

PROCUREMENT RISK IDENTIFICATION AND EFFECTIVENESS OF BOTTLED WATER FIRMS IN RIVERS STATE

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Abstract

This study investigated the relationship between procurement risk identification (PRI) and effectiveness of bottled water firms in Port Harcourt, Nigeria. Driven by persistent supply disruptions, input cost volatility, quality failures, and regulatory pressures, the research examined how PRI relates to organizational effectiveness, measured by innovativeness, adaptability and customer satisfaction. A cross-sectional survey design was employed. Data was collected using a structured and validated questionnaire administered to managers of purposively selected bottled water firms. Instrument reliability exceeded the 0.70 benchmark. The Pearson Product Moment Correlation statistic was used to test 3 null hypotheses at 0.05 significance level. Findings revealed significant positive relationship between PRI and measures of organizational effectiveness. The study concludes that PRI enhance effectiveness of bottled water firm in terms of innovativeness, adaptability, and customer satisfaction; and recommends that managers of bottled water firms should enhance PRI to foster effectiveness.

Keywords: Adaptability, customer satisfaction, organizational effectiveness, innovativeness, procurement risk identification

Introduction

Procurement risk identification (PRI) is the process of systematically assessing potential risks related to procurement activities, including supply disruptions, quality issues, and contractual non-compliance (Gelderman et al., 2015). PRI refers to the ongoing effort to identify risks that could impact the procurement of goods and services, focusing on areas such as supplier stability, logistics challenges, and regulatory changes (Zsidisin & Ritchie, 2008).

Through PRI, organizations can better assess the reliability and stability of their suppliers. This process helps in managing supplier relationships more effectively by identifying potential risks such as financial instability or dependency on a single supplier, which can be mitigated through diversification or closer collaboration (Zsidisin & Ellram, 2003).

PRI is a key component of risk management, involving the identification of potential risks that could adversely affect procurement outcomes, including supply chain disruptions, price increases, and contractual failures (Handfield et al., 2007). PRI is the process of recognizing potential risks in the procurement process, including those related to supplier capabilities, market conditions, and external events (Carter & Rogers 2008).

Therefore, effective PRI helps protect an organization's reputation by avoiding risks that could lead to negative publicity, such as supplier-related scandals or environmental violations. Proactive risk management ensures that the organization upholds its ethical and corporate social responsibility standards. PRI is the identification of all possible risks associated with the procurement process, considering factors such as supply continuity, quality assurance, and financial stability of suppliers (Knight, Harland, & Telgen, 2003).

Consequently, while bottled water firms in Rivers State play a vital role in safeguarding public health and meeting the rising demand for potable water, their effectiveness is frequently

compromised by procurement risks, weak managerial competence, and unstable business conditions. This reality underscores the importance of examining how procurement risk management can enhance the effectiveness of bottled water firms in Rivers State. It is important to note that the challenges confronting bottled water firms in Rivers State are not newly discovered.

Previous studies and industry reports have long highlighted persistent issues such as supply shortages, price volatility of raw materials, infrastructural bottlenecks, and managerial lapses that undermine firm effectiveness (Eze, 2020; Ezenwa & Okoro, 2020). However, these problems have intensified in recent years as firms contend with rising consumer demand for safe drinking water, heightened regulatory pressures, fluctuating energy costs, and increasing market competition. Thus, while the problem of ineffectiveness in bottled water firms is not new, its persistence and growing impact on public health, profitability, and sustainability necessitate renewed scholarly and managerial attention.

In this study therefore, we examine the connection between PRI and effectiveness of bottled water firms in Rivers State. The study was informed by the unending innovativeness, adaptability and customer satisfaction challenges faced by bottled water firms in Rivers State, and these have impaired their effectiveness. While literature is not in short supply of studies on PRI and its many benefits, there is relative scarcity of context specific studies that provide sufficient succor to managers of bottled water firms in Rivers State that have challenge regarding effectiveness.

Theoretical Framework

This study took its bearing from dynamic capabilities theory (DCT) which focuses on the processes through which firms adapt and reconfigure resources in response dictates of the operating environment (Teece et al. 1997). DCT theory suggests that organizations achieve competitive advantage not only by owning resources, but by having and developing the capacity to sense opportunities and threats, seize them, and transform existing capabilities to adapt to change. This capacity to adapt is referred to as dynamic capabilities. Teece (2014) defines dynamic capabilities as ability to integrate, build and reconfigure internal and external competences to address rapidly changing environmental conditions. Helfat and Peteraf (2015) opine that dynamic capabilities is the capacity of organizations to purposefully create, extend, or modify their resource base to maintain competitiveness in a changing environment.

The essence of DCT lies in the organization's capacity to sense opportunities and threats, seize opportunities, and reconfigure resources to maintain competitiveness (Teece et al., 1997). These three capabilities: sensing, seizing, and reconfiguring, are critical to responding effectively to environmental changes and achieving long-term success (Teece, 2007).

DCT has been applied in studies linking supply chain flexibility and risk management to performance. For example, Jüttner and Maklan (2011) used DCT to argue that firms with adaptive risk management practices achieve higher resilience. Also, Wilden and Gudergan (2015) found that dynamic capabilities allow firms to manage uncertainty in procurement and supply networks effectively. Bottled water firms in Rivers State face uncertainties emanating from regulatory changes, unstable power supply, and raw material price volatility. DCT is appropriate here because it explains how firms must reconfigure their procurement strategies to remain effective in uncertain and dynamic environments.

Concept of Procurement Risk Identification (PRI)

Risk management involves identifying, analyzing and responding to risk factors. Having effective risk management helps business reduce the possibility of risks happening and the impact risks have on them. Managing risk in procurement can be a tricky business, particularly because there is so much uncertainty about what risk is likely to occur and the potential impact this could have. Chartered Institute of Procurement and Supply (CIPS, 2021) define PRI (PRI) as the process of recognizing and cataloging potential events or conditions that could adversely affect the procurement process, including disruptions in supply, price volatility, and supplier performance issues.

PRI is a strategic activity aimed at pinpointing potential risks throughout the procurement lifecycle, from supplier selection to contract execution (Burt et al., 2012). It involves systematically analyzing the procurement process to detect uncertainties that may impact the supply chain's efficiency, quality, or continuity (Monczka et al., 2015). Handfield et al. (2007) indicate that PRI provide decision-makers with critical insights into potential risks, enabling more informed and strategic decisions. By recognizing risks early, organizations can evaluate different procurement options and select the most resilient suppliers or sourcing strategies.

Identifying procurement risks early can lead to significant cost savings by preventing costly disruptions. For example, recognizing a potential supplier failure ahead of time allows an organization to find alternative suppliers, thus avoiding the financial losses associated with supply chain interruptions (Cousins et al., 2008). According to Zhu et al. (2020), PRI is the constant effort to anticipate and document risks associated with procurement processes, including vulnerabilities introduced by globalization, complex supplier networks, and real-time data dependency.

PRI is the process of detecting and documenting potential threats to the procurement process, with an emphasis on understanding how these risks might affect cost, delivery, and quality (Spekman, Kamauff, & Myhr 1998). PRI involves identifying risks that could impact the procurement function, such as supplier insolvency, market volatility, and disruptions in the supply chain (van Weele 2010). Schiele (2007).

By identifying procurement risks, organizations can allocate resources more strategically to areas with the highest risk exposure. This ensures that risk mitigation efforts are focused on critical areas, enhancing the overall effectiveness of risk management strategies. Organizations that excel at PRI can turn risk management into a competitive advantage. By avoiding disruptions that affect competitors and ensuring a steady supply of critical resources, these organizations can maintain market position and customer satisfaction (Barney, 1991).

Concept of Effectiveness

In the context of organizations, effectiveness encompasses an organization's ability to achieve its strategic goals, maintain a competitive position, and manage internal and external challenges (Mitchell et al., 2022; Zehir et al., 2020). Lawrence and Lorsch (1967) opined that effectiveness is the degree of integration and differentiation within an organization that enables it to respond to environmental complexities. According to Scott (2003) and Denison et al. (2018), effectiveness is defined by the alignment of an entity's culture, leadership, and strategy, resulting in sustained performance and adaptability. Alvesson and Spicer (2019) indicate that effectiveness is the measure of an individual or organization's efficiency in using resources to produce desired outcomes while maintaining internal coherence and responsiveness to external pressures.

Effective organizations and people are better able to adapt to environmental changes, such as market shifts, technological advancements, and competitive pressures, thereby maintaining their relevance and competitiveness (Martínez-Córcoles, 2018). Organizational effectiveness often results in higher levels of employee satisfaction and engagement, as clear goals, effective leadership, and good communication contribute to a positive work environment. Zehir, Erdoğan & Müceldili (2020) suggest that effectiveness contributes to better customer service and satisfaction by ensuring that the organization delivers quality products and services that meet or exceed customer expectations. Vogel et al. (2020) observe that effectiveness is the degree to which an organization efficiently transforms inputs into outputs that meet or exceed the expectations of key stakeholders.

Organizational effectiveness manifests in different forms. Tidd and Bessant (2018) identify innovativeness, adaptability and customer satisfaction some of those manifestations. This study adopts them in lieu of their appropriateness to the study context.

Innovativeness

Innovativeness is the propensity to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes. It is a process that provides added value and novelty to a firm through the development of new market, procedures, solution and product (Mcfadzean & Shaw, 2005, as cited in Ateke & Harry, 2021). Damanpour (2020) defined innovativeness refers to the capacity to introduce new processes, products, or ideas and to implement them effectively within the organization.

In the view of Ruvio et al. (2020) and Calantone et al. (2019) innovativeness is the degree to which an organization or its members are open to, and actively seek out new opportunities, technologies, and processes that can improve business performance. For Hult, Hurley and Knight (2018), innovativeness is an orientation towards the introduction of new ideas, products, or services that can provide competitive advantages and address customer needs. Through continuous innovation, organizations can sustain long-term growth by consistently introducing new offerings that meet evolving market demands.

Hence, innovative organizations can respond more effectively to market changes, including shifts in consumer behavior, technological advancements, and competitive pressures, ensuring long-term success. Tellis et al. (2018) and Zhou and Wu (2018) indicate that innovativeness is the propensity to engage in and support creativity and experimentation, leading to the introduction of new products, services, or processes in the market.

Wang and Ahmed (2019) demarcated innovativeness as the capacity of an entity to renew itself and to adopt new approaches to technology, business models, and markets in order to sustain competitive advantage. According to Avlonitis et al. (2021), through continuous innovation, organizations can sustain long-term growth by consistently introducing new offerings that meet evolving market demands. Companies known for their innovativeness often enjoy a stronger brand reputation, as they are seen as leaders in their industry and attract positive attention from customers, partners, and investors.

In consonance with Wang and Ahmed (2019), O'Regan and Ghobadian (2019) innovativeness is the tendency to support creativity and experimentation in product development, process improvement, and problem-solving, often leading to market leadership. Lumpkin and Dess (2019) considered innovativeness as an entrepreneurial orientation that reflects an organization's tendency to engage in and support new ideas, novelty, experimentation, and creative processes.

Innovativeness enable value differentiation and confers competitiveness on firms in the new economy. Thus, non-innovative firms cannot survive the vagaries of today's technology-driven marketplace (Ateke & Harry, 2021). Responding to changing consumers' requirements is an important driver of innovativeness. Firms constantly analyze benefits of existing products vis-à-vis the importance customers attach to them; and strive to create new offers or improve on existing one to remain competitive.

Adaptability

Ateke and Nwulu (2021) states that a firm's business activities must necessarily be adaptive to evolving instantaneous and insidious disruptions in the operating milieu. In the view of Denison et al. (2018), businesses alter their behaviour, activities, structures and systems in response to changing environmental conditions. Adaptability therefore, refers to a company's ability to adjust strategies, structures, and practices in response to change in the external environment (Tushman & O'Reilly, 2022; Day, 2011; Hult et al., 2004). Kotler and Keller (2012) describe it as firms' capacity to modify strategies and tactics to cope with market dynamics.

They highlight that adaptability is linked to a firm's ability to learn and apply new knowledge effectively. Adaptability allows companies to respond quickly to market changes, technological advancements, and competitive actions, thereby maintaining and enhancing their competitive position. Adaptable organizations can continuously realign their strategies with the changing external environment, ensuring that their long-term goals remain relevant and achievable.

Tsoukas and Chia (2020) suggest that adaptability is essential for ongoing strategic alignment, allowing organizations to stay on course even as the external environment evolves. Zollo et al. (2022) highlight organizational adaptability as the dynamic capability of a firm to reconfigure its resources and processes to respond to environmental changes and seize emerging opportunities. Schoemaker et al. (2022) define organizational adaptability as the ability of an organization to pivot and transform its operations, culture, and strategies in response to volatile, uncertain, complex, and ambiguous (VUCA) environments.

Adaptable organizations can better align their products, services, and operations with changing customer needs and preferences, leading to increased customer satisfaction and loyalty (Gioia et al., 2021). They are more resilient to external shocks, such as economic downturns, technological disruptions, or unexpected crises. And they can quickly pivot and adjust their strategies to survive and thrive. Organizational adaptability fosters a culture of continuous learning, where employees and leaders alike are encouraged to acquire new skills and knowledge to better navigate changes in the environment.

By adapting to evolving customer preferences and delivering personalized experiences, organizations can build stronger customer relationships, leading to increased loyalty and repeat business. Adaptable organizations are better equipped to manage risks associated with environmental uncertainty, as they can quickly adjust their strategies and operations to mitigate potential threats (Sarta et al. 2021; Brown & Eisenhardt, 2020). Therefore, it is safe to say that adaptability is the capability to adjust and align organizational culture, leadership, and processes to navigate change effectively and achieve long-term goals.

Customer satisfaction

Customer satisfaction measures how happy customers are with a products. It is the level of positive and genuine contentment of a customer towards a product. Kotler and Keller (2012) defined customer satisfaction is a feeling of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to expectations. Customer satisfaction

is a summary affective response of varying intensity with a time-specific point of determination and limited duration, directed toward focal aspects of product acquisition and/or consumption (Gallarza et al., 2017; Giese & Cote, 2000).

Han and Hyun (2017) opined that customer satisfaction refers to the customer's emotional state that results from the discrepancy between expected and perceived performance of a product or service. Satisfied customers are more likely to engage in positive word-of-mouth, recommending the company's products or services to others, which can attract new customers. More so, customer satisfaction leads to increased loyalty; as satisfied customers are more likely to continue purchasing from a company, leading to repeat business (Shin et al., 2021).

Customer satisfaction directly impact the success of businesses. When customers have a positive experience and are satisfied with their purchase, they are more likely to become loyal and repeat customers. Nikbin et al. (2021) and Meesala and Paul (2018) argued that customer satisfaction is an effective response to a product, which results from the customer's evaluation of the overall experience relative to expectations. Customer satisfaction is a psychological state that reflects the evaluation of the experience with a service provider, shaped by expectations and perceptions of performance.

Companies with high customer satisfaction incur lower marketing costs because satisfied customers tend to remain loyal (they are more likely to spend more and return for future purchases) and spread positive word-of-mouth, hence, reducing the need for extensive advertising and promotions (Lin et al., 2020; Kumar & Kaushik, 2020). In addition, satisfied customers typically have a higher customer lifetime value, as they are more likely to continue purchasing over a longer period (Zaborek & Mazur, 2022; De Keyser & Konus, 2021).

Procurement Risk Identification and Effectiveness

Ogunleye and Adeola (2019) investigated the impact of PRI on supply chain effectiveness of bottled water firms in Lagos. The study revealed a positive correlation between robust PRI practices and overall supply chain effectiveness. This accentuate the believe that firms that identified risks in advance experienced reduced lead time, decreased production downtime, and reduced procurement costs.

Chikezie and Nwosu (2020) examined procurement risk management and operational efficiency in bottled water manufacturing firms in Rivers State. The study revealed a strong relationship between effective PRI and improved operational efficiency. Firms with active risk identification systems reported a 25% reduction in lead time variability and a 30% improvement in order fulfilment rates. Inventory management was also optimized, with firms maintaining lower stock levels due to better risk forecasting. The study found that PRI positively impacts both operational efficiency and customer satisfaction.

Adebayo and Olatunji (2021) studied PRI and performance outcomes in bottled water firms in southwest Nigeria. The results indicated that PRI was a significant predictor of production efficiency, accounting for 35% of the variance in performance outcomes. Firms that actively identified procurement risks, such as supply shortages and transportation delays, experienced a 10% improvement in production efficiency and an 8% reduction in procurement costs. The findings underscored the importance of integrating risk identification into procurement strategies to enhance performance.

A study by Eze and Nwachukwu (2018) titled the effect of PRI on supply chain performance in Nigerian bottled water firms, analysed one hundred (100) bottled water firms using a structured

questionnaire to evaluate PRI processes and their impact on supply chain performance. The analysis showed a strong positive relationship between PRI and improved supply chain performance. Firms with formal risk identification processes reported improvement in on-time delivery, decrease in procurement costs, and a reduction in production disruptions.

Onyeka and Omokhudu (2022) studied PRI and its impact on cost efficiency in bottled water firms in Nigeria. The study surveyed eighty (80) bottled water firms in Nigeria to evaluate the influence of PRI on cost efficiency. The study found that PRI significantly improved cost efficiency, with a 16% reduction in procurement-related costs. Firms that implemented risk identification mechanisms, such as early supplier risk detection and market price monitoring, reported enhanced cost savings. The regression analysis revealed that PRI accounted for 30% of the variance in cost efficiency. The research underscored that proactive PRI is vital in reducing unforeseen costs and maintaining profitability in bottled water firms.

Based on these reports from previous studies, the following hypotheses were proposed:

H₀₁: Procurement risk identification has no significant relationship with innovativeness of bottled water firms in Rivers State.

H₀₂: Procurement risk identification has no significant relationship with adaptability of bottled water firms in Rivers State.

H₀₃: Procurement chain risks identification has no significant relationship with customer satisfaction of bottled water firms in Rivers State.

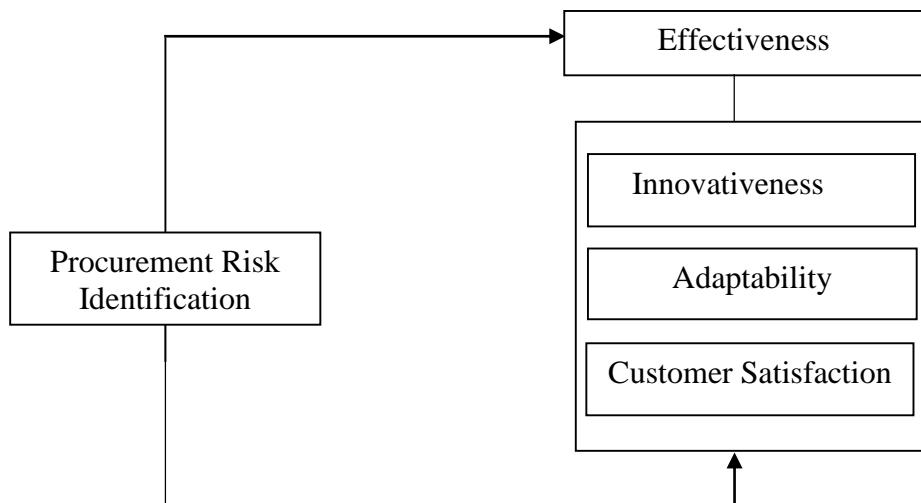


Fig. 1: Conceptual Framework of relationship between procurement risk identification and effectiveness of bottled water firms in Rivers State

Methodology

This study employed an explanatory research design and a quantitative methodology emphasize on an objective measurements. The population of this study was ten (10) bottled water firms in Rivers State according to the Nigerian Directory and search engine (Finelib, 2016). The sample size was 60. 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. Univariate descriptive statistics such as mean, standard deviation, variance, skeweness and kurtosis were used to classify the data. Table 1 below presents a summary of the result of test of reliability.

Table 1: Reliability Analysis of Items on All Variables

Variable	Number of items	Cronbach alpha coefficient
Procurement Risk Identification	6	0.820
Innovativeness	6	0.810
Adaptability	6	0.770
Customer Satisfaction	6	0.840

Source: SPSS Data 23, 2025

Table 1 indicates that all the variables have high Cronbach alpha; surpassing the threshold of 0.70. This means that the instrument was reliable. The Pearson Production Moment Correlation was the statistical tool used for data analyses, with the help of Statistical Package for Social Sciences (SPSS), version 23.0.

Results

Table 1: Correlation between procurement risk identification and innovativeness

		Procurement Risk Identification	Innovativeness
Procurement Risk Identification	Pearson Correlation	1	.290*
	Sig. (2-tailed)		.000
	N	55	55
Innovativeness	Pearson Correlation	.290*	1
	Sig. (2-tailed)	.000	
	N	55	55

*. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS output of data analyses, 2025.

The results as shown in Table 2 indicates the relationship between PRI and innovativeness. The evidence points to a weak, positive and statistically significant relationship between PRI and innovativeness. This is indicated by the correlation coefficient and probability values that shows the strength, direction and the significance of the relationship between the variables. Statistically, it is significant at ($r = 0.290$, $N = 55$, $p = 0.000 < 0.05$). In view of this result, the researcher rejected the null hypothesis which states that there is no significant relationship between PRI and innovativeness of bottled water firms in Rivers State.

Table 3: Correlation between procurement risk identification and adaptability

		Procurement Risk Identification	Adaptability
Procurement Risk Identification	Pearson Correlation	1	.200
	Sig. (2-tailed)		.000
	N	55	55
Adaptability	Pearson Correlation	.200	1
	Sig. (2-tailed)	.000	
	N	55	55

*. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS output of data analyses, 2025.

Table 3 shows the results of the correlation analysis with regard to the relationship between PRI and adaptability. The results suggests a weak, positive and statistically significant relationship between the variables, which are indicated by the correlation coefficient and probability values that shows the strength, direction and the significance of the relationship between the variables. Statistically, it is significant at ($r = 0.200$, $N = 55$, $p = 0.000 < 0.05$). In view of this result, the researcher rejected the null hypothesis which states that there is no significant relationship between PRI and adaptability of bottled water firms in Rivers State.

Table 4: Correlation between procurement risk identification and customer satisfaction

		Procurement Risk Identification	Customer Satisfaction
Procurement Risk Identification	Pearson Correlation	1	.582**
	Sig. (2-tailed)		.000
	N	55	55
Customer Satisfaction	Pearson Correlation	.582**	1
	Sig. (2-tailed)	.000	
	N	55	55

*. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS output of data analyses, 2025.

As shown in Table 4 from results of the correlation analysis with regard to the relationship between PRI and customer satisfaction, it was revealed that there is a moderate, positive and statistically significant relationship between the variables, which are indicated by the correlation coefficient and probability values that shows the strength, direction and the significance of the relationship between the variables. Statistically, it is significant at ($r = 0.582$, $N = 55$, $p = 0.000 < 0.05$). In view of this result, the researcher rejected the null hypothesis which states that there is no significant relationship between PRI and customer satisfaction of bottled water firms in Rivers State.

Discussion of Findings

The results of correlation analysis revealed a weak, positive and statistically significant relationship between PRI and effectiveness of bottled water firms in Rivers State. These were indicated by the correlation coefficient and the probability value. Specifically, the results showed a weak positive and statistically significant correlation between PRI and innovativeness and adaptability; and a moderate, positive and statistically significant relationship between PRI and customer satisfaction of bottled water firms in Rivers State.

These findings are in line with the findings of Ogunleye and Adeola (2019) that a positive correlation exists between PRI practices and overall supply chain effectiveness; as well as that of Chikezie and Nwosu (2020) that a strong relationship between effective PRI and operational efficiency. Likewise, the current findings support the findings of Adebayo and Olatunji (2021) that PRI was a significantly relates with production efficiency, and performance outcomes.

In addition, the current findings are in agreement with the findings of Eze and Nwachukwu (2018) that a strong positive relationship exists between PRI and improved supply chain performance. Further, our findings confirm the report of Onyeka and Omokhudu (2022) that PRI significantly improves cost efficiency, with a 16% reduction in procurement-related costs.

Conclusion and Recommendations

Based on the findings of this study, the conceptual linkages identified in literature and findings of previous studies, we concludes that PRI has positive significant relationship with effectiveness of bottled water firms in Rivers State, Nigeria. Therefore, we recommend that, managers of bottled water firms should enhance PRI to foster effectiveness.

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