



Quality Control Practices and Organizational Resilience of Manufacturing Firms in Rivers State, Nigeria

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ABSTRACT:

The research delves into the relationship between quality control practices and organizational resilience within the manufacturing sector of Rivers State, Nigeria. Quality control practices are gauged through customer focus and supplier relationship management, while organizational resilience is measured using indicators of robustness and agility. Employing a cross-sectional survey methodology, responses were gathered from 118 managers representing food and beverage manufacturing firms via a validated questionnaire. Through the application of Spearman's Rank Correlation Coefficient, the study establishes noteworthy positive correlations between customer focus and both robustness and agility, as well as between supplier relationship management and both robustness and agility. Thus, the study concludes that quality control practices positively influence the resilience of manufacturing companies. Particularly, both customer focus and supplier relationship management contribute to organizational robustness and agility. Consequently, it is recommended that manufacturing firms develop integrated quality management systems aligned with customer focus, robustness, and agility; establish collaborative supplier development programs focused on enhancing both robustness and agility; implement dynamic training programs to empower employees with skills for agile responses; and leverage technology platforms to facilitate seamless integration between customers and suppliers.

KEYWORDS:

Quality Control Practices, Organizational Resilience, Customer Focus, Supplier Relationship Management, Robustness, Agility



1.1 Background of the Study

Organizational resilience is essential for the adaptability and sustainability of businesses regardless of their size, age, sector, or location (Duchek, 2020). In the contemporary business landscape, characterized by rapid globalization and internationalization, organizations face recurrent crises such as the 2008 financial crisis, the 2013 Ebola virus outbreak, and the COVID-19 pandemic in 2020. These events underscore the increasing challenges to organizational survival and development. Resilient organizations exhibit mental preparedness, flexibility, and positive adaptation to unforeseen circumstances. Particularly in manufacturing, resilience is crucial for maintaining operational continuity and satisfactory customer service levels. Resilient organizations possess the capacity to anticipate, prepare for, respond to, and adapt to both incremental changes and sudden disruptions to thrive amidst uncertainties (Agnieszka, 2020).

Organizational resilience encompasses two dimensions: operational resilience and strategic resilience. Operational resilience involves overcoming crises and returning to previous conditions, often associated with adaptive interpretation and action. Strategic resilience, on the other hand, involves swiftly converting threats into opportunities and effectively capitalizing on them (Cristina, Adolfo & Gabriel, 2018). Resilient organizations exhibit key characteristics such as the ability to identify emerging threats, maintain strong stakeholder relationships, foster a committed and unified workforce, establish clear organizational objectives, and provide decisive leadership.

Quality control practices are integral to modern manufacturing, aiming for continuous product improvement, profit maximization, operational stability, and enhanced business performance (Princewill & Umoh, 2022). Quality control involves measures to ensure products and services meet customer satisfaction while minimizing costs, eliminating waste, and ensuring timely delivery. Effective quality control necessitates defining, measuring, comparing, evaluating, correcting, and monitoring processes. Statistical process control and product inspection are common quality control practices, aiming to maintain product standards and eliminate defects.

The quality of a product, from the consumer's perspective, is its ability to meet specifications or fulfill customer requirements without defects (Mushtaq & Rafi, 2022). For manufacturing companies to remain competitive, they must consistently deliver high-quality products that satisfy customer expectations. Scholars have measured quality control using various proxies, including leadership, customer focus, employee relations, supplier relationship management, and process management (Rafi & Mushtaq, 2023).

This study aims to investigate the relationship between quality control practices and organizational resilience among manufacturing companies in Rivers State, Nigeria. By examining customer focus, leadership support, and supplier relationship management dimensions of quality control, the study seeks to address a gap in the literature concerning the relationship between quality control practices and organizational resilience in Rivers State.

2. Literature Review

2.1 Theoretical Review

2.1.1 Resource-Based Theory (RBV)

The Resource-Based View (RBV) framework underscores the strategic significance of resources in shaping competitive advantages within businesses. RBV highlights the pivotal role of resources, which can be tangible or intangible, in driving sustained competitive advantages. To qualify as sources of competitive advantage, resources must exhibit specific attributes: they should be valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, 1991). This theory suggests that firms can achieve superior performance by effectively leveraging their unique set of resources, which may include tangible assets like cutting-edge technologies, as well as intangible assets like organizational culture and knowledge. Through RBV, firms gain insights into identifying and exploiting their distinctive resources to gain competitive edges in the market.

RBV addresses how firms achieve superior performance by acquiring and exploiting unique resources available to them. It is considered one of the foundational theories in strategic management (Oliver,

1997). RBV provides a blueprint for firms to strategically utilize their resources across different capabilities.

The theory suggests that valuable resources can confer competitive advantages to organizations. Firms can assess potential resources that offer the most significant benefits and facilitate success, particularly in emerging markets (Kozlenkova et al., 2014).

For manufacturing firms, tangible resources such as state-of-the-art quality control technologies and equipment can enhance the efficiency and effectiveness of quality control practices (Barney, 1991). Furthermore, RBV highlights the significance of intangible resources like organizational culture and knowledge, which can profoundly impact a company's ability to adapt and maintain resilience in challenging circumstances (Barney, 1991).

Integrating RBV into this study allows for a comprehensive examination of the unique resources available to manufacturing companies in Rivers State. It enables an analysis of how these resources influence their quality control practices and contribute to organizational resilience.

2.1.2 Conceptual Framework

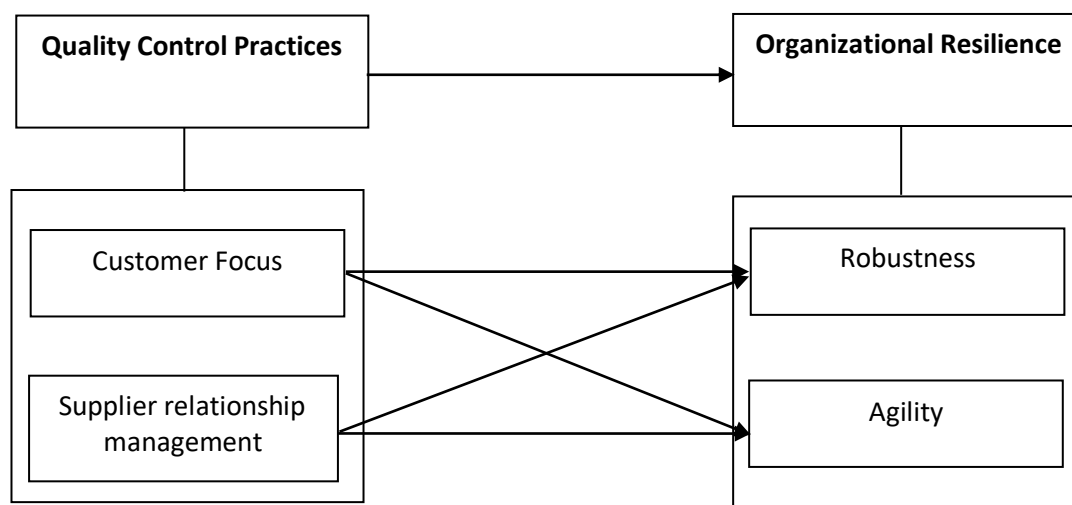


Figure 1.1: Conceptual Research Model

Source: The dimensions of Quality control practices were adapted from Oloo (2017), while the measures for Organisational resilience were adapted from Kantur and Isei-Say (2015).

2.2 Quality Control Practices

Quality control practices refer to the systematic activities implemented to ensure that produced items meet the highest standards possible. Hairulliza et al. (2010) define quality control as a crucial aspect of quality management focused on meeting specific quality requirements. These practices involve establishing well-defined controls that standardize production processes and responses to quality issues, thereby reducing errors and ensuring tasks are performed by adequately trained personnel (Mukherjee et al., 2016). Juran (1992) outlined several approaches to quality control, including setting performance standards, evaluating actual performance, comparing it with benchmarks, and taking remedial actions when variances exist. The primary objective of quality control is to ensure that businesses consistently meet their self-established standards, recognizing that absolute perfection may be unattainable.

2.2.1 Customer Focus

Customer focus is fundamental to quality improvement efforts, as highlighted by Lim and Prakash (2017), who emphasize understanding, and exceeding customer needs and managing customer relations systematically. Abdul Samat et al. (2012) argue that organizational policies and objectives

should reflect an understanding of customer needs, focusing on value-based transactions. Customer-centric approaches increase satisfaction, loyalty, revenue, and reduce waste (Al-Balushi, 2020).

2.2.2 Supplier Relationship Management

Supplier relationship management plays a critical role in facilitating competitive advantage through alliances between buyers and suppliers (Lii&Kuo, 2016). It involves managing relationships to ensure timely access to supplies of the right quality and quantity. Supplier relationship management extends to product design, material selection, innovation, information sharing, technology investments, and long-term cooperative arrangements. In the competitive global supply chain landscape, such collaborative practices are vital for gaining an edge (Tseng, 2014; Whipple et al., 2015). Effective supplier relationship management provides access to resources, reduces costs, enhances flexibility, ensures quality, facilitates technology implementation, and improves overall supply chain performance.

2.3 Organizational Resilience

2.3.1 Robustness

Robustness minimizes organizational vulnerability, enabling organizations to withstand turbulent situations and rebound from disruptions (Annarelli&Nonimo, 2016). It involves maintaining functionality even when individual elements fail, necessitating proactive strategies to deal with environmental instability. Robust organizations anticipate and endure adverse conditions, adjusting outsourcing strategies to survive disruptions (Wier& Laing, 2001).

2.3.2 Agility

Agility refers to a company's ability to identify and respond rapidly to opportunities and threats in its environment (Grover, 2003). It encompasses quick and flexible thinking and action, responding promptly to changes in the external and internal environments (Soheila& Sayyed, 2013). Agility involves sensing, decision-making, and acting rapidly, enabling organizations to be resilient (Nafei, 2016).

2.4 Empirical Review

Beuren and Santos (2019) examined the impact of management control systems (MCSs) on organizational resilience across cognitive, behavioral, and contextual dimensions. Their study found that enabling and coercive MCSs coexist in companies and that coercive controls may positively influence organizational resilience. They conducted a survey of managers from companies involved in mergers and acquisitions, finding that MCSs constitute antecedents of resilience capacity.

Umoh and Amah (2013) explored the relationship between knowledge management and organizational resilience, finding a positive and significant correlation between knowledge management and resilience. Their study concluded that knowledge acquisition, storage, sharing, and utilization enhance organizational adaptation, resourcefulness, and learning.

Serfontein and Govender (2021) investigated stakeholders' perceptions of the relationship between organizational resilience components and control systems in the South African aviation industry. They conducted a cross-sectional survey involving 203 stakeholders. Results indicated a strong positive linear relationship between organizational control systems and resilience, including its components: Strategic management and company culture, Monitoring and awareness, Exposure management, and Responsive adaptation. The study emphasized the harmonized application of control systems, such as quality assurance and corporate governance, to stimulate organizational resilience and adaptability within complex socio-technical systems like the aviation industry.

Fening et al. (2013) explored the link between total quality management (TQM) and organizational survival in Ghanaian manufacturing firms. Their survey-based study, involving 101 manufacturing companies in Kumasi, revealed significant positive effects of TQM elements on organizational

performance. This research highlighted the belief among Ghanaian and foreign-owned manufacturing companies that TQM is crucial for survival.

Suryaningtyas et al. (2019) examined the relationship between organizational resilience and performance, with resilient leadership and organizational culture as mediators. Descriptive statistics showed a positive association between organizational resilience and performance, with resilient leadership having the strongest effect. The study underscored the importance of resilient leadership and organizational culture in mediating organizational resilience and performance.

Mary (2015) investigated quality control problems, techniques, and effectiveness in Nigerian manufacturing firms, focusing on Nigeria Breweries Plc., Enugu. Data collection involved questionnaires and secondary sources, with statistical analyses including chi-square. The study identified quality control challenges, including non-awareness of techniques and management attitudes. It also revealed quality objectives such as enhancing corporate image and meeting consumer needs.

Milanoi (2013) explored quality management practices in Nairobi City County's manufacturing firms using a descriptive survey method. Findings indicated widespread adoption of continuous quality improvement, customer focus, top management commitment, and ISO 9000 practices. The study stressed the importance of workforce involvement and management commitment for successful quality programs.

Khan et al. (2017) examined the impact of quality management practices on the performance of Pakistani manufacturing companies. They found that sample companies strictly adhered to ISO 9001-2008 guidelines, emphasizing evaluation, mentoring, and customer feedback systems. The study highlighted continuous quality improvement efforts among manufacturing organizations to enhance performance.

Madzimure (2020) explored the relationship between supply chain robustness, firm competitiveness, and the performance of South African logistics firms. Using quantitative methods and Smart PLS, the study revealed a strong positive relationship between supply chain robustness antecedents and firm competitiveness, which in turn influenced firm performance.

Al-Balushi (2020) investigated the relationship between quality management and organizational resilience, finding a positive impact of ISO on resilience, particularly in process-oriented environments. The study underscored the role of organizational structure in enhancing resilience indirectly through quality management system implementation and directly by enhancing resourcefulness.

Fatoki (2018) studied the relationship between entrepreneurial resilience and SME success in South Africa. Using CD-RISC 10, they found a significant positive relationship between entrepreneurial resilience and individual and organizational success, underscoring the importance of resilience for SMEs.

Al-Abdallah et al. (2014) examined the impact of supplier relationship management (SRM) on competitive performance in the manufacturing sector. They found that SRM practices like supplier partnership/development and lead time reduction significantly and positively affected competitive performance, highlighting the importance of effective supplier relationships for firm competitiveness. These studies collectively contribute to understanding the relationships between various organizational factors, including quality management, resilience, performance, and supplier relationships, across diverse industries and contexts.

3. Methodology

This study employs a cross-sectional design to investigate the correlation between quality control practices and organizational resilience in manufacturing firms in Rivers State, Nigeria. The target population encompasses managers in food and beverage companies in Port Harcourt, affiliated with the Manufacturers Association of Nigeria (MAN) Rivers/Bayelsa chapter. Out of 150 respondents, 118 valid questionnaires were collected through a census study due to the limited accessible population. Data were sourced primarily through questionnaires and supplemented by secondary sources like literature reviews. The questionnaire underwent rigorous validation processes to ensure construct and face validity. A pre-test involving 20 staff members in Abia State confirmed the

reliability of the instrument, yielding a high Cronbach's Alpha coefficient of 0.912. Descriptive analyses will be used to summarize data, while Spearman's Rank Correlation Coefficient will test the four hypotheses concerning the relationship between quality control practices and organizational resilience. This methodology provides a robust framework for exploring and understanding the dynamics between quality control and organizational resilience in the manufacturing sector of Rivers State, Nigeria.

4. Results and Discussion

Test of Hypotheses

Table 1: Correlation between Customer focus and Robustness

			Customer focus	Robustness
Spearman's rho	Customer focus	Correlation Coefficient	1.000	.452**
		Sig. (2-tailed)	.	.000
		N	118	118
	Robustness	Correlation Coefficient	.452**	1.000
		Sig. (2-tailed)	.000	.
		N	118	118

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

The correlation coefficient of .452** suggests a moderate positive relationship between customer focus and robustness. This finding implies that as customer focus increases within manufacturing companies, their level of robustness also tends to increase. In other words, companies that prioritize understanding and meeting customer needs and expectations are more likely to exhibit robustness in their operations.

This finding underscores the importance of customer-centric strategies in enhancing the resilience and operational strength of manufacturing companies. By prioritizing customer satisfaction and aligning organizational practices with customer needs, companies can potentially improve their ability to withstand disruptions and challenges while maintaining operational efficiency. These results suggest that fostering a customer-focused culture may contribute positively to the overall resilience and long-term success of manufacturing firms in Rivers State.

Table 2: Correlation between Customer Focus and Agility

			Customer focus	Agility
Spearman's rho	Customer focus	Correlation Coefficient	1.000	.690**
		Sig. (2-tailed)	.	.000
		N	118	118
	Agility	Correlation Coefficient	.690**	1.000
		Sig. (2-tailed)	.000	.
		N	118	118

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

Table 2 presents the correlation analysis examining the relationship between customer focus and agility in manufacturing companies located in Rivers State, Nigeria. The Spearman's rank correlation

coefficient reveals a statistically significant positive correlation between customer focus and agility, with a coefficient of .690** ($p < 0.01$).

The correlation coefficient of .690** indicates a strong positive relationship between customer focus and agility. This suggests that as manufacturing companies in Rivers State prioritize understanding and meeting customer needs and expectations, they also tend to exhibit higher levels of agility in their operations. Agility, in this context, refers to the ability of companies to rapidly respond and adapt to changing market conditions and customer demands.

These findings highlight the importance of customer-centric strategies in fostering agility within manufacturing companies. By placing a strong emphasis on understanding and meeting customer needs promptly, companies can enhance their ability to adapt quickly to market changes, technological advancements, and other external factors. This agility can ultimately contribute to the competitive advantage and long-term success of manufacturing firms operating in Rivers State.

Table 3: Correlation between Supplier Relationship Management and Robustness

			Supplier Relationship Management	Robustness
Spearman's rho	Supplier Relationship Management	Correlation Coefficient	1.000	.706**
		Sig. (2-tailed)	.	.000
		N	118	118
	Robustness	Correlation Coefficient	.706**	1.000
		Sig. (2-tailed)	.000	.
		N	118	118

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

The correlation coefficient of .706** indicates a robust and positive relationship between supplier relationship management and robustness within manufacturing firms. This suggests that as companies in Rivers State effectively manage their relationships with suppliers, they tend to demonstrate higher levels of robustness in their operations. Robustness, in this context, refers to the ability of organizations to withstand and recover from adverse conditions, disruptions, and challenges in their operating environment.

These findings underscore the strategic importance of supplier relationship management as a key determinant of organizational resilience and robustness. By investing in effective communication, collaboration, and mutual trust with suppliers, manufacturing companies can enhance their ability to adapt to changing market conditions, manage supply chain disruptions, and sustain long-term competitiveness in Rivers State, Nigeria.

Table 4: Correlation between Supplier Relationship Management and Agility

			Supplier Relationship Management	Agility
Spearman's rho	Supplier Relationship Management	Correlation Coefficient	1.000	.554**
		Sig. (2-tailed)	.	.000
		N	118	118
	Agility	Correlation Coefficient	.554**	1.000
		Sig. (2-tailed)	.000	.
		N	118	118

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

From the result in Table 4 above, the correlation coefficient of .554** indicates a moderately strong positive relationship between supplier relationship management and agility. This suggests that as manufacturing companies in Rivers State foster collaborative and proactive relationships with their suppliers, they tend to exhibit higher levels of agility in their operations. Agility, in this context, refers to the ability of companies to respond promptly and effectively to changes in market conditions, supplier dynamics, and other external factors.

These findings underscore the importance of effective supplier relationship management in enhancing the agility of manufacturing companies. By establishing strong partnerships, fostering communication, and collaborating closely with suppliers, companies can streamline their supply chains, adapt quickly to disruptions, and capitalize on emerging opportunities. This agility can ultimately contribute to improved performance, resilience, and competitiveness in the dynamic business environment of Rivers State, Nigeria.

5. Summary of Findings

The findings from the correlation analysis conducted in this study reveal several significant relationships between quality control practices and organizational resilience among manufacturing companies in Rivers State, Nigeria.

Customer Focus and Robustness: The analysis indicates a statistically significant positive correlation between customer focus and robustness (Spearman's rho = .452**, $p < .01$). This suggests that manufacturing companies that prioritize customer focus tend to demonstrate higher levels of robustness in their operations.

Customer Focus and Agility: There is a statistically significant positive correlation between customer focus and agility (Spearman's rho = .690**, $p < .01$). This implies that companies emphasizing customer focus also tend to exhibit greater agility in responding to changes and challenges in their environment.

Supplier Relationship Management and Robustness: The analysis reveals a strong positive correlation between supplier relationship management and robustness (Spearman's rho = .706**, $p < .01$). This suggests that companies that effectively manage their relationships with suppliers demonstrate higher levels of robustness in their operations.

Supplier Relationship Management and Agility: The data indicate a statistically significant positive correlation between supplier relationship management and agility (Spearman's $\rho = .554^{**}$, $p < .01$). This implies that companies that prioritize strong relationships with suppliers also tend to exhibit greater agility in adapting to changes and disruptions.

6. Conclusion

In conclusion, the findings of this study underscore the crucial role of quality control practices in bolstering the organizational resilience of manufacturing companies in Rivers State, Nigeria. Through an analysis of the relationships between customer focus, supplier relationship management, and organizational resilience components such as robustness and agility, significant insights have emerged.

Firstly, the positive correlation between customer focus and both robustness and agility underscores the importance of aligning organizational strategies with customer needs and expectations. Companies that prioritize understanding and meeting customer requirements demonstrate higher levels of adaptability and operational stability, essential traits for navigating dynamic business environments.

Secondly, the strong correlations between supplier relationship management and both robustness and agility highlight the significance of fostering collaborative and responsive relationships with suppliers. Effective supplier management practices not only contribute to operational robustness by ensuring reliable access to resources but also enhance organizational agility by facilitating swift responses to changes in supply chain dynamics.

These findings emphasize the interconnectedness of quality control practices and organizational resilience in the manufacturing sector. By integrating customer-focused strategies and robust supplier relationships into their operations, companies can enhance their capacity to withstand disruptions, adapt to evolving market conditions, and sustain long-term performance.

Moving forward, manufacturing firms in Rivers State can leverage these insights to develop integrated quality management systems that prioritize customer-centricity and collaborative supplier relationships. Furthermore, investments in employee training and technology platforms can enhance organizational capabilities for agile responses and seamless integration across the value chain.

This study contributes valuable insights to the literature on organizational resilience and quality management practices, offering practical implications for enhancing the competitiveness and sustainability of manufacturing companies in Rivers State, Nigeria, and beyond.

7. Recommendations

Based on the research findings and conclusions drawn, the following recommendations are proposed to improve the organizational resilience of manufacturing companies in Rivers State, Nigeria:

1. **Invest in Quality Management Systems:** Manufacturing firms should invest in robust quality management systems that prioritize customer satisfaction, product quality, and efficient processes. By integrating quality control practices into their operations, companies can enhance their resilience to disruptions and maintain high standards of performance.

2. Manufacturing firms should focus on fostering trust, communication, and cooperation with suppliers to mitigate risks, address challenges, and adapt to changing market conditions effectively.
3. Implement Agile Strategies: Embrace agile strategies and practices to enable quick adaptation to changing customer demands, market trends, and external shocks. This may involve adopting agile methodologies in production processes, project management, and decision-making frameworks to enhance flexibility and responsiveness.
4. By empowering employees to innovate, problem-solve, and collaborate, companies can build a resilient workforce capable of navigating uncertainty and driving continuous improvement.

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