ISSN: 47X6 - 4890
Volume 10, Number 2, 2025
International Journal of Innovative Research in Marketing and Entrepreneurship

SOCIAL ENGINEERING AND PRODUCT DEVELOPMENT OF COMMERCIAL BANKS IN RIVERS STATE

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ABSTRACT

The study examined the relationship between social engineering and product development of Commercial Banks in Rivers State. The study adopted the explanatory cross sectional survey research design. The population of the study consisted of the Twenty-Four (24) Commercial Banks operating in Rivers State. The sample size of the study consisted of the entire population since the population is small. Thus, the study adopted the census method of sampling. A structured questionnaire was used as instrument for data collection after ascertaining its reliability through the employment of Cronbach Alpha. Mean and Standard Deviation were used for univariate analysis of the study. Spearman Rank Order Correlation and Partial Correlation were used for the bivariate analysis and multivariate analysis of the study, respectively. Findings revealed that there is a significant positive relationship between social engineering and product development of Commercial Banks in Rivers State. The study concluded that social engineering correlate with product development of Commercial Banks in Rivers State.. The strategic utilization of intelligence fosters a proactive approach to market dynamics, allowing banks to stay ahead of competitors, enhance customer satisfaction, and drive sustainable growth. The study recommended amongst others that management of Commercial Banks should incorporate ethical hacking as a core component of their cybersecurity strategy as conducting regular penetration testing and vulnerability assessments, banks can identify potential security gaps before malicious hackers exploit them.

Keywords: Social Engineering, Product Development. New banking Product, Innovative Product

INTRODUCTION

In this era of rapid technological advancements, evolving customer expectations, and increasing regulatory pressures, competitiveness is a critical determinant of success in the banking industry. Commercial banks, as key players in the global financial system, must consistently adapt to these changing dynamics to maintain and strengthen their competitive position (Azuonwu & Akenbor, 2024). Competitiveness in this context refers to a bank's ability to deliver superior financial products and services, maintain operational efficiency, foster customer loyalty, and respond to emerging market trends more effectively than its rivals. To remain competitive, commercial banks must innovate continuously by adopting new technologies, developing customer-centric products, and implementing strategies that enhance organizational agility (Itam & Ghosh, 2020; Achukwu, *et al.,* 2021). Thus organizational competitiveness is measured in this study through workforce diversity, new technology and product development.

As financial institutions that serve a diverse clientele across various demographics, commercial banks must cultivate inclusive workplaces to reflect the diversity of their

customers and meet their varied needs. Workforce diversity goes beyond representation; it encompasses differences in gender, ethnicity, age, culture, education, and experiences, all of which contribute to a rich blend of perspectives and ideas within an organization (Grawe, 2019; Kperogi, 2018). Despite the recognized benefits of diversity, many commercial banks still face challenges in achieving a truly inclusive workforce. Issues such as unconscious bias, lack of leadership commitment, and inadequate diversity policies hinder the progress of diversity and inclusion initiatives. These barriers can negatively impact organizational culture, employee engagement, and ultimately, the bank's performance and competitiveness (Akpakip, 2017).

Social engineering is defined as the set of tactics used to manipulate, influence, or deceive a victim into divulging sensitive information or performing actions that compromise their security. This can include revealing personal and financial information or granting access to restricted systems. Having an incident response plan specifically addressing social engineering attacks is essential for commercial banks. Such plans should outline procedures for identifying potential breaches, reporting incidents promptly, and mitigating damages when an attack occurs (Sahay & Ranjan, 2018). A well-prepared response can significantly reduce the impact of successful social engineering attempts. In the context of commercial banks, social engineering is particularly significant due to the sensitive nature of financial transactions and customer data. Fraudsters exploit human trust and behavior, making it crucial for banks to understand these tactics to protect their assets and customers. To this end, employee behaviour at work and time-sensitive message are used here as manifestation of social engineering within the context of commercial banks as used in this study.

Research Hypothesis

Ho_1: There is no significant relationship between social engineering and product development of Commercial Banks in Rivers State.

Person-Environment Fit Theory

Lewin and Edwards' Person–Environment Fit Theory was popularized in 1962. This theory of psychological stress describes the interaction between the person and environment (P × E) as the key to comprehending people's cognitive, emotional and behavioural reactions such as stress as well as operational productivity level. The relevant assumptions of this theory as deemed fit for this work are as follows:

i. A mismatch between a person and his work environment will lead to tension and uneasiness capable of hampering his level of productivity;
ii. Worker's capabilities (skill sets) will determine the level of work pressure and how environmental press affects their output. This is the phase of the theory that strengthens the fact that the innovative ability of a manager in a Commercial Bank will influence how stressful the work will be, as well as determine their ability to raise the competitive bar of the bank.

Coming up with and implementing innovative ideas through ethical hacking, dumpster diving, or social engineering requires high level of skills to handle and where managers lack the required skill sets to innovate great ideas that are capable of driving high level of competitiveness, the competitive level of the organization tend to be low. Also, for managers to skillfully and effectively innovate in their market, product and process line, tasks given to

them should be properly designed as individuals. The workplace performs better towards improving the organization's productivity when clear instructions to perform a task are given to them. The proponents of person-environment fit theory also argued that when there is a match or equilibrium between a management's (in this case, a manager) personality, skills and the innovative materials used for ethical hacking, dumpster diving, or social engineering requires, it leads to optimal competitiveness. This aspect of the theory amplifies the fact that the individual innovative ability of a manager can moderate the level of collaboration between him and the materials and techniques available for use in his job post which can lead to his effectiveness in the discharge of his diverse functions and overall competitiveness of the organization.

Social Engineering

Social engineering refers to a broad range of malicious activities accomplished through human interactions. It involves psychological manipulation to trick users into making security mistakes or divulging sensitive information (Olaru, 2014). Trust is a cornerstone of banking relationships. When social engineering attacks succeed, they erode customer trust in financial institutions. Customers expect their banks to safeguard their personal information and funds; any breach can lead them to seek services elsewhere. Maintaining a strong reputation is vital for commercial banks as it directly correlates with customer retention and acquisition. To combat social engineering threats effectively, commercial banks must invest in employee training programs that raise awareness about these tactics (Petter, *et al.,* 2018). Regular training helps staff recognize suspicious activities and respond appropriately. Employees should be educated on how fraudsters operate, including recognizing red flags associated with social engineering attempts.

Operationally, social engineering in commercial banks refers to a range of manipulative tactics employed by fraudsters to deceive individuals into divulging confidential information or performing actions that compromise their security. This manipulation exploits human psychology rather than relying on technical vulnerabilities, making it particularly effective (Ranjan, 2009). The goal is often to gain unauthorized access to sensitive financial data, such as account numbers, passwords, and personal identification details. The banking sector faces a myriad of threats from social engineering attacks, including phishing, Vishing (voice phishing), Smishing (SMS phishing), and pretexting. These attacks can lead to unauthorized access to accounts, financial losses, and reputational damage. For instance, attackers may impersonate bank officials or trusted entities to trick employees or customers into revealing sensitive information such as passwords or account numbers (Sabbour, *et al.,* 2012).

Product Development

From the marketing standpoint, the socio-economic justification for the existence of any business organization is the satisfaction of customers' needs and wants. The organizational survival over-time depends on its ability to create loyal customers because its products match the needs of the buyers (Chu-Mei, *et al.*, 2014). Thus, the organization meets its basic responsibility to the society through its product offerings. For a firm to compete effectively in the dynamic and competitive business environment and achieve set goals in terms of profitability, high sales volume, and large market share, it must continuously develop products and product lines to satisfy the constantly changing desires and needs of customers. Thus, Azuonwu and Akenbor (2024) defined product development as the

process of creating, designing, and bringing a new product to market. It involves a series of stages, from the initial idea and concept through to the final production and launch. Product development aims to transform an idea into a tangible product that meets customer needs, aligns with business goals, and achieves market success. In the highly competitive beverage industry, consumer preferences are constantly evolving.

Irena, *et al.* (2016) postulated that product development allows firms such as banks to respond to these changes by creating innovative services that align with current trend. By understanding and anticipating consumer needs, commercial banks can enhance customer satisfaction and loyalty. Effective product development helps commercial banks differentiate themselves from competitors. By introducing unique products or improving existing ones, companies can capture market share and establish a strong brand identity. This differentiation is crucial in a saturated market where consumers have numerous choices (Cooper, 2001). Quality control is paramount in the commercial banks due to strict regulations and consumer expectations regarding financial security. A robust product development process includes rigorous testing and quality assurance measures that ensure services meet safety standards and maintain consistent quality. This not only protects consumers but also safeguards the bank's reputation.

Operationally, product development is the systematic process of creating, designing, and introducing new or improved banking services to the market. Innovative product development can lead to higher profit margins by allowing companies to introduce premium products that command better charge. Additionally, developing new products can open up new revenue streams and markets, contributing to overall profitability. To Atadoga, *et al.* (2020), a well-structured product development process streamlines production by optimizing better transaction methods, and distribution strategies. As sustainability becomes increasingly important to consumers, commercial banks must innovate in ways that minimize internet risk associated with their firm. Product development enables companies to explore eco-friendly sustainable packaging solutions, and energy-efficient production processes that resonate with environmentally conscious consumers (Abdirahman & Wanjira, 2021).

Today's successful firms learn and re-learn how to deal with the dynamics of consumers, competitors and technologies, all of which require companies to review and reconstitute the products and services they offer to the market. This, in turn, requires the development of new products and services to replace current ones. The business plan should provide guidance on likely areas for product development and in circumstances will constraints development or at least provide a strategic method of comparing opportunities (Chanchal, 2010). Product development is basically a process of bringing new product and service to market. New product development is a flexible means of utilising a company's strengths and changes in the marketing environment to provide a competitive advantage for such firm, and it's a veritable tool for business progress. However, there is no guarantee that every new product introduced to market must succeed. Product development is the set of activities beginning with the perception of a market opportunity and ending in the production, sale and delivery of a product. The economic success of commercial banks depends on their ability to identify the needs of customers and to quickly create products that meet these needs and can be produced at low cost (Ulrich & Eppinger, 2004). To be successful at product innovation, a firm needs to have a process in place. The number one success factor is a unique superior product, a differentiated product that delivers unique benefits and superior value to the customer (Cooper, 2001).

Product development is a success factor for new product development efforts (Troy *et al.,* 2008). If done properly, it can have a positive impact on market share, profitability, and the long-term viability of an organization. Product Development encompasses practices that help companies achieve high-quality, viable products that meet market needs and add value to their customers while adding value to their business. Namusonge *et al.* (2017) postulated that product development practices have a significant positive impact on financial performance. Many products fail too quickly due to poor market analysis, poor design (weak products), regulatory risks, weak and untested market assumptions, and delays in getting to market. New products can open up additional revenue streams for commercial banks. By introducing innovative services such as digital banking solutions, personalized financial products, or enhanced payment systems, banks can tap into new markets and increase their overall income. Additionally, well-developed products often lead to higher transaction volumes and fees, further boosting revenue. There are several manifestations of product development, but this study considered new banking product and innovative loan product as indicators of product development.

Empirical Review

Bestman and Elekwachi (2019) examined business intelligence system strategies and organizational success of public hospitals in Rivers State, Nigeria. The objective was to investigate the relationship between data mining, Online Analytical Processing, Querying System, Report System and organizational success of the public hospitals in Rivers State. Primary data were sourced from a sample size of two hundred and thirty four medical personnel. The test for the internal consistency of the instrument was conducted using Pearson Product Moment Correlation Coefficient (r) which yielded a reliability index of 0.89. Mean and standard deviation were used to examine the extent to which business intelligence affect performance; Spearman's rank order correlation coefficient was used to test the null hypotheses. The findings of this study found data mining, online analytical processing, querying systems and reporting systems significantly relate to the success of public hospitals in Rivers State; there is a significant relationship data mining, online analytical processing, querying systems, reporting systems and quick decision making as well as time saving, significantly moderates relationship between business intelligence systems and organizational success in public hospitals in Rivers State. The study therefore conclude that business intelligence have significant effect on performance of the hospitals. It was recommended that federal and state government should overhaul the health services and bring them into the mainstream of business intelligence scheme.

Galuh, *et al.* (2023) carried out empirical study of business intelligence systems and their influence on innovation performance. This study aims to empirically measure and test a conceptual model of the magnitude of the influence of organizational culture, IT Maturity Level, and data quality on the successful implementation of business intelligence systems and their implications for innovation performance. The areas of our empirical study through the hypotheses testing were: the estimation of the effect of business intelligence on financial performance; the impact of business intelligence on innovation; the effect of business intelligence on brand success; the impact of innovation on brand success; the impact of innovation on financial performance. The study sample included 4 commercial banks and 58 conventional commercial banks in the category of national private commercial banks of Indonesia, hence, the total sample in this study was 62 banks. This study used non-

probability sampling techniques with purposive sampling techniques at conventional commercial banks in Indonesia. The data analysis method uses Covarian Based-Structural Modeling (CB-SEM) with programming tools that support primary data analysis in Lisrell 8.5. The results of this study found that the higher the level of implementation of organizational culture, IT Maturity Level, and data quality, the higher the success rate of implementing business intelligence systems which have implications for improving innovation performance, while the higher the level of application of business intelligence systems, the higher the level of innovation performance. The implementation of organizational culture is the factor that has the most significant influence on the success of implementing business intelligence systems compared to other factors studied in this study.
Shamsul (2015) examined the impact of business intelligence on organization's effectiveness: An empirical study. The purpose of this study was to identify the influence of organizational strategy, structure, process and culture on organizational effectiveness and the possible mediating role of business intelligence (BI) systems among them. Sample data for this study were collected from 225 organizational units in Bangladesh and analyzed using the Partial Least Squares (PLS) method, a statistical analysis technique based on the Structural Equation Modelling (SEM). The results revealed that organizational factors, such as organizational strategy, structure, process, and culture positively affect both BI systems' effectiveness and organizational effectiveness. Furthermore, BI systems' effectiveness partially mediates the impact of organizational strategy, structure, process and culture on organizational effectiveness.

Yonney (2020) studied business intelligence deployment and firm performance: Literature Review of empirical evidences. The main objective of this research is to empirically review recent studies on business intelligence deployment and its impact on firm performance based on two cardinal perspectives: (i) passage of time and themes, and (ii) research methodology adopted. The literature review took global dimension as it covered all geographical parts of the world. Twenty (20) empirically related studies were reviewed from 2004 – 2020 (17 years' period). In geographical bread, four (4) of the empirically reviewed researches (representing 20%) originated from African countries; six (6) of the empirically reviewed researches (representing 30%) originated from Asian countries; another six (6) of the empirically reviewed researches (representing 30%) originated from European countries; two (2) of the empirically reviewed researches (representing 10%) originated from North American country (USA); one (1) of the empirically reviewed researches (representing 5%) originated from South American country (Brazil); and another one (1) of the empirically reviewed researches (representing 5%) originated from Australia. The major findings of the study include the following: (i) there is dearth of research on secondary data collection instrumentation; (ii) there is dearth of theoretical backed business intelligence related studies; (iii) the number of quantitative and mixed research in business intelligence as a whole is very small; and (iv) there is absence of comparative business intelligence studies incorporating technological, organizational, and environmental variables. It is the recommendation of the study that these observed gaps in literature be empirically bridged.

METHODOLOGY

The research design for the study was the explanatory cross sectional survey research design. The population of the study consisted of the Twenty-Four (24) Commercial Banks operating in Rivers State. The above information was obtained from Corporate Affairs

Commission, Rivers State. The Twenty-Four (24) Commercial Banks currently operating in Rivers State are listed overleaf: The sample size of the study consisted of the entire population since the population is small. Thus, the study adopted the census method of sampling. In line with the study sample, a total of One Hundred and Twenty-Eight (128) copies of the questionnaire were administered to respondents through the help of two research assistants. The research assistants were able to retrieve One Hundred and Ten (110) copies. Mean and standard deviation were used for the univariate analysis, while the bivariate analysis was done using Spearman Rank Order Correlation Coefficient with the aid of SPSS Version 23.0.

Results

Ho_1: There is no significant relationship between social engineering and product development of Commercial Banks in Rivers State.

Correlations between Social Engineering and Product Development

			Social Engineering	Product Development
Spearman's rho	Social Engineering	Correlation Coefficient	1.000	.466**
		Sig. (2-tailed)	.	.000
		N	110	110
	Product Development	Correlation Coefficient	.466**	1.000
		Sig. (2-tailed)	.000	.
		N	110	110

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Survey Data, 2024

Table above reveals r value of 0.466 at a significance level of 0.00 which is less than the chosen alpha level of 0.05 for the hypothesis relating social engineering and product development. Since the significance value 0.00 is less than the alpha level of 0.05, the null hypothesis (Ho_1) which states that there is no significant relationship between social engineering and product development of Commercial Banks in Rivers State was rejected and the alternative hypothesis (Ha_1) was accepted. This implies that there is a moderate positive relationship between social engineering and product development of Commercial Banks in Rivers State.

Social Engineering and Product Development

The test of hypothesis one revealed that there is a moderate positive relationship between social engineering and product development of Commercial Banks in Rivers State. This is noted on the ground that using social engineering techniques such as behavioral analytics allows banks to tailor marketing campaigns based on individual customer profiles. This personalization not only increases customer satisfaction but also fosters loyalty, which is crucial for maintaining a competitive edge in the banking sector (Petter, *et al.,* 2018).

Likely, Sabbour, *et al.* (2012) found that social engineering can also positively impact organizational competitiveness by streamlining internal processes. Techniques such as process mapping and employee feedback mechanisms allow banks to identify inefficiencies within their operations. By engaging employees in discussions about workflow improvements and utilizing their insights into everyday challenges, banks can optimize procedures that lead to better service delivery. This not only enhances operational efficiency but also reduces costs associated with delays or errors in service provision. Social engineering improve security awareness among employees and customers. By

implementing training programs that utilize social engineering tactics such as phishing simulations banks can educate their staff about potential threats and vulnerabilities. This proactive approach helps in building a culture of security within the organization. When employees are aware of social engineering tactics used by cybercriminals, they are more likely to recognize suspicious activities and report them promptly, thereby reducing the risk of data breaches and enhancing overall organizational security.

Noman, *et al.* (2023) revealed that the integration of technology with social engineering practices enables banks to harness data analytics effectively. By analyzing customer interactions across various platforms (e.g., mobile apps, websites), banks can gain insights into user behavior patterns. These insights allow for more effective product development tailored to market demands.

CONCLUSION

Based on the results of the analysis, the study concluded that social engineering and product development of Commercial Banks in Rivers State. The strategic utilization of intelligence fosters a proactive approach to market dynamics, allowing banks to stay ahead of competitors, enhance customer satisfaction, and drive sustainable growth.

RECOMMENDATIONS

Based on the findings, the following recommendations were made:

1. Management of Commercial Banks should implement secure digital storage solutions with strong encryption and access controls.
2. Management of Commercial Banks should implement comprehensive training programs that include real-world simulations and scenarios to help staff recognize and respond to social engineering attempts.
3. Management of Commercial Banks should enforce strict physical security measures, including the use of access control systems, security badges, and surveillance cameras.
4. Management of Commercial Banks should adopt multi-factor authentication for accessing critical systems and sensitive data.
5. Management of Commercial Banks should adopt robust digital document management systems to minimize the reliance on physical documents.

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