

Strategic Flexibility and Organisational Resilience of Manufacturing Firms in South-East, Nigeria

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Abstract

This study focused on strategic flexibility and organizational resilience. It determined the extent to which operational flexibility affects operational resilience, the extent to which marketing flexibility affects functional resilience, the effect of human resource flexibility on employee resilience, how financial flexibility affects financial resilience, ascertained the nature of the relationship between process innovation and innovative capabilities, and determined the effect of planning flexibility on the strategic resilience of manufacturing firms in South-East, Nigeria. The study adopted a survey research design. A sample size of 431 was used. Hypotheses were tested using a structural equation model. Finding revealed that operational flexibility has a significant positive effect on operational resilience ($\beta = 1.058$; $p\text{-value} < 0.01$), marketing flexibility has a significant positive effect on functional resilience ($\beta = 1.393$; $p\text{-value} < 0.01$), human resource flexibility has a significant positive effect on employee resilience ($\beta = 0.945$; $p\text{-value} < 0.01$), financial flexibility has a significant positive effect on financial resilience ($\beta = 0.941$; $p\text{-value} < 0.01$), process innovation has a significant positive effect on innovation capabilities ($\beta = 0.464$; $p\text{-value} < 0.01$), and planning flexibility has a significant positive effect on strategic resilience ($\beta = 0.828$; $p\text{-value} < 0.01$). The study concluded that strategic flexibility can drive organisational resilience. It was recommended that manufacturing firms should strengthen operational flexibility, improve marketing flexibility, promote continuous training, multiskilling, and flexible work arrangements, etc., by investing in adaptive technologies and flexible production systems.

Keywords: Operational Flexibility, Operational Resilience, Marketing Flexibility, Functional Resilience, Human Resource Flexibility, Financial Flexibility.

Introduction

Organizational resilience shapes how firms survive, recover, and grow in uncertain business conditions. It affects the long-term stability of firms, their ability to manage risk, and their capacity to continue operations during disruptions. In recent years, there is growing agreement among researchers and management experts that modern organizations face increasing levels of uncertainty due to rapid changes in technology, competition, and global markets (Alzoraiki et al., 2024; Brozovic, 2018). Many firms fail because they do not have strong systems to manage risks and respond to sudden changes. Events such as economic crises, pandemics, and supply chain breakdowns have shown that organizations must be able to adjust quickly and maintain performance under pressure (Muneeb et al., 2023; Shekarian et al., 2023; Siagian et al., 2021). These conditions have made resilience an essential quality for firms that want to remain active and competitive over time.

To support resilience, organizations must also develop strategic flexibility. Strategic flexibility refers to the ability of a firm to adjust its plans, reassign resources, and respond quickly to environmental changes (Dey et al., 2019). It allows firms to make timely decisions without wasting valuable time. Scholars such as Cepeda and Arias-Perez (2018) explain that flexibility involves modifying strategies over time, while immediate changes help firms meet urgent demands. Firms that are flexible can explore new markets, adjust production systems, and change their operations when needed (Brozovic, 2018; Sen et al., 2023). In a business environment that is often unstable and difficult to predict, flexibility helps firms remain competitive and achieve long-term survival (Awwad, Ababneh, and Kasasneh, 2022).

The manufacturing sector shows clearly why resilience and flexibility are important. Manufacturing firms around the world face many challenges, including unstable supply chains, changing customer needs, and fast technological changes. These challenges have increased due to global events such as trade restrictions and health crises, which have disrupted production and distribution systems (Ivanov and Dolgui, 2020; Ragmoun, 2022). Firms that can adjust their sourcing, production, and delivery systems are more likely to recover quickly from such disruptions. This shows that strategic flexibility helps firms reduce risks and continue operations. At the same time, resilience ensures that firms can absorb shocks, recover from losses, and continue their activities over time (Duchek, 2020; Purnama, 2024).

In developing countries like Nigeria, the situation is more complex due to structural and economic challenges. The manufacturing sector plays an important role in job creation, industrial growth, and value addition. However, firms in this sector face many problems such as poor infrastructure, unstable government policies, high production costs, and limited access to finance (Gerald et al., 2020). These challenges make it difficult for firms to plan for the future and invest in growth. Many firms also depend on imported raw materials, which exposes them to exchange rate changes and global supply disruptions. These conditions increase the need for firms to develop flexible strategies and strong resilience systems to manage uncertainty.

The relationship between strategic flexibility and organizational resilience has received attention in recent studies. Strategic flexibility helps firms adjust to changes by allowing them to shift markets, improve operations, and manage resources effectively (Brozovic, 2018; Chen et al., 2017; Sen et al., 2023). It includes different forms such as market flexibility, operational flexibility, resource flexibility, and financial flexibility. When firms combine these forms, they are better able

to respond to risks and take advantage of new opportunities (Moura & Tomel, 2021). On the other hand, resilience focuses on the ability of a firm to withstand disruptions, recover quickly, and maintain core operations during crises (Aldianto et al., 2021). Firms that are both flexible and resilient are more likely to survive difficult conditions and achieve steady growth. Empirical studies have shown different views on how flexibility and resilience are related. Some studies show that firms with strong flexibility can manage disruptions better and maintain performance during crises (Ivanov & Dolgui, 2020). Other studies suggest that resilience also depends on internal factors such as leadership, organizational structure, and available resources (Duchek, 2020). In Nigeria, there is limited research that explains how these two concepts work together in the manufacturing sector, especially at the regional level. This shows a gap in knowledge that needs further study.

The South-East region of Nigeria is known for strong manufacturing activities, with cities such as Aba, Nnewi, and Onitsha serving as major industrial centers. Despite this, firms in this region face serious challenges such as unstable electricity supply, high production costs, policy inconsistency, and strong competition from imported goods (Dinneya-Onuoha, 2025; Ujam, 2025). Some firms have been able to adjust and remain competitive, while others struggle to survive because they cannot adapt to these conditions. This situation shows the need to understand how strategic flexibility can support resilience in such an environment. Against this background, this study focuses on the link between strategic flexibility and organizational resilience in the manufacturing sector in South-East Nigeria. It aims to examine how firms can improve their ability to respond to uncertainty and maintain performance over time. The study also seeks to fill the gap in existing research by providing evidence from a specific regional context. By doing this, it offers useful insights that can help firms and policymakers design better strategies to support business survival and growth in a challenging environment.

Objectives of the Study

The main objective of this study is to examine the effect of strategic flexibility on organizational resilience among manufacturing firms in South-East, Nigeria. The specific objectives will be to:

- i. Determine the effect of operational flexibility on the operational resilience of manufacturing firms in South-East, Nigeria.
- ii. Ascertain how marketing flexibility affects the functional resilience of manufacturing firms in South-East, Nigeria.
- iii. Identify the extent to which human resource flexibility affects employee resilience of manufacturing firms in South-East, Nigeria.
- iv. Determine the effect of financial flexibility on the financial resilience of manufacturing firms in South-East, Nigeria.
- v. Ascertain the nature of the relationship between process innovation and innovation capabilities of manufacturing firms in South-East, Nigeria.
- vi. Determine the effect of Planning flexibility on the strategic resilience of manufacturing firms in South-East, Nigeria.

Literature Review

Theoretical Underpinning

Organizational resilience and strategic flexibility are closely linked concepts that explain how firms survive and perform under changing conditions. This study is anchored on four key theories—Contingency Theory, Leadership Flexibility Theory, Dynamic Capabilities Theory, and Sensemaking Theory—to explain how different forms of flexibility influence different dimensions of resilience among manufacturing firms. These theories provide a clear basis for understanding the study objectives and the expected relationships between variables. Contingency Theory, as proposed by Fiedler (1964), explains that there is no single best way to manage or organize a firm. Instead, the best action depends on the situation a firm faces. In uncertain environments such as the Nigerian manufacturing sector, firms must adjust their strategies based on changing conditions like market demand, policy shifts, and supply chain disruptions. The theory suggests that firms that align their strategies with environmental demands are more likely to remain stable and perform well (Mark & Erude, 2023; Sushil, 2026). This directly supports the idea that strategic flexibility improves resilience.

In relation to the first objective, which focuses on the effect of operational flexibility on operational resilience, Contingency Theory explains that firms must adjust their production systems based on current conditions. For example, when there are supply shortages or power issues, firms that can quickly change their production processes are more likely to continue operations. This ability to adjust operations based on situational needs improves operational resilience. The second objective examines how marketing flexibility affects functional resilience. Contingency Theory supports this by showing that firms must adjust their marketing strategies based on customer needs and market conditions. When customer demand changes, firms that can quickly modify their products, pricing, or promotion strategies are better able to maintain their functions. This improves their ability to remain active and competitive.

The third objective focuses on human resource flexibility and employee resilience. Leadership Flexibility Theory (Rachmad, 2022) provides a strong explanation for this relationship. The theory states that leaders must adjust their leadership style based on the needs of their employees and the situation. In times of crisis or change, flexible leaders can support employees, improve communication, and reduce stress (Dagar & Sisodia, 2023). This helps employees adapt to challenges and remain productive. As a result, employee resilience is strengthened through flexible leadership and human resource practices. The fourth objective examines the effect of financial flexibility on financial resilience. Dynamic Capabilities Theory (Teece, 2022; Teece, 2020) explains that firms must be able to reconfigure their financial resources to respond to changes. Financial flexibility allows firms to adjust their spending, access funds, and manage risks during economic instability. Firms with strong financial capabilities can survive financial shocks and continue operations (Nkundabanyanga et al., 2020; Wu et al., 2024). This shows that financial flexibility is a key factor in achieving financial resilience. The fifth objective focuses on the relationship between process innovation and innovation capabilities. Dynamic Capabilities Theory also explains this objective. The theory states that firms must continuously develop and combine their resources to create new strategies and innovations (Teece, 2018). Process innovation, such as improving production methods or adopting new technologies, helps firms build stronger innovation capabilities. These capabilities allow firms to respond to market changes and maintain a competitive advantage.

Sensemaking Theory (Weick, 1995; 2015) provides a useful explanation for the sixth objective. The theory explains how organizations interpret and respond to uncertain situations. Planning

flexibility allows firms to adjust their strategies based on new information and changing conditions. Through sensemaking, managers can understand events, make informed decisions, and guide the organization effectively. This improves the firm's ability to respond to long-term challenges, which strengthens strategic resilience. In addition, Leadership Flexibility Theory also supports this objective by showing that leaders who can adjust their plans and strategies based on situational needs are more effective in managing uncertainty. Flexible planning allows firms to prepare for different possible outcomes and respond quickly when changes occur. These theories provide a strong foundation for this study. Together, these theories explain how different types of strategic flexibility—operational, marketing, human resource, financial, and planning—can improve different dimensions of organizational resilience in manufacturing firms in South-East Nigeria.

Hypotheses Development

Previous studies (Shekarian et al., 2023; Yu et al., 2021) have shown that operational flexibility plays an important role in improving operational resilience in organizations. Within the framework of Dynamic Capabilities Theory, operational flexibility acts as a strategic capability that allows firms to adjust their internal processes and resources in response to changing environmental conditions (Teece, 2022). This means that firms can reconfigure their production systems, labour, and supply networks when disruptions occur. For example, manufacturing firms that adopt flexible production systems can easily switch between product lines or adjust output levels based on demand changes or supply shortages (Elyasi et al., 2024; Liu et al., 2022). In the same way, firms that use multiple suppliers or alternative sourcing options reduce the risk of depending on a single source, which helps them maintain continuity during supply chain disruptions (Jain et al., 2022). These flexible practices allow firms to respond quickly to unexpected changes and reduce operational downtime.

Operational resilience, on the other hand, refers to the ability of a firm to sustain its core operations and recover quickly during and after disruptions. Studies have shown that firms with high levels of operational resilience are better able to manage crises, maintain service delivery, and reduce financial losses (Jain et al., 2022; Shekarian et al., 2023). Within Contingency Theory, the ability of a firm to align its operations with changing conditions improves its chances of survival. For instance, firms that adopt decentralized decision-making and cross-trained employees can respond faster to immediate challenges without delays from rigid management structures. This shows that flexibility supports resilience by providing the tools needed for quick response and recovery. Thus, we assume that:

H1: Operational flexibility has positive effect on operational resilience.

Many studies have shown that marketing flexibility is a strong factor that improves functional resilience in organizations, especially in dynamic and uncertain markets. Within the framework of Dynamic Capabilities Theory, marketing flexibility functions as a strategic capability that allows firms to adjust their marketing strategies in response to changes in customer needs, competition, and market conditions (Teece et al., 2018). This means that firms can quickly modify pricing, product positioning, promotion, and customer engagement strategies when disruptions occur. When organizations sense changes in the market, they can respond by redesigning their offerings and communication approaches to maintain relevance and customer interest (Kumar & Reinartz, 2018; Khan & Emon, 2024). This adaptive behaviour supports continuous interaction with

customers and helps firms remain competitive even in unstable environments. In addition, resilient firms are able to identify problems early, understand their causes, and adjust their marketing actions in a timely manner, which improves responsiveness and reduces the negative effects of disruptions (Pereira et al., 2020).

Functional resilience, on the other hand, refers to the ability of core organizational functions such as operations, supply chain, and customer service to continue performing effectively during disruptions and recover quickly afterward. Studies show that firms with strong functional resilience can better manage uncertainty, maintain service delivery, and sustain customer satisfaction (Annarelli et al., 2020; Ivanov & Dolgui, 2020). When marketing flexibility is well aligned with functional activities, firms can respond faster to market changes, reduce delays, and improve coordination across departments. For instance, the use of digital tools such as data analytics and artificial intelligence helps firms predict customer behaviour and adjust marketing strategies in real time (Theodorakopoulos & Theodoropoulou, 2024; Zaman, 2022). However, challenges such as poor communication between units and resistance to change can limit this alignment (Holloway, 2024). Despite these challenges, evidence shows that marketing flexibility supports functional resilience by enabling firms to adapt quickly, coordinate internal functions, and sustain performance in changing market conditions. Hence the hypothesis that:

H2: Marketing flexibility has positive effect on functional resilience.

Human resource (HR) flexibility is the degree to which organizations adjust work roles, skills, and employment practices to meet changing internal and external demands (Yasir & Majid, 2020). In addition to improving organizational efficiency, HR flexibility is often linked to psychological and behavioural outcomes in employees, especially their ability to cope with stress and change (Davidescu et al., 2020; Yasir et al., 2023). Within the framework of Leadership Flexibility Theory, HR flexibility is regarded as an organizational support mechanism that shapes employee experience by influencing how work is designed, managed, and supported. This means that flexible HR practices, such as job rotation, training programs, and employee participation in decision-making, function as organizational tools that help employees adapt to uncertainty and changing job demands.

Rachmad (2022) explains that flexible leadership and HR systems operate by adjusting management approaches based on employee needs and situational demands. These flexible practices influence employee outcomes through three main channels—skill development (learning new tasks), psychological empowerment (feeling trusted and involved), and emotional support (feeling valued within the organization). In the workplace context, continuous training and exposure to different job roles increase employees' skill variety, which makes them more capable of handling pressure and unexpected tasks. Similarly, when employees are involved in decision-making processes, they develop a stronger sense of ownership and responsibility, which improves their confidence in dealing with challenges (Irfan et al., 2022).

Within the Sensemaking Theory framework, employee resilience is understood as the ability of workers to interpret, respond to, and recover from workplace changes based on the signals and support they receive from the organization. HR flexibility acts as an environmental condition that shapes how employees interpret uncertainty and respond to change. When HR systems are flexible, employees are better able to understand organizational changes, adjust their behaviour, and

maintain performance under pressure (Waheed et al., 2021). Earlier studies have shown that employees who receive continuous support, training, and communication from management are more likely to develop resilience because they can make sense of change more effectively and respond in a stable manner (Yasir et al., 2023). In addition, flexible HR systems create a supportive work environment that encourages collaboration, reduces stress, and strengthens emotional stability among employees (Emon et al., 2024). This psychological support further increases resilience by helping employees remain focused and committed during difficult situations. Hence the hypothesis that:

H3: Human resource flexibility has positive effect on employee resilience

Financial flexibility supports the stability and survival of firms, and this study examines its effect on financial resilience based on how firms manage resources during uncertain conditions. Within the framework of Dynamic Capabilities Theory, financial flexibility is seen as the ability of a firm to adjust its financial structure, reallocate resources, and access funds when needed (Teece, 2018). As a result, firms with high financial flexibility are better able to manage cash flow, maintain operations, and respond to economic shocks by using available reserves or borrowing capacity. Many studies have shown that firms with strong financial positions, such as high cash holdings and low debt levels, are more capable of absorbing financial stress and continuing operations during crises (Rezaei-Soufi et al., 2021). When firms maintain flexible financial systems, they are also able to take advantage of new investment opportunities and adjust their strategies in response to changing market conditions, which improves long-term performance (Margiutomo et al., 2025).

This study draws on financial management behaviour and specifically how firms respond to financial uncertainty in dynamic environments. Financial resilience reflects the ability of firms to withstand shocks and recover from disruptions, and it is strongly influenced by the level of financial flexibility available. Studies show that firms with greater access to financial resources and diversified income sources are less affected by economic crises such as the global financial crisis and the COVID-19 pandemic (Kober & Thambar, 2021; Ahrens & Ferry, 2020). Firms with flexible financial systems can quickly adjust their capital structure, reduce unnecessary costs, and maintain stability during periods of uncertainty (Lusardi et al., 2021). These adaptive financial actions help firms avoid distress and sustain performance over time. Thus, we formulate the hypothesis that:

H4: Financial flexibility has positive effect on financial resilience.

In the context of manufacturing firms, process innovation is often driven by the presence of strong innovation capabilities, especially when firms operate in changing and uncertain environments. Within the Dynamic Capabilities framework, innovation capabilities function as the organizational ability to integrate, build, and reconfigure internal and external resources in order to improve processes and respond to market changes (Teece et al., 2018). These capabilities allow firms to develop new production methods, improve efficiency, and adjust operations when conditions change. In addition, process innovation depends on how well firms can combine knowledge, technology, and skills to improve existing systems or create new ones that reduce cost and increase productivity (Espeche et al., 2022).

Innovation capabilities influence process innovation through resource integration and knowledge application. This means that firms must be able to acquire new technology, absorb external

knowledge, and combine it with existing internal resources to improve production processes (Kyrddoda et al., 2023). For example, firms that invest in research, employee training, and modern technology are more likely to redesign their production systems in ways that improve speed, quality, and efficiency (Bosman et al., 2020). Within the Contingency Theory perspective, process innovation becomes necessary when firms face changes in competition, customer demand, or technology. In such situations, firms with strong innovation capabilities are better able to adjust their production processes and remain competitive.

Earlier studies have also shown that innovation capabilities support both incremental and radical process improvements, allowing firms to continuously refine their operations and adapt to changing conditions (Escrig-Tena et al., 2021; Johnson, 2020). In addition, dynamic innovation capabilities help firms detect environmental changes early and respond with appropriate process adjustments (Zhang & Bang, 2023). This improves flexibility in production systems and strengthens long-term performance. Research shows that innovation capabilities act as a foundation for process innovation, while process innovation serves as an outcome that improves efficiency, competitiveness, and organizational adaptability in manufacturing firms. Thus, we formulate the hypothesis that:

H5: Process innovation has positive effect on innovation capabilities.

Planning flexibility refers to the ability of a firm to adjust its strategies, reallocate resources, and revise goals in response to new information or changes in the business environment, and this study examines its effect on strategic resilience. Within the framework of Contingency Theory, planning flexibility is viewed as a necessary condition for aligning organizational strategies with changing internal and external conditions (Fiedler, 1964). This means that firms that adopt flexible planning approaches are better able to respond to uncertainty, anticipate risks, and avoid rigid decision-making. As a result, such firms can adapt their long-term goals without losing focus, which supports strategic resilience. Studies show that planning flexibility allows firms to detect market changes early, adjust their strategies, and maintain performance even during disruptions (Elyasi et al., 2024). In addition, flexible planning encourages innovation and learning, as firms are more open to feedback and new ideas, which improves their ability to respond to emerging challenges (Alzoraiki et al., 2024).

This study draws on strategic management behaviour, especially how firms manage change and uncertainty over time. Strategic resilience reflects the ability of firms to anticipate, withstand, and recover from disruptions while still pursuing long-term objectives. Firms that adopt continuous and adaptive planning processes, rather than fixed long-term plans, are more likely to remain stable in uncertain environments (Ahmad, 2024; Buyl et al., 2019). For example, the use of iterative planning, real-time data analysis, and contingency planning helps firms prepare for possible disruptions and respond effectively when they occur (Qudrat-Ullah, 2025). In addition, open communication and employee involvement in planning processes improve commitment and support for strategic changes, which strengthens resilience (Ning et al., 2023). However, planning flexibility provides the process through which firms adjust to change, while strategic resilience represents the outcome, as firms that plan flexibly are better able to survive disruptions, adapt to new conditions, and sustain long-term performance. Hence the hypothesis that:

H6: Planning flexibility has positive effect on strategic resilience.

Methodology

Measurement, Sampling and Data

In this study, the adopted measuring instruments for all variables were customized and adjusted to fit the context of manufacturing firms in South-East Nigeria. The measurement of operational flexibility (OF) was adopted from Vokurka and O'Leary-Kelly (2000) and Zhang et al. (2003), focusing on production adjustment, resource reallocation, and process adaptability. Marketing flexibility (MF) was measured using items adapted from Shalender (2017), capturing the ability to adjust pricing, promotion, and product positioning. Human resource flexibility (HRF) measurements were adopted from Barakat (2021), including skills, cross-training, and employee adaptability. Financial flexibility (FF) was measured using scales adapted from DeAngelo and DeAngelo (2007) and Gamba and Triantis (2008), focusing on cash reserves, debt capacity, and access to finance. Process innovation (PI) was measured using items adapted from Damanpour and Aravind (2012), focusing on improvements in production processes.

On the other hand, the measurement of operational resilience (OR) was adopted from Branicki et al. (2018), focusing on the ability to maintain operations during disruptions. Functional resilience (FR) was measured using items from Cardoso et al. (2020), capturing the ability to sustain market performance under uncertainty. Employee resilience (ER) was measured using scales from Näswall et al. (2015), focusing on adaptability and coping ability. Financial resilience (FIR) was measured using items adapted from Lusardi et al. (2021), reflecting the ability to withstand financial shocks. Strategic resilience (SR) was measured using scales from Hamel and Välikangas (2003), focusing on long-term adaptability and survival. Innovation capability (IC) was measured using items from Lawson and Samson (2001), capturing knowledge integration and innovation support systems. All items in this study were measured using a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree."

Regarding the sampling procedure, this study employed a purposive sampling technique. This non-probability sampling method was chosen because the study focused specifically on manufacturing firms with active operations and experience in managing environmental uncertainty. The target population consisted of managers and senior staff of 50 manufacturing firms located in major industrial areas in South-East Nigeria such as Aba, Nnewi, and Onitsha. These respondents were selected because they are directly involved in strategic, operational, financial, and human resource decisions within their firms.

Data were collected through a structured questionnaire distributed physically and electronically to selected respondents. A screening question was used to ensure that respondents had at least basic managerial experience and knowledge of firm operations. This helped ensure that responses were based on informed judgment and practical experience, thereby improving data reliability. The use of purposive sampling is suitable for this study because it focuses on respondents with relevant knowledge of strategic flexibility and organizational resilience, which cannot be obtained from a general population sample. A total of 500 questionnaires were distributed between March and August 2025. After data cleaning and removal of incomplete responses, 431 valid questionnaires were retained for analysis. The sample size meets the minimum requirement for SEM analysis and provides adequate statistical power for testing the study hypotheses.

Table 1. Demography of participants

Category	Variables	Freq.	Percent
Gender	Male	237	55.0
	Female	194	45.0
Age	Below 30 years	119	27.6
	30–39 years	118	27.4
	40–49 years	124	28.8
	50 years and above	70	16.2
Education	OND/NCE	105	24.4
	Bachelor's degree/HND	161	37.4
	Master's degree	115	26.7
	Doctoral degree	50	11.6
Experience	Less than 5 years	123	28.5
	5–9 years	169	39.2
	10–14 years	77	17.9
	15 years and above	62	14.4
Manufacturing	Motor Vehicle & Miscellaneous Assembly	56	13.0
	Non-Metallic Mineral Products	104	24.1
	Basic Metal, Iron & Steel, & Fabricated Metals	112	26.0
	Domestic & Industrial, Plastics, Rubber & Foam	47	10.9
	Chemical & Pharmaceuticals	54	12.5
	Food, Beverage & Tobacco	25	5.8
	Pulp, Paper & Paper Products, Printing, Publishing & Packaging	33	7.7

Table 1 shows that 237 respondents (55.0%) were male, and 194 respondents (45.0%) were female. 119 respondents (27.6%) were below 30 years; 118 respondents (27.4%) were between 30–39 years; 124 respondents (28.8%) were between 40–49 years; and 70 respondents (16.2%) were 50 years and above. The result shows that the majority of the respondents in the study area were within the age group of 40–49 years. 105 respondents (24.4%) had OND/NCE; 161 respondents (37.4%) possessed a Bachelor's degree/HND; 115 respondents (26.7%) had a Master's degree; while 50 respondents (11.6%) had a Doctoral degree. The result shows that the majority of the respondents in the study area possessed a Bachelor's degree/HND. 123 respondents (28.5%) had less than 5 years of experience; 169 respondents (39.2%) had 5–9 years of experience; 77 respondents (17.9%) had 10–14 years of experience; and 62 respondents (14.4%) had 15 years and above. The implication is that a greater number of respondents in the study area had between 5–9 years of work experience.

56 respondents (13.0%) were from the Motor Vehicle & Miscellaneous Assembly sector; 104 respondents (24.1%) were from the Non-Metallic Mineral Products sector; 112 respondents (26.0%) were from the Basic Metal, Iron & Steel, & Fabricated Metals sector; 47 respondents (10.9%) were from the Domestic & Industrial, Plastics, Rubber & Foam sector; 54 respondents (12.5%) were from the Chemical & Pharmaceuticals sector; 25 respondents (5.8%) were from the

Food, Beverage & Tobacco sector; and 33 respondents (7.7%) were from the Pulp, Paper & Paper Products, Printing, Publishing & Packaging sector. The implication is that a greater number of respondents in the study area were from the Basic Metal, Iron & Steel, & Fabricated Metals sector.

Method of Data Analysis

The study employed regression weight through Structural Equation Modeling- SEM (Amos-IBM) to test the proposed hypotheses. Amos-IBM is important for the study because it helps to test and confirm the relationships between variables and assess how well the theoretical model fits the observed data (Thakkar, 2020a). The main objective of this study is to examine and predict the effect of strategic flexibility on organizational resilience among manufacturing firms in South-East Nigeria, rather than to test a well-established theory with strict model fit criteria. Therefore, the SEM from Amos-IBM is appropriate, establishing model fits and covariances, which is mainly important for model confirmation. Given the sample size of 431 respondents, SEM from Amos-IBM provides methodological advantages because it performs well with small to medium sample sizes and does not require ideal data conditions (Thakkar, 2020b).

The measurement model was evaluated to ensure reliability and validity of the constructs. Internal consistency reliability was assessed using Cronbach's alpha and composite reliability (CR), with acceptable threshold values above 0.70 (Hair et al., 2021). Convergent validity was examined using average variance extracted (AVE), with a minimum value of 0.50 (Hair et al., 2021). Discriminant validity was assessed using the Fornell-Larcker criterion and cross-loadings to confirm that each construct is distinct from others (Henseler, 2017). Table 2 shows the results of the construct validity and reliability. The Cronbach's alpha and composite reliability (CR) show that all the constructs have more than 0.70 threshold. In addition, that convergent validity was confirmed since the AVE of the constructs possess values above 0.50.

Table 2. Construct Validity and Reliability

Indicator Variable	Loading (>70)	AVE (>500)	CR (>70)	Chron (α >70)
OPF1	0.791	0.560872	0.74891388	0.733
OPF2	0.745			
OPF3	0.767			
OPF4	0.718			
OPF5	0.721			
MAF1	0.912	0.6297256	0.793552519	0.810
MAF2	0.723			
MAF3	0.785			
MAF4	0.741			
MAF5	0.793			
FIF1	0.715	0.5821294	0.762974049	0.703
FIF2	0.708			
FIF3	0.749			
FIF4	0.801			

FIF5	0.834			
HRF1	0.81	0.5864802	0.765819953	0.884
HRF2	0.782			
HRF3	0.714			
HRF4	0.734			
HRF5	0.785			
PRI1	0.746	0.5413036	0.735733376	0.821
PRI2	0.718			
PRI3	0.754			
PRI4	0.739			
PRI5	0.721			
PLF1	0.711	0.578308	0.760465647	0.783
PLF2	0.801			
PLF3	0.819			
PLF4	0.749			
PLF5	0.716			
OPR1	0.742	0.5329822	0.730056299	0.797
OPR2	0.743			
OPR3	0.709			
OPR4	0.704			
OPR5	0.751			
FUR1	0.764	0.6053434	0.778038174	0.780
FUR2	0.725			
FUR3	0.818			
FUR4	0.784			
FUR5	0.796			
EMR1	0.772	0.6092742	0.780560183	0.891
EMR2	0.803			
EMR3	0.717			
EMR4	0.792			
EMR5	0.815			
FIR1	0.737	0.6018842	0.775811962	0.803
FIR2	0.785			
FIR3	0.811			
FIR4	0.759			
FIR5	0.785			
INC1	0.762			
INC2	0.767	0.5494794	0.741268777	0.827
INC3	0.728			

INC4	0.716			
INC5	0.732			
STR1	0.784	0.5803602	0.761813757	0.789
STR2	0.724			
STR3	0.744			
STR4	0.792			
STR5	0.763			

Source: Amos-IBM 25.0

Data Analysis and Results

This section shows the model fits, covariances and test of hypotheses.

Table 3. Model Fit

Fit Indices	Model	Default Model	Saturated Model	Independence Model
CMIN	NPAR	75	465	30
	CMIN	597.056	.000	7402.789
	DF	390	0	435
	P	.000		.000
	CMIN/DF	1.531		17.018
RMR, GFI	RMR	.069	.000	.366
	GFI	.916	1.000	.400
	AGFI	.900		.359
	PGFI	.769		.374
Baseline Comparisons	NFI (Delta1)	.919	1.000	.000
	RFI (rho1)	.910		.000
	IFI (Delta2)	.970	1.000	.000
	TLI (rho2)	.967		.000
	CFI	.970	1.000	.000
Parsimony-Adjusted Measures	PRATIO	.897	.000	1.000
	PNFI	.824	.000	.000
	PCFI	.870	.000	.000
NCP	NCP	207.056	.000	6967.789
	LO 90	145.038	.000	6692.148
	HI 90	277.028	.000	7249.838
FMIN	FMIN	1.389	.000	17.216
	F0	.482	.000	16.204
	LO 90	.337	.000	15.563
	HI 90	.644	.000	16.860
RMSEA	RMSEA	.035		.193
	LO 90	.029		.189
	HI 90	.041		.197

	PCLOSE	1.000		.000
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Source: Amos-IBM

Table 3 shows that the chi-square test (CMIN) is significant (597.056, $p = .000$), indicating a discrepancy between the model and the observed data. However, given the sensitivity of chi-square to sample size, the researchers placed more emphasis on relative and incremental fit indices. The RMR value (.069) is relatively low, which is desirable since it indicates small differences between observed and predicted values. The Goodness-of-Fit Index (GFI = .916) exceeds the .90 benchmark, showing that the model captures a substantial proportion of variance in the data. The Adjusted Goodness-of-Fit Index (AGFI = .900) also meets the acceptable threshold, while the Parsimony Goodness-of-Fit Index (PGFI = .769) reflects a favorable balance between model fit and parsimony. The Normed Fit Index (NFI = .919), Relative Fit Index (RFI = .910), Incremental Fit Index (IFI = .970), Tucker-Lewis Index (TLI = .967), and Comparative Fit Index (CFI = .970) all exceed the .90 benchmark, indicating strong improvement of the model over the independence model.

Parsimony-adjusted indices support this conclusion. The PRATIO (.897), PNFI (.824), and PCFI (.870) values confirm that the model achieves a favorable trade-off between complexity and explanatory power. The Non-Centrality Parameter (NCP = 207.056) is much lower than that of the independence model (6967.789), highlighting the model's superior performance. The Fit Minimum (FMIN = 1.389) and F0 value (.482) are also relatively low, suggesting a close fit between the model and observed data. The Root Mean Square Error of Approximation (RMSEA = .035) is well below the .08 benchmark, signifying excellent model fit. Its narrow confidence interval (.029–.041) supports this conclusion, while the PCLOSE value (1.000) indicates a very high probability that the RMSEA is less than .05, confirming a close fit.

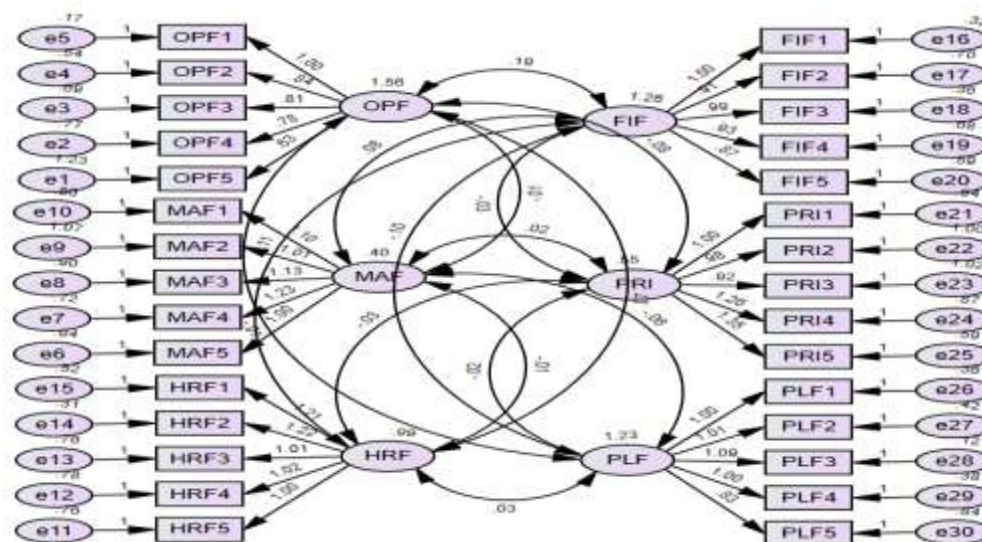


Figure 1. Structural Equation Model on Variables of Strategic Flexibility (Source: Amos-IBM, 25.0)

Fig. 1 informs the details of covariances in Table 4. The arrows show the relationship between nodes (the latent variables).

Table 4. Covariances Test for Latent Variables

			Estimate	S.E.	C.R.	P
OPF	<-->	PLF	-.014	.071	-.202	.840
MAF	<-->	PLF	-.064	.041	-1.566	.117
FIF	<-->	PRI	-.034	.047	-.737	.461
OPF	<-->	MAF	-.009	.046	-.201	.840
HRF	<-->	PRI	-.027	.041	-.646	.518
HRF	<-->	FIF	.108	.059	1.842	.065
OPF	<-->	HRF	.067	.065	1.030	.303
MAF	<-->	FIF	.078	.042	1.840	.066
MAF	<-->	HRF	-.012	.037	-.327	.744
PRI	<-->	PLF	-.019	.045	-.426	.670
MAF	<-->	PRI	.020	.030	.667	.505
OPF	<-->	PRI	-.079	.052	-1.524	.128
HRF	<-->	PLF	.033	.057	.588	.556
OPF	<-->	FIF	.189	.074	2.567	.010
FIF	<-->	PLF	-.101	.064	-1.572	.116

Source: Amos-IBM

Table 4 shows the covariance analysis of the dimensions of strategic flexibility, including operational flexibility, planning flexibility, marketing flexibility, financial flexibility, human resource flexibility, and process innovation. Most of the relationships are statistically non-significant, suggesting weak or no covariance among these dimensions. For instance, the covariance between operational flexibility and planning flexibility (Estimate = -0.014, C.R. = -0.202, $p = 0.840$) is not significant, indicating no meaningful association. Similarly, the relationship between marketing flexibility and planning flexibility (Estimate = -0.064, C.R. = -1.566, $p = 0.117$) is non-significant.

The covariance between financial flexibility and process innovation (Estimate = -0.034, C.R. = -0.737, $p = 0.461$), operational flexibility and marketing flexibility (Estimate = -0.009, C.R. = -0.201, $p = 0.840$), as well as human resource flexibility and process innovation (Estimate = -0.027, C.R. = -0.646, $p = 0.518$) are all statistically non-significant. Likewise, human resource flexibility and planning flexibility (Estimate = 0.033, C.R. = 0.588, $p = 0.556$), marketing flexibility and process innovation (Estimate = 0.020, C.R. = 0.667, $p = 0.505$), and operational flexibility and process innovation (Estimate = -0.079, C.R. = -1.524, $p = 0.128$) do not reveal any significant covariance.

However, a statistically significant relationship emerges between operational flexibility and financial flexibility (Estimate = 0.189, C.R. = 2.567, $p = 0.010$), suggesting a positive and meaningful association. This indicates that firms with higher operational flexibility are also likely to exhibit stronger financial flexibility. Near-significant associations are also observed between human resource flexibility and financial flexibility (Estimate = 0.108, C.R. = 1.842, $p = 0.065$), as well as marketing flexibility and financial flexibility (Estimate = 0.078, C.R. = 1.840, $p = 0.066$), though these remain just above the conventional 0.05 threshold. Other relationships, such as marketing flexibility and human resource flexibility (Estimate = -0.012, C.R. = -0.327, $p = 0.744$) and financial flexibility and planning flexibility (Estimate = -0.101, C.R. = -1.572, $p = 0.116$), are

also nonsignificant, indicating weak associations. The results suggest that there are no issues of covariances among the variables.

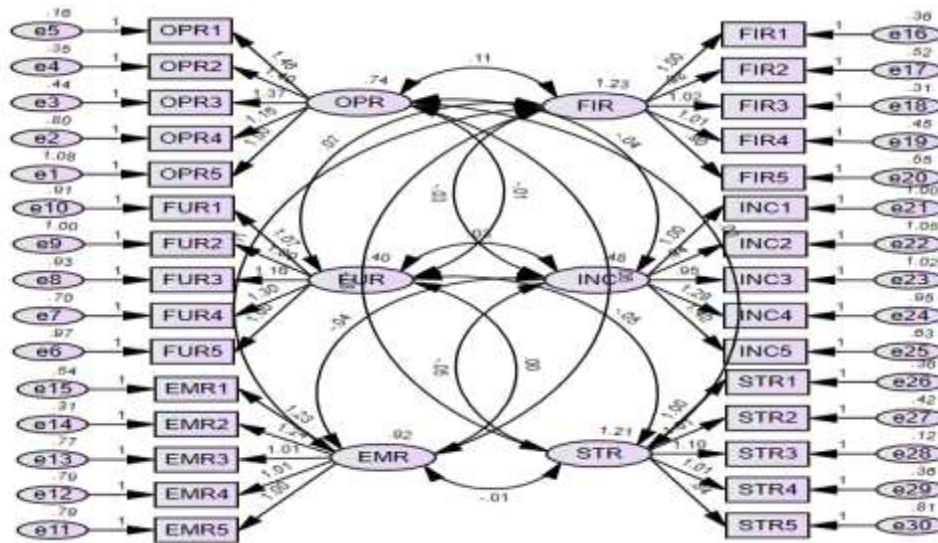


Figure 2. Structural Equation Model on Variables of Organisational Resilience (Source: Amos-IBM, 25.0)

Fig. 2 shows the tree analysis of the relationship between nodes (dependent variables). The results are complemented by the covariances in Table 4.

Table 5. Covariances Test for Organisational Resilience

			Estimate	S.E.	C.R.	P
OPR	<-->	FUR	-.007	.031	-.209	.834
OPR	<-->	EMR	.059	.043	1.382	.167
FUR	<-->	EMR	.003	.036	.079	.937
FIR	<-->	STR	-.082	.062	-1.313	.189
INC	<-->	STR	-.052	.043	-1.229	.219
FIR	<-->	INC	-.026	.043	-.602	.547
OPR	<-->	FIR	.113	.050	2.273	.023
EMR	<-->	STR	-.013	.054	-.241	.810
OPR	<-->	INC	-.036	.033	-1.088	.276
OPR	<-->	STR	-.003	.048	-.069	.945
FUR	<-->	FIR	.070	.041	1.704	.088
FUR	<-->	INC	.028	.028	1.017	.309
FUR	<-->	STR	-.046	.040	-1.156	.248
EMR	<-->	FIR	.113	.056	2.019	.043
EMR	<-->	INC	-.037	.038	-.970	.332

Source: Amos-IBM

Table 5 shows the covariance analysis of the dimensions of organisational resilience, including operational resilience, functional resilience, employee resilience, financial resilience, strategic

resilience, and innovation capabilities. Most of the relationships are statistically non-significant, suggesting weak or no meaningful covariance among these dimensions. For instance, the covariance between operational resilience and functional resilience (Estimate = -0.007, C.R. = -0.209, $p = 0.834$) is not significant, indicating no substantial association. Similarly, the relationship between functional resilience and employee resilience (Estimate = 0.003, C.R. = 0.079, $p = 0.937$) is non-significant. The covariance between financial resilience and strategic resilience (Estimate = -0.082, C.R. = -1.313, $p = 0.189$), innovation capabilities and strategic resilience (Estimate = -0.052, C.R. = -1.229, $p = 0.219$), and financial resilience and innovation capabilities (Estimate = -0.026, C.R. = -0.602, $p = 0.547$) also shows no significant association. Likewise, operational resilience and innovation capabilities (Estimate = -0.036, C.R. = -1.088, $p = 0.276$), operational resilience and strategic resilience (Estimate = -0.003, C.R. = -0.069, $p = 0.945$), as well as functional resilience and strategic resilience (Estimate = -0.046, C.R. = -1.156, $p = 0.248$), all remain non-significant.

A statistically significant relationship is observed between operational resilience and financial resilience (Estimate = 0.113, C.R. = 2.273, $p = 0.023$), suggesting a positive and meaningful association. This indicates that firms with stronger operational resilience are more likely to exhibit financial resilience. Similarly, employee resilience and financial resilience (Estimate = 0.113, C.R. = 2.019, $p = 0.043$) demonstrate a significant positive relationship, implying that resilient employees contribute to strengthening the financial resilience of organisations. Other near-significant relationships include functional resilience and financial resilience (Estimate = 0.070, C.R. = 1.704, $p = 0.088$), which points to a possible positive association but just misses the conventional 0.05 threshold. In contrast, relationships such as employee resilience and strategic resilience (Estimate = -0.013, C.R. = -0.241, $p = 0.810$) and employee resilience and innovation capabilities (Estimate = -0.037, C.R. = -0.970, $p = 0.332$) remain non-significant.

Table 6. Regression Weight on Strategic Flexibility and Organisational Resilience

Dep. Vari.		Indep. Vari.	Coeff. (β)	S.E.	C.R.	P-value	Decision
OPR	<--	OPF	1.058	.096	11.068	0.000	Accept
FUR	<--	MAF	1.393	.139	10.054	0.000	Accept
EMR	<--	HRF	.945	.064	14.673	0.000	Accept
FIR	<--	FIF	.941	.057	16.624	0.000	Accept
INC	<--	PRI	.464	.053	8.800	0.000	Accept
STR	<--	PLF	.828	.064	12.978	0.000	Accept

Source: Amos-IBM

Table 6 presents the regression analysis examining the effect of operational flexibility on operational resilience. The regression coefficient ($\beta = 1.058$) indicates that for every one-unit increase in operational flexibility, operational resilience is expected to increase by 1.058 units. This suggests a strong and positive relationship, meaning that firms with greater operational flexibility are more likely to develop and sustain operational resilience in the face of challenges. The standard error (S.E. = 0.096) signifies the precision of the estimate. Its relatively small value indicates that the coefficient is reliably estimated with minimal variability. The Critical Ratio (C.R. = 11.068), which functions similarly to a t-value, is substantially higher than the ± 1.96 threshold, demonstrating strong statistical significance at the 95% confidence level. Additionally, the p-value

($p < 0.01$) confirms that the effect of operational flexibility on operational resilience is statistically significant.

The regression coefficient ($\beta = 1.393$) indicates that for every one-unit increase in marketing flexibility, functional resilience is expected to increase by 1.393 units. This reflects a strong and positive relationship, suggesting that firms with greater adaptability in their marketing strategies are better positioned to enhance their functional resilience. The standard error (S.E. = 0.139) demonstrates the precision of the estimate. Its relatively small value implies that the coefficient is estimated reliably with limited variability. The Critical Ratio (C.R. = 10.054), which is the ratio of the regression coefficient to its standard error and functions similarly to a t-value, is far above the ± 1.96 threshold. This indicates that the relationship is statistically significant at the 95% confidence level. Moreover, the p-value ($p < 0.01$) further confirms that the effect of marketing flexibility on functional resilience is highly significant.

The regression coefficient ($\beta = 0.945$) indicates that for every one unit increase in human resource flexibility, employee resilience is expected to increase by 0.945 units. This demonstrates a strong and positive relationship, suggesting that firms with adaptable human resource practices such as flexible work arrangements, skill development, and responsive HR policies are more likely to build resilient employees. The standard error (S.E. = 0.064) is relatively small, indicating that the coefficient is estimated with high precision and low variability. The Critical Ratio (C.R. = 14.673), which is the ratio of the regression coefficient to its standard error and functions similarly to a t value, is substantially higher than the ± 1.96 threshold. This confirms that the relationship is statistically significant at the 95 percent confidence level. Furthermore, the p-value ($p < 0.01$) strongly supports that the effect of human resource flexibility on employee resilience is highly significant.

The regression coefficient ($\beta = 0.941$) indicates that for every one unit increase in financial flexibility, financial resilience is expected to increase by 0.941 units. This demonstrates a very strong and positive relationship, suggesting that firms with the capacity to adjust their financial resources, manage liquidity, and reallocate funds effectively are more likely to maintain financial resilience during uncertainties. The standard error (S.E. = 0.057) is very small, showing that the estimate is precise and stable, with minimal variability. The Critical Ratio (C.R. = 16.624), which is the ratio of the regression coefficient to its standard error and functions similarly to a t value, is far above the ± 1.96 threshold. This provides strong evidence that the relationship is statistically significant at the 95 percent confidence level. Moreover, the p-value ($p < 0.01$) confirms the robustness of this effect.

The regression coefficient ($\beta = 0.464$) indicates that for every one unit increase in process innovation, innovation capabilities are expected to increase by 0.464 units. This shows a moderate and positive relationship, suggesting that firms that consistently improve, redesign, and streamline their processes are more likely to enhance their overall innovation capacity. The standard error (S.E. = 0.053) is very small, signifying that the estimate is precise and consistently measured with low variability. The Critical Ratio (C.R. = 8.800), which is the ratio of the regression coefficient to its standard error and functions like a t value, is well above the ± 1.96 threshold. This confirms that the effect is statistically significant at the 95 percent confidence level. Furthermore, the p value ($p < 0.01$) validates the statistical significance of this relationship.

The regression coefficient ($\beta = 0.828$) indicates that for every one unit increase in planning flexibility, strategic resilience is expected to increase by 0.828 units. This shows a strong and positive relationship, suggesting that firms with adaptable planning systems and the ability to modify long-term strategies in response to uncertainties are more likely to achieve higher strategic resilience. The standard error (S.E. = 0.064) is small, reflecting high precision and reliability of the estimate with minimal variability. The Critical Ratio (C.R. = 12.978), which represents the ratio of the regression coefficient to its standard error and functions like a t value, is far above the ± 1.96 threshold. This confirms that the effect is statistically significant at the 95 percent confidence level. Additionally, the p value ($p < 0.01$) further confirms the statistical significance of the relationship.

Discussion

Finding showed that operational flexibility has a significant positive effect on operational resilience. This reveals that firms with the ability to reconfigure production schedules, switch suppliers, and redesign workflows are better positioned to sustain operations during disruptions. The implication is that operational flexibility ensures continuity in the face of crises such as supply chain interruptions, market shocks, or resource shortages. Prior studies (Kumar & Singh, 2020; Li et al., 2025; Ojha et al., 2021; Yousuf et al., 2021) confirmed that operational flexibility enhances firms' ability to manage uncertainties while maintaining productivity. Similarly, Lawson and Onuoha (2024) and Shekarian et al. (2023) emphasized that operational flexibility supports resilience by providing firms with multiple pathways to maintain efficiency during unexpected challenges. This finding supports Contingency Theory, which posits that there is no one best way of organizing; instead, firms must adapt operational systems to environmental conditions to remain resilient. In the Nigerian context, where manufacturing firms face infrastructural instability, fluctuating demand, and irregular supply of raw materials, operational flexibility allows them to adjust processes and sustain resilience. This is consistent with studies by Huo et al. (2021) and Sabherwal et al. (2019), who argued that firms that align operational systems with environmental contingencies achieve superior performance. Compared to existing literature, this study contributes local evidence by showing that operational flexibility is not only a universal resilience driver but also a contextual necessity for manufacturing firms in South East Nigeria struggling with volatility and uncertainty.

Finding showed that marketing flexibility has a significant positive effect on functional resilience. This reveals that firms capable of adjusting marketing strategies, re-segmenting markets, and altering promotional tactics in response to environmental changes are more likely to sustain functional performance. The implication is that marketing flexibility ensures that firms can continue meeting customer needs, retain loyalty, and protect market relevance even in turbulent conditions. Studies by AlQahtani et al. (2025), and Kandemir and Acur (2022) demonstrated that firms with marketing flexibility are better positioned to align products and services with changing market dynamics, thereby strengthening resilience. Similarly, Eckstein et al. (2025) and Foltean and van Bruggen (2022) emphasized that marketing flexibility allows firms to maintain functionality and market survival in competitive environments. This finding supports Leadership Flexibility Theory, which argues that leaders who encourage adaptive marketing decisions enhance organizational resilience. In Nigeria's unpredictable market conditions, where consumer behavior shifts rapidly due to economic fluctuations, flexible marketing guided by adaptive

leadership allows firms to remain functionally resilient. This aligns with Alat and Suar (2020), who noted that flexible leadership behaviors enable firms to respond effectively to changing environments. Compared to global evidence, this study contributes a Nigerian perspective, showing that flexible leadership embedded in marketing strategies is critical for building functional resilience in manufacturing firms facing both local and international competition.

Finding showed that human resource flexibility has a significant positive effect on employee resilience. This reveals that firms that adopt multiskilling, job rotation, flexible work design, and adaptive workforce practices are more likely to build employees who can cope with stress, recover from disruptions, and remain engaged during uncertainty. The implication is that flexible HR practices build adaptive employees who act as the backbone of organizational resilience. Prior studies by Karman (2019), Kołodziej (2023), and Sabuhari et al. (2020) confirmed that HR flexibility enhances employees' adaptive capacity and overall resilience. Similarly, Georgescu et al. (2024) and Sari et al. (2025) demonstrated that firms with flexible HR practices nurture resilient employees capable of sustaining productivity during crises. This finding supports Sensemaking Theory, which emphasizes that individuals create meaning from ambiguous situations to guide their responses. HR flexibility provides employees with varied roles, skills, and experiences that enhance their ability to make sense of uncertainties and respond constructively. In Nigeria, where manufacturing firms often face disruptions such as power outages, policy changes, and labor instability, employees with flexible skills are better able to adapt and recover. This agrees with the work of Kilskar et al. (2020), who argued that sensemaking processes are vital for resilience in complex and uncertain environments.

Finding showed that financial flexibility has a significant positive effect on financial resilience. This reveals that firms with strong liquidity, minimal debt exposure, and access to diverse financing options are more capable of withstanding financial shocks and maintaining long-term investments. The implication is that financial flexibility shields firms from collapse during crises by ensuring stability in cash flows and operational funding. Financial flexibility equips firms with the capacity to adapt during economic downturns while simultaneously capitalizing on emerging opportunities (Teng et al., 2021; Wu et al., 2024; Yi, 2020). Similarly, firms with financial flexibility have been shown to demonstrate greater resilience during global financial crises (Bukalska & Pietrzak, 2023; Nguyen, 2023). This finding supports Dynamic Capabilities Theory, which argues that firms achieve resilience by sensing opportunities, seizing them, and reconfiguring resources accordingly. Financial flexibility serves as a dynamic capability that allows firms to reallocate resources, absorb shocks, and adapt investment strategies. In the Nigerian context, where firms often operate under volatile exchange rates, credit scarcity, and inflationary pressures, financial flexibility becomes a vital capability for resilience. This aligns with Weaven et al. (2021), who emphasized that dynamic capabilities are crucial in turbulent markets. Compared to existing studies, this research adds Nigerian-based evidence by showing that financial flexibility is essential for firms in developing economies to achieve financial resilience and ensure survival in highly uncertain environments.

Finding showed that process innovation has a significant positive effect on innovation capabilities. This reveals that when firms introduce new processes, modernize production methods, and adopt new technologies, they build stronger innovation capabilities that foster competitiveness and resilience. The implication is that process innovation not only improves operational efficiency but also nurtures a culture of continuous learning and creativity. Process innovation has been shown

to strengthen firms' overall innovation capabilities (Canbul & Çemberci, 2023; Goni & Van Looy, 2022; Mikalef & Krogstie, 2020). Similarly, Bhatia (2021) demonstrated that firms that adopt innovative processes are better positioned to sustain adaptability and performance. This finding supports Dynamic Capabilities Theory, which posits that the ability to reconfigure and renew organizational processes is central to innovation.

Finding showed that planning flexibility has a significant positive effect on strategic resilience. This reveals that firms capable of adjusting plans, adopting scenario-based strategies, and revising long-term objectives are more likely to sustain competitiveness and continuity during disruptions. The implication is that flexible planning allows firms to respond quickly to shocks without losing sight of long-term strategic goals. Prior studies by Paul and Saha (2025), and Szemző et al. (2022) confirmed that firms with flexible planning approaches are more resilient in volatile markets. Similarly, Singh et al. (2020) emphasized that strategic resilience is reinforced by adaptive planning practices that align with dynamic environments. This finding supports Leadership Flexibility Theory, which emphasizes that leaders who enable flexible planning systems foster strategic resilience in their organizations. Compared to global evidence, this study contributes a Nigerian perspective by showing that planning flexibility, guided by leadership adaptability, is essential for building strategic resilience in manufacturing firms exposed to constant uncertainty.

Conclusion

The study concludes that strategic flexibility strongly drives organisational resilience. Specifically, operational flexibility enhances operational resilience by providing firms with the ability to adapt production processes and sustain efficiency in times of disruption. Marketing flexibility positively influence functional resilience, enabling firms to respond effectively to dynamic market demands and competitive pressures. Human resource flexibility can strengthen employee resilience by fostering multiskilling, adaptability, and commitment, which empower workers to remain productive and engaged during challenging periods. Financial flexibility can positively affect financial resilience. It can ensure that firms can absorb shocks, manage risks, and maintain financial stability in uncertain environments. Process innovation can positively affects innovation capabilities, and demonstrate that innovative processes are vital in building adaptive capacity and long-term competitiveness. Planning flexibility can enhance strategic resilience, enabling firms to anticipate environmental changes, align resources effectively, and pursue long term objectives despite uncertainties.

Recommendations

The study recommends that:

1. Manufacturing firms should strengthen operational flexibility by investing in adaptive technologies and flexible production systems. This will enhance operational resilience, ensuring firms can continue operations effectively during disruptions and market uncertainties.
2. Firms should improve marketing flexibility by adopting responsive marketing strategies, customer-driven innovations, and digital platforms for customer engagement. This will

strengthen functional resilience, enabling firms to adapt swiftly to changing customer needs and competitive pressures.

3. Human resource managers should promote employee adaptability by encouraging continuous training, multiskilling, and flexible work arrangements. This will improve employee resilience, ensuring that workers remain committed, productive, and responsive in times of organisational challenges.
4. Manufacturing firms should enhance financial flexibility through prudent financial management, diversified revenue streams, and access to credit facilities. This will promote financial resilience, enabling firms to withstand economic shocks and sustain long-term growth.
5. Management should foster process innovation by encouraging research and development, knowledge sharing, and the integration of modern technologies into production systems. This will build innovation capabilities and strengthen the overall adaptive capacity of the firms.
6. Firms should promote planning flexibility by adopting proactive strategic planning, scenario analysis, and continuous environmental scanning. This will boost strategic resilience, ensuring that firms can anticipate changes, allocate resources effectively, and achieve sustainable competitiveness.

Contributions

This study contributes to knowledge by empirically establishing that the key dimensions of strategic flexibility such as operational flexibility, marketing flexibility, human resource flexibility, financial flexibility, process innovation, and planning flexibility significantly influence various aspects of organizational resilience including operational resilience, functional resilience, employee resilience, financial resilience, innovation capabilities, and strategic resilience among manufacturing firms in South-East Nigeria. Practically, these findings provide actionable insights for manufacturing managers, policymakers, and industry stakeholders to design and implement adaptive strategies that enhance firms' ability to withstand market disruptions, economic shocks, and environmental uncertainties. Theoretically, the study enriches existing literature on organizational resilience by linking specific forms of strategic flexibility to distinct dimensions of resilience. It further extends the application of Contingency Theory, Leadership Flexibility Theory, Dynamic Capabilities Theory, and Sensemaking Theory within the Nigerian manufacturing context, thereby offering fresh empirical evidence from a region that remains underexplored in global resilience and flexibility research.

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