is an essential predictor of service delivery, with a small modification to the procurement process resulting in a 62.3 percent difference in service delivery. Procurement planning and sustainable procurement were also recognized as key predictors of service delivery, with a 2.7 percent improvement in service delivery resulting from a change in units in procurement planning (Anane et al. 2019).

An important aspect that influences service delivery is procurement planning, which encompasses all of the processes taken to ensure a smooth and efficient procurement process. Mueller et al. (2019) said in one of their significant service delivery improvement mantras that "He who fails to plan for service delivery plans to fail in delivering services to the public." Entities that make purchases might use a procurement plan to boost the value of their service spending to be supplied before they advertise their procurement notifications to possible suppliers of products, works, and services. They can also use it to find and rectify any pertinent problems regarding a specific procurement.

Supplier Partnering and Service Delivery

Supplier Partnering is an integral part of procurement practices that has a significant influence on healthcare delivery. It is the process by which firms solicit tenders from prospective suppliers through predefined selection criteria

to identify the most appropriate supplier to engage in the supply of goods and performance of works and services. Inventory management is another variable that affects healthcare delivery. It describes all the steps taken to create and manage raw material, semi-finished material, and completed good stock levels so that adequate supplies are accessible either having excessive or insufficient inventories has a very little financial impact (Kareem, 2018). Inventories are essential for sustaining the market, the distribution system, and the production machinery. They act as major forces behind an organization's production and distribution systems.

Research Design

This study employed the explanatory research design. The explanatory design allows for more objective and better conclusions, which aids in the generalization of findings (Mohajan, 2018). It can be used to communicate facts about a scenario by gathering and analyzing massive volumes of data from a broad target group in a manner that is as economical as possible. The approach employs both descriptive and inferential statistical techniques for data analysis, including t-tests, correlation, mean, standard deviation, and linear regression (Hox et al., 2017). When using an explanatory design, researchers might have better control over their study techniques, according to Babbie (2020). Structured questionnaires are also applied in the development to gather data from a diverse group of respondents.

Furthermore, this strategy is the most effective for determining connections of causation and effect among variables (Beins & McCarthy, 2016). As a result, this methodology was utilized to investigate the cause-and-effect relationships between procurement practices, Service Delivery and

Digitization. However, some flaws in the explanatory design could distort the project findings (Robson & McCartan, 2016; Wildemuth, 2016). Obtaining a representative sample, according to Wildemuth (2016), can take a long time. According to Robson and McCartan (2016), data is collected according to respondents' beliefs and ideas, which could result in biased feedback and, as a result, influence the objectivity of the results (Creswell & Creswell, 2017). It was chosen as a result of the examination of the project paradigm and methodology, as well as the investigation's goal.

Procurement Management Practices, Digitization and Service Delivery

The supply chains (SCs) of hospitals have undergone transformation and reform in the digital age. The global transformation was hastened by the Covid-19 pandemic (Ibn-Mohammed et al., 2020). Accelerating digitalization has become one of the key priorities. Technology is only one aspect of digitization and it serves as both a catalyst and an enabler (Luo, 2022). Although there is no single, accepted definition of digitization, it encompasses, additionally to thinking about technology as a pull factor and guide for organizational business models, advancement of staff members' skills, adjustments to management, viewpoint, and organizational structure, empowerment of leadership, business strategies, process and development issues, customer journeys, and cultural aspects (Witschel et al., 2019).

Different layouts, uses, and combinations of these elements are made depending on the nature and operations of each organization. Before technology application influences the strategy, system, culture, attitude, and community of the entire organization and determines how the overall business model is evolving, it cannot be considered transformative (Hanna, 2018). The focus of

intra-organizational conflict has shifted to include business, services, and goods. As a result, there is increased competition between firms in the supply chain, and supply chains are crucial for gaining a competitive edge. Hospital supply systems were altered and rebuilt after Covid-19 broke out and spread across the world (Pimenta et al., 2022).

When dealing with these crises, organizations with supply chain resilience earned a competitive edge. Digitization plays a vital part in procurement and is a valuable resource since it has features like robotic delivery, e-commerce enablement, networking, transportation, and the rise of Industry 4.0. (Kumar et al., 2021). Schniederjans (2021) assert that the digitalization of procurement procedures enables the administration of several parties, which necessitates vast volumes of data and information. Digitization involves systemic and human resources technological abilities in addition to internal and external competencies. Yet, digitization can guide businesses in the direction of cost, time, and effort savings as well as an increase in productivity, efficiency, and quality (Buer et al., 2021).

By fusing technology with other resources, digitizing procurement may give a business high-quality service in the market. Since businesses now compete in all aspects of their supply chains, including procurement, hospitals that concentrate on their core competitive advantage in this area might find great success. Das et al. (2019) posited that an important issue for executives is that around 70% of digitization initiatives fail to achieve their objectives resulting in a loss of USD 900 billion. There have been studies on the impact of technology on supply chains, but less known about how digitalization will affect

procurement management strategies to improve the quality of healthcare services (Attaran, 2020).

Companies with resources that are valuable, distinctive, difficult to duplicate, and exceptional can develop value-generating tactics that are challenging for rivals to imitate. A study by Flechsig et al. (2022) revealed that the inclusion of multiple elements such as culture and structure in addition to technology, can aid organizations in integrating digitization into their procurement management practices. Technology has always been viewed by corporations as a tool for data exchange or communication. Digitization has moved up the business agenda significantly ever since the COVID-19 pandemic started. The COVID-19 pandemic's effects and consequences have painfully shown us that organizations should begin using technology as a tool to improve managerial efficiency (Chitalia & Munawar, 2020).

Technology can provide speedy and in-depth responses since digitization places a higher emphasis on the utilization of insightful and IT services and there is growing information that digitization might enhance supply chains' multi-supplier partnership relationships, customer-centricity, operational and financial performance, and cost-effectiveness (Alabdali & Salam, 2022). A study by Beaulieu and Bentahar (2021) showed that by utilizing digitization, procurement management practices may better support hospital supply networks, illustrating how the contribution of procurement may become vital in supply chains that rely on digitization. While enhanced transparency and traceability can benefit organizations and promote buyer and seller trust, the development of more transparent and traceable procurement transactions is dependent on digitization. This will enable procurement

processes to become more strategic and serve broader organizational objectives. Reinartz et al. (2019) concluded that the correct digitization in procurement may improve service quality that is difficult for competitors to match.

Jardim-Goncalves et al. (2020) further revealed that through the use of better data, collaborative platforms, innovation laboratories, sharper analytics, more processing capacity, and better visualization tools, digital procurement may provide improved options for strategic decision-making. These options include access to supplier innovation. Digitization is crucial for ensuring that the advantages of tracking logistical support and assistance get to the proper individuals as quickly as possible. Partnering with suppliers is crucial because it might affect delivery lead times, according to Kumar et al. (2017). The type of supplier engagement may have an impact on how long the procurement cycle is. To achieve the necessary volumes of supply at the right time, with the right cost, and in the right area, technology can be utilized to ensure there are as few errors as possible and to streamline the process.

The challenge is in figuring out how to implement digitization to increase the strategic nature of procurement rather than tactics (Björkdahl, 2020). Hospital supply chains have the potential to make procurement effectiveness the centerpiece of companies' supply chain value propositions (Rutkowski et al., 2021). Yet this brings up a lot of questions, such as how procurement relates to new business strategies and how business activities should be better developed, considering what types of organizational structures will be most effective in terms of digitization, human capabilities, and organizational structures. Numerous studies have offered justifications for using digitalization in procurement to support service delivery, including cost savings,

enhanced efficiency, reduced mistakes, exceeding client satisfaction, product availability, reduced waste, and more (Choudhury et al., 2021).

Conceptual Framework

A conceptual framework is a logically constructed network of linkages between different factors that are considered key components of the dynamics of the situation being studied (Christofi et al., 2021). Following an extensive analysis of existing literature, the framework below was created. It displays the impact of procurement management practices on healthcare delivery, such as the availability of goods or stockouts. The procurement practices included inventory management, contract management, procurement planning, and supplier partnering as independent variables, whereas service delivery criteria like assurance, respect, reliability, benevolence, and tangibility are dependent variables. Also, digitalization as a moderating variable included the use of digital channels, advanced technological equipment and technological know – how and digital technologies. The dependent variables are controlled by the independent variables through the 'availability of goods and supplies' as indicated in Figure 1.

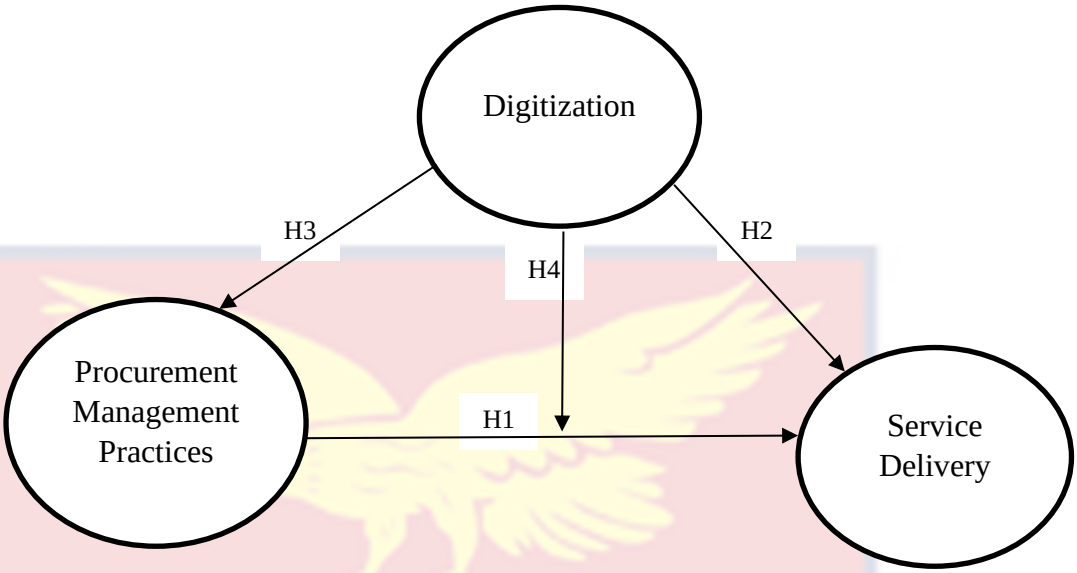

Figure 1: Conceptual Framework

Source: Authors' Construct (2022)

Chapter Summary

This chapter conducted a review of related literature. The theoretical foundations of this work were the institutional theory and the theory of information systems. A review of empirical studies was also done. The conceptual framework that explains how digitization mediates the relationship between the dependent variable (Service Delivery) and the independent variable (Procurement Management Practice) was also presented.

CHAPTER THREE

RESEARCH METHODS

Introduction

The research techniques utilized to carry out the study were presented in this chapter. The chapter presents the research philosophy, approach and design, population, sample, and sampling procedures, as well as instruments used to collect the data. Furthermore established were the instrument's reliability and validity. Together with discussing ethical issues, the data-gathering methods and data-processing techniques utilized to analyze the study's findings are also covered.

Research Paradigm

The positivist paradigm is founded on the concept that the world is one, fixed, quantifiable, and observable reality, and true knowledge is objectively quantifiable (Ryan, 2019; Bell et al., 2018). The philosophies broaden theories and ensure that only scientific methods are used to achieve genuine knowledge. It also presumes that objectivity and precision are desirable qualities, whereas subjectivity is intrinsically deceptive (Ragab & Arisha, 2018). Positivists assume that this paradigm provides an appropriate strategy for generating reliable knowledge through quantitative methodologies (Bell et al., 2018).

The positivist paradigm was used to underlie the research as it seeks to understand the social world objectively. More precisely, the study seeks to understand the mediating effect of digitization on the relationship between procurement management practices and service delivery objectively and factually (Martelli & Greener, 2018). This philosophy also employs relevant methods such as correlation, linear regression and ANOVA analysis to explain

real-world events (Bell et al., 2018; Martelli & Greener, 2018). Based on these assumptions coupled with the study's nature, the positivism philosophy was employed.

Research Approach

A research approach encompasses generalizations to precise data-gathering procedures, assessment, and interpretation (Martelli & Greener, 2018; Creswell & Clark, 2017). Due to the nature of this research, a quantitative method was adopted. This method permits quantitative methodologies to be used in the description of study concerns, which aids in the generalization of outcomes (Creswell & Clark, 2017). Quantitative analysis is a type of data analysis that is scientific, quick, and draws reasonable conclusions from numerical principles acquired through data collection methods such as surveys and questionnaires (Creswell, 2014). Due to this, it is beneficial to look into precipitate interactions among variables (Creswell & Creswell, 2017).

However, the method has drawn criticism for failing to accurately predict people's actions Crotty & Crotty (1998). According to Crotty and Crotty (1998), the approach is stiff, unnatural, and unproductive in producing hypotheses. Other critics have argued that the approach could make it difficult to establish a research model, reliance on numbers could limit the required information and its findings can be misleading if false information is provided by respondents (Ryan, 2019). Despite these criticisms and limitations, the quantitative approach was adopted due to its qualities. It is also the most suitable approach for investigating the mediating effect of Digitization between the relation procurement management practices and Service Delivery.

Study Area

The study was conducted at private hospitals in the Greater Accra region of Ghana. These hospitals are 319 in total and have thousands of staff strength (HeFRA, 2022). There has been a major shuffle in the administrative procedures, personnel, role, and the sector of procurement. For this reason, the private hospitals in Greater Accra were an ideal setting for this study which seeks to investigate the mediating effect of digitization on the relationship between procurement management practices and service delivery.

Study Population

The designated criterion for this study is personnel who often interact with the procurement section and are directly or indirectly involved in procurement planning at the hospital. As such, the target population comprises all 319 procurement personnel of private hospitals in the Greater Accra region of Ghana (HeFRA, 2022).

Sampling Procedure

The data was gathered from each unit (member) of the target population using the census approach. The census approach was used to verify that the findings of a study were more accurate and trustworthy (Creswell, 2014). Furthermore, the researchers placed a high priority on each unit in the study's target population. As a result, one (1) important representative from each of the 319 Private Hospitals which are located in Accra participated in the data collection exercise using a structured questionnaire. Because their ideas, experience, and positions at work directly affect the strategic plans of their sector in connection to procurement management practices, key personnel were chosen as respondents. All 205 questionnaires retrieved from the data

collection were usable for the study hence, a response rate of 64.2% was obtained for the study.

The Hair et al. (2012) minimum sample estimate criterion, sometimes known as the "10-times rule," was employed to calculate the sample size required for the PLS-SEM approach. The criterion indicates that a minimum number of samples should be 10 times the greatest number of the structural model's structural paths aiming at a single construct. The structural model had the most structural routes pointing at a specific latent concept in this investigation (12). As a result, the least sample size possible was 12 * 10 = 120. Other academics have mostly endorsed the 10-times technique (Hair Jr et al., 2021; Hair et al., 2014; Goodhue et al., 2012). As a result, this criterion was used to establish the study's minimum sample size indicating that 205 responses received was suitable for the study.

Data Collection Instrument

To acquire data for the PLS-SEM approach, a main data collecting tool known as the structured questionnaire was used. According to Marcoulides et al. (2009), each responder must answer an identical series of questions arranged in a specific order on this instrument. A well-structured questionnaire is ideal for a quantitative study since it facilitates the collection of objective responses that can be statistically analysed (Rahi et al., 2019). Only closed-ended and straightforward questions were employed in this investigation. This instrument was created in both paper and electronic (Google Forms) formats and was given to a delegate from each hospital evaluated. Organized surveys ensure that objective and reliable data is collected more consistently (Neelankavil, 2007).

During the survey, it also ensures respondents' confidentiality, privacy, and convenience.

Four (4) sections, lettered A to D, made up the questionnaire's format. The demographics of the respondents who responded on behalf of their hospitals were questioned in Section A. Section B featured fifteen (15) items to assess the procurement management practices, Section C contained eight (8) items to assess service delivery, and finally, Section D contained eight (8) items to assess digitization. The question items were graded on a Likert-like scale of 1 to 7, with 1 indicating the least agreement and 7 indicating the most agreement. This scale, according to Harpe (2015), allows researchers to link qualitative dimensions to quantitative metrics analysis.

The scale is the most accurate way to measure people's thoughts and beliefs (Harpe, 2015). This scale was particularly beneficial since it allowed data to be analysed using both descriptive and inferential statistics tools (Sartas, Schut, Proietti, Thiele & Leeuwis, 2020). The independent variable was procurement management practices (inventory management, contract management, procurement planning, and supplier partnering); digitization serves as the study's mediating variable, with service delivery presenting as the main dependent variable.

Data Processing and Analysis

The data collected through survey-based research must first undergo "editing, sorting, coding, mistake checking, and mathematical calculations" before processing (Zikmund, Babin, Carr & Griffin, 2003, p34). According to McNabb (2017), to examine and validate issues with raw data, a statistical analysis must be performed after editing, sorting, and coding. Before coding and

transmitting data to data processing, for instance, data editing and sorting operations are required to assess and repair data for omissions, dependability, and consistency. Data editing is also done to ensure that each questionnaire is complete and that each respondent is eligible. On the other side, the coding process is used to recognize and classify each response, along with the associated numerical symbols and scores.

Additionally, cleaning and screening of data are performed to guarantee that no missing values exist and that the data to be coded is consistent (Treiman, 2014). According to Treiman (2014) and Hair et al. (2011), these procedures improve data analysis accuracy while guaranteeing that data analysis methodologies' assumptions are not violated. They went on to say that confirming data accuracy is critical for ensuring the credibility of irregular replies, means, standard deviations, and values. They went on to say that confirming data accuracy is critical for ensuring the credibility of irregular replies, means, standard deviations, and values. Finally, data were coded, as required in quantitative research, by assigning numbers to each statement on the questionnaire. Then after, the data was processed using SMART-PLS 3 and IBM SPSS Statistics version 26.

Following that, the data was examined using structural equation modeling using partial least squares. An inferential statistical technique, as well as descriptive statistics like frequencies and percentages (PLS-SEM). Frequencies and percentages were used to describe the demographics of the respondents and the hospital. The PLS-SEM was utilised to test the study's hypotheses. The PLS algorithm, as well as the PLS-SEM model's bootstrapping outcomes, were extensively addressed. The PLS technique output included

indicators for multicollinearity, reliability: indicator and concept, validity: discriminant and convergent, and outer model significance (Hair et al., 2014). Before bootstrapping, which emphasized the test findings and was explained, these fundamental assumptions were met and discussed.

Data Analysis Methods and Justification

(PLS-SEM) is a collection of numerical models that describe interactions between various variables (Hair et al., 2012). Samani (2016) asserts that there are two primary methods for structural equation modeling: variance-based or partial least squares and covariance-based SEM (CB-SEM) (PLS-SEM). Due to the magnitude of these discrepancies, CB-SEM models include factors that lessen the difference in the computed and observed covariance matrices, leading to goodness-of-fit indices. To raise the variance of each dependent variable, the PLS-SEM model is utilized (Samani, 2016; Hair et al., 2014). PLS-capacity to minimize the residual variances of endogenous variables is used to provide parameter estimates (Hair et al., 2021; Vinzi, Chin, Henseler & Wang, 2010).

The PLS-SEM can also handle normality violations (multivariate normality), and it does not require any hard assumptions about the raw data's distributional features (Hair et al., 2014). They claim that one of the most significant approaches for multivariate statistical analysis in use today is this one. This technique employs a confirmatory (hypothesis-testing) strategy to investigate the structural theory of a situation (Babin, Hair & Boles, 2008). According to Rönkkö and Evermann (2013) and Henseler et al. (2009), it is a challenging statistical technique for assessing correlations among constructs that do not always require a large sample size before analysis. Also, it contains

more advanced and exacting statistical techniques for handling complex models (Hair et al., 2014; Hair et al., 2012).

In addition, because the PLS-SEM tool can manage normality violations and missing data, no significant assumptions about the raw data's distributional features are required (Hair et al., 2012). Within its measurement models, this statistical tool uses both regression and factor analysis (Ullman & Bentler, 2012). Ringle et al. (2012) claim that the PLS-SEM model maximizes the variances of all endogenous variables rather than elucidating the covariances of all indicators. The PLS-SEM was employed to evaluate the study's hypotheses because of its capacity to deal with normality breaches. It can also investigate causal relationships between and among components using a variety of evaluation items.

Reflective and Formative Indicators

Traditional measurement approaches in business research are primarily based on reflecting indicators, according to Hair et al. (2014). This makes sense because visible indicators are supposed to depict hidden variable swings. According to Diamantopolus, Riefler, and Roth (2008), the latent variable precedes the defined indicators in the causal chain. Because of this, it is projected that changes in the latent variable, including those in the multi-item scale, will reflect changes in all of the observed indicators. In contrast, with the opposite direction of causation in formative models, the content of the indicators defines the meaning of the latent variable. This is true because the indicators are the cause of the hidden variable.

Reflective indicators, according to Coltman et al. (2008) are required to be internally consistent in classical test theory, whereas formative indicators are

not. As such, researchers should adhere to these principles when selecting whether to model latent variables reflectively or formatively. As a result, reflective models were used in the study, and reflective indicators were used to evaluate its constructs. The endogenous latent variable will reflect any changes in an observed indicator, such as a multi-item scale for external latent variables.

Validity and Reliability

Validity is the extent to which data analysis results accurately reflect the topic being studied, whereas reliability is the degree to which repeated use of a research tool consistently produces the same data or results (Reynolds et al, 2021). Validity was ensured by seeking expert opinions on the topic through an extensive review of the literature and constant discussions with supervisors. To ensure reliability, the questionnaire was pretested among five (5) unit heads at private hospitals in the Greater Accra region of Ghana. This helped to identify ambiguities or errors and correct them before the main study was conducted (Chang et al., 2019).

Common Method Bias

To look at the possibility of common method bias in the data collected, this study used both Harman's one-factor test and the full collinearity test. The study variables were presented using Harman's one-factor test, and the first component accounted for 9.168% of the variance, which is less than the suggested threshold of 50% (Guba, 2020), indicating that common technique bias is not likely to taint the research findings. Once more, the entire collinearity test based on the regression findings revealed that all VIFs are below the suggested cutoff point of 3.3 (Kock, 2017), indicating that the model is unaffected by common technique bias.

Measurement of Variables

The variables in this study were measured based on existing empirical literature in the areas of procurement management practices, service delivery, and digitization at the private hospitals in the Greater Accra region of Ghana. This enabled the design of a scale-based device. To test the elements of the research model, a questionnaire with a 7-Likert scale contained constructs for measuring inventory management, contract management, procurement planning, supplier partnering, healthcare service delivery, and digitization. Presented in Table 1 are the various variables with their measurement indicators and sources.

Table 1: Measurement of Variables

Variable	Measurement Indicators	Source
Inventory Management (INV)	Inventory control system, required commodities for service delivery, Levels of stock for service delivery, Optimum quantities of commodities,	Anane, Adoma, and Awuah (2019); Parilla, Evangelista, Aurelio and Bullalayao (2022).
Contract Management (CM)	Compliance with terms of contracts, Following due process in executing contract	Anane, Adoma, and Awuah (2019); Parilla, Evangelista, Aurelio and Bullalayao (2022).
Procurement Planning (PP)	Approved budget for procurement plan, Budget deficits, Procurement practice process, Needs assessment.	Anane, Adoma, and Awuah (2019); Parilla, Evangelista, Aurelio and Bullalayao (2022).
Supplier Partnering (SP)	Competitive tendering in the selection of all suppliers, Predetermined evaluation criterion, External forces outside the evaluation panel, Procurement plan, Order for all purchases.	Anane, Adoma, and Awuah (2019); Parilla, Evangelista, Aurelio and Bullalayao (2022).
Service Delivery (SD)	Patients situation and right, Recognition of service efforts of staff, Adequate support from employers, Serene and comfortable environment for patients and staff, Sense of	Anderson, E.A.(1995); and Lee (2017).

	closeness and friendliness, Information on clinical review and follow-ups, Privacy during consultation, Availability of all prescribed drugs and ability to seek assistance.	
Digitization (D)	Digital channels to provide customer service, Advanced skills and technological know-how, Automation of core processes, Usage of analytics to make better operational decisions, Digital technologies to understand customers better, Advanced technological equipment aids in swift healthcare provision, launching new business models based on digital technologies, Digital technologies increase the performance of existing products and services.	Lee (2018); Zhang and Qi (2021)

Source: Authors' Construct (2022)

Ethical Considerations

The University of Cape Coast's institutional review board approved the study before it was conducted. The researcher described the study's purpose and method to the respondents. Also, participants were assured of confidentiality and protection of their integrity (Barfi, 2020). This implies that all responses given remained confidential, accessible only to the researcher and supervisors, and cannot be attributed to them in the final report of the study. To promote anonymity, participants were also not compelled to write their names on the questionnaire. Finally, they were given the assurance that they had the freedom to discontinue the study at any time without repercussions.

Chapter Summary

The important features of research methods were examined in this chapter. The positivist paradigm and a quantitative research method were employed in the study. Primary data were gathered utilizing a structured questionnaire and processed using IBM SPSS Statistics (v. 26) and Smart PLS3. Finally, data analysis was conducted with the PLS-SEM, and the findings were reported in the following chapter as tables and figures.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the data interpretation and analysis in conformity with the study's research goals. This study's goal was to examine how procurement management practices affect service delivery at private hospitals in the Greater Accra region of Ghana, with the function of digitization as a mediating factor. A well-structured questionnaire was used to gather the data. The study set out to achieve four objectives. The study's goals were examined by structural equation modelling using the partial least squares (PLS) method. This chapter addresses respondent demographics, data presentation, and the four research objectives.

Demographic Information of Respondents

The demographic details of the respondents who took part in the study are listed in this section. Frequency and percentage were used to quantitatively define the traits of these respondents. Table 2 presented the outcomes. Data on the demographics of the survey respondents were presented in Table 2. It was discovered that men (62.9%) made up the majority of respondents, with women accounting for the remaining percentage (37.1%). Even though men made up the majority of respondents, women were fairly represented, enabling a study that compares men and women based on gender.

Table 2: Demographic Information of Respondents

Variables	Options	Frequency	Percentages
Gender	Male	129	62.9
	Female	76	37.1
	Total	205	100.0
Age	21 - 30 years	33	16.1
	31 - 40 years	81	39.5
	41 - 50 years	57	27.8
	51 - 60 years	23	11.2
	Above 60 years	11	05.4
	Total	205	100.0
Work experience	Less than 1 year	21	10.2
	1- 5 years	43	21.0
	6 - 10 years	90	43.9
	More than 10 years	51	24.9
	Total	205	100.0
Educational level	Postgraduate degree	31	15.1
	First Degree	97	47.3
	Diploma/HND	45	22.0
	SHS	13	06.3
	Professional Certificates	19	09.3
	Total	205	100.0

Source: Field Survey (2022)

In terms of respondents' gender, the findings indicate that men (62.9%) made up the majority and women (37.1%) the minority. Female respondents were fairly represented even though males made up the majority of the respondents, which also allows for a gender-based comparison study. Furthermore, it was shown that the majority of respondents (39.5%) fell between

the 31–40 age group. Among 41–50 years and 21–30 years, respectively, were 27.8% and 16.1%. Furthermore, 51 to 60 years old and above made up the remaining 11.2% and 05.4%, respectively. The respondents' age distribution was in some ways rather youthful, which meant that, with the help of effective variable step planning and management consulting techniques, the hospitals in question may continue to operate for a longer working period.

The findings show that 43.9% of respondents have been in the workforce for 6 - 10 years, and 24.9% of employees have been in service for more than 10 years. 1–5 years and less than 1 year made up the remainder 21.0% and 10.2%, respectively. Regarding academic attainment, the analysis shows that 47.3% of respondents had earned a first degree, 22.1% had a diploma or HND certificate, 15.1% additionally had a postgraduate degree, 09.3% had a professional certificate, and the lowest level of education was a senior high school with a rating of 06.4%. In cases when important information can be provided, the respondents' educational backgrounds show that they all had some type of higher formal education, which justifies the use of structured questionnaires for the primary data collection.

Assessment of the PLS-SEM

Using a structural equation modelling tool and the partial least square (PLS) approach, the study's research goals were investigated. To essentially achieve satisfactory validity and reliability of the study, key underlying assumptions or model qualities including item loadings, indicator reliability (IR), construct reliability (CR), convergent validity (average variance extracted), multicollinearity (VIF), and discriminant validity were first assessed

(Hair et al.,2014). Also, these model parameters were examined to explain the outcomes of the structural model (Henseler et al., 2009; Ringle et al., 2011).

Model specification (structural and measurement)

This section described the model's structure by listing the exogenous and endogenous variables used in the study and their corresponding characteristics. One exogenous, one endogenous, and one moderating variable made up the model for the research. The model's structure is shown in Figure 2.

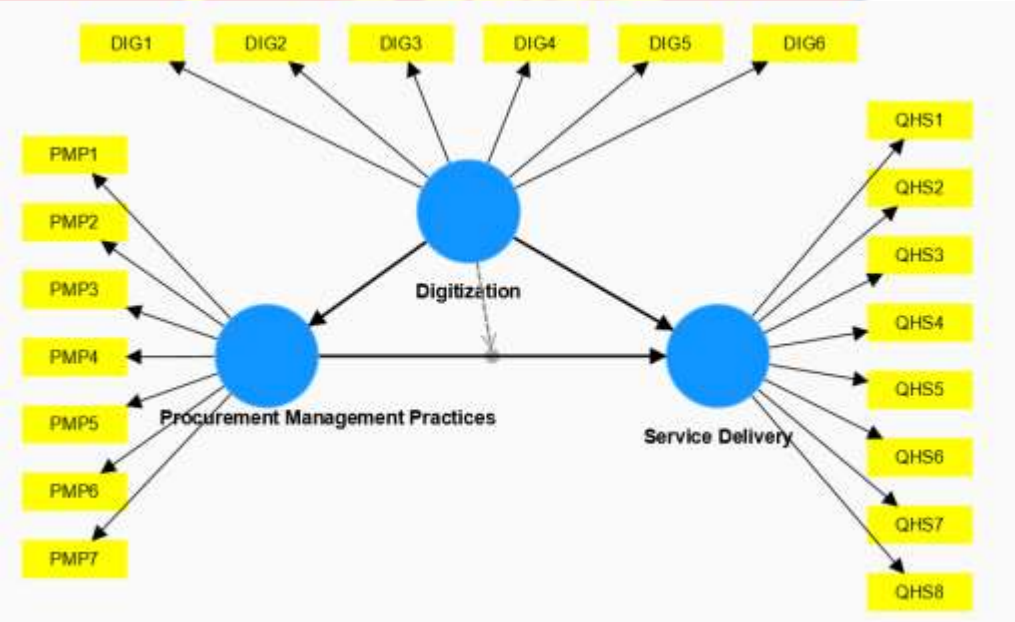

Figure 2: Structural Equation Model

Source: Authors' Construct (2022)

Figure 2 shows that there was seven indicator for the exogenous variable: procurement management practices (PMP1, PMP2, PMP3, PMP4, PMP5, PMP6 and PMP7)). The moderating variable was digitization (DIG1, DIG2, DIG3, DIG4, DIG5, and DIG6). Service Delivery was the final endogenous variable represented as (QHS1, QHS2, QHS3, QHS4, QHS5, QHS6, QHS7, and QHS8). Four path hypotheses were created in the model

using the latent variables. These path hypotheses predict that the exogenous variable, endogenous variable, and moderating variable will all be positively correlated. The path hypotheses specifically projected the connections between DIG and PMP, DIG and SD, PMP and SD, and PMP x DIG > SD.

The item loadings (indicators) of each construct were examined to analyze the model's structural stability. This was done to evaluate how well each construct was being measured by each indicator (item loadings) within the scope of the study. The reasonable assumption is that a construct quality measure is an item or indicator with a loading of 0.70 or below (≥ 0.70) (Henseler et al., 2009). However, if the loading is less than 0.70, the item or indicator is not a significant indicator of the construct and is therefore eliminated from the model. Figure 2 displays the model after the evaluation was represented. The figure demonstrates some of the item loadings for each construct were lower than the 0.70 recommended cut-off frequency by Henseler et al. (2009). This demonstrates the study's items (indicators) did not fairly represent the study's constructs in the hospital population.

Measurement Model Assessment

Findings of the model components, consisting of internal consistency reliability (indicator reliability (IR), construct reliability) and convergent validity (average variance extracted) are shown in Table 3.

Table 3: Assessment of Indicator Factor Loadings, Construct Reliability, Validity Results, and Variance Inflation Factor Results

Variables	Indicator Loadings	Outer VIF	CA	CR	AVE
Digitization			**0.896**	**0.921**	**0.660**
DIG1	**0.758**	1.814			
DIG2	**0.755**	2.463			
DIG3	**0.845**	2.539			
DIG4	**0.865**	3.725			
DIG5	**0.811**	3.734			
DIG6	**0.832**	2.477			
Procurement Management Practices			**0.906**	**0.925**	**0.637**
PMP1	**0.752**	2.016			
PMP2	**0.777**	2.002			
PMP3	**0.879**	3.339			
PMP4	**0.846**	3.965			
PMP5	**0.782**	3.161			
PMP6	**0.776**	2.880			
PMP7	**0.768**	1.835			
Service Delivery			**0.930**	**0.943**	**0.673**
QHS1	**0.814**	3.019			
QHS2	**0.746**	2.333			
QHS3	**0.854**	3.585			
QHS4	**0.891**	4.054			
QHS5	**0.835**	3.187			
QHS6	**0.833**	2.862			
QHS7	**0.778**	2.232			
QHS8	**0.806**	2.982			

IR (rho_A) –Indicator reliability; CR – Construct Reliability; AVE – Convergent Validity.

Source: Field Survey (2022)

Internal Consistency Reliability

The study's indicator and construct reliability were shown in Table 3. Indicator reliability (IR) presents the percentage of an indicator's variation that could be explained by the latent variable that underlies it (Hair et al., 2012). The fundamental premise of IR is the cut-off value for any individual indicator should be greater than 0.7. (Wong, 2013; Latan & Ghozali, 2013; Hair et al.,

2011; Chin, 2010). As stated by Vinzi et al. (2010), the threshold value is glaring evidence the shared variances of a construct and its indicator are lower than the variance of the measurement error. As a result, indicator reliability (IR) is a useful tool for evaluating a set of scale items' different constructs. The Cronbach Alpha and rho A results were used to achieve this. According to Table 3, each latent variable's indicator reliability outcome using the Cronbach Alpha method was as follows: DIG (0.896); PMP (0.906); and SD (0.930).

The findings show that each latent variable's threshold (>0.70) contented the acceptance criteria, proving its reliability for the model. The results of the construct reliability scores for each study construct were also shown in Table 3. The CR explains how well a specific variable is measured when its assigned measurement indications are taken together.

According to Bagozzi and Yi (1988) and Ringle et al. (2012) construct reliability (CR) measures how well a particular construct is appraised by its indicators when they are combined. This indicates that CR demands a high degree of mutual correlation between all the indicators allocated to a particular construct. Since composite reliability is suited for evaluating how effectively assigned indicators measure a construct, the construct reliability result was achieved using it (Bagozzi & Yi, 1988). The CR value should, as a general rule, be 0.70 or higher (Bagozzi & Yi, 1988; Ringle et al., 2012). The findings revealed that all CR values were greater than 0.70, with the lowest value being 0.921 and the highest being 0.943. Specifically, these are DIG (0.921); PMP (0.925); and SD (0.943), in that order. This indicates that there were close connections between all of the provided indicators and the corresponding structures.

Convergent Validity

The study's convergent validity (CV) findings were also presented in Table 3. The Average Variance Extracted (AVE) method is often used to evaluate the convergent validity (CV) of PLS-SEM models (Hair et al., 2011; 2012). The AVE indicates how a construct captures an indicator's variance in proportion to its overall variance and measurement error variance, according to Hair et al. (2011). By looking at the AVEs of each variable in the SEM model, the study explored CV. Fornell and Larcker (1981); Bagozzi and Yi (1988); and Hair et al. (2011), all suggested an AVE with a minimum threshold of 0.5 for a construct to show convergent validity. The findings showed the AVEs of all the latent variables were > 0.5 and varied from 0.660 to 0.673, indicating that the measurement scale was valid and convergent.

Discriminant Validity

As recommended by Hair et al., the study further tested the model's discriminant validity to evaluate the model's quality further (2011). Fornell and Larcker's (1981) criterion and, more recently, the Heterotrait-Monotrait (HTMT) ratio were employed to test the discriminant validity. Discriminant validity, for example, guarantees the study's latent variables are not related to one another, according to Fornell and Larcker (1981). It is possible to evaluate the structural model for collinearity challenges using discriminant validity (Hair et al., 2014). According to Hair et al. (2017), the degree of collinearity for discriminantly valid conceptions is frequently low. The factorial loadings in each idea should be bigger than all other relevant variables among the latent variables, according to Fornell and Larcker's (1981) criterion, to ensure

discriminant validity (Fornell & Larcker, 1981; Chin, 2010). The results were displayed in Table 4.

Table 4: Fornell-Larcker Criterion for Checking Discriminant Validity

	Digitization	Proc. Mgt. Practices	Service Delivery
Digitization	**0.821**		
Proc. Mgt. Practices	0.801	**0.816**	
Service Delivery	0.777	0.776	**0.823**

Note: Diagonal elements in bold = square root of AVE; Off-diagonal elements = correlation between constructs.

Source: Fornell and Larcker (1981)

The factor loadings in each construct are larger than each of the other correlation coefficients between the latent variables, as shown by the discriminant validity result in Table 4. The inference is that each variable is unique from every other variable. This indicates that each construct's metrics are distinct. The generality suggested by Fornell and Larcker (1981) was therefore met. Finally, the Heterotrait-Monotrait (HTMT) ratio was used to test the discriminant validity. This method for assessing discriminant validity in variance-based structural equation modeling is very recent (Rigdon 2014; Sarstedt et al., 2014).

According to Sarstedt et al. (2014), the HTMT ratio has become a widely used standard for evaluating the connections between latent variables. They suggested using the HTMT ratio rather than the Fornell-Larcker criterion and cross-loadings to evaluate discriminant validity. This is due to the HTMT ratio's ability to identify a lack of discriminant validity under typical study conditions, which makes it perform better than the Fornell-Larcker criterion and cross-loadings. The outcomes of the HTMT ratio were displayed in Table 5.

Table 5: Heterotrait-Monotrait (HTMT) Ratio

	Digitization	Proc. Practices	Mgt.	Service Delivery
Digitization				
Proc. Mgt. Practices	0.831			
Service Delivery	0.814	0.775		

Source: Field Survey (2019)

Wetzels, et al. (2009) claim that to obtain discriminant validity, the HTMT values (correlation values among the latent variables) should be less than 0.85 (< 0.85). All of the construct values in Table were lower than HTMT. This suggests that every construct is different from every other construct.

Multicollinearity Among Exogenous Variables

Here, the study employed the values of the inner (Table 6) and outer (Table 2) Variable Inflation Factors (VIF) to further test for multicollinearity. Multicollinearity analysis, according to Hair et al. (2014), is examined to verify the path coefficients are impartial and independent while reducing the substantial levels of collinearity among the predictor constructs.

Table 6: Multicollinearity Among the Constructs (Inner VIF) Values

	Digitization	Procurement Management Practices	Service Delivery
Digitization			2.617
Procurement Management Practices	1.000		3.727
Service Delivery			

Source: Field survey (2022)

According to Pallant and Manuel, VIF values greater than 10 suggested multicollinearity among the independent variables, which affected the creation of a potent PLS-SEM model (2007). The VIF values for each construct should be lower than the cut-off value of 5.0, according to Hair et al. (2014). As shown by the table, the exogenous variables' inner VIF values were below the cut-off value of 5.0. From Table 6, the various indicators' outer VIF values varied from 1.000 to 3.727. These are instantly recognizable signs that all VIF values fall from the thresholds of 5 recommended by Hair et al. (2014). This outcome further demonstrates that the indicators used to evaluate the various exogenous factors do not exhibit multicollinearity. Hence, Ringle et al. (2015) support the findings.

Explanation of Target Endogenous Variable Variance

The PLS-SEM calculation of the model's coefficient of determination (R^2) based prediction accuracy was presented in this part. Many related estimations, among the impact magnitude (f^2) and predictive relevance, were made using the Stone-Giesser test criterion (Q^2).

Table 7: Explanation of Target Endogenous Variable Variance

Latent Variable	R^2	f^2	Q^2
Procurement Management Practices	0.614	0.161	0.422
Digitation		0.199	
Service Delivery	0.621		0.443

Note: L.V. = Latent Variable, R2 = R squared, f2 = Effect size, Q2 = Predictive relevance
Source: Field Survey (2022)

Coefficient of Determination (R^2)

The section covered the model's prediction accuracy concerning the R^2 results. As cited by Hair et al. (2011), R^2 shows the combined impact of the exogenous variable (PMP) on the endogenous variable. (SD). R^2 also shows the connection between the volatility of the independent variable and the dependent variable (Cohen, 1988; Chuan, & Penyelidikan, 2006). According to Thalheimer and Cook (2002); and Henseler et al. (2009) criteria, exogenous variables in the inner route with R^2 results of 0.75, 0.50 and 0.25 suggest that the model is significant, moderate, and weak, respectively.

According to Table 7, R^2 coefficient of 0.621 was obtained. The R square value suggest that digitization and procurement management practices explains 62.1% of the variation in service delivery. According to the setting of this study, the involvement of Procurement Management Practices (PMP) and digitization (DIG) in any change in SD of private hospitals is moderate based on the standards set forth by Hensler et al. (2009). Also, digitization was found to explain 61.4% of changes in procurement practices among the private hospitals in the Greater Accra Region of Ghana.

Effect Size (f^2)

The effect size (f^2) of each exogenous (Independent) variable was analyzed using Cohen's (1988) impact indicator criterion, with values of 0.35 (large), 0.15 (mid), and 0.02 (small), respectively. According to Table 7, Digitization had the greatest impact on Service Delivery (SD) in the model, as indicated by its f^2 value of 0.199. Digitization had a moderate effect on service delivery of the private hospitals. Procurement Management Practices (PMP) also had effect size of 0.161 indicating a moderate effect on service delivery.

According to the findings, there will be a considerably greater impact on service delivery when private hospitals in Ghana's Greater Accra Region apply acceptable Procurement Management Practices (PMP) and digitization.

Predictive Relevance (Q^2)

According to Stone-(Q^2) Geisser's test, the model's ancillary component's predictive importance (Hair et al., 2014). Q^2 is analyzed by discarding some data from the matrix, running the model, and then extrapolating the missing data from the results (Roldan & Sanchez-Franco, 2012). According to Chin (2010), the construct's predictive relevance is reached if its values are greater than zero. Henseler et al. (2009) state that, $0.02 \leq Q^2 < 0.15$ indicates a minor effect, $0.15 \leq Q2 < 0.35$ suggests a moderate effect and $Q^2 > 0.35$ indicates a high effect. According to Sarstedt et al. (2014), Q^2 is intended to display predictions but does not demonstrate the accuracy of the forecast. All of the Q^2 values from the factors in the table were greater than 0.35 indicating high predictive relevance.

Significance of Path Coefficients

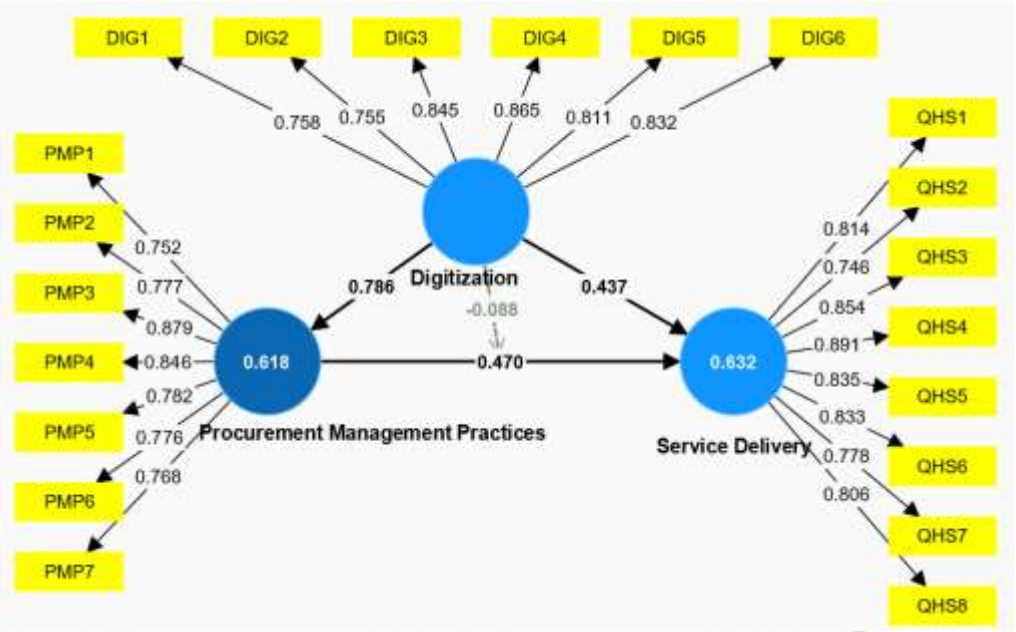

Figure 3: Final Model

Source: Author's Construct (2022)

The investigation continued by putting the four research hypotheses to the test after evaluating the measurement model to make sure it complies with the PLS-SEM standard. The specific hypotheses examined how Digitization on Procurement Management Practices (DIG-PMP), Digitization on Service Delivery (DIG-SD), Procurement Management Practices on Service Delivery (PMP-SD), and Digitization's moderating role in the relationship between Procurement Management Practices and Service Delivery (PMP x DIG-SD) at Private Hospitals in Greater Accra Region of Ghana. The t-statistics obtained by 5000 bootstraps were used to assess the hypotheses by evaluating their strength and direction using the path coefficient (β) and significance degree, as advised by Hair et al (2014). Results from the PLS-SEM tests that were undertaken on the hypotheses are indicated in Table 8.

Table 8: Hypotheses Decisions

	(β)	t-stats	p-values	Decision Rule
DIG -> PMP	0.786	19.640	0.000	H_1 (Supported)
PMP -> SD	0.470	4.218	0.000	H_2 (Supported)
DIG -> SD	0.437	3.914	0.000	H_3 (Supported)
PMP x DIG ->SD	0.129	6.062	0.023	H_4 (Supported)

Note: * = t > 1.96; P<0.05

Source: Field Survey (2022)

Based on the t-statistic results, the research hypotheses for the study were evaluated. According to Hair et al. (2014) and Henseler et al. (2014), t-stat values over 1.96 and p-values of 0.05, respectively, are equivalent. When the p-value is less than 0.05 and the model's t-stats are greater than 1.96, then there is a significant link between the variables. Since Table 16's t-stats are >1.96 and demonstrate a substantial correlation between the variables, it can be inferred that the directed hypothesis presented there is supported. The sections that follow discuss the hypotheses' findings.

Discussion of the Study's Results

Effect of Digitization on Procurement Management Practices

Digitization (DIG) had a considerable impact on Procurement Management Practices (PMP) according to the study's first hypothesis (H_1). The study's hypothesis was supported, as indicated by the t-statistical value of 19.640 and the p-value of 0.000. Since the t-stat for the hypothesis was > 1.96, it can be concluded that DIG significantly affects PMP. Also, the result of 0.801 shows that DIG and PMP have a considerable positive association. Hence, an increase in DIG analysis will result in a 78.6% rise in PMP. This suggests that DIG is crucial in guaranteeing efficient procedures that promote the Greater

Accra Region's private hospitals' procurement practices. The findings of the study is supported by the information system theory. IST argues that the use of technology in procurement systems streamline procurement processes which in turn affect service delivery positively.

When it comes to the daily tasks of running and contributing to a successful hospital, procurement management practices are quite important. The adoption of appropriate digital technologies aids procurement procedures in hospitals enabling coordinate supplies, machines, and equipment to boost operations. Procurement is accountable for all inputs required for operations (Krampf, 2012). Over the years, procurement has been supported by a variety of digital technologies. When information technology is properly adopted, task completions will be complete, autonomous, and real-time attributable to procurement (Kleemann & Glas, 2018).

Companies today must be as efficient as feasible to gain a sustainable competitive advantage through growing market share. The use of digitization aids in attracting and retaining customers that have significant resources invested in a business. Several businesses have discovered that, despite the fast-accelerating technological development of breakthroughs and technology, they are not completely profiting. The best use of digitization leads to the best patient treatment, a quick turn-around, the lowest cost possible, and patient contentment. Gathungu (2018) asserts that factors such as limited availability, outdated equipment, a lack of consumables and accessories, breakdown, delayed maintenance, a shortage of skilled workers, and procurement practices used to acquire the technologies all have an impact on their use in private hospitals (Tripolli et al., 2018). Regrettably, the bulk of these life-saving technologies

remains underused in low countries, according to Kale and Wield (2018). Once more, expenditures in digitization that are incompatible with present infrastructure, occasionally of low quality, or do not function efficiently are linked to underutilized usage of medical devices.

Private hospitals may have various procurement processes for service and digitization but they generally share a few critical components. Typically, a "demand" or set of requirements comes before the procurement procedure for digitization. These specifications may apply to a tangible good (inventory) or a service (Messori et al., 2020). Effective procurement planning's key objective is to ensure proper maintenance of new technologies and make sure that medical devices are used as cost-effectively as possible. Additionally, because certain regions are not even equipped to handle the medical gadgets, procurement done without the infrastructure in mind can cost hospitals a lot of money and result in idle machinery lying at the hospital facilities.

According to Nkrumah and Abekah-Nkrumah (2019), the majority of private hospitals in Ghana have protocols in place to make sure that medical devices are utilized properly to protect patients. In contrast to public hospitals, private hospitals have policies that encourage both the purchase and use of medical equipment (Bucciol et al., 2020). According to Jaafreh and Al-abedallat (2012), improving business performance is the outcome of quality evaluation, strategic quality designing, and top management's provision of resources to support quality initiatives.

This demonstrates how support from the top management improves the global operations of the services sector. Hence, it might be argued that digitization and procurement management practices are crucial for enhancing

hospitals' operational efficiency. According to Faheem and Siddiqui (2019), the practices of procurement strategy have been impacted by the advancement of technology and information systems. The ineffectiveness and failure of traditional procurement methods, which are associated with high purchase costs and poor customer responsiveness, were highlighted. As a result, electronic procurement has gained popularity among most firms, helping them to achieve crucial success indicators including high customer satisfaction and profit margins (Joghee, 2021).

Effect of Digitization on Service Delivery

The second research objective examined how digitization influenced service delivery. According to Table 11, digitization (DIG) significantly improved service delivery (SD) (B = 0.437; t - stats = 3.914; p 0.000). This is accurate since t-stats were > 1.96. As a result, the result's direction suggests that the hypothesis is supported. This shows that the hypothesis supporting the significant positive relationship between digitization (DIG) and service delivery (SD) is supported. According to the study's findings, a unit increase in digitization (DIG) will result in a 43.7% unit increase in service delivery (SD). So, it is obvious that the use of digitization to manage supply chain quality will result in a 4.37% increase in service delivery. This findings is supported by the information systems theory which asserts that the availability of technology in healthcare provision can enhance the rate of service delivery.

In terms of service delivery, digitization is essential since it allows hospitals to meet client requests without running out of resources. As a result, the hospital's operations may become more flexible and quick, with an increase in service quality. The procedures in the hospital are more complicated. Due to

a lack of healthcare facilities, people cannot access treatment in the early stages of illness. Today's advanced technological developments are changing how healthcare services are provided to a larger segment of the population in the nation. The healthcare industry is continually embracing new technology advancements. Because it helps supply the inputs needed for service delivery, digitization is crucial.

The hospital's operations are better-equipped due to technological involvements to effectively incorporate service delivery concepts into efficient processes. Consequently, strategically integrating technology into processes for making decisions linked to quality improves organizational effectiveness and efficiency. The study also showed that one of the main factors influencing high-quality production is permitting digitization in service delivery. The adoption of digitization in healthcare, however, has some difficulties. There is therefore a demand for a shared model that would aid all hospital-interested parties.

The digitization process needs to be tailored and streamlined, and an estimate of the time needed to monitor a functioning system is needed. Senarak and Kritchanchai (2019) observed that digitization has shown to be more useful compared to the manual way for increasing the effectiveness of hospitals' supply chain and procurement functions. Aduwo et al. (2020) did another study relating to e-procurement and its impact on service delivery. In their investigation, they concluded that the internet and other information technology have sped up communication between suppliers and buyers on transportation, inventory control, and production schedules, which eventually leads to a higher degree of customer satisfaction (Ullah & Sarkar, 2020).

Effect of Procurement Management Practices on Service Delivery

The study hypothesized that "procurement management practices have a significant positive correlation with service delivery" concerning the third research goal on the impact of procurement management practices (PMP) on service delivery (SD). Further to that assessed and presented was the major impact of (PMP) on (SD) of private hospitals. A t-statistic of 4.218 > 1.96 ($p = 0.000 < 0.05$) indicated that the path coefficient between procurement management practices and service delivery ($\beta = 0.470$) was significant at the 5% significant level. Research suggests that managing procurement management practices, including managing stocks, supplier selection, contract management, transparent information sharing, guaranteeing early supplier involvements, and actively collaborating in forecasting, helps hospitals improve their service delivery. It could be proven that an effective PMP provides hospitals with in-depth opportunities that enhance high levels of adaptability, cost savings, quick reaction times, and operational support.

According to Khan et al. (2015), all parties in the procurement process should be considered equal to help ensure good service delivery to produce an optimal shared solution effectively and efficiently. By doing this, it helps participants in the procurement process bring professionalism and competence on board to improve service delivery. According to Bataineh (2019), contracting serves as the foundation for effective procurement management. To ensure effective communication between the parties to the contract and the delivery of effective and efficient services, every contract should explicitly specify the fundamental principles, scope, and terms of performance. To make improvements to the current performance standard and expand service delivery,

hospitals can access important resources, develop mutual trust and commitment, share duties, and share risk by developing strong mutual connections with supply partners, for instance.

Procurement planning, a crucial and essential procurement activity, is one of the factors affecting service delivery. According to Liwanag & Wyss (2019), effective procurement planning is a crucial step in ensuring the public receives the right service and maximizing the level of service provision that can be achieved among the local population. According to Birett (2017), the advantages of good procurement processes include an impact on quality, cost savings, and a contribution to the growth of technology. Similar findings were made by Chalari (2021), who proposed that businesses with procurement departments that follow effective procurement procedures typically offer superior customer service.

The organization can easily deliver high-quality service thanks to the procurement process's transparency, dependability, precision, affordability, and high quality. This is consistent with the findings of Amedofu et al. (2019), who found that establishing and sustaining purposeful relationships with suppliers and other participants in the procurement process allows partners to collaborate on efforts to reduce stockouts, cut costs, and increase responsiveness. De Simone et al. (2018) examined the effects of improving the intensity of care and process improvements on patient contentment using a sample of 202 hospitals in the United States of America. According to the results of the study, significant clinical and procedural quality is effective intermediate outcomes in figuring out patient pleasure.

This highlights how crucial it is for procurement procedures to contribute to delivering high-quality clinical care in hospitals. Healthcare firms gain over time by keeping clients when patients, or customers, are satisfied. This assertion was supported by research conducted by Boshoff & Gray (2004). The results show that providing excellent customer service increases both general satisfaction and brand recognition. This means that if patients are pleased with the care they received, they are likely to recommend the clinic to others and return there in the future (Aladwan et al., 2021). The use of proper PMP in private hospitals would, thus, significantly improve their SD in Ghana.

Procurement Management Practices, Digitization and Service Delivery

The fourth aim, which examined how digitization might moderate the link between service delivery and procurement management practices, was tested for significance and presented. The proposed theory said that the relationship between service delivery and procurement management practices is moderated by digitization. With a t-test of 6.062 > 1.96 ($p = 0.023 < 0.05$) and the path coefficient between Procurement Management Practices x Digitization - > Service Delivery ($\beta = 0.129$) being significant at the 5% significant level, table 11's findings are therefore supported. This suggests that digitization is an essential and effective moderator in the relationship between service delivery and procurement management practices, which enhances hospital operations. Information Systems theory has provided support for the study's findings.

Information system theory aims to connect general systems theory's representation with the reality of information technologies. It deals with the processing of information, and its models can be implemented as computer programs and algorithms that can distinguish between various types of materials

and objects, including a person's thoughts and language (Peffers, 2007). This means that by incorporating more information technology into their daily operations, hospitals can overcome the limitations of their supply chains. This is due to the project's conclusion that digitization has sufficiently improved service delivery, procurement management practices, and enhanced operational efficiency. The findings also support other studies by Salojarvi et al. (2015); Nimeh et al. (2018); Omoush (2020); and Al-Deehani et al. (2020), which demonstrated that customer interaction practices can improve business operations.

According to Shahbaz et al. (2018), developing strong connections with consumers reduces client complaints, satisfies customer needs, and improves customer assistance. The findings showed that good customer relationships can have a significant positive influence on operational efficiency, which is why digitization has been adopted. Digitizing service delivery and procurement procedures may enable a corporation to provide high-quality services to customers by integrating technology with different versions. Hospitals that concentrate on their core competitive advantage in this area may find significant success given that businesses increasingly compete in all facets of their supply chains, including procurement. In the digital age, hospital supply chains (SCs) have undergone upheaval and reform. Studies on how technology affects supply chains have been conducted, but little is known about how digitization will impact procurement management techniques to raise the competency of healthcare services (Attaran, 2020).

Brands can devise value-creating strategies that are tough for rivals to copy if they have resources that are valued, distinctive, difficult to duplicate,

and irreplaceable. Being a valuable resource with features like robotic delivery, e-commerce enablement, networking, transportation, and the emergence of Industry 4.0, digitization is a significant component of procurement. Kumar et al. (2002). Digitization necessitates human and system-wide technological capabilities in addition to internal and external competencies. Albeit, digitization may guide businesses in the direction of cost, time, and effort reduction as well as productivity, efficiency, and quality enhancement to help them achieve the greatest results (Buer et al. 2021). Due to digitization's increased emphasis on the use of IT and analytical services and increasing evidence that it could enhance supply chains' multi-supplier partnership relationships, customer-centricity, operational and financial performance, and cost-effectiveness, technology can offer quick and thorough responses (Alabdali & Salam, 2022).

While enhanced transparency promotes buyer and seller trust, the development of more transparent and traceable procurement transactions is dependent on digitization. As a result, procurement procedures will become more strategic and support wider company goals. According to Reinartz et al. (2019), the proper digitization of procurement could lead to higher service quality that is challenging for rivals to match. Also, by leveraging better data, digital procurement may offer better possibilities for strategic decision-making, claim Jardim-Goncalves et al. (2020). Access to supplier innovation, collaborative platforms, innovation laboratories, greater analytics, more processing power, and better visualization tools are some of these choices.

Chapter Summary

The study's results and analyses of the demographic traits of the participating hospitals were reported in this chapter. Using PLS-SEM, the research objectives were described and the research objectives' hypothesis was tested. Again, the chapter looked at the impact of digitization (mediator) on procurement management practices and service delivery. This means that digitization plays a vital role in improving appropriate procurement management practices and quality service delivery throughout the chain. The summary, conclusions, and recommendations were the key topics of the next chapter.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATION

Introduction

This study examined how digitization affects the relationship between service delivery and procurement management techniques. Procurement management practices which include: inventory management, contract management, procurement planning, and supplier partnering, served as the study's independent variable, while service delivery served as the primary dependent variable and digitization functioned as the mediating variable. The overview of the major research results, the results per the objectives, and the recommendations are covered in this chapter. Finally, suggestions for further research taking into account the study's findings are made.

Summary of the Study

The summary of the results is presented chronologically per the particular research objectives. The analytical strategy used to examine the primary data gathered was directed by the following.

In total, four hypotheses were created and tested. The project used a quantitative technique and an explanatory research design per the positivist philosophy. A self-administered questionnaire was used for data collection from private hospitals in the Greater Accra region of Ghana. The census sampling technique was used, and the response rate was 205. The demographics of the respondents and the profile of the hospital were examined using frequencies and percentages, which are both descriptive and inferential statistical methods. Then, IBM SPSS (version 26) and SmartPLS (version 3.3) were used to process

the data. The significance of the investigation was assessed at a 0.05 alpha level. The following summarizes the results by objectives and hypothesis.

H_1: Digitization significantly affect Procurement management practices

Examining the impact of digitization on procurement management practices was the study's first goal. The results of the study demonstrate that digitization influences procurement management practices. This finding is consistent with other current articles which suggested that private hospitals that use digitization in their procurement management practices are better and able to plan which improves the efficiency of their operations as a whole. As a result, the adoption of digitization in procurement management practice has a significant impact on how well private hospitals operate in the Greater Accra region, Ghana.

H_2: Digitization significantly affects service delivery

The study also centered on the impact of digitization on the service delivery of private hospitals in the Greater Accra region of Ghana. The findings reveal that digitization has a significant influence on service delivery. This suggests that digitization must be extensively taken into account to improve service delivery at the hospital.

H_3: Procurement management practices significantly affect service delivery

As the third objective, procurement management practice on service delivery was also reviewed. The study indicated that procurement management practice had a significant impact on service delivery at private hospitals. That is, the more hospitals improve their procurement processes, the better their service delivery and performance will be.

H_4: Digitization significantly moderates the relationship between procurement management practices and service delivery

Examining the moderating impact of digitization on procurement management practices and service delivery was the study's fourth objective. The study revealed that digitization has a positive impact on procurement management practices and service delivery. The study was unable to successfully refute the notion that digitization has significant positive effects on the link between service delivery and procurement management practices.

Conclusions

The study examined the effect of procurement practices on service delivery at private hospitals through digitization in the Greater Accra region of Ghana. Four different objectives were defined and the findings duly discussed in the light of the two main theories that underpinned the study. The results of the first objective led to the conclusion that not only do medical devices break down but also the procurement procedures utilized to acquire the medical devices. Also, it was discovered that efficient and effective procurement pathways for digitalization enable healthcare professionals to deliver essential medical services for patient recovery and also for patient education and awareness, diagnosis, and treatment. It helps to also improve the interconnections in the supply chain without disruptions and delay through the use of digitalization.

The second research objective is positively impacted by digitalization in terms of service delivery. Patients and other stakeholders are provided with better, more cost-efficient, and more effective services attributable to the digitalization of hospital service delivery. The usage of digital technology in the

healthcare industry enhances information exchange, research, treatment approaches, and healthcare provider communication patterns. That encourages the development of emerging technologies and instruments that expand access to healthcare services and present innovative approaches to medical practice. This approach significantly increases service responsiveness and decreases the degree of time required to deliver services. This enhances the swift and appropriate decision making of the personnel involved in the procurement process.

For the third objective, it was established that every contract should adequately represent the fundamental concepts, the scope, and the rules of execution, and it should offer a straightforward. As hospitals work effectively with their suppliers, engaging them directly in planning and forecasting, and by entering into contracts with suppliers who are sustainability certified, their performance will improve. Knowing what patients want helps hospitals increase efficiency by ensuring that resources are accessible when needed, enhances customer service, and maximizes income. This result is consistent with previously published research that shows procurement management methods have a positive impact on service delivery.

Lastly, regarding objective four, digitalization can assist organizations in getting the greatest outcomes by guiding them toward a decrement in costs, time, and effort as well as an increase in productivity, efficiency, and quality. Combining technology with other resources will enable this. Hospitals that focus on their primary competitive advantage in the area of digitizing procurement methods provide a high-quality service to their clients and have significant success in their day-to-day operations. Digital procurement provides

better options for achieving informed decisions by utilizing accurate digitization and data. This includes access to web-based technologies and innovation labs, smarter analytics, more processor speed, and superior analysis and visualization that improves service quality. These options could include accessing supplier innovation and improving access to collaborative platforms and innovation labs.

Recommendations

Based on the validity of the findings, the following suggestions are made. The study suggests that since digitization have a good influence on procurement management practices, hospital managers should pay more attention to them through the use of digitalization. Procurement management practices should be seen as having strategic significance.

Also, digitalization must be appropriate and applied in such a way that procurement management practices are not covered up by the notion of successful service delivery. Additionally, private hospitals in general are urged to integrate digitalization into their operations as it has evolved into a global and national issue. This is because there is compelling research evidence demonstrating an advantageous correlation between procurement management practices and service delivery. This will help the hospitals to become more competitive and help them reach their goals. Extensive use of digitalization on a national level will enable private hospitals in the Greater Accra region of Ghana to follow suit and integrate into global and international markets.

According to the analysis, appropriate procurement management practices support regulatory compliance in several ways which leads to high-quality service delivery. Overall, this has a favourable effect on national growth since it aids in the government's achievement of significant procurement

management compliance milestones. Thus, it is advised that the government should encourage hospitals to incorporate suitable procurement procedures into their practices and operations as part of a national policy because research suggests that doing so will be to their advantage.

The study suggested that the hospital supply chain should be connected via software that enables information sharing, efficient communication, and the growth of long-lasting relationships. By doing this, there will be trustworthy relationships and dedication between these hospitals and their suppliers.

The study concluded that all participants in procurement management practices should be empowered to advance professionalism and flexibility in their business practices without compromising on quality. Digitalization should be seriously considered in all facets of hospital operations to enhance service delivery and contribute to successful operational outcomes.

Suggestions for Further Research

The study has determined that the association between procurement management practices and service delivery is mediated by digitalization. Further studies should be conducted to expand on what is already known about the topic and to serve as a foundation for future research. Other nations, particularly those with developing economies, should be included in future studies. This will aid in broadening the findings and enhancing knowledge.

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APPENDIX

QUESTIONNAIRE

UNIVERSITY OF CAPE COAST
COLLEGE OF HUMANITIES AND LEGAL STUDIES
SCHOOL OF BUSINESS
DEPARTMENT OF MARKETING AND SUPPLY CHAIN MANAGEMENT

Dear respondent,

I am offering MCom (Procurement and Supply Chain Management) at the University of Cape Coast. The objective of this study is to assess the procurement practices and Service Delivery at the Private Healthcare Delivery in the Greater Accra region of Ghana with Digitization playing a moderation role. So, I kindly request that you respond to the following questions. The data would only be utilized for academic purposes, and no personal information would be disclosed. I appreciate your cooperation in advance.

SECTION A: PERSONAL DATA

These statements relate to you. Please check the box next to the response that most accurately reflects how you felt in each of the states..

1. Sex: [ ] Male [ ] Female
2. Age (years) of respondent:
   a. [ ] 21 – 30 years
   b. [ ] 31 – 40 years
   c. [ ] 41 –50 years
   d. [ ] 51 – 60 years
   e. [ ] Above 60 years

3. How long have you been with the Hospital?

   a. [ ] less than 1 year

   b. [ ] 1-5 years

   c. [ ] 6-10 years

   d. [ ] More than 10 years

4. Educational Level:

   a. [ ] Postgraduate Degree

   b. [ ] First Degree

   c. [ ] Diploma/HND

   d. [ ] SHS

   e. [ ] Professional certificates

SECTION B: PROCUREMENT MANAGEMENT PRACTICES

The following are statements stated about **Procurement Management Practices** in private hospitals in Ghana's Greater Accra region. Please check the relevant box next to each statement to indicate [√] your level of agreement.

S/N	Statement	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
PMP INV 1	There is an established inventory control system at the hospital to manage stock							
PMP INV 2	End users are able to obtain all the commodities required for service delivery at stores							
PMP INV 3	Delays by procurement staff in buying affect the levels of stock required for service delivery							
PMP INV 4	There is enough funds to procure optimum quantities of commodities at the							

	hospital which helps in service delivery							
PMP CM 5	Ensuring compliance with terms of procured contract							
PMP CM 6	Following due process in executing contract							
PMP PP 7	The procurement plan of the hospital is based on the approved budget.							
PMP PP 8	Poor procurement planning leads to budget deficits							
PMP PP 9	The procurement practice process of the hospital begins with planning							
PMP PP 10	Needs assessment is always undertaken by the hospital before procurement is made							
PMP SP 11	The hospital employs competitive tendering in the selection of all suppliers							
PMP SP 12	Supplier Partnering is based on a predetermined evaluation criterion							
PMP SP 13	Supplier Partnering is affected by external forces outside the evaluation panel							
PMP SP 14	The procurement plan takes into account all purchases of the hospital							
PMP SP 15	The procurement department places an order for all the purchases of the hospital							

SECTION C: SERVICE DELIVERY

The following are statements about **Service Delivery** at the Private Hospital in Greater Accra region of Ghana. Please check the relevant box next to each statement to demonstrate your level of agreement by ticking [√].

S/N	Statement	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
QHS1	The hospital understands and consider the patient's situation and right (in terms of finances and care).							
QHS2	The service efforts of best medical staff is recognized and motivated.							
QHS3	Employees get adequate support from their employers to execute their jobs well.							
QHS4	There is continuous degree of provision of serene and comfortable environment for patients and staff.							
QHS5	There is a sense of closeness and friendliness between the staff and patient.							
QHS6	Information on clinical review and follow-ups are given to clients at the hospital are good.							
QHS7	There is privacy during consultation at the hospital.							
QHS8	There is the availability of all prescribed drugs at the hospital.							

SECTION D: DIGITIZATION

The following are statements about **Digitization** at the Private Hospitals in the Greater Accra region of Ghana. Please check the box next to each statement to show how much you agree with it by ticking [√] the right box.

S/N	Statement	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
DIG1	We use digital channels to provide customer service.							
DIG2	There are medical staff with advanced skills and technological know - how.							
DIG3	Our core processes are automated.							
DIG4	We use analytics to make better operational decisions.							
DIG5	We are using digital technologies (such as analytics, social media, mobile, and embedded devices) to understand our customers better.							
DIG6	There are advanced technological equipment used at the hospital which aids in swift healthcare provision.							
DIG7	We have launched new business models based on digital technologies.							
DIG8	We use digital technologies to increase the performance of our existing products and services.							

Thank You!