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The Impact of Different Innovation Process Types on the Performance of Banking Services in Ghana

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Abstract

This study examined the impact of four innovation process types—organizational, product, process, and marketing—on the market share of universal banking services in Ghana. Data were collected from 100 managers across four universal banks, with respondents categorized by managerial roles for deeper analysis. Structural equation modeling was employed to test hypotheses, generating path coefficients, t-statistics, and *p*-values. The findings highlight process, product, and marketing innovations as significant drivers of market share, with process innovation emerging as the most influential factor. Marketing and product innovations follow in importance, while organizational innovation shows a comparatively limited impact. This quantified hierarchy provides a clear understanding of the relative significance of each innovation type within Ghana's banking sector. The study offers actionable insights for strategic decision-making, resource allocation, and policy formulation, helping stakeholders enhance market share and overall performance. By shedding light on the specific innovation processes that drive success, the research equips practitioners with tools to better meet evolving customer needs and gain a competitive edge in Ghana's dynamic banking landscape. Additionally, addressing the challenges of organizational innovation remains crucial for maximizing its potential impact. This research contributes to the existing body of knowledge and lays a foundation for future studies to further optimize innovation strategies in the banking industry.

Keywords

Banking Services, Diffusion, Innovation, Performance

1. Introduction

The banking sector remains one of the most dynamic and turbulent industries

globally (Appiahene et al., 2019; Asgber & Hanif, 2018; YuSheng & Ibrahim, 2020). The sector is critical to the growth of any economy and the support of businesses and individuals (Asikhia et al., 2021; Cahyo et al., 2021; Hu et al., 2020). As a result of the need to constantly meet new and modern trends, banks must find innovative means of satisfying customers' needs (Camilleri, 2018; Kolapo et al., 2021; Zhao et al., 2019). Customer satisfaction is essential to the survival of the banking sector due to immense competition (Chalabi, 2020; Oduro et al., 2022; Omagu et al., 2021; Sharma & Kumar, 2017). Adopting innovation in the industry allows banks to meet customer demands and to achieve a competitive advantage in the banking sector. Innovation in the banking sector is an important phenomenon, which needs constant revision (Rahman et al., 2021; YuSheng & Ibrahim, 2019).

There is a broad understanding that performance over time undergoes influence from a range of dynamic factors, including innovation, even if mainstream microeconomic theory (rightly) devotes much of its emphasis to the problems of static resource allocation and economic efficiency (Asikhia et al., 2021; Vagnani & Volpe, 2017). For many years, experts have emphasized the importance of innovation for organizations to compete and succeed (Kolapo et al., 2021; Rajapathirana & Hui, 2018). Increased awareness of innovation has produced a wealth of literature on the topic. As a result, innovation has expanded into a broad term that has several possible interpretations (Dziallas & Blind, 2019; Hu et al., 2020; YuSheng & Ibrahim, 2020).

In this study, innovation is defined as a "transformative mechanism for generating new ideas and incorporating them into established practices" (Tidd et al., 2005: p. 66). Damanpour and Gopalakrishnan (2001) presented a typology of innovation kinds that might be radical, incremental, product, process, administrative, or technological. More recently, YuSheng and Ibrahim (2020) proposed that a multidimensional framework for innovative process banking services consisting of organizational, product, process, and marketing innovations would positively impact banks' performance and productivity. Following the conceptual framework of YuSheng and Ibrahim, this study distinguishes between four innovation process types (organizational, product, process, and marketing). Tahir et al. (2018) stated that the main reason for the innovation process in the banking sector is to ensure efficiency and to position banks to meet the changing demands of both customers and competition.

Impact Statement

The banking industry has undergone significant transformation over the past decade, shaped by technological advancements, regulatory shifts, and evolving consumer behaviors (Asgber & Hanif, 2018). These changes have introduced challenges such as maintaining profitability amid capital costs and nonperforming assets, as well as addressing global financial exclusion, with 2.5 billion adults remaining unbanked (Ardizzi et al., 2019; Boateng, 2018; Le & Ngo, 2020). Technological leapfrogging presents an opportunity to extend banking services to underserved

populations and gain sustainable competitive advantages (Organization for Economic Cooperation and Development [OECD], 2020).

In Ghana, the banking sector faces additional challenges, including operational inefficiencies, rapidly changing consumer preferences, and recurrent banking crises that have eroded public confidence (Belkhir et al., 2020; Dadzie & Ferrari, 2019; Dwamena & Yusoff, 2022). While innovation is recognized as a critical driver of service quality and market share, there remains limited clarity on which specific innovation processes most effectively enhance banking performance. Divergent findings in existing research further complicate strategic decision-making, leaving Ghanaian banks at risk of falling behind competitors and failing to meet consumer needs.

This study addresses these pressing issues by investigating the impact of organizational, product, process, and marketing innovations on banking service performance in Ghana. By bridging knowledge gaps and offering actionable insights, this research aims to empower professionals, policymakers, and stakeholders to adopt evidence-based strategies that improve service efficiency, restore public confidence, and foster competitiveness. Its findings aim to foster financial inclusion and ensure the sustainability of Ghana's banking sector.

2. Theoretical Review

2.1. Concept of Innovation Process

Understanding and implementing the concept of the innovation process poses significant challenges that organizations must address to maximize their growth potential (Bossman & Agyei, 2022; Vagnani & Volpe, 2017). However, by establishing a systematic process, fostering the right mindset, and allocating resources effectively, companies can overcome these challenges and harness the transformative power of innovation to drive strategic growth and achieve long-term success (Kolapo et al., 2021; Galvan & Galvan, 2017). The vast expanse of literature concerning innovation within the banking industry reflects the multifaceted nature of innovation processes, which have become increasingly intricate and diverse over time (Asgber & Hanif, 2018; Ashiru et al., 2023).

The research adopted the theoretical framework known as the Diffusion of Innovation theory (DOI), initially conceptualized by Rogers in 1962. The theory provides a robust analytical lens to explore how new ideas and technologies permeate societies, addressing fundamental questions regarding innovation adoption's motivations, mechanisms, and outcomes. DOI theory elucidates the intricate process by which innovations spread through social systems, shedding light on the underlying mechanisms that drive the diffusion process. DOI theory examines the factors influencing the rate and extent of adoption, ranging from the perceived benefits and compatibility of the innovation with existing practices to its complexity, trialability, and observability.

In the context of technology adoption within the banking environment, Rogers's (1962) DOI theory is particularly pertinent and illuminating (Arthur &

Khraisha, 2018). DOI theory provides a comprehensive framework for understanding how banks and financial institutions assimilate and integrate technological innovations into their operations and services. Moreover, Rogers's distinction between adoption and rejection offers a clearer perspective on the decision-making processes within organizations, highlighting the factors that influence the embrace or reluctance towards innovation. By employing DOI theory as the theoretical foundation for this study, the researcher sought to unravel the complexities of innovation adoption within the Ghanaian banking sector, offering valuable insights into the dynamics shaping the integration of new ideas and technologies in this rapidly evolving industry.

Finally, in this study, diffusion is "the process through which an innovation is communicated via specific channels over time among members of a social system" (Rogers, 1962: p. 5). Thus, innovation, communication channels, time, and social systems represent the four critical components of DOI.

- *Innovation*: According to Rogers (1962), innovation is an idea, practice, or project perceived as new by individuals or other adoption units. A unit of adoption could be an organization, a society, or a target market (Sai, 2018). Innovation could still be considered new, even if it has been around for a while, if individuals perceive it as such (Sahin, 2006). The concept of newness in adoption was closely tied to the three steps of the innovation-decision process: knowledge, persuasion, and decision (Sai, 2018). Innovations tend to appear in clusters that shape technological development (OECD, 2005). A technology cluster refers to one or more different elements of technology that appear to have a close interconnection (Rogers, 1962). The need for more understanding and exploration of how innovations spread within these interconnected technological contexts is evident. Additionally, uncertainty presents a significant hurdle to adopting innovations (Luthfa, 2019). The consequences of adopting an innovation can create uncertainty as they bring about changes in individuals or social systems (Sahin, 2006). Thus, to mitigate this uncertainty, it was crucial to inform individuals about the advantages and disadvantages of the innovation, making them fully aware of the potential outcomes and impacts (Luthfa, 2019). Furthermore, Rogers (1962) proposed that consequences could be categorized in various ways. They could be classified as desirable or undesirable, indicating whether they bring benefits or negative outcomes. Consequences could also be characterized as functional or dysfunctional, depending on whether they serve a purpose or hinder performance. Additionally, consequences can be direct or indirect, where direct consequences are immediate results and indirect consequences arise from immediate results (Rogers, 1962). Understanding the nature and classification of consequences is essential for assessing their role in shaping system behavior and outcomes. Last, consequences can be anticipated or unanticipated, reflecting whether they were recognized and intended or occurred unexpectedly. By recognizing these different dimensions of consequences and addressing the uncertainties

associated with adopting innovations, individuals and organizations can make more informed decisions.

- *Communication Channels*: The DOI process involves communication channels that facilitate the spread of information and influence the adoption of new ideas. Communication is sharing information to achieve mutual understanding, while channels serve as the means for transmitting messages (Rogers, 1962). Mass media and interpersonal communication are recognized channels in the diffusion context. Mass media channels reach a broad audience through media like television and newspapers, while interpersonal channels enable two-way communication between individuals (Sahin, 2006). Understanding communication channels is vital to disseminate innovative information effectively.
- Different channels served distinct roles at different stages of the innovation-decision process. Cosmopolite channels facilitate connections with external sources, which raises awareness in the knowledge stage. However, locality and interpersonal channels become crucial during the persuasion stage, influencing adoption (Luthfa, 2019). Leveraging appropriate channels enables organizations and individuals to facilitate DOI, fostering acceptance and implementation.
- *Time*: Rogers (1962) criticized the omission of the time aspect in most behavioral research. Rogers contended that incorporating the dimension of time in diffusion research reveals one of its key strengths. Time elements intrinsically link the innovation-diffusion process, adopter categorization, and adoption rate (Almutairi & Yen, 2017). Recognizing the influence of time provides a more profound comprehension of the process through which innovation spreads. Explaining how innovations spread and evolve, this process encompasses knowledge acquisition, persuasion, decision-making, implementation, and confirmation stages (Rogers, 1962). Additionally, the concept of adopter categorization acknowledges that individuals' adoption behaviors vary across different periods (Sahin, 2006). Individuals can be innovators, early adopters, early majority, late majority, or laggards, depending on when they adopt the innovation relative to others (Almutairi & Yen, 2017).
- *Social System*: In the diffusion process, the social system represents the final element. As Rogers (1962) defined it, the social system refers to a collection of interconnected units collaborating to solve shared problems and achieve common objectives. DOI unfolds within this social system, significantly influencing the social structure inherent to the system (Almutairi & Yen, 2017). Rogers characterized the social structure as the organized arrangement of units within the system. The structure encompasses the patterns and relationships that exist among individuals, groups, organizations, and institutions within the social system (Sai, 2018). The nature of this social structure plays a pivotal role in shaping individuals' propensity for innovativeness, which serves as the primary criterion for categorizing adopters (Boer & During, 2001). The way the social system is structured and organized can either facilitate or impede the

adoption and diffusion of innovations (Luthfa, 2019).

When the social system is conducive to innovation, it can facilitate the adoption and diffusion of new ideas, technologies, and practices (Yaw-Obeng & Boachie, 2018). On the other hand, a social system that is resistant to change or heavily influenced by established norms and traditions can impede the adoption and diffusion of innovations (Asaah et al., 2020). Factors such as social norms, communication networks, power dynamics, and institutional arrangements contribute to the overall context for the introduction and acceptance of innovations within the system (Arthur & Khraisha, 2018). Various social systems demonstrate diverse levels of openness to change, support for innovation, and risk tolerance (Wang et al., 2020). These distinctive attributes profoundly impact individuals' attitudes, perceptions, and behaviors, shaping their decisions regarding adopting innovations (Rogers, 1962). Understanding how the characteristics of the social system interact with individuals' levels of innovativeness allows researchers to grasp the intricacies and outcomes of the diffusion process within that specific social milieu (Boer & During, 2001). In essence, this perspective enables researchers to comprehend how societal norms, cultural values, institutional frameworks, and interpersonal networks collectively shape the trajectory of innovation adoption and dissemination within a given social context.

By considering these dynamics, stakeholders can develop better strategies and interventions to facilitate the successful integration and uptake of innovations, fostering positive societal change and advancement. The process of adopting new concepts, services, or products within a social system is not an instantaneous event but rather a gradual process that evolves over time (Ganzer et al., 2017). As a result, it becomes crucial to understand the specific behaviors individuals who adopt innovations at different stages exhibit compared to those who adopt them later (Geissdoerfer et al., 2018). By gaining insights into the characteristics of each segment, marketers can better comprehend the factors that either facilitate or hinder the acceptance of innovations. In line with DOI theory, five distinct adopter categories emerge in this process (Rogers, 1962):

- *Innovators*: These individuals strive to be the first to embrace innovation.
- *Early Adopters*: They are comfortable with change and are quick to adopt new ideas.
- *Early Majority*: This group adopts innovations before the average person but requires evidence that the innovation is effective.
- *Late Majority*: They are conservative and hesitant to embrace change, only adopting an innovation once the majority widely accepts it.
- *Laggards*: They are traditional and skeptical, resistant to adopting new technologies. Convincing this category can be challenging. It is worth noting that the size of the laggards' category is considerably larger than that of the innovators, representing opposite ends of the spectrum.

Understanding these adopter categories and their proportions helps marketers to tailor their strategies and communication approaches effectively to target different

market segments. By recognizing the varying degrees of readiness for adoption, marketers can tailor their messages, incentives, and engagement strategies to appeal to each category and to maximize the diffusion and acceptance of innovations within the social system. However, for innovation processes to occur, a comprehensive understanding of strategies, resources, technologies, tools, materials, markets, and situational needs is essential (Alharbi et al., 2019). Therefore, a deep understanding of the complexity of the innovation process and various diffusion methods is crucial for any diffusion study (Arthur & Khraisha, 2018). Consequently, the researcher adopted DOI theory as the theoretical framework for this study. According to Rogers (1962), innovation spreads through communication channels and requires consideration of time and the social system. An innovation introduces new, disruptive, or adapted value-added solutions to address customer needs (Hu et al., 2020). Specifically, it introduces new changes in existing products, processes, markets, organizations, or combinations (Boer & During, 2001).

Drawing from the pioneering work of (Asgber & Hanif, 2018; Ashiru et al., 2023) who delineated various types of innovation, the theory of innovation provides a valuable framework for analyzing the impact of different innovation process types on the performance of banking services in Ghana. Schumpeter's categorization, which includes product, process, organizational, and marketing innovations, serves as a lens to examine how each type of innovation influences the efficiency, effectiveness, and competitiveness of banking services in Ghana. By leveraging this theoretical foundation, researchers can explore how innovations in products, processes, and organizational structures enhance banking service performance, drive growth, and foster sustainable development in the Ghanaian banking sector. Furthermore, better understanding of innovation types enables stakeholders to identify opportunities for strategic intervention and innovation-driven transformation, thereby positioning banks for success in an increasingly dynamic and competitive landscape.

Early studies on innovation in the field of banking services primarily focused on consumer adoption of the innovation process in the technological realm (Obeng & Mkhize, 2019). Subsequent research has expanded to explore various forms of innovation and their impacts on the industry. In banking services, process innovation refers to adopting new information technology, product innovation relates to financial innovation, and organizational innovation encompasses restructuring, re-engineering, and right-sizing the workforce (Chhabra, 2019). However, some scholars differentiate between technological innovation, including product and process types, and non-technological innovation, such as marketing and organizational interventions (Alharbi et al., 2019). Technological processes involve enhancements in electronic, internet, telephone, ATM, and mobile banking products (Nkem & Akujima, 2017). Technological advancements are reshaping financial services and products, particularly in payments and deposits. New payment and deposit methods, platforms, and interfaces have been introduced, with ongoing projects aimed at further innovation (Ohiani, 2021).

In today's business landscape, a significant business model innovation process revolves around the shift from traditional product-centric approaches to offering outcome-based services (Ameme & Wireko, 2016; Sjödin et al., 2019). Unlike traditional service models, which focus on delivering specific products or services, outcome-based models prioritize achieving tangible business results for customers. Under this paradigm, service providers assume responsibility for delivering the necessary services, tools, and resources, persisting until the agreed-upon outcomes are realized (Kolapo et al., 2021). This approach ensures that customers receive tailored services precisely aligned with their objectives, highlighting the dual nature of innovation as both a process and an outcome (Sai, 2018).

Central to this shift is the recognition that banking service providers must continually generate new ideas or products capable of diffusion throughout the market. However, it is essential to note that different types of innovation processes within banking services exhibit varying patterns and speeds of diffusion (Arthur & Khraisha, 2018). Some innovations may spread rapidly across the market, while others may encounter barriers or exhibit slower adoption rates. As Rogers (1962) noted, service providers do not immediately transition to new products, processes, and marketing strategies. Instead, the adoption occurs gradually as they evaluate perceived attributes such as relative advantage, compatibility, complexity, trialability, and observability. Companies are more likely to adopt and implement innovations that offer clear and unambiguous advantages over previous approaches, sometimes replacing existing products and business processes entirely (Arthur & Khraisha, 2018; Inusa & Bambale, 2017).

By employing DOI theory as a theoretical framework, the researcher examined the impact of different types of innovation processes on the performance of banking services in Ghana. Innovations diffuse through communication channels, and companies adopt them in stages (Rogers, 1962). Therefore, it may take time for a new product, marketing approach, or process to become widespread. Service providers regularly embrace new technologies, adopt new process models, and introduce new products (Ameme & Wireko, 2016; Mbama et al., 2018). However, each social system responds differently to these innovations, and DOI theory helps to explain this phenomenon. Essentially, the innovation process allows banking service providers to gain a competitive edge over their competitors and to expand their market share by offering new and distinctive products to their customers (Adeabah et al., 2019; Kpinpuo et al., 2022). Achieving this enables organizations to optimize their profitability. However, the complexity of organizational systems can sometimes result in nonlinear relationships between variables and increase decision-making challenges. Hence, the complexity of the banking service process modifies the stable relationship between innovation strategy and strategic outcomes (Anning-Dorson, 2017).

2.2. Conceptual Framework

A conceptual framework is a diagrammatic representation of abstract or general

ideas derived from specific instances (Gichungu & Oloko, 2015). The independent variables in this study are innovation process types: organizational, product, process, and marketing. Rogers's (1962) work on innovation is relevant to this study, as it focuses on the influence of various types of innovation processes on banking service performance. Rogers developed a comprehensive framework emphasizing the factors influencing the adoption and implementation of new ideas, facilitating the understanding of innovation diffusion.

This study's use of Rogers' (1962) diffusion theory produced a more sophisticated knowledge of how to introduce and integrate innovative practices into Ghana's banking environment. The pivotal role of organizational, product, process, and marketing innovations in propelling performance enhancements becomes apparent, as evidenced by studies conducted by Alharbi et al. (2019) and Ohiani (2021). Moreover, Rogers's diffusion theory furnishes invaluable insights into disseminating and assimilating these various forms of innovation within the banking sector. According to Rogers, several factors shape the adoption and diffusion of innovations, including each innovation's relative advantage, compatibility with existing practices, complexity, trialability, and observability (Almutairi & Yen, 2017). These factors are highly relevant to this study, as they contribute to understanding why specific innovation processes are more effective in driving banking service performance. For instance, organizational innovation, with its potential for improved operational efficiency and customer satisfaction, can appeal to banking institutions due to its relative advantage (Adeabah et al., 2019; Inusa & Bambale, 2017). Similarly, product innovation offering unique and tailored services may align well with customer demands, resulting in greater market acceptance (Forcadell et al., 2019; Sharma & Kumar, 2017). However, specific innovation processes, such as process innovation, can be complex to implement (Asgber & Hanif, 2018; Effiom & Edet, 2018). Nevertheless, through trialability, banks can test and pilot innovative processes, reducing complexity and increasing the likelihood of successful adoption (Anning-Dorson, 2017). Moreover, observability plays a crucial role in innovation diffusion. When banks observe positive outcomes their peers achieve through marketing innovation, they are more inclined to adopt similar strategies to enhance their market share (Baba, 2012). By aligning this study with Rogers's (1962) work on innovation, the researcher established a robust theoretical foundation for examining the impact of different innovation types on the performance of banking services in Ghana.

In addition, Rogers's framework enabled the researcher to explore the factors influencing the adoption and DOI within the banking industry. It made it easier to conduct a thorough analysis of the dynamic interactions between these variables. Adopting a comprehensive approach contributes to a deeper understanding of how innovation processes drive banking service performance, fostering market share growth (Hu et al., 2020; YuSheng & Ibrahim, 2020). Furthermore, it underscores the importance of identifying the specific innovation dimensions that yield the most significant benefits in competitive banking environments. The intricate

relationships between these independent and dependent variables are visually illustrated in the conceptual framework presented in Figure 1.

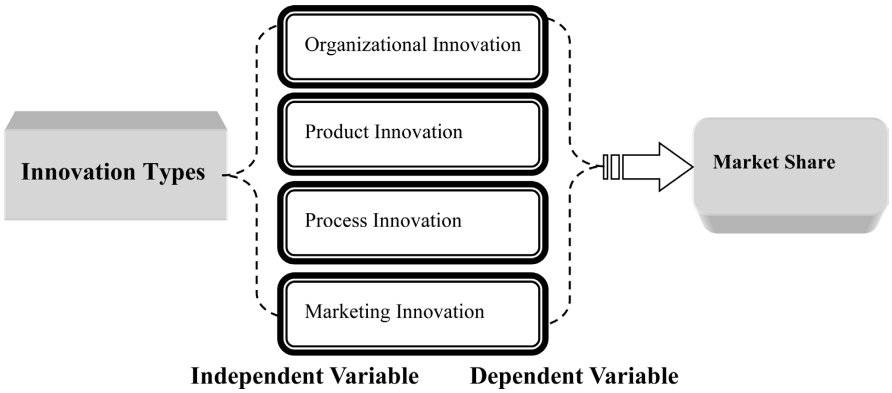

Figure 1. Conceptual framework.

3. Methodology

Research Design

In this study, the researcher used a non-experimental correlation survey design to collect numerical data from the target population, which consisted of managers working in universal banks in Ghana. In a correlational study, the researcher measures the two variables of interest and assesses their relationship without attempting to control for extraneous variables (Vance et al., 2013). Therefore, a non-experimental correlation design was the best choice for achieving the study's results. The desired sample size was 100 management members to address the research question effectively. Out of the 23 banks operating in Ghana, the researcher selected a simple random sample of four banks. Each of the four universal banks contributed 25 managers to the study. The researcher's primary data-collection method was survey questionnaires to bank managers via email accessed through established contact persons at each bank, with institutional permission.

Power Analysis

Recognizing the importance of power analysis during the design phase, the researcher aimed to protect everyone involved (van Voorhis & Morgan, 2007). When conducting a power analysis to establish the necessary sample size for the research, the researcher used a statistical study power of 0.95 and an alpha level of 0.05 (Figure 2). The chosen effect size for the analysis was 0.15, and the researcher conducted a *t* test for multiple regression and Structural equation modeling. By performing power analysis, the researcher aimed to estimate the minimum sample size necessary to detect the expected effect size with adequate power. Based on the G*power calculation, the priori computed sample size was $n = 74$. For multiple regression analysis, it was sensible to have a sample size greater than 50 plus eight times the number of predictors (m), expressed as $N > 50 + 8m$, where N represents the number of participants and m denotes the number of predictors (Beck, 2013).

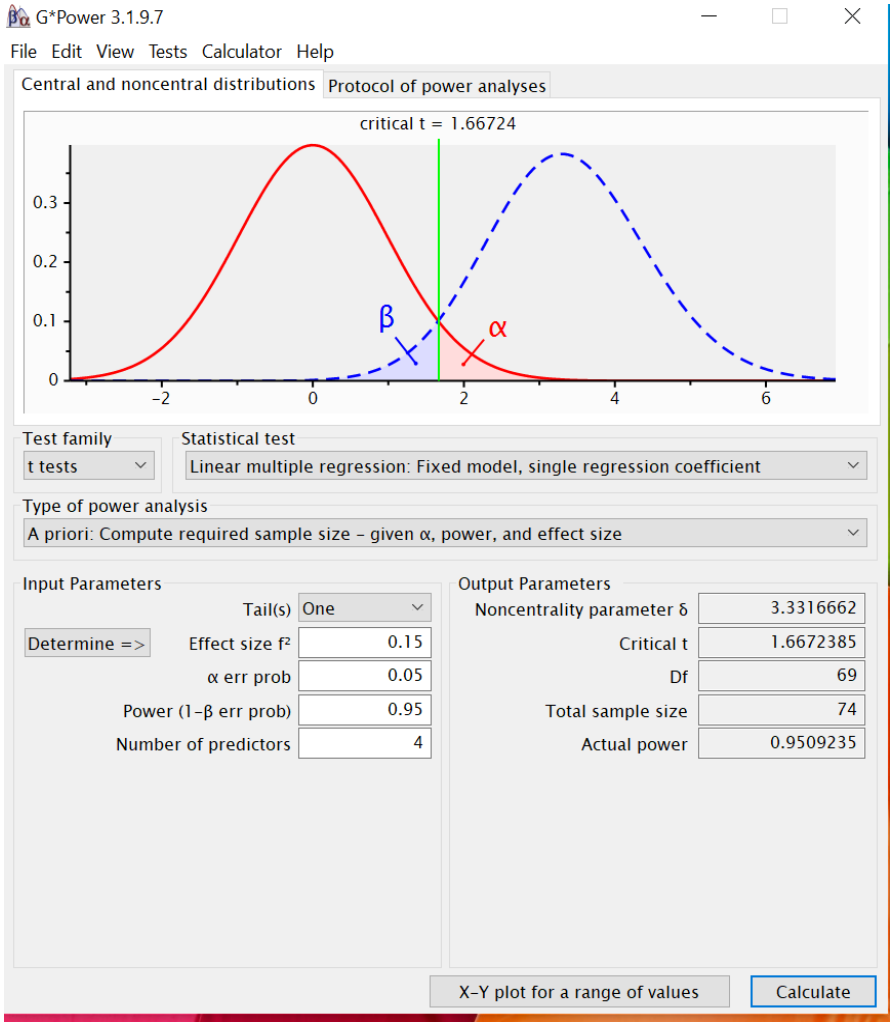

Figure 2. G * Power sample size estimate.

However, to account for potential outliers, reduce the margin of errors, and increase confidence in the findings, the researcher opted for a sample size of 100 participants. This decision was influenced by various factors, including time constraints and the study's specific inclusion and exclusion criteria. The researcher selected a sample size of 100 managers to ensure a robust representation of the target population. The researcher aimed to balance practical considerations and the need for a sufficiently large sample size to detect meaningful relationships between variables. By choosing a sample size of 100, the researcher aimed to enhance the study's statistical power, improve the accuracy of the findings, and increase the generalizability of the results to the broader population of managers in universal banks in Ghana.

In this study, the researcher adopted a descriptive design. A descriptive design provides a snapshot of the current status of a variable or phenomenon (Aggarwal & Ranganathan, 2019; Creswell & Creswell, 2018). Descriptive design involves collecting data that answer questions about the study's respondents. The researcher chose the design to gather information about the existing state of the phenomena

and to describe the variables or conditions in the research context. Various approaches can be employed within descriptive design, ranging from surveys to correlation studies that investigate the relationships between variables (Gunday et al., 2011; Zyphur & Pierides, 2017). The following research questions and hypotheses were addressed.

The study has one main research question (RQ1) and four sub-research questions (RQs) with corresponding hypotheses.

RQ1: To what extent do innovation types (organizational, product, process, and marketing) influence banks' market share of banking services in Ghana?

Sub-Research Questions

RQA. To what extent does organizational innovation influence banks' market share of banking services in Ghana?

H_{0A}: There is no statistically significant influence of organizational innovation on banks' market share of banking services in Ghana.

H_{aA}: There is a statistically significant influence of organizational innovation on banks' market share of banking services in Ghana.

RQB. To what extent does product innovation influence banks' market share of banking services in Ghana?

H_{0B}: There is no statistically significant influence of product innovation on banks' market share of banking services in Ghana.

H_{aB}: There is a statistically significant influence of product innovation on banks' market share of banking services in Ghana.

RQC. To what extent does process innovation influence banks' market share of banking services in Ghana?

H_{0C}: There is no statistically significant influence of process innovation on banks' market share of banking services in Ghana.

H_{aC}: There is a statistically significant influence of process innovation on banks' market share of banking services in Ghana.

RQD. To what extent does marketing innovation influence banks' market share of banking services in Ghana?

H_{0D}: There is no statistically significant influence of marketing innovation on banks' market share of banking services in Ghana.

H_{aD}: There is a statistically significant influence of marketing innovation on banks' market share of banking services in Ghana.

Reliability and Validity

Reliability of the Research Instrument

A research instrument's reliability and validity are paramount, as they collectively influence the integrity and credibility of the research endeavor. According to Cohen et al. (2000), the integrity of research hinges upon the reliability of participant data, the precision of data-collection methods, and the validity of research outcomes. Reliability, a fundamental metric in research, gauges the consistency and dependability of a research instrument's measurement variable across multiple trials involving diverse participants within the same context or scenario (Fraenkel & Wallen, 2000).

Moreover, reliability encompasses the facets of internal consistency, stability, and equivalency within a research instrument (Bannigan & Watson, 2009). An impeccably reliable research instrument yields consistent results across various applications, regardless of the specific conditions of its deployment. In alignment with these tenets, the fundamental concept of reliability suggests that observed scores are a blend of signal and noise, and that distilling the genuine signal requires mitigating the noise (Anderson & Gerbing, 1988; Revelle & Condon, 2019). In essence, ensuring the reliability of a research instrument involves harmonizing the instrument's measurement consistency to emphasize the accurate signals within the collected data. The process, in turn, bolsters the research's capacity to yield dependable and trustworthy insights. By rigorously assessing the reliability of research instruments, researchers can enhance the credibility and robustness of their findings, thereby contributing to the advancement of knowledge in their respective fields.

Reliability of the Participant Data

Table 1 provides a comprehensive overview of the reliability analysis for the current study. The obtained coefficients, ranging from 0.894 to 0.968, demonstrated high internal consistency among the investigated latent variables (Lai, 2018). This robust reliability indicated that the measurement instruments used to capture these variables were stable and coherent, contributing to the overall validity and trustworthiness of the study's findings. The commendable reliability of the latent variables strengthens the confidence in the accuracy and consistency of the collected data, thereby reinforcing the credibility of the study's outcomes. Additionally, the high reliability of the latent variables suggests that the constructs they represent are well-defined and accurately measured, further solidifying the study's methodological rigor. The reliability analysis results underscore the reliability and robustness of the study's data-collection instruments, enhancing the study's overall quality and reliability. The latent variables' high reliability indicates that the constructs they represent are precisely defined and implies that they are accurately measured, thereby bolstering the study's methodological rigor.

Table 1. Result of reliability analysis.

Construct	Number of Items	Cronbach's alpha (α)
Organizational innovation	8	0.968
Process innovation	8	0.963
Product innovation	8	0.950
Market innovation	8	0.920
Bank market share	4	0.894

Source: Field Data, 2024.

Validity of the Research Instrument

The concept of research instrument validity encapsulates the extent to which

the variables encompassed within the instrument accurately measure the intended dimensions. It serves as a yardstick to ascertain whether the instrument effectively captures the intended attributes (Anderson & Gerbing, 1988; Chetwynd, 2022). The validation of a research instrument could be contingent upon different perspectives: alignment with external perceptions, which constitutes face validity or content validity; congruence with theoretical constructs, defined as construct validity; or correlation with prior investigations, or criterion validity, encompassing both concurrent and predictive forms (Souza et al., 2017).

Despite adopting a research instrument from pre-existing studies, each rigorously tested for validity, the researcher took additional steps to bolster its credibility. In this context, the researcher subjected the instrument to the scrutiny of fellow doctoral students, enhancing its face validity by rectifying any inadvertent spelling errors (Mostert et al., 2023). Moreover, experts in the field, leveraging diverse methodologies, meticulously reviewed the instrument, contributing valuable insights to ensure its accuracy and appropriateness (Souza et al., 2017).

At its core, construct validity was entrenched in the foundational theory underpinning variable measurement. The theory forms the bedrock for the research instrument. The establishment of construct validity involves a range of techniques, each tailored to substantiate the alignment between the instrument's measurement outcomes and the theoretical framework anchoring it. In essence, construct validity scrutinizes the alignment of observed associations between variables and their anticipated relationships as predicted by theoretical constructs (Westen & Rosenthal, 2003). It is pertinent to note that construct validity centered on the outcomes derived from the instrument's application rather than the instrument per se.

Consequently, the validation process of the construct is an ongoing endeavor, signifying that it is a continual and iterative process (Bannigan & Watson, 2009). In this study, construct validity was examined through lenses such as convergent validity and discriminant validity. Both contribute to a more comprehensive understanding of the instrument's ability to measure the theoretical constructs it was designed to assess accurately.

Convergent Validity

The evaluation of convergent validity in this study drew on the alignment with three widely recognized acceptance criteria for measurement scales, encompassing factor loadings, composite reliabilities (CR), and average variance extracted (AVE). The factor loadings ranged from 0.698 to 0.918, CR spanned from 0.907 to 0.965, and AVE ranged from 0.665 to 0.775. The fulfillment of these criteria is contingent upon certain thresholds: factor loadings greater than 0.6 (Bagozzi, 1981), CR exceeding 0.7 (Henseler et al., 2009), and AVE surpassing 0.5 (Hair et al., 2017).

Table 2 shows that all constructs' factor loading, AVE, and CR values surpassed the established thresholds, signifying robust convergent validity. The measurement instruments for all constructs exhibited a strong convergence with their

Table 2. Summary of exploratory factor analysis.

Construct	Measurement	Factor Loading	Skewness	Kurtosis
Organizational innovation	AVE = 0.705, CR = 0.950			
OI1		0.798	−1.308	1.038
OI2		0.865	−1.414	1.464
OI3		0.864	−1.318	1.095
OI4		0.884	−1.409	1.210
OI5		0.886	−1.259	0.884
OI6		0.858	−1.120	0.701
OI7		0.847	−1.571	1.965
OI8		0.698	−1.085	0.738
Product innovation	AVE = 0.665, CR = 0.941			
PI1		0.768	−1.118	0.619
PI2		0.835	−1.446	1.616
PI3		0.782	−1.208	1.021
PI4		0.848	−1.414	1.464
PI5		0.801	−1.044	0.373
PI6		0.852	−1.648	1.990
PI7		0.827	−1.273	1.084
PI8		0.808	−1.273	1.109
Process innovation	AVE = 0.773, CR = 0.965			
PrI1		0.881	−1.352	0.987
PrI2		0.864	−1.448	1.257
PrI3		0.888	−1.324	0.895
PrI4		0.909	−1.412	1.243
PrI5		0.918	−1.319	0.931
PrI6		0.863	−1.057	0.210
PrI7		0.877	−1.344	1.108
PrI8		0.831	−1.385	1.040
Market innovation	AVE = 0.710, CR = 0.951			
MI1		0.848	−1.040	0.163
MI2		0.870	−0.820	−0.391
MI3		0.875	−1.075	0.181

Continued

MI4		0.881	−1.328	0.640
MI5		0.779	−0.450	−0.880
MI6		0.868	−0.937	−0.128
MI7		0.816	−0.613	−0.873
MI8		0.796	−1.574	1.637
Bank market share	AVE = 0.709, CR = 0.907			
BMS1		0.824	−0.853	−0.304
BMS2		0.860	−0.911	−0.258
BMS3		0.873	−0.984	−0.163
BMS4		0.808	−0.926	−0.202

AVE: Average Variance Extracted = $\sum \rho^2 / n$, CR: Composite Reliability = $\sum(\rho)^2 / \sum(\rho)^2 + (\sum a), a = 1 - \rho^2$, Factor Loadings < 0.500 were omitted, Varimax with Kaiser Normalization.

underlying theoretical constructs, aligning with the anticipated theoretical associations and confirming the constructs' effective capture of the intended dimensions. The thoroughness of the convergent validity assessment underscores the reliability and accuracy of the measurement instruments in representing the constructs, substantiating the credibility of the subsequent analyses. The meticulous evaluation enhanced the credibility and validity of the study's findings, reinforcing the confidence in the conclusions drawn from the data.

Discriminant Validity

The assessment of discriminant validity took place following the methodology proposed by Fornell and Larcker (1981), a widely employed approach in empirical studies (Amankwa & Asiedu, 2022; Bossman & Agyei, 2022; Hanaysha & Al-Shaikh, 2022). Employing this well-established technique involves comparing the square root of the AVE for each latent variable with the correlation value between that latent variable and any other. According to the recommended criterion for discriminant validity, the square root of AVE should surpass the correlated value between the latent variable and any other, thereby establishing the condition for discriminant validity.

The diagonal values (in parentheses) indicate that the square root of AVE is greater than the correlated value, confirming the fulfillment of the discriminant validity criterion. Affirming this outcome indicates that the latent variables are sufficiently distinct from one another, reinforcing the reliability and accuracy of the study's measurement instruments, as **Table 3** shows.

Before proceeding to hypothesis testing, the researcher rigorously evaluated the dataset, scrutinizing it against key statistical assumptions. The researcher transformed the data if necessary to ensure compliance with linearity, normality,

multicollinearity assumptions, and fundamental measurement model criteria. The meticulous examination of these assumptions was vital, as any violation could significantly affect the accuracy of confidence intervals and significance tests, potentially compromising the model's broader applicability to the population (Field, 2018). The rigorous data-preparation phase was essential for maintaining the integrity and robustness of subsequent statistical analyses, thereby enhancing the reliability and validity of the study's findings.

Table 3. Correlation matrix of the constructs.

Construct	OI	PrI	PI	MI	BMS
OI	**0.840**				
PrI	0.165	**0.879**			
PI	0.079	0.021	**0.815**		
MI	0.105	0.050	0.043	**0.843**	
BMS	0.074	0.259	0.007	102	**0.842**

Note: Diagonal values (bold) are square roots of AVE.

Collinearity and Tolerance Diagnostics

In this study, the researcher examined tolerance and variance inflation factor (VIF) to ensure the absence of common bias. The scholarly literature has suggested specific thresholds for both tolerance and VIF. Specifically, tolerance values should surpass 0.1 (O'Brien, 2007), while VIF values should be below 3.3 (Kock, 2015) and not exceed 10 (Hair et al., 2017). The values of tolerance and VIF, along with their significance in diagnosing multicollinearity, are in **Table 4**. The computed tolerance values in this study ranged from 0.952 to 0.990, all surpassing the recommended threshold of 0.1.

Table 4. Collinearity statistics.

Dependent Variable	Independent Variable	Tolerance (1/VIF)	VIF
Bank market share	Organizational innovation	0.952	1.050
	Process innovation	0.967	1.034
	Product innovation	0.990	1.010
	Marketing innovation	0.981	1.019

Source: Field Data, 2024.

Similarly, the VIF values ranged from 1.010 to 1.050, significantly lower than the stipulated limit of 10. This observation underscores the absence of perfect multicollinearity among the predictor variables. Consequently, the study did not encounter the issue of multicollinearity, implying the absence of common bias in the analysis. The meticulous assessment of tolerance and VIF values adds robustness to the study's results, enhancing the credibility and accuracy of the statistical

analyses, as Table 4 shows.

Testing for Normality of the Data

The researcher employed several statistical methods to assess the normality of the collected data from the study participants, including Kaiser-Meyer-Olkin (KMO), skewness, and kurtosis. The examination of normality took place to ensure the robustness of the data analysis. The researcher evaluated the adequacy of the sample for the analysis using Bartlett's test of Sphericity, while KMO assessed the sample adequacy (Beck, 2013). The outcomes of these analyses were indicative of the data's appropriateness for further investigation. Specifically, the results revealed significant statistics of χ^2 (630) = 3996.774 (p = 0.000 < 0.05) for Bartlett's test, affirming the suitability of the data for factor analysis. Furthermore, the KMO measure was 0.836, exceeding the threshold of 0.500, thereby reinforcing the adequacy of the sample for the analysis.

Additionally, the skewness and kurtosis indices, ranging from −1.574 to −0.450 and −0.880 to 1.965, respectively (see Table 2), were evaluated in normality. Lei and Lomax (2005) advised that indices of kurtosis and skewness should not exceed |2.3| to indicate normality. The study's results met this criterion, confirming the normal distribution of the collected data from the participants. The rigorous assessment of normality utilizing a variety of statistical indices ensures the reliability and validity of the data, enhancing the study's overall credibility and the accuracy of the subsequent analyses conducted.

Measurement of the Model Fit

In accordance with Kline's (2016) recommendations for SEM analysis, it is essential to include key fit indices in the reporting process. The minimum set of indices suggested by Kline comprises chi-square, RMSEA, CFI, and SRMR. These fit indices play critical roles in evaluating the goodness-of-fit of a structural equation model, providing a comprehensive and rigorous assessment of its adequacy. Incorporating these indices in the reporting enhances transparency and adherence to best practices in SEM analysis. However, the current study went beyond this minimal requirement by presenting an extensive set of 10 absolute fit indices from the LISREL results. Specifically, these fit indices encompass various aspects of model adequacy and a range of critical measurements. The reported fit indices include the p value, chi-square/degree of freedom ratio, NFI, GFI, Adjusted Goodness of Fit Index (AGFI), Incremental Fit Index (IFI), RMSEA, CFI, SRMR, and Root Mean Square Residual (RMR).

These indices collectively contribute to comprehensively assessing the model's overall fit. The obtained values, as Table 5 shows, demonstrate an exemplary model fit in this study, with notable indices including a p value of 0.038, chi-square/degree of freedom of 1.565, NFI of 0.907, GFI of 0.941, AGFI of 0.912, IFI of 0.906, RMSEA of 0.0752, CFI of 0.920, RMR of 0.0762, and SRMR of 0.0735.

These values collectively affirm the soundness and appropriateness of the model in explaining the relationships under investigation. The meticulous reporting of these fit indices demonstrates the researcher's commitment to evaluating

the structural equation model's adequacy thoroughly and comprehensively. This practice not only enhances the transparency and rigor of the study, but also provides valuable insights into the model's capacity to explain the observed phenomena effectively.

Table 5. Summary of confirmatory factor analysis.

Fit Indices	Criterion	Research Model
p value	<0.05	0.038
Chi-square/degree of freedom (χ^2/df)	≤3.00	1.565
NFI	≥0.90	0.907
GFI	>0.90	0.941
AGFI	≥0.90	0.912
IFI	≥0.90	0.906
RMSEA	≤0.08	0.0752
CFI	≥0.90	0.920
RMR	<0.08	0.0762
SRMR	<0.08	0.0735

Study Findings

The study used descriptive SEM to analyze the results, which offer valuable insights into the impact of innovation processes on the performance of banking services in Ghana. By explaining the specific types of innovation processes and their influence on market share, the study contributes to a better understanding of the dynamics within the banking industry. Overall, the findings obtained from the survey, providing a clear and detailed account of the relationships between innovation process types and the market share of universal banking services. These results contribute to the existing knowledge in the field and offer practical implications for the banking sector in Ghana.

Description of the Sample and Response Rate

The study involved a sample of 100 managers from universal banking services in Ghana. Data collection occurred through email survey questionnaires spanning several weeks. There was a 100% response rate, signifying the bank managers' high level of engagement and cooperation. The respondents had different managerial roles, providing insights into their distribution within the sample. The diverse and educated pool of management members enhanced the study's credibility and provided valuable perspectives on the impact of different innovation processes on banks' market share.

Positions of Respondents

Table 6 reveals that the respondents comprised 39 managers and 34 middle managers. Additionally, 21 lower level managers and 5 vice presidents from the participating banks participated in the survey. Only one respondent indicated

being a chief executive officer (CEO), holding the highest leadership position within a bank. Based on the findings, managers comprised the largest group of respondents, constituting 39 of the total. The term managers in this context likely refers to individuals working in various managerial capacities within the banks.

Table 6. Distribution by position.

Category	CEO	Vice Manager	Middle Manager	Lower Manager	Total
Frequency	1	5 39	34	21	100

Source: Field Data,2024.

The second-largest group comprised middle managers, representing 34 of the respondents. Middle managers typically occupy positions between top-level executives and front-line managers. Additionally, there were 21 lower level managers. The distribution of respondents' positions in this study serves as a rich source of valuable insights, shedding light on the diverse perspectives and contributions originating from distinct managerial levels within the banking sector in Ghana. This distribution contributes significantly to the depth and breadth of understanding, offering a comprehensive view of how innovation processes impact market share in the universal banking industry from the lens of various management hierarchies.

The study has captured a holistic spectrum of viewpoints, encompassing respondents from different managerial levels, ranging from front-line managers to senior executives. Each level of management brings unique experiences, challenges, and strategic considerations. As a result, the findings derived from this diverse distribution enable a thorough exploration of the multifaceted dynamics surrounding the impact of innovation on market share. The active participation and high response rate from the respondents reinforced the robustness and reliability of the data collected, enhancing the validity of the study's findings.

4. Bio-Data Discussion

The bio-data section of the study serves multiple essential purposes that contribute to the overall credibility and context of the research findings. While it may not directly impact the study's outcomes, this section provides valuable information that fosters trustworthiness and transparency, and that provides context for readers, researchers, and stakeholders. One crucial aspect of the bio-data section is that it offers a glimpse into the characteristics of the respondents, enabling readers to understand the demographic makeup of the participants. Information such as gender, age, educational level attained, and work experience in the banking sector provides a comprehensive picture of the sample involved in the study. These data are crucial as they help readers to assess the study's relevance and generalizability to specific populations.

Gender

Table 7 indicates that the study achieved a balanced representation of genders

among the respondents. Specifically, 61 of the participants were male, and 39 were female. By reflecting a commitment to ensuring equal opportunities for both males and females in the banking sector, the researcher maintained a balanced gender distribution in this study. This highlights that employment decisions within the banks were made based on merit, skills, and capabilities rather than being influenced by gender biases. The study's substantial representation of both genders reinforced the notion of inclusivity and diversity within the banking industry.

Table 7. Distribution by gender.

Category	Male	Female	Total
Frequency	61	39	100

Source: Field Data, 2024.

The balanced gender composition of the respondents further suggested that the sector has been actively fostering an environment that welcomes and supports talented individuals from all genders to contribute to the industry's growth and success. By achieving a balanced gender distribution in the research sample, the study promotes the idea of gender equality and fairness in the workplace. It serves as a positive example for the banking sector in Ghana and could be viewed as a progressive step towards dismantling gender-based barriers and stereotypes within the industry.

Moreover, the balanced representation of males and females in the study enhanced the credibility and generalizability of the findings. It ensured that the research outcomes reflected diverse perspectives and experiences, making the results more comprehensive and reliable. Overall, the study's achievement of a balanced gender representation reflected a commitment to inclusivity and equal opportunities within the banking sector. It sets a positive precedent for future research and serves as a testament to the industry's dedication to promoting gender equality in all aspects of its operations.

Age

Table 8 displays the age distribution analysis, revealing significant insights into the respondent demographics. The largest age group among participants was between 41 and 50 years, comprising 40 participants. Following closely were individuals aged 31 to 40 years, constituting 31 respondents. Moreover, 15 fell within the age range of 51 to 60 years, while 12 participants represented the 21 to 30 years category. The smallest proportion, accounting for two, consisted of respondents at least 20 years old. Notably, the dominance of middle-aged participants offers crucial perspectives, given their roles and experiences within the banking sector.

Table 8. Distribution by age.

Age Bracket	At least 20	21 - 30	31 - 40	41 - 50	51 - 60	Total
Frequency	2	12	31	40	15	100

Source: Field Data, 2024.

The substantial representation of the 41 to 50 age group is particularly noteworthy. These seasoned professionals hold pivotal positions within banks, making their insights influential in shaping the study's outcomes. Their perspectives provide depth and reliability to the research results, enriching the understanding of innovation's effects on market share. Furthermore, including respondents spanning various age brackets ensures diversity in the data, facilitating a comprehensive exploration of how different age segments perceive and respond to banking innovation. By embracing a wide range of participants, the study captures diverse experiences and viewpoints, thereby enhancing comprehension of how innovation processes impact market share.

In conclusion, this age distribution offers valuable insights into how distinct age groups contribute to banking service performance in Ghana. The demographic data enrich research findings and foster an inclusive understanding of innovation's role in shaping market share for universal banks in the country. The attention to age diversity ensures that the study captures different age cohorts' varied perspectives and preferences, contributing to a more inclusive and representative analysis. The findings of this comprehensive approach hold significance for guiding strategic decisions and formulating targeted interventions to enhance banking services across various age segments.

Educational Level

Table 9 highlights the educational qualifications of respondents, shedding light on their diverse academic backgrounds. The data revealed that 60 of the participants held first or second degrees, indicating a well-educated cohort. This substantial percentage underscores the sample's solid academic foundation and expertise in their respective fields, suggesting their capacity to engage thoughtfully with the research questions and offer valuable insights. Additionally, 26 of the respondents possessed professional certifications such as Associate of Chartered Institute of Bankers, Association of Chartered Certified Accountants, Chartered Institute of Management Accountants, Institute of Chartered Accountants, Certified Public Accountant, and Certified Information Systems Auditor, attesting to their specialized knowledge in the banking domain. These recognized certifications signify their commitment to continuous learning and professional growth, enhancing the study's credibility and relevance.

Table 9. Distribution by education level.

Category	Certificate	Diploma	Degree	Professional	Doctorate	Others	Total
Frequency	2	7	60	26	3	2	100

Source: Field Data, 2024.

Furthermore, seven of the participants held diplomas, and two had certificates, contributing diverse viewpoints to the study despite their relatively minor representation. The study also identified three respondents with doctoral degrees. Their extensive research experience and advanced expertise in their respective fields

elevate the study's rigor and contribute to the comprehensive analysis and interpretation of findings.

In summary, the study's participants exhibited a high level of education, with a diverse mix of qualifications, including first and second degrees, professional certifications, diplomas, certificates, and doctoral degrees. The educational diversity enriches the research outcomes, making them more robust and applicable to Ghana's broader banking industry landscape.

Working Experience

Table 10 on working experience indicated that most respondents (36) had worked in their respective banks for 6 to 9 years. A substantial group of participants with 6 to 9 years of experience demonstrates a significant level of tenure within the banking sector. Their tenure suggests active involvement in the industry and likely accumulation of valuable expertise and insights over the years. The responses from this group carry weight and offer valuable perspectives on the impact of innovation processes on banking services. A close number of participants (35) had been with their banks for 10 years or more, showcasing remarkable expertise and long-standing commitment to their respective banks.

Table 10. Distribution by working experience.

Years	At least 3	3 - 5	6 - 9	10 and above	Total
Frequency	9	20	36	35	100

Source: Field Data, 2024.

Respondents with 10 years or more of experience in the banking industry held various roles and witnessed industry changes over time. Their extensive tenure positioned them as key informants in understanding the historical context and the evolution of innovation processes within the banking sector. Additionally, 20 respondents had 3 to 5 years of experience, representing a relatively newer cohort within the industry. Respondents with 3 to 5 years of experience may bring fresh perspectives and insights into the study, offering a view of the challenges and opportunities faced by early-career professionals. Their contributions are vital as they can shed light on the impact of innovation processes on their initial experiences in the banking sector. Moreover, the smallest group (nine) had at least 3 years of working experience. Being the least tenured, this subset of respondents may offer insights into the perspectives of newcomers to the universal banking sector. Their responses could reveal the early impressions and expectations of individuals just starting their careers in the sector, making their input crucial for a comprehensive understanding of the industry's dynamics. The combination of seasoned professionals and early-career individuals contributes to the richness and complexity of the study's outcomes, making it relevant and applicable to various stakeholders in the banking industry. In conclusion, the study's exploration of working experience reveals a diverse group of respondents with varying tenure levels within the universal banking sector. Respondents with 6 to 9 years, 10 years

or more, 3 to 5 years, and at least 3 years of experience offer unique insights into the industry's landscape. The collaborative efforts of these individuals enhance our understanding of how innovation processes impact the performance of banking services. Consequently, the study's findings have practical implications for strategic decision-making and policy development within Ghana's banking industry.

Hypothesis Testing

The researcher employed SEM as a robust analytical approach to generate inferential statistics for testing the formulated hypotheses (Anderson & Gerbing, 1988). The technique was a combination of factor analysis and multiple regression analysis. The results provide estimates that furnish valuable insights into the relationships under investigation through SEM. These estimates manifest as model summary tables and path coefficient figures, offering a comprehensive overview of the interconnections between variables within the research framework. The dataset employed for this analysis came from a pool of 100 respondents. The significance level, or alpha level, for the study was 0.05. The effect size, a measure of the strength of relationships in the model, was 0.15, and the statistical power was 0.95 (Field, 2018). These parameters serve as foundational components in establishing the analytical rigor of the study. The results stemming from the analysis provide compelling support for the alternative hypothesis posited in this study. This hypothesis proposes that different types of innovation processes banks implement influence the market share of universal banking services in Ghana. The path coefficient analysis outcomes within the SEM framework are comprehensively presented in **Figure 2** and **Table 11**. The study's formulated hypotheses, H_{0A} through H_{0E}, underwent empirical scrutiny, leading to notable findings. The results rejected the null hypothesis and accepted the alternative hypothesis for H_{aA} and H_{aC}, revealing that both organizational innovation ($\beta = 0.159$, $t = 1.951$, $p = 0.032 < 0.050$) and process innovation ($\beta = 0.252$, $t = 2.743$, $p = 0.006 < 0.050$) significantly and positively influence the market share of banking services in Ghana. Additionally, the results affirmed the validity of H_{aD}, signifying that marketing innovation ($\beta = 0.251$, $t = 2.040$, $p = 0.017 < 0.050$) has a substantial and favorable influence on the market share of banking services in Ghana.

Conversely, the findings did not support H_{aE}, indicating that product innovation ($\beta = 0.0232$, $t = 0.262$, $p = 0.793 > 0.050$) does not exert a statistically significant influence on the marketing innovation of banking services in Ghana. However, H_{aB} garnered empirical support, highlighting that product innovation ($\beta = 0.242$, $t = 2.037$, $p = 0.021 < 0.050$) has a notable and affirmative influence on the market banking services within the Ghanaian context. Based on the study's findings, the researcher rejected the null hypothesis for organizational innovation and accepted the alternative hypothesis, indicating that organizational innovation statistically influences the market share of banking services in Ghana. Similarly, the researcher rejected the null hypotheses for product, process, and marketing

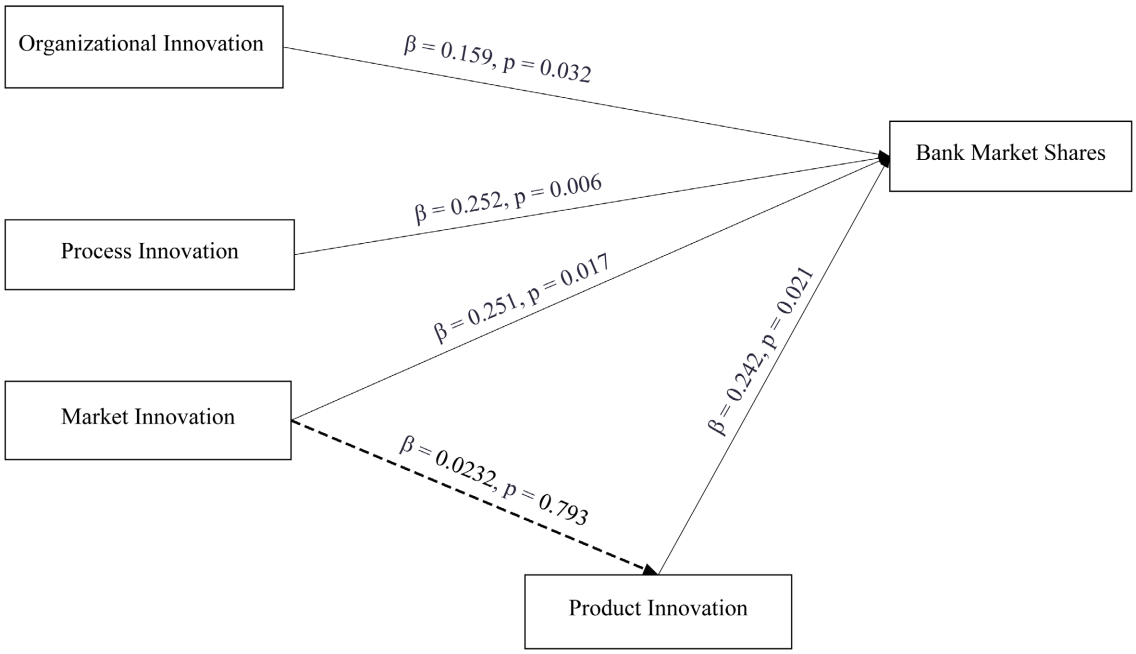

Figure 3. Path coefficients of the research.

innovations and accepted the alternative hypotheses. The findings suggested that product, process, and marketing innovations statistically significantly influence banks' market share of banking services in Ghana. Therefore, the study supported the idea that combining diverse innovation process types is crucial for optimizing market share growth in the Ghanaian banking sector.

Collectively, these observations underscore the varying impacts of distinct innovation types on the market share of banking services in Ghana. Process innovation (β = 0.252) emerged as the most pivotal factor shaping bank market shares in Ghana. The result was closely followed by marketing innovation (β = 0.251), product innovation (β = 0.242), and organizational innovation (β = 0.159). These quantified influences shed light on the relative significance of each innovation type in the Ghanaian banking industry. The comprehensive depiction of these results provided valuable insights for industry practitioners and policymakers, facilitating informed decision-making and strategic planning to enhance banks' market positions and performance within the sector. These insights can guide the development of targeted strategies to maximize market share growth and overall performance within the Ghanaian banking industry. Additionally, policymakers can use these findings to inform regulatory frameworks and policies that promote innovation and competitiveness within the banking sector. These results highlighted the varying impacts of different innovation types on the market share of banking services in Ghana, with process innovation emerging as the most pivotal factor, followed by marketing, product, and organizational innovations. The findings offer valuable insights for industry practitioners and policymakers to guide strategic planning and decision-making. By conducting a detailed path coefficient analysis within the SEM framework, the researcher provided a deeper

understanding of the relationships between the variables. These outcomes, presented in Figure 3 and Table 11, contribute to a comprehensive examination of the mechanisms driving banking service performance in Ghana.

Table 11. Summary of the effect of coefficient path.

Hypothesis	Coefficient (β)	*T* Value	*P* Value	Decision
H_{aA}: OI → BMS	0.159	1.951	0.032	Supported
H_{aB}: PI→ BMS	0.242	2.037	0.021	Supported
H_{aC}: PrI→ BMS	0.252	2.743	0.006	Supported
H_{aD}: MI → BMS	0.251	2.040	0.017	Supported
H_{aE}: MI → P	0.0232	0.262	0.793	Not supported

Significant at $p < 0.05$*.

Based on the study's findings, the researcher rejected the null hypothesis for RQA (organizational innovation) and accepted the alternative hypothesis. The findings implied that organizational innovation has a statistically significant influence on the market share of banking services in Ghana. However, its effect may be weaker than other factors such as process, marketing, and product innovation.

The researcher rejected the null hypothesis for RQB (product innovation) and accepted the alternative hypothesis. The outcome suggested that product innovation statistically significantly influences banks' market share of banking services in Ghana, with innovative products substantially and positively affecting market share performance. These findings underscore the importance of prioritizing product innovation to enhance market share within the banking sector.

The researcher rejected the null hypothesis for RQC (process innovation) and accepted the alternative hypothesis. The findings suggested that process innovation has a statistically significant influence on banks' market share in Ghana, with innovative processes within banking operations substantially and positively affecting market share performance. These results underscore the importance of prioritizing process innovation to enhance market share within the banking sector. The researcher rejected the null hypothesis for RQD (marketing innovation) and accepted the alternative hypothesis. The findings implied that marketing innovation has a statistically significant influence on banks' market share in Ghana, with innovative marketing strategies substantially and positively affecting market share performance. The outcomes of this study provided valuable insights into the influence of various innovatiSon processes on the market share of universal banks in Ghana, highlighting critical pathways for growth. While organizational innovation emerged as a significant driver of market share, the study found that process, product, and marketing innovations contributed even more notably to market share enhancement. These results align with prior research conducted in Ghana by YuSheng and Ibrahim (2020), emphasizing the importance of employing a combination of diverse innovation processes to maximize performance

gains. Such alignment reinforces the argument that holistic innovation strategies are essential for competitive success in the banking sector. However, these findings stand in contrast to Baba's (2012) study, which suggested a stronger positive correlation between organizational innovation and market share growth. This divergence underscores the need for context-specific investigations to fully understand the unique dynamics of innovation within different banking environments.

5. Discussion

The study, a quantitative, non-experimental correlational investigation, examined the influence of various types of innovation processes (namely, organizational, product, process, and marketing) on banks' market share. In the past decade, the banking sector has operated within an environment characterized by high volatility, dynamism, and fierce competition (Asgber & Hanif, 2018; Dadzie & Ferrari, 2019). Consequently, banks' profitability has faced challenges (Asaah et al., 2020; Das et al., 2018). The study's findings are poised to offer banks a means to assess the significance of distinct innovation processes in terms of their impact on banking performance, with implications for bolstering profitability and market share within the sector.

The outcomes of this study reveal a noteworthy pattern within the hierarchy of innovation processes' significance for banks' market share. The hierarchical structure, when ordered from the most to the relatively least influential, takes the shape of process innovation, followed by marketing innovation, product innovation, and last, organizational innovation. While the impact of organizational innovation on market share appears relatively limited, the study establishes the substantial influence of product, process, and marketing innovation on banks' market share in the Ghanaian banking sector.

Remarkably, among these four innovation types, process innovation emerges as the most potent factor, underscoring the pivotal role of innovative process strategies in driving the overall performance of banks. Following process innovation's prominence, the impact hierarchy is structured as marketing innovation, product innovation, and organizational innovation. This hierarchy of influences presents a quantified assessment of the relative significance of each innovation type in the Ghanaian banking industry. The comprehensive depiction of these findings yields valuable insights for professionals within the banking sector and policymakers. For industry professionals, this knowledge provides a strategic roadmap, guiding their efforts in a manner that aligns with the workings of the Ghanaian banking landscape. On the other hand, policymakers can wield these findings as a potent tool to craft regulatory and policy frameworks that harmonize with the industry's evolving needs.

The following answers were inferred in response to the research questions and sub-questions based on the study results.

Answer to Research Question 1

Based on the study's findings, innovation types, including organizational,

product, process, and marketing, have varying degrees of influence on banks' market share of banking services in Ghana. Specifically, the research revealed that process, product, and marketing innovations significantly influence banks' market share performance. In contrast, the influence of organizational innovation on market share was comparatively weaker. These results suggested that combining diverse innovation types is essential for optimizing market share growth in the Ghanaian banking sector.

Answer to Research Question A

The study's findings suggested that organizational innovation holds statistical significance, providing evidence to reject the null hypothesis that organizational innovation does not affect the market share of banking services in Ghana. However, compared to process, marketing, and product innovation, which exhibited lower p values or more substantial effects, organizational innovation exerted less significant influence in explaining the variability in the market share of banking services in Ghana. Thus, while organizational innovation remains significant, its impact may be weaker than other factors such as process, marketing, and product innovation.

Answer to Research Question B

Product innovation significantly influences banks' market share in Ghana, as evidenced by the study's findings. Specifically, implementing innovative products substantially and positively influences banks' market share performance. Thus, banks introducing novel and competitive products are better positioned to capture a larger market share than those not innovating in their product offerings. Consequently, the researcher rejected the null hypothesis, which posited no statistically significant influence of product innovation on banks' market share, based on the study's results.

Answer to Research Question C

Process innovation significantly influences banks' market share of banking services in Ghana, as study's findings indicated. The research revealed that implementing innovative processes within banking operations substantially and positively influences market share performance. Specifically, banks adopting efficient and streamlined processes are better positioned to enhance their market share than those not innovating in their operational processes. Therefore, the study supports the alternative hypothesis, suggesting a statistically significant influence of process innovation on banks' market share, thereby rejecting the null hypothesis.

Answer to Research Question D

Marketing innovation significantly influences banks' market share of banking services in Ghana, as evidenced by the study's findings. The research revealed that implementing innovative marketing strategies substantially and positively influences market share performance. Further analysis of Research Question D revealed that managers view banks that effectively utilize innovative marketing techniques as better positioned to capture a larger market share than those needing innovation in their marketing approaches. Therefore, the evidence supports the

alternative hypothesis, suggesting a statistically significant influence of marketing innovation on banks' market share, thereby rejecting the null hypothesis.

The study findings indicated that innovation process types, including organizational, product, process, and marketing innovations, significantly influenced the market share of banking services in Ghana. Specifically, process innovation exerted the most substantial influence, followed closely by marketing, product, and organizational innovation. The study demonstrated that organizational innovation had a significant and positive influence on the market share of banking services in Ghana. While its impact was notable, it was comparatively less influential than process and marketing innovation in shaping market share within the Ghanaian banking sector.

The study did not find sufficient evidence to support a statistically significant impact of product innovation on the marketing innovation of banking services in Ghana. However, the research did suggest that product innovation positively influenced the market share of banking services in Ghana, although it was less substantial than the impacts of process and marketing innovation. The findings suggested that process innovation significantly and positively influenced the market share of banking services in Ghana. Process innovation emerged as one of the most critical factors in shaping market share within the Ghanaian banking sector, indicating its importance in driving banking performance and competitiveness. The study results indicated that marketing innovation had a substantial and positive influence on the market share of banking services in Ghana. While not as dominant as process innovation, marketing innovation remained a crucial driver of banking performance and market positioning in the Ghanaian banking landscape.

The outcomes of the hypothesis testing underscore the vital significance of integrating diverse innovation processes to achieve optimal performance enhancements within banking services. These results align harmoniously with prior research that underscores the multidimensional nature of innovation processes, emphasizing their integration for achieving optimal performance outcomes (Asgber & Hanif, 2018; Chipeta & Muthinja, 2018; Hu et al., 2020; YuSheng & Ibrahim, 2020). However, the outcomes contrast with those of Baba's (2012) investigation, which indicated a major positive correlation between organizational innovation and market share growth. The study's findings directly address the research question centered on how various innovation types (organizational, product, process, and marketing) influence the market share of banking services in Ghana. These findings corroborate a positive relationship between these innovation types and banks' market share. The interpretation of the findings underscores the necessity to enhance and cultivate innovation strategies that are well-aligned with the existing practices and values of the organization, thereby emphasizing compatibility (Rogers, 1962).

Among the innovation types, process, product, and marketing innovation emerge as prominent predictors of banks' market share, while the impact of

organizational innovation on market share remains relatively limited. The study revealed the pivotal role of product innovations in augmenting the market share of universal banks in Ghana. Introducing innovative products and services enables banks to attract a more extensive customer base and subsequently increase their market share (Asare, 2019; Ashiru et al., 2023). These findings underline the strategic significance of consistent product development and innovation to secure a competitive edge in the dynamic and competitive banking industry (Sharma & Kumar, 2017). Such insight can give banks valuable direction in pursuing relevance, competitiveness, and growth within the ever-evolving Ghanaian banking landscape.

The statistical significance test notably demonstrated the substantial impact of process innovations on banks' market share, confirming the alternate hypothesis. The observation aligns seamlessly with the prevalent trend in the Ghanaian banking sector, where banks have proactively embraced process innovations such as mobile banking and digital banking experience to enhance their market share while managing costs (Adjei et al., 2020; Amoah et al., 2020). By embracing these technological advancements and streamlining their internal processes, banks can bolster efficiency and customer experiences, thereby contributing to expanding their market share (Akkaya, 2021; Ardizzi et al., 2019; Kolapo et al., 2021). The study's results underscore the strategic role of process innovation for universal banks in Ghana, acting as a catalyst for market performance and growth. The positive influence of process innovations underscores their potential to drive banks' success and market expansion, offering a pragmatic roadmap for harnessing the power of innovation within the dynamic banking landscape.

Moreover, the findings lay bare the substantial role of marketing innovation in explaining variations in bank market share. The regression outcomes further corroborated that marketing innovation exerts a statistically significant influence on the performance of universal banks in Ghana, thus endorsing the alternate hypothesis. The positive impact of marketing innovations on the market share of these banks is evident. The study sheds light on how Ghanaian universal banks leverage innovative delivery channels to market their products and services effectively (Asare, 2019; Ashiru et al., 2023; YuSheng & Ibrahim, 2020). Through the adoption of pioneering marketing strategies, banks can amplify their visibility, attract a more extensive customer base, and ultimately expand their market share within Ghana's fiercely competitive banking industry. The constructive influence of marketing innovations emphasizes the strategic importance of harnessing state-of-the-art marketing methodologies to sustain competitiveness and success amid the nation's dynamic banking landscape.

6. Conclusion

The study's findings shed light on the distinctive roles played by various types of innovation processes, namely organizational, product, process, and marketing, in shaping the market share of universal banking services in Ghana. These results

carry significant implications, and when compared with existing literature, they provide valuable insights into the shades of innovation within the banking sector. A detailed comprehension of how various innovation processes influence market share performance can guide strategic decisions and resource distribution in banks, ultimately strengthening their competitiveness and market standing.

Process innovation (β = 0.252) emerged as the central driver of bank market share in Ghana, signifying its pivotal role in enhancing banking service performance. The literature has advocated harmonizing and integrating diverse innovation processes for optimal performance improvements. The present study aligns with this perspective, emphasizing that combining various innovation processes can yield the most significant enhancements in performance. In contrast to these findings, Baba's (2012) study revealed a strong positive correlation between organizational innovation and market share growth. The variation underscores the unique dynamics and evolving characteristics of the banking industry. It indicates that the significance of different types of innovation can shift over time and across regions, emphasizing the importance of a comprehensive understanding of innovation's diverse effects.

Furthermore, the study's results affirm the influence of marketing and product innovations (β = 0.251 and β = 0.242, respectively) on bank market share. These findings complement the broader literature on innovation in the banking sector, emphasizing that introducing innovative products, services, and marketing strategies can attract more customers and consequently increase market share. By aligning with the industry's ongoing trend, innovative delivery channels are constantly adopted to market their offerings effectively.

Notably, the study found that organizational innovation (β = 0.159) had a relatively limited impact on market share. This finding suggested that while organizational innovation remains a relevant aspect of banking operations, it may not be the primary driver of market share growth in the banking services in Ghana.

Regarding the hypotheses, the researcher formulated hypotheses H_{0A} through H_{0E}, which all were supported except for H_{aE}, as the evidence showed that product innovation does not exert a statistically significant impact on the marketing innovation of banking services in Ghana. The outcome underscores the need for banks to differentiate between product and marketing innovation strategies and highlights the independence of these two aspects in influencing banking service performance. In conclusion, this study's outcomes present a nuanced perspective compared to prior research, indicating that different types of innovation processes exert variable influences on the market share of universal banks in Ghana. Process, marketing, and product innovation emerge as notable drivers of market share, while the impact of organizational innovation on market share remains relatively limited. These insights contribute to the evolving body of knowledge on innovation in banking and offer practical guidance for banks operating in Ghana and similar contexts.

7. Limitations and Implications

Research Limitations

The research focuses on four specific innovation process types—organizational, product, process, and marketing—and their impact on market share within Ghana's banking sector. While insightful, this narrow scope excludes other innovation forms, such as radical, incremental, or disruptive innovations, which may also influence performance. Additionally, the study may not fully capture the interconnected nature of innovation, where improvements in one area (e.g., organizational practices) ripple across others (e.g., product development).

This study included four universal banks out of the 23 operating in Ghana. However, this limited sample size may have constrained the generalizability of the results. Future studies could enhance the generalizability of findings by including broader sample sizes, both within and outside Ghana, to compare and validate the current study's findings across a wider range of bank managers.

The use of email surveys as the primary data collection method, while economical and time-efficient, may introduce response bias and lower response rates, potentially affecting the generalizability of the findings. Despite these limitations, email surveys remain a valuable tool for collecting data on innovation in Ghana's banking industry due to their ability to reach geographically dispersed participants and ensure uniformity in questioning (Creswell & Creswell, 2018). They also facilitate seamless integration with data analysis tools, offering respondents convenience and encouraging accurate, thoughtful responses. Future research should adopt a broader approach, incorporating diverse innovation types and mixed data sources, such as large-scale secondary datasets, to provide a more comprehensive understanding of innovation dynamics.

Disclosure Statement

Cosmos Kwasi Gyadu (PhD) is a scholar-practitioner specializing in Business Management and Accounting. He holds a PhD from Capella University, with research focusing on optimizing organizational performance through innovative financial strategies. With over 20 years of experience in the financial services industry, Dr. Gyadu has demonstrated expertise in financial analysis, strategic budgeting, performance optimization, and consultancy in the banking sector.

As an educator and consultant, Dr. Gyadu is deeply committed to mentoring future leaders in accounting and finance. His professional and academic endeavors are driven by a dedication to excellence, continuous improvement, and the application of cutting-edge research to solve practical challenges. Dr. Gyadu has no conflicts of interest to disclose concerning this publication.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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