

WEIGHTED-POINT METHOD OF VENDOR EVALUATION AND VENDOR EFFICIENCY IN DOWNSTREAM OIL AND GAS FIRMS OF RIVERS STATE

SHDRACH Obiyemie Marian, ADIELE Kenneth Chima OGONU Chituru Gibson
Department of Marketing, Faculty of Administration and Management
Rivers State University Nkpolu-Oroworukwo, Port Harcourt

Abstract

This study examined the impact of weighted-point method of vendor evaluation on vendor efficiency in downstream oil and gas firms of Rivers State. The specific objectives was to ascertain the extent to which weighted-point method impact timely delivery, improved quality and cost reduction of downstream oil and gas firms in Rivers State. The population of the study comprised 30 downstream oil and gas firms in Rivers State. Considering the size of the population, the study took a census. A structured questionnaire designed in Likert 5-point scale was used to collect data from respondents. The data collected were analyzed using the linear regression statistic. The analysis revealed that weighted-point method of vendor evaluation, have positive and statistically significant impact on timely delivery, product quality, and cost reduction of downstream oil and gas firms in Rivers State. Based on these findings, the study concludes that, weighted point method have positive and significant impacts on vendor efficiency in the downstream oil and gas firms in Rivers State. Therefore, the study concludes that weighted-point method of vendor evaluation is a strong determinant of vendor efficiency, and recommended that downstream oil and gas firms in Rivers State that seek increased vendor efficiency in terms of timely delivery, improved quality and cost reduction should adopt weighted-point method of vendor evaluation when assessing vendor for the supply of required materials.

Keywords: Cost reduction, improved quality, timely delivery, vendor efficiency, weighted-point method

Introduction

The weighted-point method of evaluation is a decision-making tool that helps organizations systematically evaluate alternatives by assigning weighted scores to multiple criteria. This method has been widely used in various sectors, including supply chain management, where evaluating supplier performance, logistics providers, or overall supply chain efficiency requires considering a range of factors such as cost, quality, delivery performance, and flexibility (Saaty, 1980).

The prevalence of competition in today's business environment has tasked business thinkers' to explore novel approaches to survival, growth, competitiveness and profitability. The truth in present day markets where stakeholders continually ask for greater value and competitors pose greater challenge is that firms must either "shape up" or "ship out" (Ateke & Iruka, 2015). In this milieu, firm are increasingly focusing on what they best and outsource what they are less competent to do. This means that firms must cultivate and nurture suppliers. Supplier evaluation and selection is thus a critical component of outsourcing (Ammar, 2005).

In the view of Ammar (2005), the primary concern of a buying company is the potential operational risks of production outsourcing in the long. The more reliable suppliers are, the less negative effects on the production system there are. Thus, supplier evaluation and selection is a critical step in production outsourcing as reliable suppliers equal reliable production flow. Projects in the downstream oil and gas sector need resources to achieve their predefined goals. In many cases, these resources are provided by suppliers, who are required to provide quality goods or services at competitive prices (Alireza et al, 2024; Yang et al., 2022).

According to Fahimnia et al. (2018), the performance of suppliers is an important issue in project management. This is in reference to how accurately, speedily and efficiently, suppliers accomplish
Publication of the Department of Marketing, Rivers State University

tasks. While evaluating suppliers has its own difficulties, the selection of unknown suppliers or suppliers that are less known can be considered as major risks of an oil and gas project. Thus buying firms adopt different methods to evaluate vendors. The weighted-point method is one of them, and in this study, we examine the correlation between weighted-point method and vendor efficiency

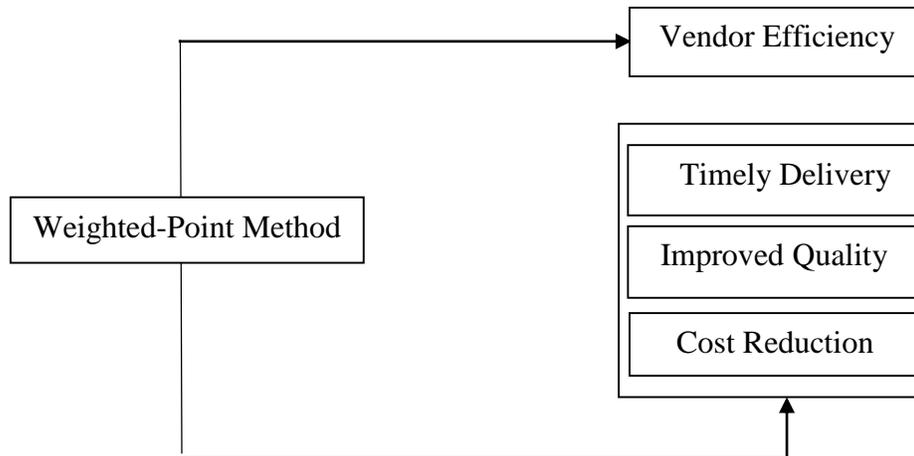


Fig. 1: Conceptual framework of impact of supplier weighted-point method on vendor efficiency
 Source: Shpend et al. (2015), and Agburum and Adiele (2022).

Theoretical Framework: Decision Analysis and Multi-Criteria Decision-Making Theory

The principles of decision analysis set the framework wherein decision makers determine choices through the use of various methods and diverse approaches (Anastasia & Yiannis, 2018). Originated by Ronald Howard (1964), decision analysis is a systematic, quantitative and visual approach to addressing and evaluating the important choices that businesses sometimes face. It is a scientific discipline comprising a collection of principles and methods aiming to help individuals, groups of individuals in difficult decision-making contexts (Hans & Paul-André, 1999).

According to Von and Morgenstern (1944), decision analysis focuses on how individuals make decisions in situations of uncertainty or complexity. Decision analysis emphasizes the use of mathematical and analytical techniques to model decision-making, allowing decision-makers to assess the desirability of different alternatives. The application of decision analysis in multi-criteria decision-making provides a framework for evaluating and comparing alternatives that involve conflicting criteria.

In multi-criteria decision-making, different evaluation criteria are weighted based on their importance, and each alternative is scored based on these criteria. In the view of Hamed and Mitra (2023), there is no decision that can be addressed without referring to the decision-making process. This process can be rational or irrational, and can use implicit or explicit assumptions influenced by physiological, biological, cultural, social and factors.

The relevance of this theory to our study context is that the weighted point method of evaluation is rooted in decision analysis and multi-criteria decision-making theory. It is employed to provide a systematic approach for evaluating alternatives based on multiple criteria, especially when decision-makers must navigate complex trade-offs. In the context of supplier management, where

companies evaluate suppliers, the weighted-point method is a valuable tool that simplifies decision-making processes (Timmerman, 1986).

Weighted-Point Method of Vendor Evaluation

In supply chain settings, where trade-offs often need to be made between conflicting goals, the weighted-point method of vendor evaluation provides a simple, transparent and adaptable approach to decision-making (Kannan & Tan, 2005). Parkash and Veerender (2011) states that the weighted-point method of evaluation is useful one that has been around for more than half a century. It is a method in which, relevant attributes are chosen and each are assigned a weight depending on their importance to overall performance.

Using weighted-point method of vendor evaluation however, require establishing standard of assigning weight to prevent or minimize subjectivity. The weight for different performance category is then multiplied by the performance score that is assigned to it. Finally, these products are totaled to determine a final rating for each supplier. The weighted-point method is highly reliable and costs less to implement. In addition, weighted-point method of vendor evaluation combine qualitative and quantitative performance factors into a common system. Because users can change the weights assigned to each performance category, or change the performance categories themselves depending on strategic priorities, the system is flexible (Abdullah et al., 2011).

Abdullah et al. (2011) identify seven criteria used to evaluate suppliers: quality, price, service production capacity, engineering capacity, business structure and delivery. These attributes can be weighted with the relative importance considered by buying firms on a scale of 0 (less important) to 1 (most important) scale.

Concept of Vendor Efficiency

Vendor efficiency refers to a vendor's ability to utilize resources effectively to deliver products that meet a buyer's needs in a timely, cost-effective, and high-quality manner. It encompasses operational effectiveness, process optimization, waste reduction, and consistent performance (Oboloo, 2023). Petroni and Braglia (2000) observe that efficient vendors contribute significantly to a firm's success through competitive pricing and lower internal costs due to reliable deliveries and consistent high-quality products.

According to Hadi et al. (2010), a key issue in vendor management is the measurement of vendor's efficiency. An effective measurement system provides a fair framework for vendor selection. Efficiency evaluation is a critical element when selecting an appropriate vendors selection methods, especially as number of vendors increase and criteria on which vendors are evaluated multiplies. In the view of Ogonu and Egbuche (2025), operational efficiency depend on a skilled and proficient workers, adoption technological solutions, supply chain optimization, efficient procurement practices, economies of scale in production and distribution, among others.

In order to compete effectively, a company must have a network of competent suppliers. Vendor assessment and selection is designed to create and maintain such a network and to improve vendor capabilities that are necessary for the buying organization to meet its competitive challenges. A firm's ability to produce quality product at a reasonable cost and in a timely manner is influenced by vendor efficiency (Mutai & Philip, 2017). Monahan (2005) noted that vendor efficiency adds value to a supply chain.

Hadi et al. (2010) posits that vendors' efficiency measurement is a key issue in supply chain management. In today's competitive marketplace, many companies have moved from a single vendor to a multi-vendor platform. Many conceptual and analytical models have been developed to address vendor selection problem. Based on review of literature, a lot of scholars have identified different metrics to measure vendor efficiency. For this study, timely delivery, improved quality and cost reduction were used to measure of vendor efficiency.

Timely delivery

Kathey et al. (2025) states that timely delivery is a metric used to measure supply chain efficiency, as it shows whether or not an organization meets its promised delivery times. Timely delivery is thus the extent to which a firm supply products within promised or expected timeframes. Timely delivery. According to Poi and Moko (2023), on-time delivery depicts the proportion of orders placed by customers that are dispatched on or before the chosen delivery date. It basically means delivering goods on schedule or ahead of schedule. Timely delivery builds stronger client connections and guarantees their loyalty.

Performance measures such as set up time, operational cycle time, procurement lead time, on-time delivery, delivery lead time and speed of new product development have been analysed under four process categories: operational processes, supply processes, order fulfilment processes and product development processes (Rupp & Ristic, 2004; Hiroshi & David, 1999). This shows that timely delivery is a key performance indicator in different aspects of business operations.

Nevertheless, to advance prompt delivery, given the unique characteristics of a supply chain; a few guiding principles are necessary. These include prioritizing customer service, creating schedules that are appropriate for the capabilities of the business, ensuring accurate forecasting, precise inventory monitoring, and strong supplier relationships.

Improved quality

Due to the fierce competition across many markets today, companies are increasingly seeing quality a key necessity for competitiveness (Lee et al., 2013; Hammami et al., 2014). It is what differentiate a firm and its products from the competition (Shin et al., 2009). Shin et al. (2009) defines quality as a mix of properties that determine the extent to which a product meet the needs of consumers. In the views of Araz and Ozkarahan (2007), quality is the totality of features that meet certain implied or stated needs. Service quality is also the extent to which a service meets customers' needs or expectations (Wisniewski & Donnelly, 1996)

For Panayides and Venus (2009), quality does not mean goodness but conformity to certain expectation. According to Araz and Ozkarahan (2007), a product with qualities that meet the standards of consumer's taste has the potential to become a market leader in its product class. It is important that suppliers guarantee the level of product quality for their offerings (Panayides & Venus, 2009). Providing quality products in the 21st century is not only to satisfy the customers, but also, to have a safe position in the market place (Nadube & Akhome, 2017; Parasuraman et al., 1985).

Cost reduction

Cost is resource forgone to achieve a specific goal. This can be expressed as the monetary amount which must be paid to acquire goods and services (Robert, 2016). The term cost reduction denotes

real or genuine saving in production, administration, selling and sharing, resulting in the elimination of wasteful and non-essential elements from the design of the product and from the techniques and practices carried out in connection therewith (Gong, 2008). The necessity for cost reduction arises when profit margin has to be increased without an increase in the sales turnover (Robert, 2016).

In today's competitive landscape, cost reduction is more than a matter of necessity - it's a strategic imperative. Businesses that successfully reduce expenses not only improve profitability but also create more resilient operations that can adapt to changing market conditions. Cost reduction is the process of minimizing operational expenses while maintaining productivity and service quality. Porter (1985) describes cost reduction as "a strategic approach to minimizing costs in a way that sustains long-term competitiveness."

According to Johnson and Scholes (1997), cost reduction involves systematic efforts to decrease costs without undermining operational integrity or customer satisfaction. Kotler and Keller (2015) define cost reduction as the continuous process of identifying and eliminating unnecessary expenditures to improve overall efficiency.

Empirical Review

Mustafa (2013) applied weighted-point method of vendor evaluation in gear motor company and identified 5 different criteria for evaluating suppliers using the weighted-point method of supplier evaluation, including quality, origin, cost, delivery and after sales service. The study concluded that, weighted-point method reduces subjectivity and bias in vendor evaluation by providing a transparent and quantifiable framework.

Sachin and Dalu (2014) Sinan et al. (2012) applied the weighted-point method of supplier evaluation for luxury car selection and identified seven criteria's as quality, reliability, technology, brand image, flexibility, performance and price. They conclude that weighted-point method provides useful guidelines as a structured and logical means of producing judgments for evaluating appropriate decision tools, decision makers can compare different scenarios and possibilities with respect to appropriate criteria through the weighted point method of evaluation. Thus decision makers can examine the strengths and weakness of each criterion as it relates with the specifics of what is most important to the organizations and this can influence vendor efficiency.

Mungai, (2014) examined how supplier appraisal method influence vendor performance in real estate industry and observed that different supplier evaluation method are given different importance when selecting potential suppliers with financial stability, technical competence and quality control and management seen as major criteria in selecting suppliers. Similarly, Kavale and Mwikali (2012) indicated that the choice of supplier evaluation and selection method has a great influence on vendor performance and management. The study showed that weighted-pointed method is the most popular model used to appraise suppliers; and that a good supplier appraisal method should have the following attributes; provide structures and discipline to the evaluation process, helps avoid selection of unqualified suppliers, reduce subjectivity during the evaluation and should hastens the evaluation and selection process in in turn improve the efficiency of delivery, quality and cost reduction.

Cebi and Bayraktar developed an Analytic Hierarchy Process (AHP) model dividing the factors into four different categories: logistics, technology, business, and relationship. These factors were developed through observations of a Turkish manufacturing company. Tahiri et al (2008) postulated that weighted point model is also easy to implement, flexible, and fairly efficient in the optimization of vendor performance. However, it is more costly than the categorical method, but tends to be more objective, even though it relies on the buyer’s assessment of the supplier performance. Based on these findings, the following hypotheses were formulated:

- H01:** Weighted-point method of supplier evaluation has no significant impact on timely delivery of downstream oil and gas firms in Rivers State.
- H02:** Weighted-point method of supplier evaluation has no significant impact on improved quality of downstream oil and gas firms in Rivers State.
- H03:** Weighted-point method of supplier evaluation has no significant impact on cost reduction of downstream oil and gas firms in Rivers State.

Methodology

This study adopted a causal research design and cross-sectional research strategy in a non-contrived study environment. The population of the study was 30 registered downstream oil and gas firms operating in Rivers State as listed in Finelib Nigeria Directory. Based on the small size of our population, a census was conducted, and the unit of analysis were supply chain manager, procurement/purchasing manager, logistics manager and operations manager. Primary data were collected from the respondents through semi-structured questionnaire designed in the Likert 5-point scale of very difficult, somewhat difficult, neither difficult nor easy, somewhat easy, very easy. The primary data were analyzed using both descriptive and inferential statistics. The data collected were analyzed using simple regression analysis to test the hypotheses formulated for the study.

Results and Interpretation

Table 1: Model Summary of impact of weighted-point method on timely delivery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.691 ^a	.410	.498	1.519

a. Predictors: (Constant), Weighted Point Method

Source: Field Survey, 2025.

A simple regression analysis was run to determine the impact of weighted-point method on timely delivery of downstream oil and gas firms in Rivers State. As shown in Table 1, weighted-point method has a strong and positive impact on timely delivery. This is evident in the regression coefficient (R) of 0.691. Furthermore, the coefficient of determination (R Square) is 0.410. This means that approximately 41% of the changes in the criterion variable (timely delivery) are attributable to the predictor variable (weighted-point method), whilst the remaining 56% of changes are due to the impact of external variables not included in the model.

Table 2: ANOVA^a of impact of weighted-point method on timely delivery

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	20.356	1	20.356	18.819	.000 ^b
	Residual	163.891	71	2.308		
	Total	184.247	72			

a. Dependent Variable: Timely Delivery

b. Predictors: (Constant), Weighted Point Method

Source: Field Survey, 2025.

As shown in Table 2, weighted-point method significantly predicts timely delivery of downstream oil and gas firms in Rivers State. This is indicated by the probability value of 0.000, which is less than the critical value of 0.05. Statistically, Weighted Point Method significantly predicts Timely Delivery at $F(1, 71) = 18.819, p = 0.000 < 0.05, R^2 = 0.410$. The results also showed that the regression model is a good fit for the data. Therefore, we rejected the null hypothesis which states that, weighted point method has no significant impact on timely delivery in the downstream oil and gas sector of Rivers State.

Table 3: Coefficients^a of impact of weighted-point method on timely delivery

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.343	1.748		9.923	.000
	Weighted Point Method	.236	.080	.691	2.970	.000

a. Dependent Variable: Timely Delivery

Source: Field Survey, 2025.

As shown in the regression model in Table 3, the unstandardized coefficients indicate how much the dependent variable – Timely Delivery varies with the independent variable – weighted-point method. As shown in the Table, before the introduction of the predictor variable, timely delivery stood at 17.343, but at the introduction of the predictor variable, there is an additional unit. Specifically, the intercept B_0 is 17.343, which is the predicted value of timely delivery without the contributions of the predictor variable. That is, when weighted-point method is equal to zero, timely delivery is 17.343. However, the slope B_1 is 0.236, indicating that a percentage increase in weighted-point method will bring about approximately 0.24 percent increase in timely delivery.

Table 4: Model Summary of impact of weighted-point method on improved quality

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.577 ^a	.211	.200	2.076

a. Predictors: (Constant), Weighted Point Method

Source: Field Survey, 2025.

A simple regression analysis was run to determine the impact of weighted-point method on improved quality of downstream oil and gas firms in Rivers State. As shown in Table 4, weighted-point method has a moderate and positive impact on improved quality. This is evident in the regression coefficient (R) of 0.577. Furthermore, the coefficient of determination (R Square) is 0.211. This means that approximately 21% of change in improved quality is attributable to the

impact of weighted-point method, whilst the remaining 79% changes are due to the impact of external variables not included in the model.

Table 5: ANOVA^a of impact of weighted-point method on improved quality

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	81.904	1	81.904	19.001	.000 ^b
	Residual	306.041	71	4.310		
	Total	387.945	72			

a. Dependent Variable: Improved Quality

b. Predictors: (Constant), Weighted Point Method

Source: Field Survey, 2025.

As shown in Table 5, weighted-point method significantly predicts improved quality of downstream oil and gas firms in Rivers State. This is indicated by the probability value of 0.000, which is less than the critical value of 0.05. Statistically, weighted-point method significantly predicts improved quality at $F(1, 71) = 19.001, p = 0.000 < 0.05, R^2 = 0.211$. The results also showed that the regression model is a good fit for the data. Therefore, we rejected the null hypothesis which states that, weighted point method has no significant impact on improved quality in the downstream oil and gas sector of Rivers State.

Table 6: Coefficients^a of impact of weighted-point method on improved quality

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.615	2.388		4.863	.000
	Weighted Point Method	.474	.109	.577	4.359	.000

a. Dependent Variable: Improved Quality

Source: Field Survey, 2025

As shown in the regression model in Table 6, the unstandardized coefficients indicate the level of change in improved as a result of change in weighted-point method. As shown in the Table, before the introduction of the predictor variable, improved quality stood at 11.615, but at the introduction of the predictor variable, there is an additional unit. Specifically, the intercept B_0 is 11.615, which is the predicted value of improved quality without the contributions of the predictor variable. That is, when weighted-point method is equal to zero, improved quality is 11.615. However, the slope B_1 is 0.474, indicating that a percentage increase in weighted-point method will bring about approximately 0.47 percent increase in improved quality.

Table 7: Model Summary of impact of weighted-point method on cost reduction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.816 ^a	.668	.659	1.869

a. Predictors: (Constant), Weighted Point Method

Source: Field Survey, 2025.

A simple regression analysis was run to determine the impact of weighted-point method on cost reduction of downstream oil and gas firms in Rivers State. As shown in Table 7, weighted-point

method has a very strong and positive impact on cost reduction. This is evident in the regression coefficient (R) of 0.816. Furthermore, the coefficient of determination (R Square) is 0.668. This means that approximately 69% of change in cost reduction is attributable to the impact of weighted-point method, whilst the remaining 31% changes are due to the impact of external variables not included in the model.

Table 8: ANOVA^a of impact of Weighted Point Method on Cost Reduction

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	144.092	1	144.092	41.263	.000 ^b
	Residual	247.935	71	3.492		
	Total	392.027	72			

a. Dependent Variable: Cost Reduction

b. Predictors: (Constant), Weighted Point Method

Source: Field Survey, 2025.

As shown in Table 8, weighted-point method significantly predicts cost reduction of downstream oil and gas firms in Rivers State. This is indicated by the probability value of 0.000, which is less than the critical value of 0.05. Statistically, weighted-point method significantly predicts cost reduction at $F(1, 71) = 41.263$, $p = 0.000 < 0.05$, $R^2 = 0.668$. The results also showed that the regression model is a good fit for the data. Therefore, we rejected the null hypothesis which states that, weighted point method has no significant impact on cost reduction in the downstream oil and gas sector of Rivers State.

Table 9: Coefficients^a of impact of weighted-point method on cost reduction

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.098	2.150		3.767	.000
	Weighted Point Method	.629	.098	.816	6.424	.000

a. Dependent Variable: Cost Reduction

Source: Field Survey, 2025.

As shown in the regression model in Table 9, the unstandardized coefficients indicate how much the dependent variable (cost reduction) varies with variation in the independent variable (weighted-point method). As shown in the Table, before the introduction of the predictor variable, Cost Reduction stood at 8.098, but at the introduction of the predictor variable, there is an additional unit. Specifically, as shown in the Table, the intercept B_0 is 8.098, which is the predicted value of Cost Reduction without the contributions of the predictor variable. That is, when weighted-point method is equal to zero, cost reduction is 8.098. However, the slope B_1 is 0.629, indicating that 1 percent increase in weighted-point method will bring about approximately 0.63 percent increase in cost reduction.

Discussion of Findings

The simple regression analysis done to determine the impact of weighted-point method of vendor evaluation strongly impact efficiency of vendor in the downstream oil and gas sector in Rivers. The study showed that weighted-point method has significant impact on timely delivery, improved quality and cost reduction of downstream oil and gas firms in Rivers State.

These findings are in line with findings of previous studies. For instance, the findings agree with the finding of Mustafa (2013) that weighted-point method of vendor evaluation reduces subjectivity and bias in vendor evaluation by providing a transparent and quantifiable framework. The findings also align with the findings of Sinan et al. (2012) that weighted-point method of vendor evaluation provides useful guidelines as a structured and logical means of producing judgments for evaluating appropriate decision tools, decision makers can compare different scenarios and possibilities with respect to appropriate criteria through the weighted point method of evaluation.

Also, results of this study confirm the results of Mungai (2014) that different supplier evaluation method are given different importance when selecting potential suppliers with financial stability, technical competence and quality control and management seen as major criteria in selecting suppliers. The results also agree with the results of Kavale and Mwikali (2012) that the choice of method in supplier evaluation and selection has a great influence on vendor performance and management.

Conclusion and Recommendations

Based on these findings, the study concludes that weighted-point method of vendor evaluation have positive and significant impacts on vendor efficiency in the downstream oil and gas firms in Rivers State. Therefore, the study recommended that weighted-point method of vendor evaluation should be institutionalized as the primary supplier evaluation technique. Downstream oil and gas firms in Rivers State are encouraged to customize this method to reflect their strategic priorities such as timely delivery, quality compliance, and cost-efficiency ensuring objective, data-driven vendor assessments that improve overall efficiency.

References

- Akintokunbo, O. O., & Oluwarotimi, O. (2021). Supplier evaluation and supply chain performance of shipping firms in Rivers State, Nigeria. *European Journal of Logistics, Purchasing and Supply Chain Management*, 9(1), 31-48.
- Aksoy, A., & Ozturk, N. (2011). Supplier selection and performance evaluation in just-in-time production environments. *Expert Systems with Applications*, 38(5), 6351-6359.
- Alireza, P. R., Mohammad, K., Sayyid A. B, Darko, B., Aleksandar, M., Goran, C. (2024). Supplier selection in downstream oil and gas and petrochemicals with the fuzzy bwm and gray cocoso methods considering sustainability criteria and uncertainty conditions. *Multidisciplinary Digital Publishing Institute*, 16(880), 1-18.
- Ateke, B. W., & Iruka, C. H. (2015). Investigating the relationship between customer involvement management and marketing performance in the manufacturing industry. *International Journal of Research in Business Studies and Management*, 2(9), 22-34.
- Burnet, K. (2012). Supplier relationships in business briefing: Global purchasing & supply chain strategies. *Journal of Purchasing and Supply Chain Strategies*, 18(4), 36-45.
- Cebi F., & Bayraktar D. (2003). An integrated approach for supplier selection, *Logistics Information Management*, 16(6), 395-400.
- Chung, W. W. C., Yam, A. Y. K., & Chan, M. F. S. (2004). Networked enterprise: A new business model for global sourcing. *International Journal of Production Economics*, 87(3), 267-280.

- Gronroos, C., (2000). Quality comes to service: The service quality handbook. *International Journal of Production Economics*, 3(2), 17-24.
- Groves, W., Collins, J., Gini, M., & Ketter, W. (2014). Agent-assisted supply chain management: Analysis and lessons learned. *Decision Support Systems*, 57(1), 274-284.
- Hadi, S., Farhad, H. L., Dabestani, R. (2010). Vendor efficiency measurement using 535 data envelopment analysis. *Computers & Operations Research*, 36(8), 7-31.
- Hamed, T., & Mitra, M. (2023). Multi-Criteria Decision Making (MCDM) Methods and Concepts. *Encyclopedia*, 3 (2), 77–87.
- Hammami, R., Temponi, C., & Frein, Y. A. (2014). Scenario-based stochastic model for supplier selection in global context with multiple buyers, currency fluctuation uncertainties, and price discounts. *European Journal of Operational Research*, 33(1), 159-170.
- Hans W. B., & Paul-André M. (1999). Decision analysis. *Optimization and Operations Research*, 4 (8), 71-83.
- Hiroshi, K., & David, B. (1999). Agility, adaptability and leanness: A comparison of concepts and a study of practice. Agile Manufacturing: The 21st century competitive strategy. *Elsevier Science*, 21(9), 483-498.
- Holmberg, S., (2000). A system perspective on supply chain measurements. *International Journal of Physical Distribution & Logistics Management*, 30(10), 847-868.
- Holthausen, J. (2013). Scientific review of the social exchange theory and its contribution to solving purchaser's decision making issues. *IBA Bachelor Thesis Conference*. 7(2), 45-61.
- Howard R. A. (1964). Research in semi-Markovian decision structures. *Journal of the Operations Research Society of Japan*, 6(7), 169-199.
- Ogonu, C. G., & Egbuche V. U. (2025). Electronic tendering and operational efficiency of soft drink distribution companies in Port Harcourt, Nigeria. *Journal of Marketing Development*, 10(1), 142-148.
- Ovia, A. (2018). Supply chain management in the Nigerian oil and gas sector: Challenges and solutions. *Nigerian Journal of Business Studies*, 21(2), 44-59.
- Panayides P.M., Venus Y.H. (2009). The impact of trust on innovativeness and supply chain performance. *International Journal of Production Economics*, 122 (1):35-46.
- Shin, H., Benton, W., & Jun, M. (2009). Quantifying suppliers' product quality and delivery performance: A sourcing policy decision model. *Computers & Operations Research*, 36 (8), 2462-2471.
- Shpend, I., Khuram S., Josu, T., Yang, L., Ilkka, S., & Tahir A. (2015). Evaluation and selection process of suppliers through analytical framework: An empirical evidence of evaluation tool. *Management and Production Engineering Review*. 6 (3), 10–20.
- Sinan A., Gizem, G. G., & Ibrahim, S. K. (2012). An analytic hierarchy process approach with a novel for luxury car selection. *ELSEVIER*, 58 (5), 1301-1308.
- Timmerman, E. (1986). An approach to vendor performance evaluation. *Journal of Purchasing and Materials Management*, 22(4), 2-8.
- Tracey, M., & Tan, C. L. (2001). Empirical analysis of supplier selection and involvement, customer satisfaction, and firm performance in supply chain management. *An International Journal*, 6(4), 174-188.
- Von, N. J., & Morgenstern, O. (1944). Theory of games and economic behaviour. *Princeton University Press*. 53 (4), 80-94.
- Weber, C. A. (1996). A data envelopment analysis approach to measuring vendor performance, supply chain management: *An International Journal*, 1(1) 28-39.