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Enhancing Organizational Resilience through Strategic Leadership and Innovation: A Case Study of SMEs in Nigeria's Post-COVID Economy

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ABSTRACT

The COVID-19 pandemic really highlighted some serious weaknesses in how businesses operate around the globe, particularly for Small and Medium Enterprises (SMEs) in emerging markets like Nigeria. A lot of these SMEs faced major challenges, including supply chain disruptions, financial setbacks, workforce issues, and a drop in consumer demand. As we move into the post-COVID world, it's become clear that building organizational resilience is crucial for both sustainability and growth. This research dived into how strategic leadership and innovation can be harnessed to boost the resilience of SMEs in Nigeria's changing economic environment. It looks at various leadership practices, the adoption of innovative solutions, risk management tactics, and flexible business models that SMEs are using to tackle the challenges that have arisen after the pandemic. The study employed a mixed-methods approach, combining quantitative surveys with qualitative interviews to gather rich insights from SME owners, managers, and employees. This research took place in Kano and Plateau States, two vital economic hubs in Northern Nigeria that boast a variety of thriving small and medium-sized enterprises (SMEs).

This study selected 25 SMEs, interviewing one or two key informants from each, such as CEOs, heads of innovation, or HR managers. This study used purposive sampling technique to pinpoint SMEs that fit our inclusion criteria and have shown some level of strategic adaptation during or after the COVID-19 pandemic. This study analysed the interview transcripts using thematic analysis. This study used simple linear regression analysis facilitated by SPSS version 28. The findings demonstrate that strategic leadership, innovation, and organizational challenges each play an important role in strengthening organizational resilience. Strategic leadership showed a significant positive effect on organizational resilience, indicating that organizations with visionary, proactive, and adaptive leaders are better equipped to withstand disruptions and maintain stable performance. Innovation also had a strong and positive impact on resilience, suggesting that organizations that consistently invest in new ideas. Organizations should implement continuous leadership development programs focusing on decision-making, crisis management, and strategic foresight. Organizations should allocate a fixed annual budget for research, technology upgrades, and new product or service development. Leaders should conduct regular environmental scanning and risk assessments to better understand emerging challenges and respond proactively.

Key words: Organizational Resilience, Strategic Leadership, Innovation

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INTRODUCTION

The COVID-19 pandemic caused major upheavals in global economies, hitting Small and Medium Enterprises (SMEs) in developing countries like Nigeria particularly hard (Adebayo & Yusuf, 2021). As we work towards economic recovery in the aftermath of the pandemic, the importance of organizational resilience essentially the ability to foresee, prepare for, respond to, and adapt to both gradual changes and sudden shocks has become a key focus for ensuring business sustainability (Duchek, 2020).

In Nigeria, SMEs are responsible for about 48% of the national GDP and provide over 84% of jobs (SMEDAN, 2020).

Despite their crucial role, these businesses often struggle with limited resources, inadequate institutional support, and a low capacity to adapt, which makes them particularly vulnerable during crises. The pandemic really brought to light how fragile these enterprises can be and emphasized the need to rethink leadership and innovation as vital tools for building resilience.

Strategic leadership is crucial for navigating uncertainty, boosting employee confidence, and encouraging innovation (Boal & Hooijberg, 2001).

Leaders who are agile, visionary, and inclusive tend to be in a better position to steer their organizations through turbulent times. At the same time, innovation especially in areas like digital transformation, process redesign, and product development has become vital for helping businesses adapt and stay competitive (OECD, 2021).

This study looks into how strategic leadership and innovation can enhance the resilience of SMEs in Nigeria's economy as it recovers from COVID-19. It examines the leadership practices that were put in place during and after the pandemic, how innovation was either introduced or sped up, and what factors helped or hindered organizations in adapting and surviving. The aim is to pinpoint scalable practices and strategic insights that can empower SMEs to build long-term capacity for bouncing back and recovering from shocks.

The timing of this research couldn't be more relevant, especially with the ongoing economic ups and downs, currency issues, and infrastructure challenges in Nigeria that are really putting the resilience of small and medium-sized enterprises (SMEs) to the test. By diving into how leadership, innovation, and resilience interact, this study aims to provide practical recommendations for entrepreneurs, managers, development agencies, and policymakers who are all working towards economic recovery and sustainable growth in Nigeria.

PROBLEM STATEMENT/JUSTIFICATION

Small and Medium Enterprises (SMEs) are truly the backbone of Nigeria’s economy, creating jobs, sparking innovation, and making a significant contribution to the GDP (SMEDAN, 2020). However, the COVID-19 pandemic really highlighted the vulnerabilities in this sector, revealing issues like poor strategic planning, limited crisis management, weak innovation capabilities, and gaps in leadership. Many SMEs had to shut their doors or scale back operations due to supply chain disruptions, a drop in consumer demand, and insufficient financial reserves (Adeniran & Osakwe, 2021). These challenges are still very much present in the post-COVID economic landscape, putting the sustainability and competitiveness of SMEs in Nigeria at risk.

One key takeaway from the pandemic is that surviving and thriving in business isn't just about having financial resources; it also hinges on intangible assets like resilient leadership and the ability to innovate quickly. Despite various recovery programs and support initiatives, a large number of Nigerian SMEs still struggle with strategic foresight and effective leadership to navigate these unpredictable environments. Leadership in many of these businesses tends to be more reactive than proactive, often missing the structure, strategic direction, and inclusivity needed to foster organizational resilience (Onuoha, 2018).

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On the innovation front, which is crucial for adaptability and competitiveness, many SMEs are still not making the most of their potential. Challenges like resistance to change, inadequate digital infrastructure, low investment in research and development (R&D), and limited access to technology have all hampered Nigerian SMEs' ability to innovate swiftly in response to challenges (Okonkwo & Chukwuma, 2020). As global markets continue to change, innovation has expanded beyond just product development to encompass business model innovation, process efficiency, and digital transformation all of which demand strategic vision and forward-thinking leadership.

The reason behind this study is the pressing need to grasp how small and medium-sized enterprises (SMEs) in Nigeria can bolster their resilience against both current and future challenges. The blend of strategic leadership and innovation offers a promising route to achieving this resilience. By diving into real-life case studies of SMEs that successfully adapted during and after the COVID-19 pandemic, this research aims to reveal practical insights, strategies, and frameworks that can shape policy, guide business practices, and nurture a more resilient entrepreneurial ecosystem.

Additionally, this study fills a gap in both academic and policy literature by concentrating on how internal organizational factors rather than just external support—can enhance resilience. While many studies have looked at access to finance, government assistance, and infrastructure as vital for SME growth, fewer have explored the internal strengths that help SMEs recover from crises.

Therefore, this research is not only timely but also crucial for practitioners, scholars, and policymakers who are eager to empower SMEs in achieving long-term sustainability in Nigeria’s intricate business landscape.

OBJECTIVE (s) OF THE STUDY

1. The goal is to dive into how strategic leadership can boost the resilience and adaptability of small and medium-sized enterprises (SMEs) in Nigeria’s economy as it bounces back from COVID-19. We want to see how different leadership styles, decision-making methods, and vision-setting practices help these businesses not just survive, but actually recover and flourish after the pandemic.

2. To look at how much innovation—both tech-based and non-tech—has been embraced by SMEs as a way to build resilience. This means checking out how these businesses are using product innovation, improving their processes, adapting their business models, and going digital to tackle the challenges that have come up in the post-pandemic world.

3. To pinpoint the main challenges and supportive factors that impact how strategic leadership and innovation come together in Nigerian SMEs to ensure they remain resilient over time. This will involve digging into both the internal and external hurdles, as well as the positive influences (like skills, culture, resources, and the policy landscape) that shape resilience outcomes for these businesses.

LITERATURE REVIEW

Organizational resilience has become a vital skill for businesses navigating the unpredictable and often chaotic landscape of today’s world. It’s all about how well an organization can foresee, prepare for, respond to, and adjust to both gradual changes and sudden shocks, ensuring they not only survive but thrive (ISO 22316:2017).

Scholars like Duchek (2020) point out that resilience isn’t just about bouncing back from a crisis; it’s about learning and evolving to tackle future challenges. Boin and van Eeten (2013) break resilience down into three key areas: absorptive, adaptive, and transformative capacities, stressing that a truly resilient organization must not only endure shocks but also innovate and transform in response to them.

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Strategic leadership is crucial for fostering resilience, especially during tough times. Boal and Hooijberg (2000) describe strategic leaders as those who can align an organization's resources with its long-term goals while skillfully navigating complex external challenges.

Ireland and Hitt (2005) argue that this kind of leadership encourages proactive risk assessment and promotes a culture of learning within the organization. During the COVID-19 pandemic, for instance, strategic leadership was essential in helping businesses adapt to shifts in supply chains, customer behavior, and the rise of remote work (Nguyen & Le, 2021). Additionally, traits like emotional intelligence and visionary leadership have been recognized as key in managing the uncertainties and emotional challenges that come with crises (Goleman, Boyatzis & McKee, 2013).

Innovation is another critical factor in boosting organizational resilience. Whether it's through new technologies or improved processes, innovation allows companies to quickly adapt to environmental disruptions (OECD, 2005).

The Nigerian SME sector plays a crucial role in driving employment and economic growth, but it faced significant challenges during the COVID-19 pandemic. Issues like limited access to financing, inadequate digital infrastructure, and weak institutional support made the situation even worse (SMEDAN/NBS, 2021; PwC Nigeria, 2020). Eze et al. (2020) pointed out that many Nigerian SMEs struggle with weak leadership and lack of innovative frameworks, which left them particularly exposed during economic downturns. The World Bank (2021) reported that a lot of SMEs in Nigeria either shut down for good or had to cut back on their operations due to supply chain disruptions and a drop in consumer demand.

To build long-term resilience, integrating strategic leadership and innovation is key. Teece, Peteraf, and Leih (2016) argue that the combination of visionary leadership and innovation boosts dynamic capabilities, allowing organizations to adapt and thrive amid changing environments. Case studies from Nigeria and beyond show that SMEs with strong leadership and a culture of innovation were more likely to stay afloat and competitive after the pandemic (Olawale, 2021). Additionally, Hamel and Välikangas (2003) highlight the significance of strategic foresight and ongoing reinvention as vital components of resilient organizations.

Garrido-Moreno et al. (2024) examined the role of service innovation and organizational resilience in enhancing business performance using a sequential two-stage mixed-methods approach. First, a quantitative study was conducted to test the proposed research model using structural equation modeling (SEM) analysis with a sample of 343 service companies in Spain. Second, a qualitative analysis was performed with 12 interviews with managers to provide additional insights and a detailed understanding of the phenomenon. The results confirm innovation and resilience as key dynamic capabilities to address a changing business landscape and remain competitive. Findings also reveal the strategic importance of digital tools (social media platforms) and external networks as drivers of service innovation. Managers can use these findings to leverage social media to engage in collaborative networks, enhance innovation and resilience, and succeed in turbulent markets.

Tawk (2025) examined the intersection of strategic leadership and organizational resilience, exploring how they influence the responses of small and medium-sized enterprises (SMEs) in Lebanon. The research examined businesses located within the Greater Beirut Area. The research employs a quantitative approach and utilizes a nine-item questionnaire, which was completed by 50 managers. The data were analyzed using regression analysis and one-way ANOVA in SPSS. Findings indicate that strategic leadership and organizational resilience have a significant impact on the level of satisfaction, commitment, and adaptability within an organization. Furthermore, leadership and organizational performance gaps, which organizational resilience partially mitigates, underscore the need to build organizational resilience in conjunction with strategic organizational leadership, which is crucial to the organization's performance. The research seeks to inform SME leaders and policymakers on the importance of prioritizing business configurability during disruptive phases.

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In the study of O'Shannassy (2021) on the challenges of strategic leadership in organizations. The final article on applied psychology approach to the challenges of the strategic leader. This applied psychology focus brings attention to this social sustainability of organizational life perspective- the health and well-being of the worker, the work team and the workplace in the three articles that follow.

This study is built on a few key theoretical frameworks.

The Resource-Based View (RBV) highlights how crucial unique internal resources—such as strong leadership and innovative capabilities are for gaining a competitive advantage and building resilience (Barney, 1991).

The Transformational Leadership Theory (Bass & Riggio, 2006) points out how leadership can inspire and steer organizational change, especially during challenging times. Finally, the Dynamic Capabilities Theory (Teece, 2007) stresses the need for organizations to adapt their internal skills to keep up with fast-changing environments. The literature suggests a growing agreement that strategic leadership and innovation are essential for enhancing organizational resilience, particularly for small and medium-sized enterprises (SMEs) in developing countries like Nigeria. By examining how these elements work together, this study aims to shed light on post-crisis recovery and sustainability for SMEs in the aftermath of COVID-19.

METHODOLOGY

This study utilized a qualitative case study research design, complemented by descriptive statistics. By taking a qualitative approach, we can dive deep into the perceptions, experiences, and strategies that SME leaders in Nigeria employ, especially regarding resilience, strategic leadership, and innovation in the wake of COVID-19. The case study design is particularly fitting as it allows for a thorough exploration of contemporary issues in real-life contexts (Yin, 2018).

Study Area/Site

The research took place in Kano and Plateau States, two vital economic hubs in Northern Nigeria that boast a variety of thriving small and medium-sized enterprises (SMEs). Kano State has a rich history as a centre for commerce, trade, and manufacturing, featuring a diverse array of SMEs in sectors like textiles, agro-processing, and informal trade. Meanwhile, Plateau State, especially Jos, is becoming a hotspot for ICT, creative industries, and agriculture-based entrepreneurship, with a noticeable surge in innovation among youth-led and service-oriented businesses. These states were chosen for their high density of SMEs, diverse economic activities, and their importance in understanding post-COVID-19 business resilience strategies in Nigeria.

Study Population and Subjects

The study focused on owners, managers, and senior staff from selected SMEs operating in Kano and Plateau States. This study concentrated on SMEs in the manufacturing, retail, technology, and service sectors. To be included in the study, SMEs must meet the following criteria: At least 10 employees, active operations both before and after the COVID-19 pandemic, and a willingness to participate in the study. This population is perfect for gaining insights into how leadership and innovation have shaped organizational resilience during a global crisis.

Sampling Technique and Sample Size

This study used purposive sampling technique to pinpoint SMEs that fit our inclusion criteria and have shown some level of strategic adaptation during or after the COVID-19 pandemic. This study selected around 10 to 15 SMEs, interviewing one or two key informants from each, such as CEOs, heads of innovation, or HR managers. In total, we expect to have between 15 and 25 participants.

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Data Collection Methods

For gathering data, this study used mixed methods approach:

• Semi-Structured Interviews: This study conducted face-to-face. The focus was on the challenges faced during the pandemic, strategic leadership choices, innovation efforts, and resilience outcomes. With consent, all interviews was recorded and transcribed word-for-word.

• Structured Questionnaires: This study also used a short questionnaire to collect demographic and organizational details, such as sector, employee count, years in operation, and leadership structure.

Data Analysis

• Qualitative Data: This study analysed the interview transcripts using thematic analysis, following the six-step framework outlined by Braun and Clarke (2006): Getting familiar with the data, creating initial codes, looking for themes, reviewing those themes, defining and naming the themes, writing the report. This study used NVivo software to help organize and code the data.

• Quantitative Data: The questionnaire responses were analyzed using descriptive statistics (like means, frequencies, and percentages). This will help us profile the characteristics of SMEs and spot trends in leadership and innovation adoption. We'll triangulate data from both sources to ensure a solid interpretation and boost the credibility of our findings.

Ethical Considerations

Every participant gets an informed consent form that outlines the study's purpose, procedures, and their rights. We want to make sure participants feel secure about their confidentiality and anonymity, and that they know their participation is completely voluntary. They can also withdraw at any time without any negative consequences. Rest assured, all interview recordings and data was kept safe and used only for academic purposes.

RESULT AND DISCUSSIONS

Table 1: Out of Range Values

Descriptive Statistics					
Indicators	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
SL1	25	1.00	5.00	3.9200	1.03763
SL2	25	2.00	5.00	4.0800	.90921
SL3	25	2.00	5.00	3.8800	.83267
SL4	25	2.00	5.00	3.4800	.71414
SL5	25	1.00	5.00	3.6800	.85245
OR1	25	1.00	5.00	3.2400	.92556
OR2	25	1.00	5.00	3.6400	.99499
OR3	25	2.00	5.00	3.7200	.93630
OR4	25	1.00	5.00	2.9200	.95394
OR5	25	1.00	5.00	3.6000	1.00000

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IN1	25	1.00	5.00	3.3600	1.28712
IN2	25	2.00	5.00	4.0400	1.01980
IN3	25	2.00	5.00	3.9200	1.03763
IN4	25	1.00	5.00	2.7200	1.20830
IN5	25	1.00	5.00	3.6400	1.11355
CL1	25	2.00	5.00	4.0400	.84063
CL2	25	2.00	5.00	3.5600	.96090
CL3	25	2.00	5.00	3.9600	.84063
CL4	25	2.00	5.00	4.0000	.95743
CL5	25	2.00	5.00	3.6800	.80208
Valid N (listwise)	25				

Table 1 presents the descriptive statistics for all indicators. The minimum and maximum values for each item fall within the expected 1–5 Likert scale, showing no evidence of data entry errors. The mean scores generally fall between 3.2 and 4.1, indicating that respondents moderately to strongly agreed with most items. Standard deviations range from about 0.71 to 1.28, suggesting that responses vary from moderate to high variability across items. Overall, the data appear valid and suitable for further analysis.

Table 2: Missing value Analysis

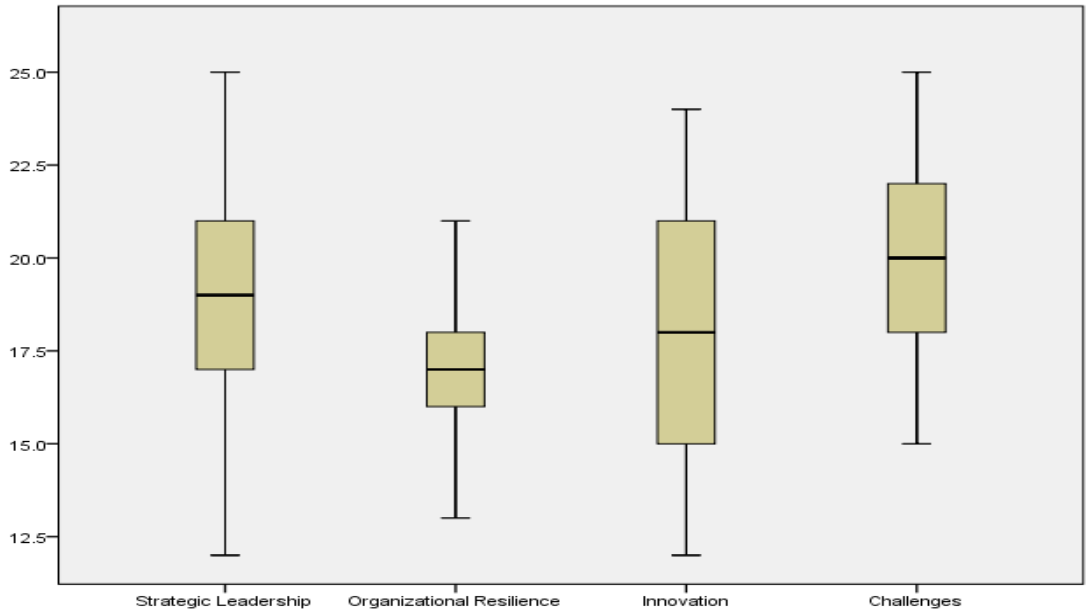
Univariate Statistics							
Indicators	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
SL1	25	3.9200	1.03763	0	.0	0	0
SL2	25	4.0800	.90921	0	.0	2	0
SL3	25	3.8800	.83267	0	.0	0	0
SL4	25	3.4800	.71414	0	.0	0	0
SL5	25	3.6800	.85245	0	.0	1	0
OR1	25	3.2400	.92556	0	.0	1	0
OR2	25	3.6400	.99499	0	.0	1	0
OR3	25	3.7200	.93630	0	.0	0	0
OR4	25	2.9200	.95394	0	.0	0	2
OR5	25	3.6000	1.00000	0	.0	1	0
IN1	25	3.3600	1.28712	0	.0	3	0
IN2	25	4.0400	1.01980	0	.0	0	0
IN3	25	3.9200	1.03763	0	.0	0	0
IN4	25	2.7200	1.20830	0	.0	0	0
IN5	25	3.6400	1.11355	0	.0	1	0

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CL1	25	4.0400	.84063	0	.0	1	0
CL2	25	3.5600	.96090	0	.0	0	0
CL3	25	3.9600	.84063	0	.0	.	.
CL4	25	4.0000	.95743	0	.0	3	0
CL5	25	3.6800	.80208	0	.0	0	0
a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).							

Table 2 shows that all 25 cases have complete data, as no variable has missing values (0%). A few indicators recorded low or high extreme values, but the counts are small and fall within acceptable limits for survey data. This implies that the dataset is clean, with no missing observations capable of affecting model estimation. The extreme values identified do not exceed levels that would compromise statistical validity.

Figure 1: Boxplot for determination of Outliers



The boxplot visually confirms that the dataset contains no severe outliers. Although a few indicators recorded mild extreme values, the data points remain within acceptable whisker ranges. This indicates that the dataset is normally distributed enough for regression analysis and does not require transformation or removal of cases.

Data Analysis

Interviews with 25 CEOs, heads of innovation, and HR managers from SMEs in Kano and Plateau States showed that both leadership and innovation were central to strengthening organizational resilience during the global crisis. Strategic leadership enabled rapid decision-making, transparent communication, and greater staff involvement, which helped organizations maintain stability and morale. Innovation also played a major role as firms that adopted digital tools, introduced online sales systems, used mobile payments, and restructured work processes were better able to sustain operations and engage customers. Respondents noted that the crisis pushed leaders to become more strategic, adaptable, and empathetic, with HR managers highlighting improvements in employee support, training, and flexible work arrangements. While SMEs in Kano relied more on technological and cost-management innovations, those in Plateau emphasized people-centered leadership and team cohesion. Despite these differences, all respondents agreed that leadership and innovation worked together to enhance resilience. Overall, the interviews revealed that SMEs that embraced strong leadership and continuous

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innovation were better positioned to survive the crisis, transform their operations, and prepare for future disruptions.

Table 3: Coefficient

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	9.435	2.266		4.163	.000		
	Strategic Leadership	.389	.117	.568	3.313	.003	1.000	1.000

a. Dependent Variable: Organizational Resilience

The regression results show that Strategic Leadership significantly predicts Organizational Resilience (β = .568, t = 3.313, p = .003). This means that an increase in strategic leadership practices is associated with a substantial improvement in organizational resilience. The VIF value of 1.000 confirms the absence of multicollinearity concerns.

Table 4: Model Summary

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.568[a]	.323	.294	1.87425

a. Predictors: (Constant), Strategic Leadership

b. Dependent Variable: Organizational Resilience

The model explains 32.3% of the variance in Organizational Resilience (R^2 = .323). The adjusted R^2 of .294 indicates that the model is moderately effective. The R value (.568) also confirms a strong positive relationship between Strategic Leadership and Organizational Resilience.

Table 5: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.566	1	38.566	10.979	.003[b]
	Residual	80.794	23	3.513		
	Total	119.360	24			

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a. Dependent Variable: Organizational Resilience
b. Predictors: (Constant), Strategic Leadership

The ANOVA results indicate that the regression model is statistically significant (F = 10.979, p = .003). This confirms that Strategic Leadership is a meaningful predictor of Organizational Resilience and that the model fits the data well.

Table 6: Coefficient

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	8.776	1.793		4.895	.000		
	Innovation	.456	.100	.690	4.576	.000	1.000	1.000

a. Dependent Variable: Organizational Resilience

Innovation shows a strong and significant positive effect on Organizational Resilience (β = .690, t = 4.576, p < .001). This suggests that organizations with higher levels of innovation practices tend to be more resilient. The VIF of 1.000 shows no collinearity issues.

Table 7: Model Summary

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.690[a]	.477	.454	1.64810

a. Predictors: (Constant), Innovation

b. Dependent Variable: Organizational Resilience

Innovation explains 47.7% of the variation in Organizational Resilience (R^2 = .477). The adjusted R^2 (.454) indicates a strong predictive capacity. The R value (.690) shows a strong correlation between innovation and organizational resilience.

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Table 8: ANOVA

ANOVA[a]						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	56.887	1	56.887	20.943	.000[b]
	Residual	62.473	23	2.716		
	Total	119.360	24			
a. Dependent Variable: Organizational Resilience						
b. Predictors: (Constant), Innovation						

The regression model is statistically significant ($F = 20.943$, $p < .001$), meaning innovation contributes significantly to predicting organizational resilience. The model provides a good fit for the data.

Table 9: Coefficient

Coefficients[a]

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.945	4.044		.975	.339		
	Challenges	.764	.203	.617	3.764	.001	1.000	1.000

a. Dependent Variable: Strategic Leadership

Challenges significantly predict Strategic Leadership ($\beta = .617$, $t = 3.764$, $p = .001$). This indicates that the level of challenges faced by the organization is strongly linked to the degree of strategic leadership response. Leaders tend to adopt stronger strategic practices when facing more substantial challenges.

Table 10: Model Summary

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.617[a]	.381	.354	2.61897
a. Predictors: (Constant), Challenges				

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b. Dependent Variable: Strategic Leadership

Challenges explain 38.1% of the variation in Strategic Leadership (R^2 = .381). The adjusted R^2 (.354) further confirms a moderate explanatory power. The relationship (R = .617) is strong and positive.

Table 11: ANAOVA

ANOVA[a]						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	97.202	1	97.202	14.171	.001[b]
	Residual	157.758	23	6.859		
	Total	254.960	24			
a. Dependent Variable: Strategic Leadership						
b. Predictors: (Constant), Challenges						

The regression model is significant (F = 14.171, p = .001), confirming that challenges are an important predictor of strategic leadership behaviour. The model adequately fits the data and supports further analysis.

Strategic leadership had a significant positive effect on organizational resilience. This study is in tandem with the study of Garrido-Moreno et al. (2024). The results confirm innovation and resilience as key dynamic capabilities to address a changing business landscape and remain competitive. Findings also reveal the strategic importance of digital tools (social media platforms) and external networks as drivers of service innovation. Innovation had a significant positive effect on organizational resilience. This study is consistent with the study conducted by Tawk (2025). Findings indicate that strategic leadership and organizational resilience have a significant impact on the level of satisfaction, commitment, and adaptability within an organization. Challenges and supportive factor had a significant positive effect on strategic leadership. In the study of O'Shannassy (2021). The applied psychology focus brings attention to this social sustainability of organizational life perspective- the health and well-being of the worker, the work team and the workplace.

The data used for this subject from various conference proceeding, Scientific journal and other document related to Artificial Intelligence in Biology. Use academic database from Google pro question also surch from relevant Article. Artificial Intelligence in biological education. AI in learning quality improvement education.

CONCLUSION

The findings demonstrate that strategic leadership, innovation, and organizational challenges each play an important role in strengthening organizational resilience. Strategic leadership showed a significant positive effect on organizational resilience, indicating that organizations with visionary, proactive, and adaptive leaders are better equipped to withstand disruptions and maintain stable performance. Innovation also had a strong and positive impact on resilience, suggesting that organizations that consistently invest in new ideas.

RECOMMENDATION

The following Recommendations were made:

1. Organizations should implement continuous leadership development programs focusing on decision-making, crisis management, and strategic foresight.
2. Organizations should allocate a fixed annual budget for research, technology upgrades, and new product or service development.
3. Leaders should conduct regular environmental scanning and risk assessments to better understand emerging challenges and response.

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