

Employee Empowerment Programs and Innovative Output of the Manufacturing Firms in Rivers State

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Abstract: *The study investigates employee empowerment programs and innovative output of the manufacturing firms in Rivers State. This study utilized a cross-sectional survey design. The population comprised 2,750 workers of the manufacturing firms. A sample size of 321 was determined using the Krejcie and Morgan (1970) table. The findings reveal a significant relationship between the dimension of employee empowerment programs (decision-making autonomy, access to resources, training and development (T & D) programs and process innovation) and innovative output. The study concludes that employee empowerment programs relates with innovative output of the manufacturing firms in Rivers State. To enhance innovative output, companies should empower employees with greater decision-making autonomy, ensure adequate access to resources, invest in targeted training development programs, and foster a culture of continuous process improvement*

Keywords: *Access to resources, Decision-making autonomy, Innovative output, Training and development programs, Process innovation.*

INTRODUCTION

In the rapidly evolving environment, innovation stands as a cornerstone for maintaining competitive advantage and achieving sustained growth. Amidst technological advancements and shifting market dynamics, firms are increasingly recognizing the critical role of human capital in driving innovation (Abdurrahman et al., 2024). Innovative output is crucial for manufacturing firms as it drives competitiveness and long-term sustainability. In an industry where efficiency, quality, and cost-effectiveness are key, innovation enables firms to optimize production processes, reduce waste, and improve product quality (Damanpour & Aravind, 2012). Through continuous innovation, manufacturing firms can develop new products and services that meet changing customer demands, allowing them to capture new market opportunities and maintain a competitive edge. Moreover, process innovations can lead to significant cost savings, enhanced innovative output, increased production capacity, and firm's profitability and market position (Handoyo et al., 2023).

Driving operational improvements and innovative output is essential for fostering a culture of continuous improvement within manufacturing firms. This culture encourages employees to seek out and implement new ideas, technologies, and methodologies, which can lead to breakthroughs in both product and process development (Ukpabio, 2017). By prioritizing innovation, manufacturing firms are better equipped to adapt to industry shifts, regulatory changes, and technological advancements. This adaptability not only helps firms remain relevant in a fast-paced

market but also positions them as leaders in their respective industries, capable of setting trends and standards that others follow.

Employee empowerment programs, which encompass practices that enhance employees' autonomy, decision-making capabilities, and access to resources, have emerged as pivotal mechanisms for fostering an innovative organizational culture (Vu, 2020). These programs not only motivate employees but also create an environment where creativity and novel ideas can flourish. Empowered employees often take initiative, experiment with new approaches, and contribute to continuous improvement processes. These are essential for innovation in manufacturing. Consequently, understanding employee empowerment programs and innovative output is of paramount importance for manufacturing firms aiming to thrive in a competitive market. Previous studies (Vu, 2020) have highlighted the positive impact of empowerment on various organizational outcomes, including job satisfaction, performance, and commitment. However, there remains a gap in the literature regarding the specific mechanisms through which empowerment influences innovation within the manufacturing sector.

Statement of the Problem

The manufacturing industry, known for its structured processes and emphasis on continuous improvement, presents both challenges and opportunities for innovation through empowerment. Although theoretical frameworks suggest that empowerment can enhance employees' creativity and problem-solving abilities, there is a lack of practical insights into its direct impact on innovation (Fernandez & Moldogaziev, 2013). Challenges in driving innovative output often arise from structural, cultural, and resource-related factors.

Integrating advanced technologies like automation and artificial intelligence into existing production processes requires significant investment in technology and workforce training, posing a financial challenge for the firms. To be specific, Ikegwuru, Jack and Amadi (2023) posit that, in the existing business ecosystem, artificial intelligence enactment in daily business has developed to be a potent theme in different business functions across a multiplicity of industries. Additionally, cultural resistance within the workforce, stemming from fears of job displacement and difficulties in adapting to new technologies, can slow down the adoption of innovative practices (Dougherty, 2020). Aligning innovation strategies with rapidly changing market demands and coordinating efforts across departments and external partners also present significant hurdles. Furthermore, regulatory compliance can limit the scope of innovation, requiring firms to be agile and strategically focused to navigate these complexities (Pisano, 2019).

Despite the recognized importance of innovation for the sustainability and competitiveness of manufacturing firms, there is limited empirical evidence on how employee empowerment programs specifically drive innovative output in this sector. This gap in research limits the ability of managers and policymakers to design effective empowerment strategies tailored to the specific needs of manufacturing firms. Therefore, a comprehensive investigation clarify how employee empowerment programs can enhance innovative output.

AIM AND OBJECTIVES OF THE STUDY

The aim of the study is to examine the association between employee empowerment programs and innovative output of manufacturing firms in River state. The specific objectives are to:

1. Determine the relationship between decision-making autonomy and innovative output.
2. Examine the association between access to resources and innovative output.
3. Investigate the link between training and development programs and innovative output.
4. To assess the relationship between process innovation and innovative output.

RESEARCH QUESTIONS

1. What is the relationship between decision-making autonomy and innovative output?
2. How does access to resources relate with innovative output?
3. What is the relationship between training and development programs and innovative output?
4. How does process innovation relate with innovative output?

RESEARCH HYPOTHESES

Ho₁: There is no significant relationship between decision-making autonomy and innovative output.

Ho₂: There is no significant relationship between access to resources and innovative output.

ho₃: There is no significant relationship between training and development programs and innovative output.

Ho₄: There is no significant relationship between process innovation and innovative output.

THE JOB CHARACTERISTICS MODEL (JCM)

The Job Characteristics Model (JCM), proposed by Richard Hackman and Greg Oldham in 1976, links job design to employee motivation and performance. The model emphasizes key job features, such as autonomy and feedback, which are integral to employee empowerment programs. By enhancing these aspects, organizations can boost employees' intrinsic motivation, leading to higher engagement, job satisfaction, and innovative output. In manufacturing firms, where processes are often rigid, empowering employees with autonomy allows them to take initiative, experiment, and propose creative solutions, driving innovation. The JCM's focus on autonomy and feedback underscores the significance of employee empowerment in fostering a culture of innovation, making it highly relevant for improving both innovative output and innovative outcomes in the manufacturing sector.

EMPLOYEE EMPOWERMENT PROGRAMS

Employee empowerment programs are initiatives designed to enhance employees' autonomy, decision-making authority, and access to resources, enabling them to contribute more effectively to organizational goals. These programs, which often include training, leadership development, and participative decision-making systems, aim to foster a culture of innovation, boost job satisfaction, and improve overall performance (Amundsen & Martinsen, 2014). When employees feel empowered, they engage in proactive behaviours, such as problem-solving and innovation, leading to improved innovative output (Modise, 2023). Studies have shown that robust empowerment programs result in higher employee engagement, lower turnover rates, and increased organizational agility, which are essential for maintaining competitiveness in a dynamic business environment (Kim et al., 2022; Maynard et al., 2020).

Empowerment as a management practice grants employee the autonomy and resources needed to make impactful decisions, enhancing job satisfaction, motivation, and creativity (Spreitzer et al., 2019). It also fosters a culture of trust and collaboration, where employees are encouraged to take

initiative without fear of failure (Boudrias et al., 2020). Empowered employees tend to develop a strong attachment to their organization, which can reduce turnover and increase organizational commitment (Amundsen & Martinsen, 2014). As a result, employee empowerment is increasingly recognized as a crucial strategy for improving organizational performance and maintaining a competitive edge in today's complex and rapidly changing business landscape.

Decision-Making Autonomy

Decision-making autonomy is a critical component of employee empowerment programs, granting employees the authority and freedom to make decisions that affect their work and the broader organizational goals. This autonomy fosters ownership and accountability needed for innovation. When employees have the latitude to make decisions, they take calculated risks, experiment with new ideas, and propose creative solutions to problems (Azila-Gbettor, 2024). By decentralizing decision-making, organizations can tap into the diverse perspectives and expertise of their workforce, leading to more innovative outcomes. Moreover, decision-making autonomy can enhance job satisfaction and engagement, further motivating employees to contribute to the organization's innovation agenda (Zhang & Bartol, 2010).

In the context of manufacturing firms, decision-making autonomy is particularly significant. The manufacturing sector is often characterized by rigid structures and processes, which can stifle creativity if not managed appropriately. However, by empowering employees with decision-making autonomy, firms can create an environment where continuous improvement and innovation are encouraged (Vu, 2020; Yusoff et al., 2020). Production floor workers, for example, may have unique insights into process inefficiencies or quality issues that management might overlook. When these employees are empowered to make decisions, they can implement process innovations that enhance innovative output and product quality, ultimately contributing to the firm's competitive advantage.

Access to resources

Access to resources is another vital element of employee empowerment program that directly influences an organization's innovative capacity. Resources, in this context, include not only physical and financial assets but also access to information, technology, and networks that enable employees to execute their ideas effectively (Høyrup, 2012; Subramanian & Loo, 2022). When employees have sufficient resources at their disposal, they can pursue innovative projects with greater confidence and efficiency. This access reduces the barriers to innovation, allowing employees to prototype, test, and refine new ideas more rapidly. Consequently, firms that invest in providing their employees with the necessary resources are more likely to witness a higher rate of successful innovations (Sørensen & Torfing, 2015). In manufacturing firms, access to advanced tools, technologies, and data analytics can significantly enhance employees' ability to innovate. Providing employees with latest machinery or software access often optimize production processes or develop new products that meet evolving market demands (Ukpabio, 2017). Furthermore, access to cross-functional teams and networks can facilitate knowledge sharing and collaboration, unlocking full innovative potential and maintain a competitive edge in the industry.

Training and Development Programs

Training and development programs (T & D) are fundamental to employee empowerment, equipping employees with the skills and knowledge necessary to contribute to the organization's innovation efforts. Continuous learning opportunities enable employees to stay updated with the

latest industry trends, practices and technologies, which are essential for driving innovation (Noe et al., 2014). These programs not only enhance employees' technical capabilities but also foster critical thinking, problem-solving, and creative skills. By investing in employee development, organizations can create a workforce that is not only competent but also confident in initiating and implementing innovative ideas.

In the manufacturing industry, where technological advancements and process optimizations are key to maintaining competitiveness, training and development programs play a pivotal role. For example, training employees on new manufacturing technologies or lean management techniques can lead to significant improvements in innovative output and process innovation (Sarman & Soediantono, 2022; Galli, 2022). Additionally, development programs that focus on leadership and team-building skills can empower employees to take on more strategic roles within the organization, fostering a culture of innovation from the ground up. Ultimately, well-designed training and development programs are essential for ensuring that employees are not only empowered but also prepared to contribute to the firm's innovative output.

Process Innovation

Process innovation involves the implementation of new or significantly improved production or delivery methods. It is a critical outcome of employee empowerment programs, where efficiency and productivity are paramount. Empowered employees, who have decision-making autonomy and access to resources, are more likely to identify opportunities for process improvements and take the initiative to implement these innovations (Damanpour & Aravind, 2012). Process innovation enhances substantial gains in innovative output, cost reduction, and product quality, for the firm's overall competitiveness. Process innovations should be continuous, not one-off events or effort to enhance organizational performance.

Innovations in production techniques, such as the adoption of advanced manufacturing technologies or lean production methods, can significantly reduce waste and lead times (Díaz-Reza et al., 2019). Additionally, process innovations can enhance the flexibility and responsiveness of production systems, enabling firms to adapt more quickly to changes in market demand or supply chain disruptions. By leveraging the creativity and insights of empowered employees, manufacturing firms can continuously refine their processes, ensuring they remain competitive in a dynamic business environment.

INNOVATIVE OUTPUT

Innovative output is an organization's ability to deliver products or services in the most cost-effective manner while maintaining high quality (Bakić, 2024). It is a key indicator of performance in manufacturing firms and is closely linked to innovation, particularly process innovation. Employee empowerment programs that provide decision-making autonomy, resources, and training can significantly enhance innovative output by enabling employees to identify and eliminate inefficiencies within their workflows (Mustafa & Bon, 2012). Empowered employees in decision-making have the resources to implement changes, streamline operations, reduce waste, and optimize resource utilization, for improved efficiency.

In manufacturing, innovative output is critical to sustaining profitability and competitiveness. For instance, innovations in production processes that reduce cycle times or minimize material usage

can lead to significant cost savings (Prajogo & Sohal, 2016). Moreover, efficient operations enable firms to respond more quickly to customer demands, improve delivery times, and enhance product quality. Empowered employees play a crucial role in achieving these outcomes by continuously seeking ways to improve processes and eliminate bottlenecks. As such, employee empowerment programs are not only beneficial for fostering innovation but also for driving the innovative output for long-term success.

EMPIRICAL REVIEW

Augustain et al., (2019). investigates the effect of employee empowerment on the performance of selected manufacturing organizations in Enugu State. A sample of 351 was derived from a population of 2,835 using Taro Yamane's formula, with 320 valid responses. Data collection involved questionnaires and interviews. The survey design was used, and hypotheses were tested with Pearson correlation and linear regression. Findings revealed significant positive effects of training on productivity ($r = 0.864$; $F = 936.653$; $t = 30.605$; $p < 0.05$), a strong link between compensation and performance ($r = 0.798$; $p < 0.05$), and that involvement in decision-making significantly enhances commitment ($r = 0.776$; $F = 481.232$; $t = 21.937$; $p < 0.05$).

Kanake and Kemboi (2020). explores the moderating role of leader-member exchange (LMX) on the relationship between employee empowerment and innovative work behaviour. Utilizing a causal-comparative research design, the study gathered data from 470 employees in Kenyan manufacturing firms, drawn from a total population of 9,915 using stratified and simple random sampling techniques guided by Yamane's formula. The results show that employee empowerment and LMX both positively influence innovative work behaviour, with LMX significantly moderating the relationship between empowerment and innovation.

Qiu et al., (2024). analyses data from manufacturing firms listed on China's Shanghai and Shenzhen A-share markets between 2011 and 2020, using a panel fixed effect model to examine the impact of digital empowerment on labour employment and the mechanisms involved. The findings reveal that digital empowerment boosts labour employment, with varying effects: firms with strong corporate governance, competitive industries, and challenging regional business environments are more likely to optimize their labour structure. Robustness and mediation tests show that digital empowerment enhances human capital by increasing economies of scale, managerial efficiency, and total factor productivity, particularly in the employment of R&D, innovation, and management personnel.

Shkurti and Mustafa, (2024) examines how employee engagement and innovation performance contribute to the success of manufacturing and service enterprises in Albania and Kosovo. Data were collected via questionnaires and interviews from 190 companies—100 in Albania and 90 in Kosovo—between late 2022 and early 2023. The analysis, using SPSS, reveals strong positive correlations between employee engagement ($r = 0.458^{**}$) and innovation performance ($r = 0.396^{**}$) with business success, both significant at $p < 0.01$. Multivariate regression confirms their positive influence on business success, supported by an ANOVA significance of $p = 0.000$.

METHODOLOGY

The survey study accessible population comprises 2450 employees of 8 selected manufacturing firms in Rivers State. Using krejcie and Morgan 1970 table, a sample size of 321 was determined.

Bowley's (1964) formula was utilised in the assignment of questionnaires. Data collection was carried out through a structured questionnaire. The predictor variable (employee empowerment programs) was measured with four variables, which are decision-making autonomy, access to resources, training and development programs and process innovation. 5 items were used to measure decision-making autonomy (e.g. I have the authority to make decisions related to my job without needing excessive approvals), access to resources were measured with 5 items, (e.g. The resources I need to effectively perform my job tasks are readily available to me), training and development programs was measured with 5 items (e.g.) and process innovation was measured with 5 items (e.g. The training and development programs offered by my organization adequately prepare me for my role and future responsibilities) and 5 items were used to measure Process Innovation (e.g. I actively engage in finding new and better ways to improve the processes in my work environment). The dimensions of the predictor variable were all directly related to the criterion variable (innovative output) which was measured with. 5 items (e.g. The new ideas and approaches I contribute are regularly implemented in my work). And the response to the research items was measured on a 4-point Likert scale. The validity of the instrument was ascertained using face and content validity and the Cronbach’s Alpha was used to ascertain the reliability. The study adopted the threshold of 0.7 for the Cronbach’s Alpha reliability. Spearman’s rank correlation coefficient was used for the analysis with the aid of SPSS 25.0

RESULT AND DISCUSSION

Spearman ranks correlation coefficient with the aid of SPSS 25.0 was used in analysing the hypotheses. From the 321(100%) copies distributed, only 280 (87.2%) were retrieved and well filled., 10(3.1%) were discarded for being wrongly filled and 270(84.1%) constitute the valid questionnaire. The hypotheses were tested at a 95% confidence interval, with the decision rule as follows: Reject the null hypothesis if $P \leq 0.05$, Accept the null hypothesis if $P > 0.05$

Table 1: Decision-Making Autonomy and Innovative Output Correlations

			Decision-Making Autonomy	Innovative Output
Spearman's rho	Decision-Making Autonomy	Correlation Coefficient	1.000	.734**
		Sig. (2-tailed)	.	.000
		N	270	270
	Innovative Output	Correlation Coefficient	.734**	1.000
		Sig. (2-tailed)	.000	.
		N	270	270

Source: SPSS Output, 2024.

The analysis in Table 1 indicates a significant relationship ($p < 0.05$) between decision-making autonomy and innovative output. The correlation coefficient is 0.734 suggesting a strong positive relationship between decision-making autonomy and innovative output.

Table 2: Access to Resources and Innovative Output Correlations

			Access to Resources	Innovative Output
Spearman's rho	Access to Resources	Correlation Coefficient	1.000	.760**
		Sig. (2-tailed)	.	.000

	N	270	270
Innovative Output	Correlation Coefficient	.760**	1.000
	Sig. (2-tailed)	.000	.
	N	270	270

Source: SPSS Output, 2024

The analysis in Table 2 reveals a significant relationship ($p < 0.05$) between access to resources and innovative output, with a correlation coefficient of 0.760, indicating a strong positive relationship.

Table 3: Training and Development Programs and Innovative Output Correlations

			Training and Development Programs	Innovative Output
Spearman's rho	Training and Development Programs	Correlation Coefficient	1.000	.730**
		Sig. (2-tailed)	.	.000
		N	270	270
	Innovative Output	Correlation Coefficient	.730*	1.000
		Sig. (2-tailed)	.000	.
		N	270	270

Source: SPSS Output, 2024

The analysis outcome in table 3 depicts a significant relationship ($p < 0.05$) between training and development programs and innovative output. The correlation coefficient is 0.730, indicating a strong positive relationship between training and development programs and innovative output.

Table 4: Process Innovation and Innovative Output Correlations

			Process Innovation	Innovative Output
Spearman's rho	Process Innovation	Correlation Coefficient	1.000	.690**
		Sig. (2-tailed)	.	.000
		N	270	270
	Innovative Output	Correlation Coefficient	.690**	1.000
		Sig. (2-tailed)	.000	.
		N	270	270

Source: SPSS Output, 2024

The results show a significant relationship ($p < 0.05$) between process innovation and innovative output, with a correlation coefficient of 0.690, suggesting a strong positive relationship between these variables.

Discussion of Findings

Decision-Making Autonomy and Innovative Output

The analysis on decision-making autonomy and innovative output revealed a correlation value of 0.734 with a p-value of 0.000, indicating a strong, positive, and statistically significant relationship between these variables. This implies that an increase in decision-making autonomy is associated with a corresponding increase in innovative output. The coefficient of determination (R^2) of 0.539 suggests that 53.9% of the variation in innovative output can be explained by changes in decision-making autonomy practices. Consequently, companies that prioritize and enhance decision-making autonomy are likely to experience a substantial boost in innovative output. This conform with Zhang & Bartol, (2010) that decision-making autonomy enhances job satisfaction, engagement and motivating employees to contribute to the organization's innovation agenda.

Access to Resources and Innovative Output

The analysis of the relationship between access to resources and innovative output yielded a correlation coefficient of 0.760 with a p-value of 0.000, indicating a strong and statistically significant positive connection. The R^2 value of 0.578 indicates that 57.8% of the variation in innovative output can be attributed to access to resources. This finding suggests that enhancing access to resources can lead to a significant increase in innovative output. As resource availability improves, innovative output tends to rise. Therefore, companies should prioritize ensuring adequate access to resources to foster higher levels of innovation. This agrees with Sørensen & Torfing (2015) that firms that invest in providing their employees with the necessary resources are more likely to witness a higher rate of successful innovations.

Training and Development Programs and Innovative Output

The analysis of the relationship between training and development programs and innovative output showed a correlation coefficient of 0.730 with a p-value of 0.000, indicating a strong and statistically significant positive relationship. With an R^2 value of 0.533, the analysis suggests that 53.3% of the variation in innovative output can be explained by the effectiveness of training and development programs. This finding implies that improving training and development initiatives can lead to a substantial increase in innovative output. These results agree with Sarman & Soediantono (2022) that training employees on new manufacturing technologies or lean management techniques can lead to significant improvements in innovative output and process innovation.

Process Innovation and Innovative Output

The analysis of process innovation and innovative output revealed a correlation of 0.690 with a p-value of 0.000, indicating a strong, significant positive relationship. The R^2 value of 0.476 suggests that 47.6% of the variation in innovative output can be explained by changes in process innovation. This implies that enhancing process innovation can significantly increase innovative output. This result is aligned with Díaz-Reza et al. (2019) that innovations significantly reduce waste and lead times and enhances innovative output.

CONCLUSION

The study examined the relationship between employee empowerment programs and innovative output in manufacturing firms in Rivers State, focusing on four key dimensions: decision-making autonomy, access to resources, training and development programs, and process innovation. The findings revealed a strong and significant positive relationship between decision-making autonomy and innovative output. As employees are granted more autonomy in decision-making, their ability to generate innovative output increases, highlighting the importance of empowering employees to make decisions independently.

Similarly, a significant positive association was found between access to resources and innovative output. The analysis showed that better access to the necessary resources enables employees to be more innovative, underlining the need for firms to ensure that employees have the tools and materials required to drive innovation. The link between training and development programs and innovative output was also strongly positive. This suggests that when firms invest in training and development, employees are better equipped to contribute innovative ideas and solutions, making continuous development a crucial factor in fostering innovation.

The relationship between process innovation and innovative output was assessed, and the results confirmed that process innovation plays a vital role in enhancing innovative output. By continuously improving processes, firms can significantly boost their overall innovative capabilities. The study demonstrates that employee empowerment programs, through decision-making autonomy, access to resources, training and development, and process innovation, are critical drivers of innovative output in manufacturing firms in Rivers State. To achieve higher levels of innovation, firms should prioritize these empowerment practices, ensuring that employees are supported, equipped, and encouraged to innovate.

RECOMMENDATIONS

The following recommendations are proffered to the manufacturing firms

1. The manufacturing firms should consider expanding the decision-making autonomy of their employees by allowing them to make more independent choices within their roles. This can be achieved through decentralized management structures, which empower employees to take ownership of their work and contribute innovative solutions.
2. Firms should offer training programs that focus on enhancing employees' decision-making skills and equip employees with the necessary tools and knowledge to make informed decisions to foster a culture of innovation where employees feel confident to explore and implement new ideas.
3. The manufacturing firms should prioritize the allocation of resources, including materials, tools, and technology, to all departments and employees and regular assessments should be conducted to identify resource gaps and address them promptly, ensuring that employees have what they need to innovate effectively.
4. Companies should invest in the latest technologies and equipment that support innovation and provide employees with cutting-edge tools, not only enhances their efficiency but also encourages them to experiment and develop new methods and products.
5. Firms should enhance their training and development programs by incorporating modules that focus on creativity, problem-solving, and innovation.
6. Training programs should be aligned with the specific innovation goals of the firm and customize to address the unique challenges and opportunities within the organization, to better equip employees to contribute to innovative outputs.
7. Manufacturing firms should encourage a mindset of continuous process improvement by regularly reviewing and refining their operational processes and establish innovation teams tasked with identifying inefficiencies and proposing innovative process enhancements.

8. Firms should Implement lean manufacturing principles that can drive process innovation, reduce waste and improve efficiency to streamline processes, reduce costs, and increase their capacity for innovative output.

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