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EFFECT OF SOCIO-CULTURAL AND TECHNOLOGICAL FACTORS ON PERFORMANCE OF SMALL AND MEDIUM SCALE ENTERPRISES (SMEs) IN NASARAWA STATE, NIGERIA

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Abstract

This study explored the effect of Socio-cultural and Technological factors on the performance of Small and Medium Enterprises (SMEs) in Nasarawa state, Nigeria, addressing the high failure rate of SMEs within their first 1-5 years. The harsh economic environment, limited access to finance, and inappropriate business practices contribute to this trend. The study focuses on the influence of acculturation and technological compliance on sales, production, and profitability of SMEs. Nasarawa state's SMEs confront a dynamic external environment marked by evolving customer needs, heightened competition, changing industries, poor infrastructure, limited finance access, and regulatory uncertainties affecting growth and sustainability. To fill the research gap, a survey research design is employed, collecting data through structured questionnaires from 353 registered SMEs out of a population of 3,015 in Nasarawa state, Nigeria. The analysis, conducted using Partial Least Square Structural Equation Model (PLS-SEM), reveals that socio-cultural and technological factors positively and significantly impact SMEs' performance. The findings emphasize the importance of SMEs conducting thorough market research to understand and respect local culture, traditions, and values in Abuja, Nigeria. Additionally, they should embrace contemporary technological compliance by developing mobile apps or optimizing websites for mobile devices to broaden their customer base. In conclusion, this study underscores the critical role of socio-cultural and technological factors in enhancing SMEs' performance, offering practical recommendations for operators in Nasarawa state, Nigeria, to navigate and thrive in a competitive business environment.

Keywords: Business Environment, Socio-Cultural Factor, Technological Factor, Smes Performance, Nasarawa State, Nigeria.

Introduction

In emerging nations, small and medium-sized businesses (SMEs) are typically seen as the key to equitable development and economic success. By the turn of the century, the world will need one billion new employment, and these labour-intensive, capital-saving technologies can help produce the majority of those jobs. They are seen as essential to Nigeria's economic development, reduction

of poverty, and creation of jobs. But their underwhelming performance in recent years in generating employment has led to a lot of academic interest on their difficulties and potential. (Agwu & Emeti, 2014)

According to Salihu and Abubakar (2019), Small and Medium Enterprises (SMEs) are very heterogeneous in nature. They are found in a wide array of business activities worldwide. The definition of SMEs varies by country and is usually based on employment, capital investment, sales turnover, accessibility, and output and in some cases, a blend of some or all of these criteria. The number of employees is the most widely utilized variable (criteria) because it is the easiest to collect. The criterion used in the most recent collaborative study of Micro, Small, and Medium Enterprises (MSMEs) in Nigeria is that a business is considered a Micro Enterprise if it has fewer than 10 employees and a Small-Scale Enterprise if it has between 10 and 49 employees, Medium Scale Enterprises have 50–199 people whereas Large Scale Enterprises have 200+ employees. These criteria were used in this study's identification of SMEs.

Small and medium-sized enterprises (SMEs) are the backbone of the Nigerian economy and contribute significantly to job creation, income generation, and poverty reduction. The Nigerian government has recognized the importance of SMEs and has implemented various policies to support their growth and development. However, despite these efforts, SMEs in Nigeria continue to face numerous challenges, which limit their performance and competitiveness in the market. The Nigerian SME sector is faced with numerous challenges that affect their performance, including limited access to credit, inadequate infrastructure, and unfavorable economic policies. Additionally, external environmental factors such as political instability, technological and socio-cultural factors, fluctuations in the global economy, and changes in consumer preferences have a significant impact on the performance of SMEs.

About 80% of SMEs in Nigeria fail before their fifth anniversary due to harsh economic environments, lack of access to capital and poor business practices which have stunted the growth and transition of micro businesses. (SMEDAN, 2023). One of the major challenges facing SMEs in Nigeria is the impact of external environmental factors on their performance. The external environment refers to all factors outside the control of an organization that can affect its performance, including political, economic, social, technological, and legal factors. These external factors can have a significant impact on the performance of SMEs in Nigeria, especially in the North-Central region of the country.

Socio-cultural factors in the researcher’s opinion refer to the social and cultural context in which an individual exists, including their upbringing, education, community, and societal norms.

Performance refers to an individual's ability to accomplish tasks and meet objectives, often measured by quantitative metrics such as grades, job performance ratings, or sales numbers. Organizations that value diversity and promote inclusion can benefit from increased innovation, creativity, and problem-solving ability. This can improve performance by providing a wider range of perspectives and ideas, and by creating a more welcoming and supportive work environment. Also, Socio-cultural factors, such as brand identity or reputation, can influence customer loyalty and purchasing behavior. Organizations that are known for their commitment to social responsibility or sustainability, for example, may attract customers who prioritize these values. This can improve performance by increasing customer loyalty and retention.

Technology can help organizations improve the quality of their products or services by providing tools to monitor and control production processes. For example, the use of quality control software can help organizations identify and address defects in their products, resulting in improved customer satisfaction and reduced waste. This can improve performance by increasing customer loyalty and reducing costs. While technological factors can certainly impact an individual's performance, it is important to recognize that performance is also influenced by a wide range of individual and contextual fact.

According to SMEDAN (2023), over eighty percent (80%) of Small and Medium Enterprises in Nigeria die within their 1 – 5 years due to harsh economic environment, limited access to finance and inappropriate business practices. One of the significant challenges faced by SMEs in Nigeria is the impact of external environmental factors on their performance. The external environment consists of factors that are beyond the control of the SME, including economic, social, political, and technological factors. These factors can influence the performance of SMEs in different ways, such as affecting their sales, production, and profitability. There are little or inadequate literature in relation to study of effect of external environmental factors on the performance of SMEs in Nasarawa state, Nigeria. Also, the current study will fill the gap in external validity as most of the studies were carried out in foreign countries, there by justifying the gap to be filled in relation to external validity context as this current study is carried out in North central, Nigeria. There was also a time gap with the current study as some studies were carried out in 2011, long ago.

Adeoye (2013) noted that productivity in contemporary Nigerian business environment is predicated on factors such as low sales, high cost of production, low capital utilization, lack of foreign exchange to source needed input and materials, poor power supply, and low quality of goods and services among others. SMEs in many parts of the country are folding up because of erratic power supply, insecurity, lack of infrastructure, government policies, technology and persistent increase in

interest rate which has affected their performance and productivity and undermines their profit-making potentials. And this has resulted in massive unemployment which is detrimental to the economic development of the country. Observations have shown that despite the efforts made to revamp the performance of SMEs in North central, Nigeria, they are still witnessing high rate of performance decline. And we are yet to ascertain the definite reasons for this steady performance decline of the SMEs.

Therefore, this study aims to investigate the effect Socio-cultural and Technological factors on the performance of SMEs in Nasarawa state, Nigeria. The study will also serve as a basis for comparative analysis with other regions within Nigeria or even other countries. Comparing the findings from this study with those from other states and regions and inform policies that address these challenges.The broad objective of this thesis is to examine the effects of Socio-cultural and Technological factors on the performance of small and medium scale enterprises (SMEs) in Nasarawa state, Nigeria. The following hypotheses were stated in the null form (Ho) were tested.

Ho1: Socio-cultural environment has no significant effect on the performance of SMEs in Nasarawa state, Nigeria.

Ho2: Technological environment has no significant effect on the performance of SMEs in Nasarawa state, Nigeria.

Concept of External environment

According to Ogundare et al. (2019) external environment of a business consists of a set of conditions and influences outside the business but which shape the life and continued existence of the business. These conditions and influences are outside the firm as a business unit, but which effect changes in the organization and the business entity cannot control but only adjusts to them. The elements of the business external environment constitute the external environmental factors. The external environment is the totality of external factors that may have an impact on an organization's performance (Murgor, 2014). In the view of Njoroge et al. (2016) the external environment is a collection of factors that are exogenous to the organization.

A company can foresee and address problems that could otherwise go unnoticed until they had developed into significant challenges by fostering relationships with important stakeholders among governmental organizations, consumer organizations, environmental groups, and other constituents. These demand careful examination by the business of its internal and external environments. Businesses must deal with the obstacles posed by social considerations, which concentrate on particular issues relating to their interactions and transactions with employees, customers, shareholders,

suppliers, and other stakeholders. Protecting public health and safety, maintaining environmental sustainability, creating and implementing ethical standards and practices, adhering to cultural and social norms, balancing economic interests with those of society, and acting pro-actively are just a few of the social factors. Such influences on an organization's performance have renewed interest in this subject, which has been explored by administrators, activists, policymakers, and researchers for decades (Aragon et al., 2020)

A combination of social, technological, economic, political, and legal variables are outside the control of business and impose their constraints on the actions of the organization make up the external environment of companies, which is an integrated, continuously growing characteristic. An organization's survival and performance depend on the management team's adept contact with the external environment, prompt responses to changes in this environment, and analysis and accounting for its effects on the organization and business in general (Kuznetsova & Alekseeva, 2016).

Concept of Socio-cultural environment

Socio-cultural factors refer to the environmental and societal influences that impact the behavior, beliefs, values, and customs of individuals within a given culture or community. These factors can include various dimensions, such as socioeconomic status, gender, ethnicity, religion, family background, and education. Understanding socio-cultural factors is critical to developing effective policies, programs, and interventions that can address issues related to health, education, and social development.

In the opinion of Lareau (2019), socio-cultural environment such as family background and socioeconomic status can impact educational outcomes, such as academic achievement and educational attainment. The study found that children from higher socioeconomic backgrounds tend to have more access to educational resources, such as private tutors and extracurricular activities, which can lead to better educational outcomes. In contrast, children from lower socioeconomic backgrounds may face significant barriers to accessing these resources, leading to reduced academic achievement and lower educational attainment.

According to Bonilla-Silva (2020), ethnic identity can have a significant impact on social outcomes, such as education, employment, and health. For instance, individuals from marginalized ethnic groups may experience discrimination and prejudice in various settings, leading to reduced access to resources and opportunities. Another socio-cultural factor that has gained attention in recent years is ethnicity. Ethnicity refers to the shared cultural practices, language, and history of a particular group of people. This can create significant barriers to achieving social mobility and success.

Religion is another socio-cultural factor that can impact social outcomes. Religion refers to the beliefs, practices, and values associated with a particular faith or spiritual tradition. Religion can impact various aspects of an individual's life, such as social attitudes, health behaviors, and mental health. For instance, individuals who adhere to strict religious beliefs may have more conservative attitudes towards sexuality and gender, leading to increased stigma and discrimination towards individuals who do not conform to these norms. Socio-cultural factors are critical to understanding the complex interplay between social and environmental influences on individual behavior and outcomes. Gender, ethnicity, socioeconomic status, and religion are just a few of the many socio-cultural factors that can impact social outcomes. By understanding these factors, policymakers and practitioners can develop effective policies, programs, and interventions that address the unique needs of diverse communities and promote social development and equity (Ghosh & Ghosh, (2021).

According to a study by Schramm-Nielsen and Thastum (2019), socio-cultural factors such as family dynamics, gender, and religion can impact social outcomes, such as social connectedness, self-esteem, and mental health. The study found that individuals who have positive family dynamics, strong social connections, and a sense of belonging tend to have better social outcomes and improved mental health.

Socio-cultural factors play a crucial role in shaping individual behavior, social outcomes, and well-being. Gender, ethnicity, socioeconomic status, religion, and other socio-cultural factors can impact various aspects of an individual's life, including health, education, and social development. By understanding these factors, policymakers and practitioners can develop targeted interventions that address the unique needs of diverse communities and promote social equity and well-being for all individuals.

According to Buss and Hawley (2017), socio-cultural factors refer to the social and cultural influences that shape individual behavior, attitudes, and beliefs. These factors can include societal norms, cultural values, and social institutions that impact an individual's sense of identity and belonging.

Concept of Technological environment

Technological factors refer to the various advancements and innovations in technology that can impact a business or organization's operations and competitiveness. According to Johnson et al. (2017), technological environment refers to the impact of new technologies on the economy, society, and businesses. They include factors such as the rate of technological change, the level of research and development investment, and the presence of technology-focused regulations. These factors can impact a company's ability to innovate and remain competitive in the market.

Another definition of technological factors comes from the field of marketing. According to Kotler et al. (2021), technological factors refer to the impact of technology on the marketing mix, including product design, pricing, promotion, and distribution. These factors can include advancements in digital marketing, e-commerce, and customer relationship management software, as well as changes in consumer behavior driven by technology. According to Slack et al. (2017), technological factors can include the adoption of new technologies such as automation, artificial intelligence, and robotics, which can lead to increased efficiency, productivity, and quality in manufacturing.

Technological environment can include the development of communication technologies such as the internet and social media, which have facilitated global trade and investment. They can also include the impact of technological advancements on transportation and logistics, such as the development of autonomous vehicles and drones. Technological factors is the impact of technology on various aspects of business and society, including strategic management, marketing, operations, and international trade. By understanding the impact of technological factors, businesses and organizations can identify opportunities for innovation and competitiveness, as well as potential threats to their operations (Czinkota et al., 2021). Hitt et al. (2017) defined Technological environment as the application of knowledge to create new processes, products, and services that provide competitive advantage. Technological advancements can enable businesses to create new products and services, improve operational efficiency, and increase profitability.

Innovation is a crucial factor that affects SMEs' performance. Innovation enables SMEs to develop new products, services, and business models that meet the evolving needs of customers. Innovation can also enable SMEs to enter new markets and gain a competitive advantage. Technological innovations such as 3D printing, artificial intelligence (AI), and blockchain technology have transformed the way SMEs do business. The adoption of e-commerce by SMEs is a critical factor that affects their performance. E-commerce enables SMEs to reach a wider customer base and access new markets. E-commerce platforms such as Amazon, Alibaba, and eBay have provided SMEs with new opportunities to sell their products and services online. The adoption of e-commerce can also significantly reduce SMEs' operational costs and increase their efficiency.

ICT infrastructure refers to the hardware, software, and network resources used to support the adoption of technology and digitalization in SMEs. The quality and availability of ICT infrastructure can significantly affect SMEs' performance. SMEs that have access to high-speed internet, cloud computing, and other advanced technologies are more likely to succeed than those that do not have access to such resources (Rahman et al., 2018)..

More so, technological environment play a critical role in shaping various aspects of business and society. Technological advancements can enable businesses to create new products and services, improve operational efficiency, reduce environmental pollution, and drive economic growth. By understanding the impact of technological factors, businesses and organizations can identify opportunities for innovation and growth.

Concept of SMEs Performance

According to Obiwuru et al. (2011), an organization's performance may be evaluated in terms of its level of customer loyalty, investment, profit, revenue, growth, expansion, and staff happiness, among other factors. Performance is simply the ability and willingness to be dedicated to certain goals and objectives, to pursue these goals and objectives actively and sincerely, and to see them through to completion. As opposed to merely knowing knowledge, performance can be described as the act of doing something successfully and using that knowledge. From the organization's contextual point of view, performances are contextually viewed, measured in a variety of ways, and continuously monitored. Performance, however, is probably understood, assessed, and operationalized differently, making comparison a challenging process. According to Wei and Liu (2021), SMEs performance can be assessed from a multi-dimensional perspective, which includes financial, operational, and strategic dimensions. Small and Medium-sized Enterprises (SMEs) performance can be defined as the ability of these businesses to achieve their objectives and goals. This can be measured by various financial and non-financial indicators.

Financial performance can be defined as the ability of SMEs to generate profits, increase revenues, and manage costs. It is usually measured by financial ratios such as return on assets (ROA), return on equity (ROE), gross profit margin, and net profit margin (Wang, Li, & Tang, 2021). Financial performance refers to the ability of an SME to generate revenue, profits, and cash flow. Financial performance measures include return on investment (ROI), return on assets (ROA), and net profit margin (NPM), among others (Jiranyakul & Brahmasrene, 2020).

Salim and Sulaiman (2011) contended that Non-financial performance refers to the ability of SMEs to meet customer needs, improve product quality, and enhance customer satisfaction. It is usually measured by non-financial indicators such as customer satisfaction, employee satisfaction, innovation, and brand reputation. Non-financial performance measures, such as customer satisfaction, innovation, and employee engagement, have gained attention in recent years. These measures are believed to provide a more comprehensive and balanced view of SMEs performance. Composite measures, such as the balanced scorecard, aim to integrate financial and non-financial measures to provide a holistic view of performance.

The determinants of SMEs performance are numerous and diverse, reflecting the complexity of SMEs as a phenomenon. Scholars have identified various factors that impact SMEs performance, such as firm size, age, ownership, location, industry, human capital, innovation, and networking.

Firm size is a well-established determinant of SMEs performance. Some studies suggest that small firms outperform large firms in terms of profitability and growth, while others argue that large firms have advantages in terms of resources, economies of scale, and market power. The relationship between firm size and performance is not linear, and it varies depending on the context and the measure of performance used.

Location is a determinant of SMEs performance that is often overlooked in the literature. Some studies suggest that firms located in urban areas have advantages in terms of access to markets, resources, and knowledge, while others argue that firms located in rural areas have advantages in terms of lower costs, closer community ties, and lower competition.

Industry is a determinant of SMEs performance that reflects the heterogeneity of SMEs. Some industries, such as technology and healthcare, are characterized by high growth and profitability, while others, such as retail and construction, are characterized by low growth and profitability.

Human capital development is a determinant of SMEs performance that is crucial for innovation, productivity, and competitiveness. Some studies suggest that firms with higher levels of education and training among their employees have advantages in terms of innovation, while others argue that firms with lower levels of education and training have advantages in terms of flexibility and adaptability.

Innovation is a determinant of SMEs performance that is crucial for long-term competitiveness and growth. Some studies suggest that firms that invest in research and development and introduce new products and services have advantages in terms of profitability and growth. Networking is a determinant of SMEs performance that is crucial for access to resources, knowledge, and opportunities. Some studies suggest that firms that participate in business associations, clusters, and networks have advantages in terms of access to markets, information, and funding.

Empirical review

Social-cultural factor and SMEs Performance

Aldrich and Zimmer (1986) investigated how social networks can provide SMEs with access to valuable resources, including finance, information, and expertise, ultimately influencing their performance outcomes. Qualitative research approach was used to explore the experiences and perspectives of SME owners and managers in relation to their social networks. In-depth interviews and case studies are conducted to gain a deeper understanding of how social connections contribute to SME

growth, innovation, and competitiveness. The study was based on path goal leadership theory. The population of study was 19,385 SMEs while the saple size was 400 respectively. Descriptive research design was applied and primary data gathered through administration of questionnaires. Data was subjected to descriptive statistics through use of SPSS. It was concluded that there is need for creation of horizontal and vertical external environment linkages so as to optimize growth of SMEs.

The findings of the study highlight the significant role of social networks in SME performance. The results indicate that SMEs embedded in robust social networks have greater access to resources that positively impact their performance. Social networks facilitate knowledge sharing, information dissemination, and access to diverse expertise, enabling SMEs to make informed decisions, identify business opportunities, and enhance their competitive advantage.

Furthermore, the study reveals that social networks also play a crucial role in accessing finance, as SMEs connected to supportive networks are more likely to receive financial support and investment. The study emphasizes the importance of nurturing and leveraging social networks for SME success. It suggests that SMEs should actively engage in networking activities, participate in industry associations, join business communities, and build strong relationships with stakeholders. By cultivating a network of contacts, SMEs can tap into valuable resources, gain market insights, and establish collaborative partnerships that contribute to their growth and performance. The implications of this research highlight the need for policymakers, business support organizations, and SME owners to recognize and leverage the power of social networks. Policies and initiatives that foster networking opportunities, facilitate knowledge exchange, and encourage collaboration among SMEs can enhance their access to resources and improve their performance outcomes.

Technological factor and SMEs Performance.

Akinwale, Adepoju, and Olomu (2017) examined the impact of technological innovation on SME's profitability in Nigeria. There is no doubt that new or improved product or process of production continues to create firm's competitive advantage over others in the market. This study examined the impact of research and development (R&D) expenditure, product and process innovations on small and medium enterprises (SMEs) performance in the manufacturing industry in Nigeria using a survey of 1,000 SMEs with a response rate of 52.1% in year 2009. The results with least squares method showed that R&D spending by the firms as well as product and process innovation has significant impacts on the firm's performance with the probability value of 0.0529, 0.0624 and 0.0086 respectively at 10% level of significant. Also, training of workforce constitutes the major innovation activities in the Nigerian manufacturing SMEs as against in-house and outsourced R&D activities.

This study suggests improvement in R&D spending and other technological activities which are expected to increase SMEs' profitability and thus generate more employment in the country. The Keywords were innovation; technological innovation; small and medium enterprises; manufacturing industry; profitability; research and development; R&D. . The current study will be aligning with other various studies to analyze the data using PLS-SEM.

Edmund et al. (2020) examined the impact of Technology acquisition and SMEs performance, the role of innovation, export and the perception of owner-managers. Sufficient literature supports small and medium 'enterprises' (SMEs) significant role in emerging and mature economies. Still, the same research highlights varying challenges that innovative firms in developing economies face, like access to formal credit and external markets. This study examines the effect of a capital budget's proportion for acquiring new technology and sale performance between 2017-2019 using a sample of 101 Kenyan SMEs.

The ordinary least square moderated mediation results indicate that: (1) the proportion of the capital budget allocated for the acquisition of technology positively and significantly influences sales; (2) the index of moderated mediation suggests that the perception of firm owner-managers towards the availability of formal credit moderates the mediated relationship between the capital budget's portion spent on technology and sales as mediated by innovation activities. However, the index is insignificant for the second mediator, export longevity. However, in the final model, both the level of innovation and export longevity positively and substantially affect sales.

Finally, the findings of this study concur and contradict the findings by other scholars. As already mentioned elsewhere, the Kenyan economy has its uniqueness. However, the findings on the perception of financing hurdles by owner-managers are in tandem with Wang (2016) study. On the same note, Cobham (1999) analysis of southern European SMEs established that support for highly successful firms is distinctly different from struggling businesses. Besides, policies that encourage banking efficiency and stimulate venture capital investment influence SMEs' investment in technology differently. Most importantly, Cobham concludes that finance determines the level and the nature of technology investment by these firms—the conclusion mirrors the findings of the present study based on the bootstrap confidence interval of the index of moderated-mediation, which does not straddle a zero. The studies were carried out in foreign countries, there by justifying the gap to be fill in relation to external validity context as this current study will be carried out in North central, Nigeria. Wang and Huang (2021) examined the influence of technological factors on the performance of small and medium-sized enterprises (SMEs) in China. The research explores the extent to which techno-

logical capabilities, innovation adoption, and digitalization initiatives affect the financial and operational performance of SMEs in the Chinese business landscape. The study combined quantitative surveys and qualitative interviews to gather comprehensive insights. The population of study was 280 SMEs operators. Primary data is collected through surveys administered to a representative sample of 117 SMEs across various industries and regions in China. The survey focuses on assessing technological factors such as investment in research and development (R&D), technological infrastructure, innovation activities, and digital transformation efforts.

Additionally, qualitative interviews provide deeper contextual understanding and explore the experiences and perspectives of SMEs regarding technological factors and their impact on performance. Data was analyzed using descriptive statistics. Chi-square test was used to test the hypotheses. The findings of the study highlight the significant impact of technological factors on SME performance in China. The results indicate that SMEs with strong technological capabilities and a focus on innovation tend to exhibit better financial performance, including higher profitability and revenue growth. Moreover, SMEs that actively embrace digitalization and leverage emerging technologies are more likely to enhance operational efficiency, expand market reach, and improve customer experiences. The study emphasizes the need for SMEs in China to prioritize technological factors as key drivers of performance and competitiveness. The study recommends that SMEs invest in R&D activities, build robust technological infrastructures, and foster a culture of innovation within their organizations.

More so, embracing digital technologies, such as e-commerce platforms, cloud computing, and data analytics, can help SMEs capitalize on emerging opportunities and navigate the challenges of the digital era. The current study will fill a gap in external validity as the study was done in China and cannot be applicable to the Nigerian context. The theory that underpinned this study is contingency theory. The concept of contingency theory emphasized that there is no one-sized all approach to management, that the best managerial approach is depended on situation or context.

Methodology

The research design employed for this study was survey research design. It involves the use of carefully selected samples from the population for intensive study of the characteristics of the population. The sampling technique used for this work is Stratified Sampling: This is a probability sampling method where the population is divided into strata. The population of the study consists of 3,015 registered SMEs in Nasarawa state, Nigeria (SMEDAN report, 2023). This method was chosen because the study required drawing information from a sample of the population through the administration of the questionnaire. The questionnaire was administered to the selected SMEs operators

personally by the researcher. In addition, the method will present and indicates the opinions of respondents to be taken as their attitudes. In-depth interview on the other hand was adopted because it provides more accurate responses on sensitive issues.

Sample Size of the Study

Given the population size, the sample was selected using the following sampling technique formulated by Taro Yamane (1967).

$$Sample\ size = \frac{N}{1 + N(e)^2}$$

In this study,

N is the total population of the study,

e = sampling error is taken to be 5%,

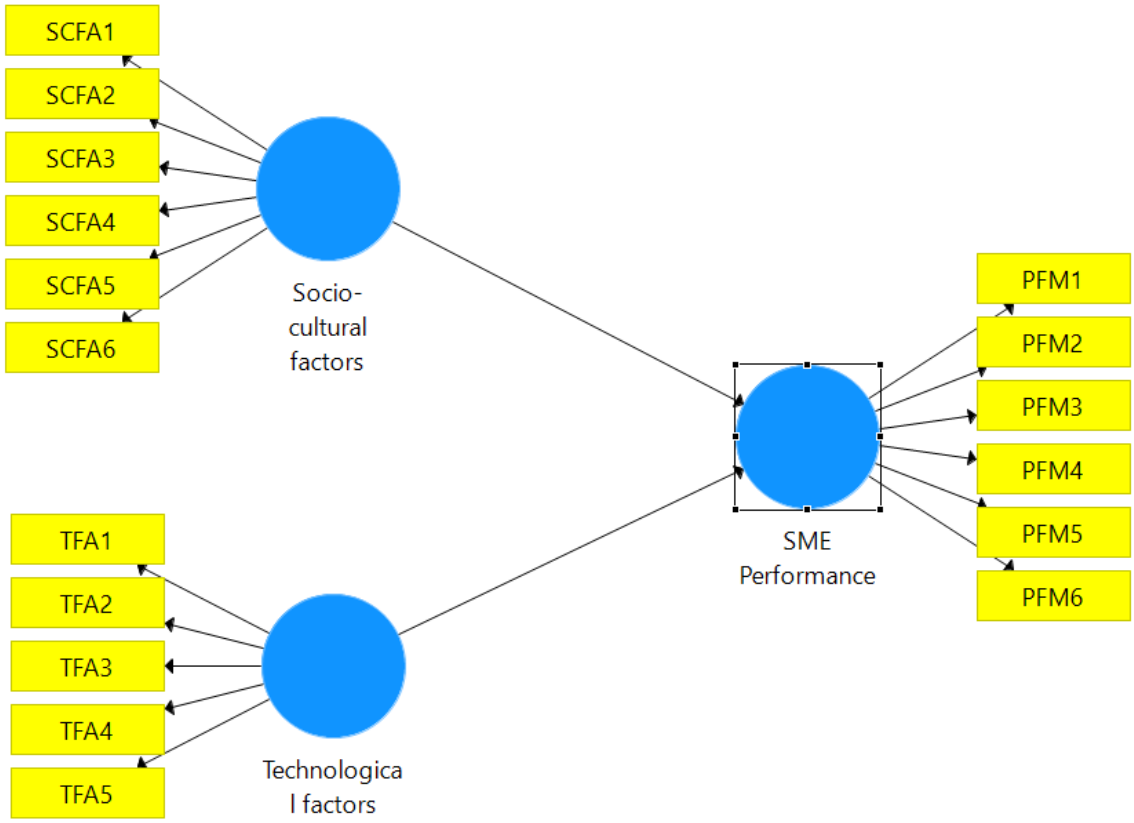
n= Sample size.

The sample size of this proposed study is computed below:

$$Sample\ (RSME) = \frac{3{,}015}{1 + 3{,}015\ \ (0.05)^2}$$

$$Sample = \mathbf{353}$$

Therefore, the sample size of the study was 353 respondents. Primary data was used for this study and was sourced using structured questionnaire. The data was collected using a five-point Likert scale questionnaire. The scale was structured in a manner that the respondents score an item five (5) if they strongly agree with the statement; four (4) if they agree with the statement; three (3) if it is a neutral point where the respondents feel indifferent to the statement; when the respondents disagree with the statement they score it two (2) and lastly, a score of one (1) for strongly disagree. The questionnaire will therefore be tested for content validity and reliability to assure that it would be able to address appropriately the questions being answered. The data collected for this study was presented using simple percentages and descriptive statistics, while the hypotheses of the study was tested using Partial Least Squares Structural Equation Modelling (PLS-SEM) analysis because the emphasis is on the relationship between socio-cultural and technological environmental factors and SMEs performance.



Results and Discussions

Assessment of Measurement Model

Factor loadings

The factor loadings provide insight into the relationship between observed variables and latent factors in the study on the effect of socio-cultural and technological factors on the performance of small and medium-scale enterprises (SMEs) in Nasarawa State, Nigeria. Regarding SME Performance (PFM), all six observed variables (PFM1 to PFM6) demonstrate high factor loadings, ranging from 0.828 to 0.892. This indicates a strong association between these variables and the latent factor of SME Performance, suggesting that they are reliable indicators of SME performance in the study.

In terms of Socio-cultural Factors (SCFA), five observed variables (SCFA2 to SCFA6) show moderate to high factor loadings, ranging from 0.701 to 0.826. These variables are positively correlated with the Socio-cultural Factors latent factor, indicating that they capture important aspects of socio-cultural factors that impact SME performance.

Table 1: Outer loadings

	SME Performance	Socio-cultural factors	Technological factors
PFM1	**0.830**		
PFM2	**0.877**		
PFM3	**0.892**		
PFM4	**0.828**		
PFM5	**0.735**		
PFM6	**0.800**		
SCFA2		**0.701**	
SCFA3		**0.721**	
SCFA4		**0.826**	
SCFA5		**0.715**	
SCFA6		**0.714**	
TFA1			**0.832**
TFA2			**0.876**
TFA3			**0.798**
TFA5			**0.802**

Regarding Technological Factors (TFA), four observed variables (TFA1 to TFA5) demonstrate moderate to high factor loadings, ranging from 0.798 to 0.876. These variables are positively associated with the Technological Factors latent factor, suggesting that they represent key dimensions of technological factors affecting SME performance. Overall, the factor loadings highlight the reliability and significance of the observed variables in measuring SME performance, socio-cultural factors, and technological factors. The findings underscore the importance of considering both socio-cultural and technological factors in understanding the performance of SMEs in Nasarawa State, Nigeria.

Validity and Reliability

The statistics provided in table 2 indicate the quality and validity of the measurement scales used to assess the latent constructs in the study. Construct validity is demonstrated, indicating that the measurement scales accurately represent the underlying constructs of SME Performance, Socio-cultural Factors, and Technological Factors. Reliability analysis, as measured by Cronbach's Alpha and rho_A, indicates high internal consistency and stability for all three constructs as their values are greater than 0.7. This suggests that the items within each construct reliably measure their intended constructs.

Table 2: Construct Validity and Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
SME Performance	**0.908**	**0.914**	**0.929**	**0.687**
Socio-cultural factors	**0.789**	**0.801**	**0.855**	**0.543**
Technological factors	**0.846**	**0.848**	**0.897**	**0.685**

Convergent validity is also supported by the statistics. The Composite Reliability (CR) values which are greater than 0.7 show that the items within each construct share substantial variance, indicating convergent validity. The Average Variance Extracted (AVE) values further support this, demonstrating that a significant proportion of the variance in the constructs is captured by their respective measurement scales.

Discriminant Validity

The Fornell-Larcker criterion was used to assess the discriminant validity between the constructs of SME Performance, Socio-cultural Factors, and Technological Factors. The criterion compares the correlation coefficients between the constructs with the square roots of the average variance extracted (AVE) values for each construct.

Table 3: Fornell-Larcker Criterion

	SME Performance	Socio-cultural factors	Technological factors
SME Performance	0.829		
Socio-cultural factors	0.591	0.737	
Technological factors	0.635	0.578	0.828

The analysis revealed the AVE value for SME Performance was 0.829, indicating that it captures a substantial amount of variance within the construct. The AVE value for Socio-cultural Factors was 0.737, indicating a significant amount of variance within the construct. The correlation coefficient between Socio-cultural Factors and SME Performance was 0.591, which is lower than the AVE value for Socio-cultural Factors. This suggests discriminant validity between the two constructs, indicating that they are distinct and not highly correlated.

The AVE value for Technological Factors was 0.828, indicating substantial variance captured within the construct. The correlation coefficients between Technological Factors and SME Performance and between Technological Factors and Socio-cultural Factors were 0.635 and 0.578, respectively. Both correlation coefficients were lower than the AVE value for Technological Factors, indicating discriminant validity between Technological Factors and the other constructs.

R square

Table 4 presents the R-squared values for the model predicting SME Performance. R-squared is a statistical measure that represents the proportion of variance in the dependent variable (SME Performance) that can be explained by the independent variables included in the model.

According to the table 4, the R-squared value for SME Performance is 0.478. This means that approximately 47.8% of the variance in SME Performance can be accounted for by the independent variables included in the model.

Table 4: R square

	R Square	R Square Adjusted
SME Performance	0.478	0.472

The adjusted R-squared value for SME Performance is 0.472. The adjusted R-squared considers the number of independent variables and the sample size, providing a more conservative estimate of the proportion of variance explained. In this case, it suggests that about 47.2% of the variance in SME Performance is explained by the independent variables, considering these factors.

In summary, the R-squared values indicate that the independent variables in the model account for a moderate proportion of the variance in SME Performance, with approximately 47.8% of the variance explained. The adjusted R-squared provides a slightly lower estimate, considering the number of independent variables and the sample size.

Effect Size

In Table 5, the f-square values for the model predicting SME Performance are presented. The f-square is a measure that quantifies the effect size of each independent variable on the dependent variable. According to the table 5, For the variable "Socio-cultural factors," the f-square value is 0.144. This indicates that the inclusion of Socio-cultural factors in the model explains approximately 14.4% of the variance in SME Performance.

Table 5: f square

	SME Performance
SME Performance	
Socio-cultural factors	0.144
Technological factors	**0.247**

For the variable "Technological factors," the f-square value is 0.247. This suggests that the inclusion of Technological factors in the model explains around 24.7% of the variance in SME Performance. In summary, the Socio-cultural factors account for approximately 14.4% of the variance, while the Technological factors explain about 24.7% of the variance. These results suggest that both Socio-cultural and Technological factors have a meaningful impact on SME Performance, but Technological factors appear to have a relatively stronger influence.

Multicollinearity test

In the inner VIF (Variance Inflation Factor) values presented in table 6, we examine the potential multicollinearity between the independent variables in the model predicting SME Performance. VIF measures the extent to which the variance of an estimated regression coefficient is inflated due to collinearity with other independent variables.

Table 6: Inner VIF

	SME Performance
SME Performance	
Socio-cultural factors	**1.503**
Technological factors	**1.503**

In this case, the inner VIF values for the variables "Socio-cultural factors" and "Technological factors" are both 1.503. A VIF value of 1 indicates the absence of multicollinearity, while values greater than 1 suggest increasing levels of multicollinearity.

In summary, the inner VIF values of 1.503 for both "Socio-cultural factors" and "Technological factors" indicate that there is no significant multicollinearity issue between these variables and other independent variables in the model. This suggests that they can be included in the model without concerns of high collinearity.

Model Fit

The fit summary in Table 7 compares the Saturated Model and the Estimated Model to evaluate how well the Estimated Model fits the data. The measures examined include SRMR, d_ULS, d_G, Chi-Square, and NFI. Both models have identical values for these measures, indicating that the Estimated Model provides a reasonable fit to the data. A lower SRMR suggests a better fit, and the consistent values for d_ULS, d_G, Chi-Square, and NFI indicate that the Estimated Model captures the data patterns effectively. In conclusion, the Estimated Model demonstrates satisfactory alignment with the data, as indicated by the fit summary measures.

Table 7: Fit Summary

	Saturated Model	Estimated Model
SRMR	0.073	0.073
d_ULS	0.636	0.636
d_G	0.255	0.255
Chi-Square	272.500	272.500
NFI	0.831	0.831

Test of Hypotheses

Table 8 provides information about the path coefficients, which represent the strength and direction of relationships between variables in the model. The table shows the path coefficients for two relationships: Socio-cultural factors to SME Performance and Technological factors to SME Performance.

Table 8: Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Socio-cultural factors -> SME Performance	0.337	0.339	0.086	3.910	**0.000**
Technological factors -> SME Performance	0.440	0.440	0.071	6.197	**0.000**

For Socio-cultural factors to SME Performance, the path coefficient is 0.337 in the original sample and 0.339 in the sample mean. The associated standard deviation is 0.086. The T statistic, calculated by dividing the path coefficient by the standard deviation, is 3.910. The p-value for this relationship is 0.000, indicating statistical significance. It shows that sociocultural factors have significant effect on SMEs performance. This finding is consistent with the findings of Aldrich and Zimmer (1986) investigated how social networks can provide SMEs with access to valuable resources, including finance, information, and expertise, ultimately influencing their performance outcomes. Qualitative research approach was used to explore the experiences and perspectives of SME owners and managers in relation to their social networks. In-depth interviews and case studies are conducted to gain a deeper understanding of how social connections contribute to SME growth, innovation, and competitiveness. The study was based on path goal leadership theory. The population of study was 19,385 SMEs while the saple size was 400 respectively. Descriptive research design was applied and primary data gathered through administration of questionnaires. Data was subjected to descriptive statistics through use of SPSS. It was concluded that there is need for creation of horizontal and vertical external environment linkages so as to optimize growth of SMEs.

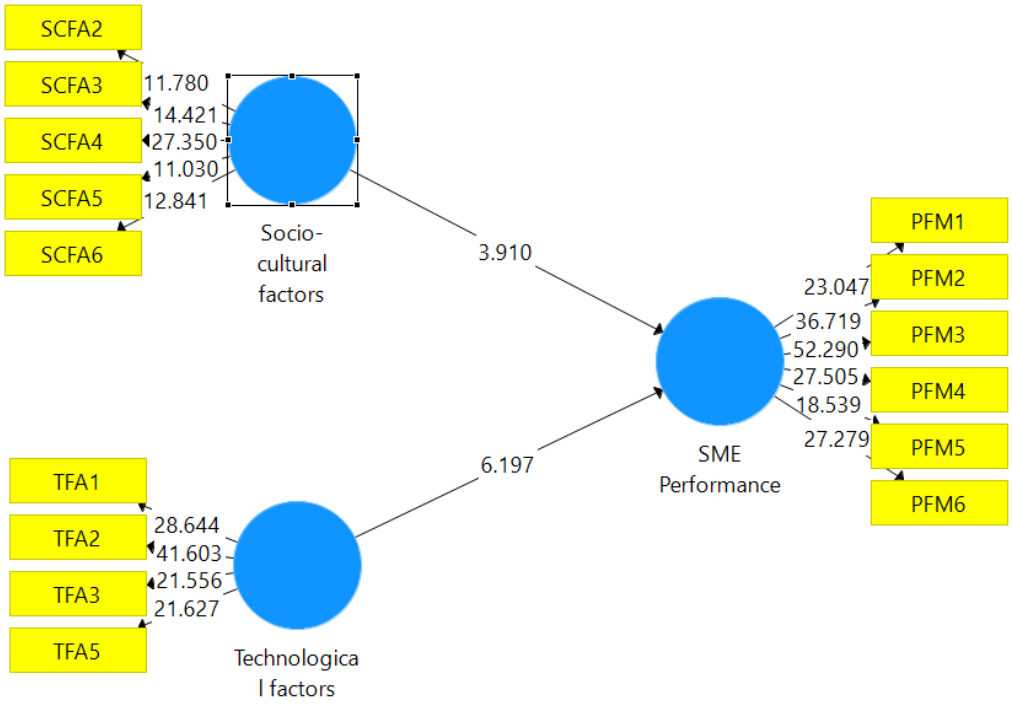
The findings of the study highlight the significant role of social networks in SME performance. The results indicate that SMEs embedded in robust social networks have greater access to resources that positively impact their performance. Social networks facilitate knowledge sharing, information dissemination, and access to diverse expertise, enabling SMEs to make informed decisions, identify business opportunities, and enhance their competitive advantage.

For Technological factors to SME Performance, the path coefficient is 0.440 in both the original sample and the sample mean. The standard deviation associated with this path coefficient is 0.071. The T statistic is 6.197, and the p-value is 0.000, also indicating statistical significance. This

finding is consistent with the findings of Edmund et al. (2020) that examined the impact of Technology acquisition and SMEs performance, the role of innovation, export and the perception of owner-managers. Sufficient literature supports small and medium 'enterprises' (SMEs) significant role in emerging and mature economies. Still, the same research highlights varying challenges that innovative firms in developing economies face, like access to formal credit and external markets. This study examines the effect of a capital budget's proportion for acquiring new technology and sale performance between 2017-2019 using a sample of 101 Kenyan SMEs.

The Figure 2 provides further insight into the path model.

Figure 2: Structural Model Results



In summary, both relationships between the factors and SME Performance are statistically significant. The Technological factors have a higher path coefficient compared to Socio-cultural factors, suggesting a relatively stronger influence on SME Performance in this model.

Conclusion and Recommendations

In conclusion, this study examined the relationships between Socio-cultural factors, Technological factors, and SME Performance. The results indicate that both Socio-cultural factors and Technological factors have a significant influence on SME Performance. The path coefficients demonstrate that Technological factors exert a relatively stronger impact on SME Performance compared to Socio-cultural factors. These findings highlight the importance of considering both Socio-cultural and Technological factors when studying and promoting SME Performance. Policymakers and practitioners should focus on leveraging both technological advancements and socio-cultural aspects to

enhance the performance and success of small and medium-sized enterprises. Further research can delve into specific strategies and mechanisms to optimize these factors for improved SME Performance.

Based on the findings of the study, here are two specific recommendations:

i. Enhance Technological Infrastructure: Given the significant influence of Technological factors on SME Performance, it is crucial to focus on improving technological infrastructure. Policymakers and stakeholders should invest in providing SMEs with access to advanced technology, such as digital platforms, cloud computing, and data analytics tools. This can help SMEs streamline their operations, improve productivity, and gain a competitive edge in the market.

ii. Foster Cross-Cultural Collaboration: Since Socio-cultural factors also play a significant role in SME Performance, fostering cross-cultural collaboration can be beneficial. Encouraging SMEs to engage in international partnerships, joint ventures, and knowledge-sharing networks can facilitate the exchange of ideas, practices, and experiences across different cultural contexts. This can lead to innovation, cultural diversity appreciation, and enhanced adaptability, enabling SMEs to better navigate diverse markets and customer preferences.

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