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DETERMINANTS OF PAYMENT INNOVATION AMONG DEPOSIT MONEY BANKS IN NIGERIA: A REVIEW OF LITERATURE

Payment innovation plays the central role in enhancing efficiency, accessibility, and financial inclusion within the banking sector, particularly in emerging economies like Nigeria. Through a systematic review of relevant literature, this study synthesises relevant theories and empirical studies to identify gaps in understanding the factors driving payment innovation among DMBs in Nigeria. The review reveals several key determinants influencing payment innovation among DMBs in Nigeria, including bank size, perceived usefulness, regulatory capital, research and development, human capital development, asset quality, leverage, and investment in information and communication technology (ICT). However, the study identified a significant research gap in establishing the directional relationship between these factors and payment innovation outcomes in the Nigerian banking context. Based on the findings, the paper recommends conducting empirical investigations to elucidate the causal relationships between DMBs in Nigeria and the identified determinants of payment innovation. In conclusion, this paper underscores the importance of understanding the determinants driving payment innovation among DMBs in Nigeria. By bridging the research gap through empirical investigations, stakeholders can better navigate the complexities of the banking industry and foster an environment conducive to on-going innovation and growth.

Keywords: payment innovation, bank-level determinants, bank size, Fintech, deposit money banks.

1. INTRODUCTION

In the dynamic landscape of the Nigerian financial industry, the exploration of payment innovation among Deposit Money Banks (DMBs) has gained prominence as a focal point reshaping the operational dynamics of banking services. While DMBs engage in various

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financial activities, from deposits to loans and advisory services, the efficiency of payment systems is fundamental to their operational smoothness (Somoye et al., 2019). Without robust payment infrastructure, the daily transactions within a bank, including fund transfers, payments for goods and services, and employee salaries, would falter.

While the adoption of electronic payment innovations has been significant, understanding the factors that drive their development is crucial for ensuring sustained and robust performance for DMBs in Nigeria. Factors such as bank characteristics, regulatory frameworks, technological infrastructure, customer preferences, and cybersecurity measures play pivotal roles in shaping the success of payment innovation.

Organisational activities are shaped by industry-level factors such as competition and technology trends (Meyer, 2020). Sadowska (2019) identifies Information as a pivotal role in driving economic and organisational strategies. External macroeconomic conditions like interest rates and government policies also impact organisations (Jensen, Meckling, 1976).

The emergence, spread, or adoption of innovative products is frequently impacted by a blend of internal and external elements, a reality that extends to DMBs (Muthinja, Chipeta, 2017). Thus, DMBs find themselves subject to the sway of what can be categorised as bank-level, macro-level, and customer-level determinants (Wahyudi, 2020; Nguena, 2019).

Recognising the imperative to comprehend the determinants steering payment innovation at the bank level becomes paramount for scholars and practitioners alike, unraveling essential insights into the strategic decisions and operational frameworks adopted by these financial institutions.

2. PAYMENT INNOVATION

Since the beginning of the new millennium, technological advancements and, more specifically, innovations in payment systems have significantly transformed and modernised the operational landscape of the global banking industry, thereby establishing their credibility (Serge et al., 2019). Payment innovation refers to the introduction and adoption of new technologies, systems, and processes within the banking industry to improve the efficiency, security, and convenience of payment transactions (CBN, 2021). It is a Fintech solutions that introduce novel or distinctive methods of paying for goods or services, typically with the objective of enhancing customer convenience or expediting the process (Rahayu et al., 2022).

Joanna (2011) contends that payment innovation, exemplified by the introduction of new payment mechanisms like ATMs, mobile banking, and internet banking platforms, is synonymous with process innovation. This innovation within payment systems serves as the linchpin for various facets of financial innovation, including product development, regulatory advancements, market dynamics, and the functioning of financial institutions. In essence, the effectiveness of these other financial innovations hinges on the success and evolution of payment innovation.

Meyer (2020) opines that payment innovation is considered a component of financial innovations within the financial system. The Banks for International Settlement (BIS), (2020) characterised payment innovation as the implementation of electronic payment systems, such as Automated Teller Machines (ATMs) and Mobile Banking (MB) with the support of Unstructured Supplementary Service Data (USSD), Electronic Cheques (E-cheques), Point of Sale (POS) terminals, and other similar technologies, aiming to enhance user accessibility and foster public trust in the banking sector.

2.1. Automated Teller Machine (ATM) channel

According to Ibekwe (2021), ATM payment channel or otherwise called ATM banking is a financial innovation that has been implemented in the banking industry to streamline payment transactions. This system utilises an ATM gallery, which is a cash dispenser that allows customers to withdraw funds from their accounts conveniently and at any time, regardless of their location, resulting in an immediate debit from their accounts. The introduction of ATM banking to expedite the payment function of DMBs was made possible by the advent of technology in finance (Bingilar, Bariweni, 2019). According to Oke et al. (2021), ATM banking not only reduces customers' waiting time for service delivery but also lowers operating costs for DMBs while generating additional income for them.

In the 21st century, ATM banking has undergone significant changes, capitalising on technological advancements to offer improved services and convenience to customers of DMBs, as noted by Ibekwe (2021). These ATMs have evolved from basic cash withdrawal machines into versatile devices. Beyond cash withdrawals, modern ATMs now enable customers to deposit cash and cheques, transfer funds between accounts, check account balances, print mini statements, and even purchase prepaid cards or postage stamps. ATMs have incorporated advanced security features to safeguard customer transactions and data (Zouari, Abdelmalek, 2020). These include PIN encryption, card skimming detection, biometric authentication (such as fingerprint or scanning), and real-time monitoring systems to prevent fraud and unauthorised access.

Othman et al. (2020) noted that the labour-intensive paper-based payment transaction system has been replaced by ATM banking. Bank will be more productive during business hours as a result of the combined services provided by ATM banking and human tellers. This suggests that because ATMs can function continuously, unlike people, they can produce more work than other financial channels.

Furthermore, ATMs now offer cardless transactions, allowing customers to withdraw cash using their mobile devices or unique codes generated through banking applications. This feature provides added convenience and reduces the risk of card theft or loss. Other features in the ATMs include cash recycling, remote monitoring and maintenance. This enables banks to track ATM performance, detect issues, and perform maintenance or troubleshooting remotely, minimising downtime and ensuring optimal functionality. Overall, ATM banking is a concept that encompasses the provision of financial services through automated teller machines.

2.2. MOBILE BANKING/USSD PAYMENT CHANNEL

According to the Nigeria Inter-Bank Settlement System (NIBBS) (2021), mobile banking can be described as the delivery of banking payment services through mobile phones, functioning without the need for an internet data network. Instead, it relies on codes provided by network providers using the system known as Unstructured Supplementary Service Data (USSD). Conversely, Safdar et al. (2018) characterise mobile banking as the act of conducting banking activities on a mobile phone, incorporating payment system features. Nazrul-Islam et al. (2022) assert that the integration of mobile banking payment into the financial system represents a form of financial innovation aimed at facilitating financial inclusion for the underbanked. This aligns with the perspective presented by Fatokun (2013).

The rise of smartphones has led to the emergence of mobile banking applications, enabling customers to perform digital payment services on their mobile devices. Unlike ATMs, mobile banking does not support cash withdrawals or deposits directly from the mobile device. However, mobile banking often includes options for transferring funds to other accounts, which can serve as an alternative to cash withdrawals.

2.3. Internet banking/web-payment channel

The concept, internet banking is often used as web-payment channel (CBN, 2020); electronic banking (e-banking) (NIBSS, 2021). It is another prominent payment innovation in the banking sector. According to Chen and Peng (2019), it is the delivery of a wide range of valuable products and services to consumers of banks via the internet. Monyoncho, (2015) views it as an e-banking which renders online real time traditional banking functions. Tamara et al. (2019) view it as a modern payment channel which provides online banking functions and information-related benefits that favour the customers in terms of accessibility, convenience, control and confidence. Customers can efficiently manage their accounts, track transactions in real-time, and make payments conveniently from anywhere at any time using internet banking (Aurazo, Vega, 2021).

Nwakoby et al. (2019) highlight that internet banking reduces operational costs and improves payment processes. It also aligns with the cashless policy, as described by Oke et al. (2021). The adoption and usage of internet banking are influenced by various factors, including customer-related aspects and technological infrastructure, as discussed by Akintoye et al. (2022). Furthermore, the perceived security and confidentiality of online transactions play a crucial role in determining its acceptance. Internet banking provides valuable data on customer behaviours and preferences, empowering banks to customise their services, enhance product offerings, and make data-driven decisions to drive performance and profitability.

2.4. Point of Sales (POS) banking

Salami et al. (2022) describe the Point of Sales (POS) system as a payment processing and financial transaction terminal. This channel employs a portable electronic device called a POS terminal, specifically designed to facilitate card payments at different retail locations. According to Ibekwe (2021), the POS payment channel utilises a debit card for processing payments or withdrawals. This method enhances efficiency, accessibility, and reach, especially in unbanked areas, as POS-accredited agents can operate remotely. Additionally, this system saves time and resources for customers since they are not required to visit bank premises to use ATMs. As described by CBN (2021), agent banking is a novel payment channel that offers improved financial access, enhances bank efficiency, and creates employment opportunities for individuals involved in the agent banking unit. With the aid of POS terminals operated by approved bank agents, users can conveniently make deposits and withdrawals, thereby increasing convenience and accessibility for customers.

In Figure 1, a comprehensive overview of Nigeria's payment transaction trends from 2013 to 2022 is depicted, shedding light on the evolving financial landscape of the country. Notably, this data reveals that the volume of ATM transactions during this period accounted for a substantial 35% of the total payment transactions in Nigeria. In close alignment with ATM transactions, Point of Sale (POS) transactions represented 29% of the payment landscape, as they also require the use of debit cards and involve physical cash transactions. However, the rise of digitalisation is evident in the payment landscape. Mobile banking transactions, while comprising a smaller portion at 12%, offer a convenient

digital alternative for financial activities. Internet banking transactions, on the other hand, represented 20% of the total volume, indicating a more substantial shift towards digital financial services. Transactions conducted through other electronic or manual channels collectively represented 8%. In essence, this data underscores the coexistence of traditional cash-based methods with an emerging digital financial landscape in Nigeria.

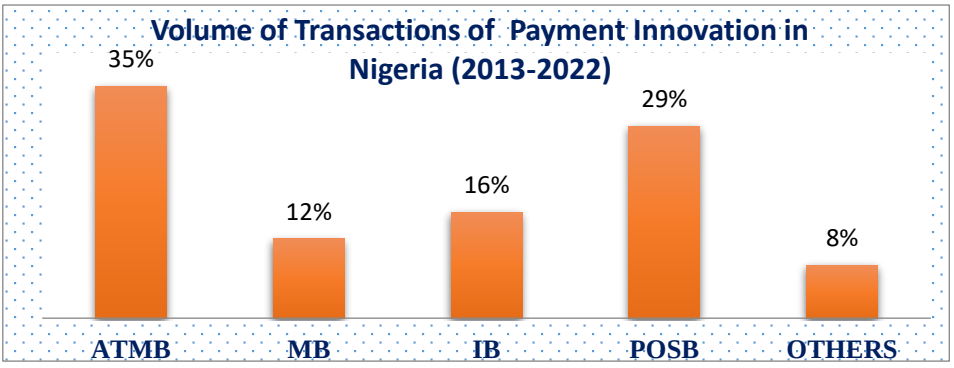

Figure 1. Volume of Transactions of Payment Innovations from 2013 to 2022

Source: (CBN, 2023).

3. BANK-LEVEL DETERMINANTS PAYMENT INNOVATION

Payment innovation is multifaceted process influenced by a multitude of factors. These influential elements encompass internal and external (Muthinja, Chipeta, 2017; Wahyudi, 2020; Sharon, 2021). Bank-level determinants include bank size, bank age, bank investment in R&D, bank profitability and bank capital regulation. These factors are inherent to the bank's profile and are under the direct control of the DMBs (Muthinja, Chipeta, 2017; Wahyudi, 2020; Beck, 2012).

3.1. Bank Research and Development (R&D)

Wahyudi (2020) described the concept of R&D as a systematic and purposeful process of investigation, experimentation, and innovation conducted by banks to acquire new knowledge, develop new financial products and services, or processes. R&D has become increasingly important in the banking industry as a key determinant of innovation. It is difficult to measure level of investment in research and development in banks. Intangible assets are usually used to proxy R&D (Nguena, 2019) and it is usually hidden and protected by firms in order to reduce the risk of imitation.

However, by investing in R&D, DMBs can identify emerging trends, customer preferences, and technological advancements to design new financial products. This may include mobile banking applications, digital payment solutions, personalised financial advisory services, and advanced risk management tools. R&D-driven innovation helps DMBs to differentiate themselves in the market, attract new customers, and improve customer loyalty (Cho, 2019).

R&D serves as a driving force behind collaborations between traditional banks and Fintech companies. By investing in R&D, DMBs can explore strategic partnerships and joint ventures with Fintech firms, leveraging their innovative technologies and disruptive business models. Such collaborations enable banks to quickly adopt cutting-edge solutions,

accelerate digital transformation, and remain agile in the rapidly changing financial landscape. R&D serves as a critical determinant of bank innovation, enabling financial institutions to enhance product offerings, improve operational efficiency, strengthen risk management, foster Fintech collaborations, and ensure regulatory compliance.

3.2. Bank size

The concept of bank size refers to the measure of a bank's total assets, which includes loans, deposits, investments, and other financial instruments. Wahyudi, (2020) views it as the scale and magnitude of a bank's operations, encompassing various quantitative measures such as the number of employees, annual revenue, market capitalisation, or total assets (Muthinja, Chipeta, 2017). There is no universally agreed-upon definition of what constitutes a "large" or "small" bank in terms of size, as it can vary across different countries and regulatory frameworks. However, in general, banks are categorised into different tiers based on their size and systemic importance (BIS, 2020).

The size of a bank can influence its risk profile and potential impact on the financial system. Larger banks may be more interconnected with other financial institutions, and their failure or financial distress can have broader systemic implications (Ohiani, 2021). Therefore, regulatory authorities often impose stricter oversight and capital requirements on larger banks to mitigate systemic risks. Bank size can indeed be a determinant of adoption and diffusion of payment innovation of DMBs (Muthinja, Chipeta, 2017). Larger banks often have more resources, both financial and human, which can be dedicated to research and development efforts. They have the capacity to invest in innovative technologies, hire specialised staff, and collaborate with external partners to drive innovation (Ferrouhi, 2017).

Large DMBs often have a broader customer base and market presence, which can provide them with more extensive data and insights about customer behaviour and preferences. This data can be leveraged to identify new opportunities, design innovative products and services, and tailor them to specific customer segments. However, small DMBs like Fintech startups, may have more flexibility and agility to experiment with innovative ideas without being constrained by extensive regulatory requirements (Aurrazo, Vega, 2021). DMBs of all sizes can collaborate with Fintech companies, technology providers, and other external partners to foster innovation. Smaller banks may be more open to collaborating with startups and leveraging their disruptive technologies to bring new products and services to market quickly.

Overall, bank size can provide certain advantages for innovation development, it is important to note that smaller DMBs or specialised innovation-focused units within larger DMBs can also excel in driving payment innovation. They can leverage their agility, flexibility, and ability to adopt emerging technologies more quickly, allowing them to introduce novel solutions and disrupt traditional banking practices.

3.3. Bank age

The concept of bank age refers to the duration or length of time that a DMB has been in operation or existence (Ferrouhi, 2017). It signifies the chronological age of a DMB, starting from its establishment or inception. Bank age is an important factor in assessing the experience, stability, and reputation of a financial institution. Established DMBs with a long history are often perceived as more trustworthy and reliable by customers and stakeholders. The age of a DMB can reflect its ability to withstand economic cycles, navigate financial crises, and adapt to changing market conditions.

The bank age can influence various aspects of a financial institution's performance. For instance, older DMBs may have a larger customer base and a more established presence in the market, which can contribute to their competitive advantage. They may have built a solid reputation over time, attracting customers through word-of-mouth and longstanding relationships. Additionally, the longevity of a DMB can be indicative of its ability to manage risk, maintain regulatory compliance, and adhere to industry best practices. Furthermore, older DMBs may have more bureaucratic structures and decision-making processes, which can slow down the adoption and implementation of innovative ideas. Sharon (2021) opines that older DMBs may have established networks and relationships with other financial institutions, technology providers, and Fintech startups which can facilitate collaboration in technologies that can drive payment innovation.

3.4. Bank regulatory capital

Bank regulatory capital refers to the amount of capital that financial institutions, such as banks, are required to hold in accordance with regulations set by governing bodies, typically central banks and regulatory agencies (CBN, 2021). This capital serves as a financial cushion to absorb unexpected losses, maintain the stability of the bank, and protect depositors and the broader financial system. Regulatory capital requirements are designed to ensure that DMBs have enough capital to cover their risk exposures and maintain their operations even in times of economic stress (Wahyudi, 2020).

Bank regulatory capital is categorised into different tiers, often referred to as “capital tiers” or “capital levels”, each with specific characteristics and functions (CBN, 2021). The most common tiers include Tier 1 capital and Tier 2 capital. Tier 1 capital consists of common equity and retained earnings, representing the core level of a bank's capital. Tier 2 capital includes instruments like subordinated debt and hybrid securities that can absorb losses if the bank faces financial difficulties. The evolving dynamics of digital payments, Cryptocurrencies, and Fintech disruptors necessitate a thorough re-evaluation of the capital buffers that financial institutions maintain. With these innovations introducing novel risks and vulnerabilities, regulatory bodies must ensure that DMBs possess sufficient capital to navigate potential disruptions while accommodating the transformative changes brought by these advancements (NDIC, 2021).

3.5. Bank profitability

Schumpeter (1934) describes bank profitability as a crucial determinant of a financial institution's overall performance that reflects its ability to generate earnings from its operations. Penrose (1959) opines that it is a measure for assessing a bank's financial sustainability and its capacity to provide returns to shareholders. At its core, interest income stands as a significant contributor to a bank's profitability. This is the difference between the interest earned from loans and other interest-bearing assets, and the interest paid on deposits and other liabilities (Farah et al., 2016).

Profitability is not solely defined by income. The management of operating expenses is equally pivotal. These costs encompass employee salaries, administrative overheads, technology investments, and regulatory compliance expenses. Efficiently managing these costs helps ensure that revenue outpaces expenditures, safeguarding profitability (Aduaka, Awolusi, 2020).

Key metrics like net interest margin (NIM), return on assets (ROA), return on equity (ROE), profit before interest and tax (PBIT), and profit after tax (PAT) are commonly used to gauge profitability (Akani, Obiosa, 2020). PBIT reflects the bank's earnings before

accounting for interest and taxes, highlighting its core operating performance. PAT, on the other hand, represents the ultimate earnings after accounting for all expenses, including interest, taxes, and other operational costs.

Bank profitability is a multifaceted concept shaped by a variety of internal and external factors. Achieving and sustaining profitability necessitates a balanced approach involving prudent management of interest income, non-interest income, expenses, risk, capital, and regulatory compliance. By considering all these elements, banks can navigate the intricate landscape of finance while ensuring profitability and long-term success.

4. THEORETICAL REVIEW

4.1. Schumpeter theory of innovation

Schumpeter (1934) observed the relevance of innovation in economic growth as it is fundamental impulse that ignite and sustain the capitalist engine as competitive innovative activity keeps the market up through creative destruction which continuously changes economic structure through invention, innovation and diffusion. Invention entails new ideas formation and its successful implementation while innovation entails successful invention, commercialisation, and diffusion (Somoye, 2013).

This theory offers valuable insights into the dynamics of innovation and its effects on economic development. The theory revolves around the central role of entrepreneurs as drivers of innovation, introducing new products, processes, and business models into the market. Schumpeter emphasised the concept of creative destruction, whereby new innovations replace or render obsolete existing products, industries, or technologies. This destructive aspect of innovation is seen as crucial for economic progress and the reallocation of resources toward more productive uses.

The theory operates on several assumptions, including the significance of entrepreneurship as a catalyst for innovation and economic growth. It also recognises the cyclical nature of innovation, occurring in waves of rapid expansion and subsequent stabilisation or decline. Furthermore, the theory assumes imperfect competition within markets, providing entrepreneurs with opportunities to introduce and profit from new innovations.

Despite its contributions, Schumpeter's theory has some limitations. It primarily focuses on radical or disruptive innovations, overlooking the importance of incremental advancements. It also pays less attention to institutional factors and social and environmental implications of innovation. Gundogdu and Taskin (2017), underscore the role of entrepreneurial innovation, where Fintech firms and banks introduce new technologies, platforms, and business models that reshaped the traditional banking.

The role of macroeconomic factors in driving innovation was highly highlighted in this theory. Schumpeter believed that governments should facilitate the process of innovation and provide a supportive environment for entrepreneurship. This includes providing technology supportive environment such as investment in ICT infrastructure and electricity supply in the country. Ejike (2019) observed that the theory recognises the influence of market competition, with increased competition from Fintech firms stimulating DMBs to invest in payment innovations to enhance customer experience and retain market share.

4.2. Diffusion of Innovation Theory

The Diffusion of Innovation Theory, proposed by sociologist Everett Rogers in 1962, provides a comprehensive framework for understanding the adoption and spread of new ideas, products, or technologies within a society. The theory is based on several key assumptions. First, it recognises that an innovation refers to an idea, product, or practice that is perceived as new by individuals or a social system. Second, the adoption process involves an individual's decision to try and use an innovation, leading to its acceptance and incorporation into their daily lives. Third, communication channels play a crucial role in the diffusion of innovations, as they facilitate the spread of information and influence individuals' perceptions and adoption decisions. Finally, the diffusion process occurs within a social system that includes individuals, groups, organisations, and cultural norms, which influence the adoption and diffusion of innovations (Khraisha, Arthur, 2018).

The theory further identified two main tests which innovation must pass before it can be adopted or diffused. They are the Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) (Hefferman et al., 2014). DOI theory establishes five adopter categories in transmitting the PU and PEOU to other categories. They are the innovators, early adopters, early majority, late majority and laggards. In each of these categories, factors such as relative advantages of the innovative idea over the existing ones, comparability and complexity are crucial to the adoption and diffusion.

The theory finds application in various fields including technology, healthcare, marketing, and social change (Namusonge et al., 2016). Organisations can use the theory to understand the factors that influence the adoption and diffusion of innovations, enabling them to develop strategies to promote adoption and overcome barriers. However, the theory does have certain weaknesses. It tends to overemphasise individual decision-making, neglecting the influence of systemic factors that shape the diffusion process.

Despite these limitations, the theory remains relevant to understanding the determinants of payment innovation (Ejike, 2019). Banks and payment service providers can leverage various communication channels, such as advertising, social media, and customer education campaigns, to effectively promote and explain the benefits of new payment solutions. By applying the theory's principles, banks can enhance their understanding of customer behaviour, develop effective marketing and communication strategies, and foster a culture of innovation to drive payment innovation and improve overall bank performance.

4.3. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was proposed by Fred Davis in 1989 as a framework for understanding user acceptance and adoption of new technologies. It is based on the assumptions that users are more likely to accept and use a technology if they perceive it as useful and easy to use. TAM encompasses five essential components: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude (A), Behavioural Intention (BI), and External Variables (EV).

Davis (1989) submits that the first assumption, which is based on PU, imply that individuals are more likely to accept a new technology if they believe it will be useful in addressing their current challenges. The second assumption, derived from PEOU, suggests that users prefer a technology that is easy to use and lacks complexity. The third assumption focuses on the users' attitude towards the system, which is influenced by their perception of PEOU. The attitude reflects the user's response to the system's usability. The fourth assumption, behavioural intention (BI), highlights the link between BI and the other conditions. It emphasises that there is a causal relationship between users' behavioural

intentions and the factors mentioned earlier. The final condition, external variables, serve as an encompassing category for factors not explicitly captured in the previous four conditions, such as age, gender, religion, and personal beliefs.

TAM has found widespread application in various fields, including information systems, technology acceptance, and user behaviour research (Ejike, 2019). In the context of payment innovation and bank performance, TAM is highly relevant. It provides insights into the determinants of user acceptance of new payment technologies (Enukoha et al., 2022). Users' perception of the usefulness and ease of use of payment innovations plays a significant role in their adoption decisions. DMBs can leverage this understanding to design and develop payment solutions that meet users' needs and expectations, ultimately enhancing user acceptance and driving bank performance (Sharon, 2021).

Payment innovations that are perceived as useful and easy to use are more likely to be adopted by customers (Inegbedion, 2018). DMBs can focus on creating intuitive, user-friendly interfaces and seamless payment experiences to enhance user satisfaction and promote adoption (Somoye et al., 2019). The model also recognises the influence of external factors such as training, Fintech literacy and support. DMBs can provide adequate training, assistance, and customer support to facilitate the adoption and effective use of payment innovations, thereby increasing their chances of success. The model has a limited scope as it primarily focuses on individual-level technology acceptance and does not account for customer Fintech literacy.

4.4. Traditional theory of innovation

Sundbo (1997) made a significant contribution to the Technology Acceptance Model (TAM) and the Diffusion of Innovation (DOI) theories by introducing two fundamental paradigms that influence innovation. The first paradigm is the Technological-Economic Paradigm, which focuses on the creation of new technology (Khraisha, Arthur, 2018).

The theory emphasises that the impact of technology on the economy depends on how innovators utilise it in a unique way that enhances economic growth. The second paradigm involves the creation of new financial entrepreneurs. The theory posited that the introduction of financial innovations plays a crucial role in achieving market efficiency.

Sundbo (1997) opines that traditional theory, which prioritises the market before innovation, is incomplete. Instead, he highlights the significance of persistent financial innovations within a firm's strategy to maintain a competitive advantage and market share. In this context, payment innovations are driven by technology and implemented by financial experts who possess a deep understanding of the need for innovation and the factors driving it (Nwakoby et al., 2019).

The theory highlights that innovations by DMBs are primarily technologically driven and implemented by financial experts (Khraisha & Arthur, 2018). While this perspective may be applicable within the context of banking, it may not directly translate to other industries or sectors where innovation dynamics differ significantly. It is important to recognise the contextual boundaries of the theory and consider its applicability in different domains. Lastly, the theory appears to neglect the user perspective in influencing innovation adoption and acceptance.

4.5. Constraints induced financial innovation theory

Silber (1983) argues that constraints on businesses that limit their ability to grow and expand are what led to the emergence of payment innovation. Constraints come in a variety of forms; some influence how lenders choose to finance decisions, while others have an

impact on how investors might make money (Khraisha, Arthur, 2018). The adoption of payment innovations, he pointed out, was an effort to increase business profitability through effective service delivery (Sharon, 2021). According to the theory, firms create new financial products primarily for profit-driven or profit-prompted innovation.

In furtherance to his earlier work, Silber (1983) added that firms need to introduce innovative product, process and strategy continuously to meet with the dynamics of economy in which they operate. The theory further explains that firms facing significant constraints may experience reduced innovation output, slower growth rates, lower profitability, and a competitive disadvantage compared to firms with greater financial resources. One limitation of the theory is its narrow focus on profitability and profit-driven innovation. Silber (1983) argues that firms create new financial products primarily for profit motives, aiming to increase business profitability through effective service delivery. This perspective neglects other potential drivers of financial innovation, such as customer needs, market demand, and regulatory requirements. By solely emphasising profit-seeking motives, the theory overlooks the broader societal and market dynamics that shape innovation in the financial sector. Despite this limitation, the theory offers relevant insights into the determinants of payment innovation and bank performance. It highlights the importance of addressing constraints and securing financing as a means to overcome financial limitations and gain a competitive advantage.

4.6. Meta theory of financial innovation

Meta theory was created by Khraisha and Arthur (2018) claimed that various flaws exist in earlier hypotheses, For instance, geographical distance used to be a significant factor in driving payment innovations in DMBs, but it now only has a little impact on financial operations. Khraisha and Arthur (2018) introduced four models to elucidate the process of payment innovation, drawing from the foundations laid by Poole and Van (1995). These models include the life-cycle theory, evolutionary theory, economic theory, and institutional theory.

The life cycle theory of payment innovation suggests that every innovation faces four stages; introduction, growth, maturity and decline. The extent of adoption and diffusion of financial innovations can vary depending on factors such as market conditions, industry dynamics, technological advancements, regulatory environments, and customer preferences (Ibekwe, 2021). Understanding the life cycle of innovation can help financial institutions, policymakers, and researchers anticipate the stages of adoption and plan accordingly. It highlights the importance of monitoring emerging trends, assessing the potential impact of innovations, and proactively adapting strategies to stay competitive in a rapidly changing financial landscape.

ATM served as an example to illustrate the life-cycle innovation hypothesis. ATM technology was first developed outside of the financial industry (Arthur, 2017). The initial ATMs could only dispense cash; however, modern ATMs are capable of performing a variety of tasks (Oke et al., 2021). In reality, the life cycle of innovations can be more complex, with periods of re-evaluation, reinvigoration, or transformation. Additionally, the theory does not provide a comprehensive understanding of the specific determinants that drive each stage of the life cycle.

The economic theory of payment innovation focuses on understanding the drivers, incentives, and economic implications of financial innovations. This theory examines how market forces and economic factors shape the development, adoption, and impact of payment innovations. It considers the motivations of financial institutions, investors, and

other market participants in creating and adopting new financial products, services, and processes. It emphasises the role of market forces, profit incentives, risk-return dynamics, information and technology, and regulatory factors in shaping the landscape of financial innovations (Khraisha, Arthur, 2018).

The third theory, evolutionary theory, claims that innovation happens as a result of optimisation, which means that businesses encounter issues for which they look for solutions. The theory views financial innovation as a process of adaptation and selection in response to changing market conditions and competitive pressures. This theory draws upon principles from evolutionary biology to understand how innovations emerge, evolve, and persist in financial markets over time. In the evolutionary theory of innovation, market feedback is measured, in the form of customer preferences, profitability, performance metrics, or regulatory changes that shape the adaptation, modification, or abandonment of financial innovations.

The institutional theory of innovation focuses on the role of institutional factors in shaping innovation. According to this theory, innovation is not solely driven by market forces but is influenced by the broader institutional environment (Khraisha, Arthur, 2018; Ejike, 2019). Meta theory is a combination of four theories which have integrating features in explaining the factors determining payment innovation. The four theories show the relevance of institutional need to innovate such as profit-seeking motive and the acceptance of the system by the public.

5. EMPIRICAL REVIEW

Tufano (1989) conducted one of the early investigations in this area, focusing on bank size as a determinant of financial innovation. Using market share as a measure of size, the study found that bank size is an important driver of financial innovation.

Aladwani (2001) conducted a comprehensive survey focusing on banks operating in Kuwait, with the aim of delving into the underlying factors driving their foray into the realm of digital payment services. The study meticulously identified a range of factors influencing these banks' decisions, employing a systematic ranking system to discern the significance of each factor. Notably, among the array of motivations, one factor emerged as the predominant driver: the potential reduction in workforce, followed by reduction in administrative expenditures. In contrast, some factors exhibited a lower degree of influence. For instance, the provision of expedited services to customers emerged as one of the less influential considerations in this digital transformation journey. This was closely trailed by the factor of ease of use. These outcomes collectively underscored an intriguing proposition that banks in Kuwait embarked upon the digital payment landscape primarily driven by their own perceived advantages.

In a subsequent study, Tufano (2003) identified capital requirements as another significant determinant. The research revealed that regulatory capital, particularly in relation to capital adequacy ratio, restricts banks from innovating. Building on the concept of bank size, Frame and White (2005) established a positive and significant relationship between bank size and financial innovation, specifically in the context of payment innovation.

Heffeman et al. (2014), conducted a survey which involved over one thousand financial institutions in Britain; the objective was to examine the factors that drive the adoption and usage of financial innovation. Through the application of Logit and generalised Tobit models, the study revealed that the main determinants of financial innovation adoption and

usage in the country are research and development (R&D) and human capital development. These findings indicate that bank and customer-level factors are the two important drivers of payment innovation diffusion.

Arnaboldi and Rossignoli (2015) conducted a study that explored the impact of various bank and country-related elements on the acceptance and utilisation of financial innovation, exemplified by ATM banking. The research focused on the United States during the period 2005 to 2008, utilising secondary data sourced from the chosen banks' annual reports. Employing a regression analysis approach, the study revealed that specific factors such as size, loan portfolio to assess asset quality, and the level of leverage in banks were associated with strategic timing in adopting innovation. In essence, highly leveraged banks demonstrated a tendency to synchronise their innovation efforts with market conditions.

Muthinja and Chipeta (2017) conducted an empirical investigation on the drivers of payment innovation of branchless banks in Kenya. Analysing the secondary data through GMM, results showed that bank size and regulatory capital firm have significant impact on the development, adoption and usage of innovative payment channels in Kenya.

Wahyudi (2019) conducted a study on financial innovation determinants in Indonesia. The research revealed that bank age, bank size, and bank investment in research and development (R&D) significantly influence financial innovation in the country. Contrary to these findings, Tamara et al., (2019) examined the determinants of financial innovation in Indonesia and found that bank size does not have a statistically significant impact on financial innovation in the country.

Barman, et al., (2021) conducted a global perspective study on the determinants of financial innovation. Their research identified technological development, competition, firm size, and regulations as major drivers of financial innovation across various categories.

5.1. Summary of empirical review

The empirical review provided above unveils crucial findings that warrant further scrutiny to broaden the knowledge frontier. Examining bank-specific characteristics as pivotal drivers of payment innovation, the empirical evidence indicates that only a limited number of studies have delved into these internal factors that play a significant role in shaping innovations within financial institutions. The table 1 below succinctly encapsulates the key determinants identified in existing studies at the bank level.

Table 1. Bank-Level Determinants

S/N	Significant Determinants	Authors & Years
1	Bank Size	Tufano (1989); Frame and White (2005); Arnaboldi and Rossignoli (2015); Muthinja and Chipeta (2017); Tamara et al., (2019); Barman, et al., (2021)
2	Bank Perceived Usefulness	Aladwani (2001)
3	Regulatory Capital	Tufano (2003); Muthinja and Chipeta (2017); Barman, et al., (2021)
4	Research & Development	Heffeman, et al., (2014)
5	Human Capital Development	Heffeman, et al., (2014)
6	Assets Quality	Arnaboldi and Rossignoli (2015)
7	Leverage	Arnaboldi and Rossignoli (2015)
8	Investment in ICT	Barman, et al., (2021)

Source: Author's compilation (2023).

6. GAPS IN LITERATURE

The literature review reveals significant research gaps, emphasising the need to understand bank-specific factors influencing payment innovation, particularly within the Nigerian context. The absence of studies conducted in Nigeria limits our understanding of the unique dynamics faced by Deposit Money Banks (DMBs) in the country as they undergo digital transformation. This gap hinders a comprehensive exploration of the internal determinants shaping payment innovation within the Nigerian banking sector. Bridging this gap is crucial for obtaining a holistic understanding of the internal determinants shaping payment innovation within the Nigerian banking industry.

Furthermore, the traditional emphasis on bank size as a determinant of innovation faces challenges in the evolving landscape of financial technology (Fintech). The emergence of Fintech entities with small or no physical offices prompts questions about the contemporary empirical relationship between bank size and payment innovation. Young banks, leveraging modern technologies for market exploration and adopting seamless payment systems, challenge conventional assumptions about the criticality of size. An exploration of how these dynamics influence payment innovation is a notable research gap.

7. CONCLUSION AND RECOMMENDATIONS

In conclusion, the literature review underscores the significance of comprehending bank-specific factors influencing payment innovation. The conceptual review, theoretical foundations, and empirical findings from existing studies offer valuable insights into this understanding. Payment innovation stands as a core banking function, integral to various other functions, including the acceptance of deposits and the granting of credit facilities, all of which rely on an efficient payment system. The advent of innovations like ATMs, POS, mobile, and internet banking has alleviated the challenges faced by Deposit Money Banks (DMBs) in the traditional banking era, enhancing their efficiency and overall performance.

However, future research endeavours should prioritize studying Nigeria's banking industry to address identified gaps, considering the country's unique socio-economic and regulatory landscape. Delving into the impact of digital transformation, Fintech integration, and regulatory frameworks on payment innovation in Nigeria will contribute significantly to both academic knowledge and provide practical insights for policymakers and banking professionals.

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