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LOGISTICS SERVICE RECOVERY AND CUSTOMER RETENTION IN THE CONSTRUCTION AGGREGATES INDUSTRY IN CROSS RIVER STATE

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Abstract
This research was on logistics service recovery and customer retention in the construction aggregates industry in Cross River State. We sought to determine the effects of post-failure analysis, communication management and technical innovation management on customer retention in the construction aggregates haulage business. Cross-sectional survey research design was adopted. Using a structured questionnaire, primary data were elicited from 182 personnel from the operations, logistics and marketing department of haulage companies in Akamkpa. The data obtained were descriptively analyzed, while hypotheses testing was done using multiple linear regression. The findings of the study revealed that post-failure analysis, communication management and technical management had significant positive effects on customer retention in the construction aggregates haulage business in Akamkpa. Hence, the study recommended, among others, that: logistics companies should initiate a well-coordinated post-failure analytical exercise in the aftermath of every failure incident in order to identify the type of failure that has occurred, its root causes, impact on its operations and the recovery measures required to address the incidents; and logistics companies should prioritize effective communication during service failures by providing factual, timely, and transparent information to customers in an empathetic way to lessen the adverse impacts of the incidents on customers and to provide confidence in their recovery capabilities.

Key Words: *Customer Retention, Haulage, Logistics Management, Service Failure, Service Recovery, Transportation*

Introduction
Customer retention is a fundamental asset upon which the sustained success of a business organization depends. This is because while new customer acquisition is profitable in the short term, the ability to retain customers offers business organizations long-term competitive advantages in a competitive environment (Osman et al., 2019). As such, as businesses build lasting relationships with customers, they can enjoy a steady flow of income from repeat purchases and ongoing engagement (Kebede & Demissie, 2021). In recognition of the enormous marketing benefits of sustained customer retention capability, business organizations across sectors are seeking viable ways to enhance their ability to retain customers. From the account of extant research, one of the approaches suggested particularly in the service industry is service recovery (Hassan & Wang, 2019;

Hernandes, 2021; Karim & Li, 2023; Mohammed & Zhang, 2018). According to Oguntuase et al. (2023), service recovery encompasses the strategic actions and processes that organizations employ to address and resolve service failures or customer dissatisfaction effectively. It is an essential aspect of customer relationship management, as it aims to restore customer confidence, loyalty, and satisfaction after a service breakdown. It typically involves a series of steps and components designed to rectify the negative impact of a service failure and turn the situation into a positive customer experience. In the logistics industry, service recovery strategies are popularly employed by companies to respond to failure incidents that inevitably occur due to human, process or technical inefficiencies (Hassan et al., 2020). Moreover, Kidane et al. (2018) maintained that one primary reason for the growing emphasis on service recovery in the logistics context is the recognition of the impact that customer dissatisfaction can have on long-term relationships. However, given that the haulage of construction aggregates still largely depends on human efforts to function properly, there continues to be a real possibility for service failures to occur in the process. These failures can result from drivers' inefficiency, delay in transportation and delivery, breakdown in transportation infrastructure, accidents, among others, leading to delays, cost overruns, and reputational damage to haulage companies (Roberts et al., 2022; Edwards & Anderson, 2023; Wilson et al., 2022).

This has spawned substantial research interest on the roles of service recovery strategies in improving the haulage of construction aggregates and enhancing customer retention by scholars around the world. Nevertheless, current research on this subject by Nigerian scholars appears to acutely sideline logistics firms involved in the haulage of aggregates. This is because most studies on service recovery in the Nigerian context are restricted to the hospitality sector (Nwokorie, 2016; Agu, 2023; Okeiyi & Agu, 2022); banking (Oguntuase et al., 2023; Oranusi & Mojekeh, 2019); and aviation (Atuo & Kalu, 2017; Akwikwa & Fadare, 2023; Etuk et al., 2023), leaving the construction sector acutely under-researched. An evidence gap has also been observed in the current literature; in that, the dominant service recovery dimensions used by previous scholars have revolved around – apology, compensation, assurance, explanation, empowerment, responsiveness, refund and replacement (Nwokorie, 2016; Oguntuase et al., 2023; Etuk et al., 2023). There is however a substantial gap with respect to contemporary service recovery strategies such as post-failure analysis, communication management, and technical innovation management. Particularly in the context of haulage of construction aggregates, service recovery cannot be complete without a comprehensive post-failure analysis to reveal the root causes of the failure and identify potential flashpoints for proactive action.

Against this backdrop, this study adopted contemporary variables (post-failure analysis, communication management, and technical innovation management) from Hassan and Wang (2019); Karim and Li (2023); Mohammed and Zhang (2018), to investigate the effect of logistics service recovery on customer retention in the construction aggregates haulage business in Cross River State.

To actualize this aim, the specific objectives of the study were to:

1. examine the effect of post-failure analysis on customer retention in the construction aggregates haulage business in Akamkpa;
2. ascertain the effect of communication management on customer retention in the construction aggregates haulage business in Akamkpa;
3. determine the effect of technical innovation management on customer retention in the construction aggregates haulage business in Akamkpa.

Hypotheses

These have been stated in their null form only.

H_1: Post-failure analysis has no significant effect on customer retention in the construction aggregates haulage business in Akamkpa.

H_2: Communication management has no significant effect on customer retention in the construction aggregates haulage business in Akamkpa.

H_3: Technical innovation management has no significant effect on customer retention in the construction aggregates haulage business in Akamkpa.

Conceptual Review

Construction Aggregates

Construction aggregates are granular materials (such as crushed stone, gravel, sand, crushed concrete, asphalt, and others) used in construction projects, including buildings, roads, bridges, dams, and other infrastructure (ACPA, 2021). These natural or manufactured materials, including sand, gravel, crushed stone, and recycled concrete, form the backbone of infrastructure development worldwide. According to Ferrell et al. (2017), construction aggregates are incredibly versatile and offer a wide range of functions in the construction sector. They serve as a fundamental component in the production of concrete, providing strength, durability, and workability. Aggregates also form the base for road and pavement construction, offering stability and load-bearing capacity. Furthermore, these materials are essential in the creation of drainage systems, land reclamation projects, and landscaping applications. The versatility and functionality of construction aggregates make them indispensable in the construction industry. Similarly, construction aggregates are indispensable for infrastructure development and resilience. Well-designed road networks, bridges, and tunnels rely on aggregates to provide stability, strength, and durability. Aggregates used in concrete provide the compressive strength necessary to withstand heavy loads and the flexural strength to resist cracking and deformation (ACPA, 2021). Moreover, aggregates contribute to the resilience of structures by enhancing their ability to withstand environmental forces, such as seismic activity and extreme weather events (Huang et al., 2019).

Logistics Service Recovery

Logistics service recovery refers to the strategic actions and processes implemented by logistics service providers to address and rectify service failures or shortcomings, aiming to restore customer satisfaction and loyalty. In scholarly terms, Grönroos (1988) defines logistics service recovery as the firm's response to service failures that result in customer dissatisfaction. Another scholarly perspective by McCollough et al. (2000) extends the concept of logistics service recovery beyond mere problem resolution, framing it as a

means to rebuild customer trust and loyalty. According to this view, logistics service recovery involves not only addressing the immediate issue but also implementing measures to prevent similar failures in the future. In a more contemporary context, Bitner and Hubbert (2014) propose a comprehensive definition that incorporates the customer's emotional response to service failures. They describe logistics service recovery as a firm's process for mitigating negative outcomes resulting from a logistics service failure and preventing their recurrence while addressing the customer's emotional needs. This definition underscores the dual focus of logistics service recovery on both operational improvements and emotional engagement, recognizing the intricate interplay between functional and emotional dimensions in customer satisfaction. Furthermore, Huang et al. (2019) maintained that the imperatives of service recovery in the logistics context are multifaceted and pivotal for sustaining customer relationships. This is because logistics service recovery serves as a mechanism for restoring customer trust and confidence.

When logistics service failures occur, customers may experience a breach in the perceived service quality. Prompt and effective recovery actions communicate the service provider's commitment to rectifying mistakes, thereby rebuilding trust and mitigating potential customer churn. Also, logistics service recovery is instrumental in preserving customer loyalty (Anderson & O'Connor, 2023). By demonstrating a genuine concern for customer satisfaction and implementing corrective measures, service providers have the opportunity to turn a negative experience into a positive one. In addition, logistics service recovery contributes to service innovation and continuous improvement (Alexander et al., 2019). Analyzing the root causes of service failures provides valuable insights for organizational learning. Logistics service providers can use this information to implement proactive measures, preventing similar issues from recurring in the future. This cyclical process of service recovery, analysis, and improvement fosters a culture of continuous enhancement, ensuring long-term competitiveness in the dynamic service sector.

Customer Retention

Customers' retention refers to a company's capability to transform a new or irregular customer to a repeat customer by consistently meeting their needs to lessen the possibility of switching to competing brands (Mahmoud, 2019). It is the totality of a company's efforts and programmes aimed at ensuring that new customers acquired become regular customers over a long period of time in order to maximize customers' lifetime value and enhance marketing competitiveness. In the views of Barusman et al. (2019), customer retention describes how a company is able to build its loyal customer base amidst competitive pressure through the conversion of new customers to repeat customers who display brand loyalty in the long run. It is critical because a company's future prospects for growth and competitiveness depend not just on its ability to acquire new customers; but more importantly on its ability to ensure that customers sustain their patronage in the long run.

Similarly, Olson (2020) perceived customer retention as "a company's ability to turn customers into repeat buyers and prevent them from switching to a competitor". It indicates whether or not a company's product and/or service quality is adequate to satisfy

new customers in order to convert them to repeat customers. Furthermore, Olson (2020) asserted that customers' retention is the lifeblood of most subscription-based companies and service providers like telecommunication companies. In addition to identifying the number of loyal customers, customer retention can reflect or predict customer satisfaction, repurchase behavior, customer engagement and emotional ties to a brand. Similarly, precisely because it is far less expensive to retain customers than to acquire new ones, such subscription-based and service-providing companies have often intensified the design and implementation of strategies aimed at achieving customers' retention. Retained customers are also more likely to engage in word-of-mouth marketing or become brand ambassadors (Stokinger & Ozuem, 2018). Also, customer retention strategies are the processes and initiatives that business organizations create and implement with the aim of building customer loyalty and improving customer lifetime value (Olson, 2020).

Post-Failure Analysis and Customer Retention

Post-failure analysis in the context of service recovery refers to the systematic examination and evaluation of the events, processes, and factors that led to a service failure (Alexander et al., 2019). It is an essential component of service management aimed at identifying the root causes of service failures to implement corrective actions and prevent future occurrences. Another perspective on post-failure analysis by Bhatia and Bhatia (2019) sees it as a strategic approach to learning from service failures. This definition emphasizes the proactive nature of the analysis, viewing it as an opportunity to gain insights and knowledge that can be leveraged to enhance overall service quality and customer satisfaction. Additionally, De Witte and De Knop (2019) observed that post-failure analysis can be seen as a reflective process that involves cross-functional collaboration. This definition highlights the collaborative aspect of analyzing failures, involving various departments within an organization to gain a holistic understanding of the failure and develop comprehensive solutions. In the views of El-Said and Omar (2020), post-failure analysis encompasses an ongoing and iterative process that contributes to organizational learning of service failures. This perspective underscores the continuous nature of the analysis, with organizations adapting and evolving based on the insights gained from each failure. As such, Faruk and Ali (2019) maintained that post-failure analysis serves as a crucial service recovery strategy that can significantly enhance customer retention after a service failure incident. By addressing potential failure points before they impact customers, organizations can create a more robust and reliable service delivery, earning long-term customer loyalty.

Furthermore, involving cross-functional teams in the post-failure analysis process ensures a comprehensive understanding of the failure's impact across various organizational functions. This collaborative approach facilitates the development of well-rounded solutions that consider the perspectives of different stakeholders, contributing to more effective service recovery strategies (Lestari, 2021). Hence, by defining and implementing comprehensive analyses, organizations can not only rectify immediate issues but also foster a culture of continuous improvement, proactively address systemic issues, develop preventive measures, and leverage cross-functional insights to create more effective service recovery strategies. The foregoing viewpoint suggests that post-

failure analysis, as a service recovery strategy, has the potential to guarantee customer satisfaction after a failure incident and enhance customer retention in the long run. This viewpoint is backed by the study of Hernandes (2021), which revealed that post-failure analysis had a significant positive effect on customer loyalty towards haulage firms in Brazil. The viewpoint is also in line with the study of Karim and Li (2023), which revealed that there is a significant positive relationship between post-failure analysis and customer retention towards logistics companies in Oman. In another study by Mohammed and Zhang (2018), it was revealed that post-failure analysis had a significant positive effect on customer loyalty in the Pakistani logistics sector. Hence, we put forward the following hypothesis for empirical testing:

Communication Management and Customer Retention

Communication management in the context of service recovery refers to the strategic and systematic approach taken by organizations to handle communication with customers following a service failure incident (Mohapatra & Sahu, 2018). It involves the effective use of communication channels, messages, and methods to address customer concerns, rebuild trust, and ultimately enhance customer satisfaction. According to Van and Nguyen (2021), communication management in service recovery involves the planned and coordinated process of conveying information to customers in a clear, empathetic, and responsive manner after a service failure. Another definition by Okore and Njanja (2019) views communication management as the systematic planning, execution, and control of information dissemination aimed at addressing and resolving customer service issues. Another perspective by Suwannaporn and Assarut (2020) views communication management as a service recovery strategy which involves the responsive handling of unexpected service failures or customer dissatisfaction. Effective communication management in this scenario aims to rebuild trust, manage customer expectations, and convey a sense of urgency in resolving the problem (Yildiz, 2018). It involves deploying various communication channels such as email, social media, and customer service hotlines to ensure that customers are kept informed and feel valued throughout the service recovery process. As such, Hassan et al. (2020 maintained that effective communication management can significantly contribute to customer retention through various mechanisms.

To begin with, clear and timely communication helps in managing customer expectations (Anderson & O'Connor, 2023). When customers are promptly informed about the service failure, the reasons behind it, and the steps being taken to rectify the situation, they are more likely to appreciate the transparency, which can contribute to rebuilding trust. Furthermore, Chen and Wang (2023) maintained that post-failure communication management enables personalized interactions. Tailoring communication to individual customers, acknowledging their specific concerns, and offering personalized solutions can make customers feel valued and understood after a failed service. This personalized approach fosters a sense of importance, increasing the likelihood of customer retention. Similarly, communication management allows organizations to showcase their commitment to service excellence in the aftermath of a failed service (Hassan & Wang, 2019). By openly addressing service failures and demonstrating a genuine desire to make amends, organizations signal their dedication to customer satisfaction. This commitment,

when effectively communicated, can contribute to long-term loyalty and retention. The foregoing viewpoint suggests that communication management, as a service recovery strategy, has the potential to guarantee customer satisfaction after a failure incident and enhance customer retention in the long run. This viewpoint is backed by the study of Hernandes (2021), which revealed that communication management had a significant positive effect on customer loyalty towards haulage firms in Brazil. The viewpoint is also corroborated by the study of Karim and Li (2023), which revealed that there is a significant positive relationship between communication management and customer retention towards logistics companies in Oman. In another study by Hassan and Wang (2019), it was revealed that communication management had a significant positive effect on customer retention among logistics companies in the Thai construction sector. Hence, we put forward the following hypothesis for empirical testing:

Technical Innovation Management and Customer Retention

Technical innovation management in the context of service recovery refers to the strategic process of identifying, implementing, and overseeing technological advancements within an organization to address service failures effectively (Karim & Li, 2023). In the views of Mohammed and Zhang (2018), technical innovation management is the systematic and organized process of capturing, assessing, and implementing technological advancements to gain a competitive advantage in the market. Alexander et al. (2019) defined it as the dynamic capability of an organization to integrate and manage technological changes proactively, aligning them with business strategies to ensure long-term success and resilience. In another view, Ali and Al-Qaysi (2021) defined technical innovation management as the process of leveraging cutting-edge technologies to swiftly and efficiently address service failures, thereby restoring customer confidence and loyalty sustainably. Also, Faruk and Ali (2019). observed that by employing technical innovation management as a service recovery strategy, organizations can enhance customer retention after a service failure incident because the swift deployment of innovative technologies allows for quicker identification and resolution of service issues, minimizing customer inconvenience and frustration. Similarly, the introduction of technological solutions such as automated communication systems or self-service platforms can provide customers with alternative and convenient means to address their concerns, promoting a more positive post-service recovery experience. This increased accessibility can contribute to improved customer perceptions and loyalty (Vieira & Chambel, 2019). Moreover, technical innovation management enables organizations to implement preventive measures through predictive analytics or monitoring systems, reducing the likelihood of recurring service failures (Yildiz, 2018).

By addressing potential issues proactively, organizations can create a more reliable service environment, fostering customer trust and loyalty. Furthermore, Mohapatra and Sahu (2018). argued that the use of innovative technologies in service recovery can enhance the overall customer experience by offering personalized and tailored solutions. For instance, the integration of artificial intelligence and machine learning can enable organizations to understand individual customer preferences, providing more targeted and effective recovery strategies. In addition, Chen and Wang (2023) submitted that technical innovation management supports continuous improvement in service delivery.

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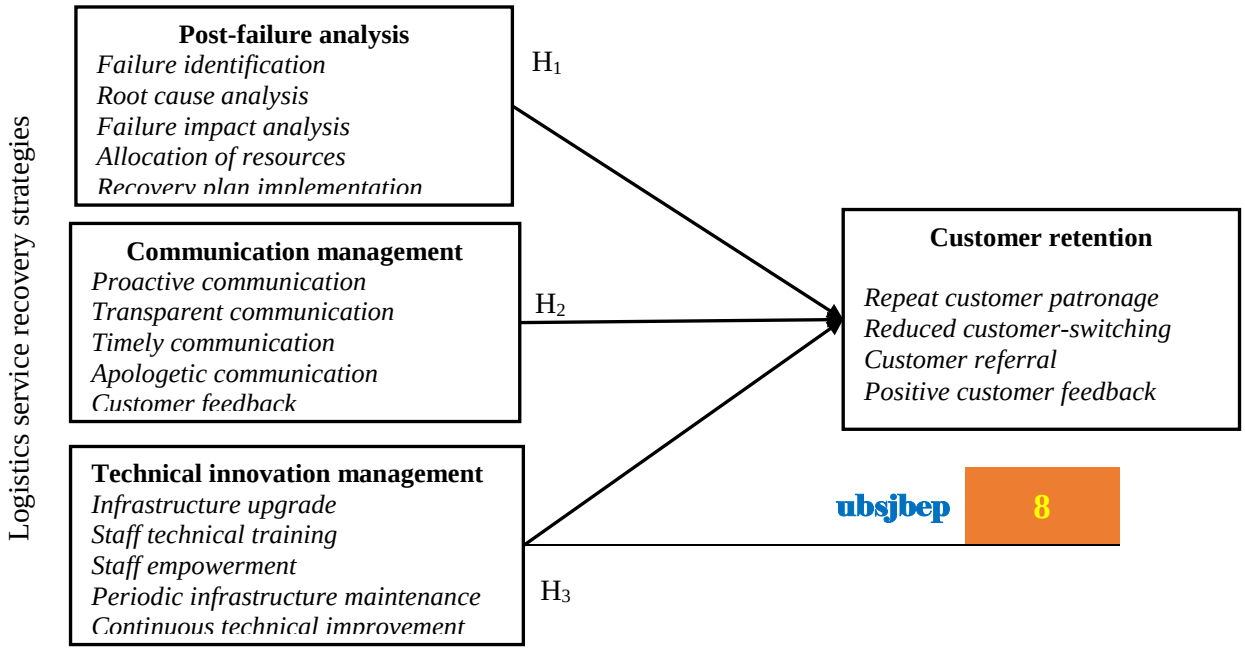
By regularly assessing and updating technological solutions, organizations can stay ahead of customer expectations and market trends, ensuring sustained customer satisfaction and loyalty even after service failure incidents. The foregoing viewpoint suggests that technical innovation management, as a service recovery strategy, has the potential to guarantee customer satisfaction after a failure incident and enhance customer retention in the long run. This viewpoint is backed by the study of Hassan and Wang (2019), which revealed that technical innovation management had a significant positive effect on customer retention among logistics companies in the Thai construction sector. The viewpoint is also backed by the study of Mohammed and Zhang (2018), which revealed that technical innovation management had a significant positive effect on customer loyalty in the Pakistani logistics sector. Hence, we put forward the following hypothesis for empirical testing:

Conceptual Model

From the review of scores of extant relevant literatures, this study adopted post-failure analysis, communication management and technical innovation management as proxies of service recovery in the context of the study. Accordingly, the parameters of post-failure analysis (failure identification, root cause analysis, failure impact analysis, allocation of resources and recovery plan implementation) were adapted from Hassan and Wang (2019). The parameters of communication management (proactive communication, transparent communication, timely communication, customer feedback and apologetic communication) were adapted from Karim and Li (2023). While the parameters of technical innovation management (infrastructure upgrade, staff technical training, staff empowerment, periodic infrastructure maintenance, and continuous technical improvement) were adapted from Mohammed and Zhang (2018). In the same way, the dependent variable (customer retention) is measured using parameters (repeat customer patronage, reduced customer-switching rates, customer referral, and positive customer feedbacks) adapted from Ascarza *et al.* (2018). In light of existing empirical evidence by previous researchers, this study therefore presents the conceptual model in FIG.1 to portray the hypothesized relationship between service recovery and customer retention in haulage companies in Akamkpa.

Figure 1: Conceptual model of the study



Source: Parameters of independent variable adapted from Hassan and Wang (2019); Karim and Li (2023); Mohammed and Zhang (2018). Parameters of dependent variable adapted from Ascarza *et al.* (2018)

Theoretical framework

The theoretical foundation of this study is based on the service recovery paradox, which is a phenomenon observed in the field of service management and customer satisfaction. It was first introduced by Michael D. Johnson and Anders Gustafsson in their 2000 paper titled "Improving Customer Satisfaction, Loyalty, and Profit Through the Measurement of Service Quality"(Johnson & Gustafsson, 2000). This serves as the foundational work for the service recovery paradox. According to Johnson and Gustafsson (2000), the service recovery paradox highlights a counterintuitive occurrence where customers who experience a service failure that is effectively resolved tend to become more satisfied and loyal than those who never experienced a failure at all. This theory challenges the traditional assumption that a service failure inevitably leads to decreased customer satisfaction. Instead, the theory proposes that the successful recovery process can result in a higher level of customer satisfaction and loyalty than if no service failure had occurred in the first place (Johnson & Gustafsson, 2000). This effect arises because when a service failure is handled efficiently and empathetically, it demonstrates the company's commitment to customer well-being and service quality. In the context of this study, the implication of the service recovery paradox lies in its basic premise, which suggests that if logistics service failures in the haulage of construction aggregates are properly handled and recovery is implemented promptly, it will enhance customers' perception of the companies' overall service competence. This entails that if haulage companies can effectively implement service recovery measures immediately after failures, they can still have the opportunity to satisfy customers' requirements and enhance customer retention. Essentially, this suggests that in situations where failures occur in the logistics service, particularly in the haulage of construction aggregates, companies have a unique opportunity. By effectively and swiftly implementing service recovery measures, these haulage companies can not only meet but exceed customers' expectations. The outcome of such proficient recovery efforts is anticipated to go beyond mere satisfaction, actively contributing to the enhancement of customer retention. The premise of the service recovery paradox has been confirmed by the findings of this study which demonstrated that service recovery can contribute to customer retention in haulage firms in Akamkpa.

Materials and Methods

This study adopted cross-sectional survey research design, which enabled the collection of primary data from a cross-section of respondents on a one-time basis for analysis and generalizations. The population of the study targeted all personnel in the operations, logistics and marketing departments of logistics companies in Akamkpa involved in the haulage of construction aggregates. The rationale behind targeting this category of employees (operations, logistics and marketing managers) is that their proximity to the logistical operations of their companies makes them suitable and knowledgeable to be included in the survey. There are 40 logistics companies involved in the haulage of

construction aggregates in Akamkpa; hence the researcher could not have access to their employee statistics. Being an active stakeholder in the sector, the researcher made used of professional networks to contact and acquire employee statistics from 3 major logistics companies in Akamkpa. This information revealed that the target population of the study comprised 186 employees as presented in Table 1.

Table 1: Population

SN	Company	Operations department	Logistics department	Marketing department	Total
1	China Civil Engineering Construction Corporation (CCECC)	32	23	26	81
2	Faithplant Global International Services Ltd	15	31	21	67
3	Mac-Kaino Ventures Ltd	12	8	18	38
					186

Source: Field survey (2024)

Given that the population of the study was below 500, it was deemed manageable and usable for the study without a further sample size statistical procedure (Ghosh, 2021). This entails that in this study, the population of 186 personnel was adopted as the sample. Also, given that the entire population of the study was adopted as sample, the total population sampling technique was adopted. This is a type of purposive sampling which studies the entire population of interest as a unit of investigation (Etikan et al., 2016). Since the study adopted the entire population as sample, there was no need for a separate sampling technique, given that the entire population was the unit of analysis. The research instrument for data collection in this study was a structured questionnaire with measures adapted from extant relevant studies. Prior to field administration, the questionnaire was content-validated, while Cronbach's alpha method was used for its reliability test. The results of the reliability test are presented in TABLE 2. The instrument was therefore deemed reliable because all measurement scales yielded Cronbach's alpha coefficients not less than 0.7. To that end, the instrument was adopted for field administration. The data obtained were descriptively analyzed and interpreted, while the hypotheses of the study were tested using multiple linear regression in the Statistical Package for the Social Sciences (SPSS).

Table 2: Reliability coefficients of questionnaire

Research variables	No. of items	Cronbach's alpha coefficients
Post-failure analysis	5	.712
Communication management	5	.748
Technical innovation management	5	.802
Customer retention	4	.795
	19	

Source: Authors' analysis via SPSS 2024

Results and Discussion

During the field questionnaire survey, the researcher administered 186 copies of the questionnaire to personnel from the operations, logistics and marketing department of haulage companies in Akamkpa. Out of the 186 questionnaire copies distributed, 182 copies (or 97.8 percent) were correctly completed and returned, while 4 copies (or 2.2 percent) were inadvertently damaged by the respondents, therefore resulting in a total response rate of 97.8 percent. This analysis is hereby based on the responses of 182 personnel of haulage companies.

Hypotheses Testing

The hypotheses developed for this study were subjected to statistical testing using multiple regression method. The study tested the null hypotheses on the grounds of maintain a non-biased and objective attitude towards the investigation.

H_1: Post-failure analysis has no significant effect on customer retention in the construction aggregates haulage business in Akamkpa.

H_2: Communication management has no significant effect on customer retention in the construction aggregates haulage business in Akamkpa.

H_3: Technical innovation management has no significant effect on customer retention in the construction aggregates haulage business in Akamkpa.

Predictor variables: post-failure analysis, communication management and technical innovation management

Outcome variable: customer retention

Decision criteria: The alternative hypothesis is accepted if probability value (P) is less than error margin of 0.05. The null hypothesis is accepted, if the reverse is the case.

Table 3: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.623[a]	.455	.421	.62553

a. Predictors: (Constant), Post-failure analysis, communication management and technical innovation management

Source: Student's analysis via SPSS 2024

Table 4: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.087	3	2.696	3.085	.001[b]
	Residual	69.257	178	.389		
	Total	77.344	181			

a. Dependent Variable: Customer retention

b. Predictors: (Constant), Post-failure analysis, communication management and technical innovation management

Source: Student's analysis via SPSS 2024

Table 5: Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	2.405	.653		3.683	.000
	Post-failure analysis	.175	.074	.185	2.367	.019
	Communication management	.257	.098	.202	2.634	.009
	Technical innovation management	.007	.061	.169	1.108	.004

a. Dependent Variable: Customer retention

Source: Student's analysis via SPSS 2024

The results presented in Tables 3, 4 and 5 demonstrate the relationship between logistics service recovery and customer retention in the construction aggregates haulage business in Akamkpa. The results in Table 3 indicate that the association between logistics service recovery and customer retention is 62.3 percent (R = .623). This implies that the variables are very highly correlated with each other. Also, the R2 value of 0.455, indicates that logistics service recovery explains about 45.5 percent of the variation in customer retention in the construction aggregates haulage business in Akamkpa. As such, in the event of a unit change in logistics service recovery, customer retention in the construction aggregates haulage business in Akamkpa will be impacted by about 45.5 percent, if other factors remain unchanged. The F-test (3.085, $P < 0.05$) statistic in Table 4 signifies that the overall prediction of the dependent variable by the independent variable is statistically significant; therefore, implying that service recovery has a significant effect on customer retention in the construction aggregates haulage business in Akamkpa. Table 5 (the coefficients table) provides information on the capability of each service recovery dimension to explain or predict customer retention in the construction aggregates haulage business in Akamkpa. As can be seen on Table 5 above, all the service recovery dimensions tested were found to significantly predict or explain customer retention in the construction aggregates haulage business in Akamkpa, because their p-values [post-failure analysis (p-value = 0.019), communication management (p-value = 0.009), and technical innovation management (p-value = 0.004)] were less than the error margin of 0.05, with positive t-test values.

This indicates that the relationship between service recovery dimensions tested and customer retention in the construction aggregates haulage business in Akamkpa, is a direct and positive one. Furthermore, the standardized beta coefficient column in Table 5 shows the individual contributions of each service recovery dimension to the model. As can be seen on the column, the highest contributing service recovery dimension to the model is communication management, with a beta coefficient of 0.202 (20.2 percent). The second highest contributing service recovery dimension to the model is post-failure analysis, with a beta coefficient of 0.185 (18.5 percent), while the least-contributing service recovery dimension to the model is technical innovation management, with a beta coefficient of 0.169 (16.9 percent). Finally, since the p-values of post-failure analysis (p-value = 0.019), communication management (p-value = 0.009), and technical innovation management (p-value = 0.004) were less than the error margin of 0.05, we reject all the

null hypotheses, and accept all alternative hypotheses. Therefore, we conclude that post-failure analysis, communication management and technical innovation management have significant positive effects on customer retention in the construction aggregates haulage business in Akamkpa, Cross River State.

Discussion of findings

The finding that emerged from the test of hypothesis one revealed that post-failure analysis has a significant positive effect on customer retention in the construction aggregates haulage business in Akamkpa. This finding is backed by the study of Hernandes (2021), which revealed that post-failure analysis had a significant positive effect on customer loyalty towards haulage firms in Brazil. The finding is also in line with the study of Karim and Li (2023), which revealed that there is a significant positive relationship between post-failure analysis and customer retention towards logistics companies in Oman. In the context of this study, this finding implies that post-failure analysis plays a pivotal role in influencing customer retention for construction aggregates haulage companies in Akamkpa. When these companies invest in thorough post-failure analyses, they are better equipped to understand and address the challenges that led to the failure. This level of introspection allows them to not only rectify immediate issues but also implement preventative measures to avoid similar failures in the future. As a result, customers perceive the company as proactive and dedicated to continuous improvement, fostering a sense of trust and reliability.

In testing the second hypothesis, it was found that communication management has a significant positive effect on customer retention in the construction aggregates haulage business in Akamkpa. This finding is corroborated by the study of Hernandes (2021), which revealed that communication management had a significant positive effect on customer loyalty towards haulage firms in Brazil. The finding is also corroborated by the study of Karim and Li (2023), which revealed that there is a significant positive relationship between communication management and customer retention towards logistics companies in Oman. In the context of this study, the implication of this finding is that communication plays a pivotal role in building and maintaining strong relationships between companies and their customers. In the construction aggregates haulage industry, where the services provided are often critical to the success of construction projects, the ability to communicate effectively during service recovery can enhance customer satisfaction. Under such circumstances, clear and timely communication not only addresses customer concerns but also instills confidence in the company's commitment to rectifying the situation.

Finally, the test of hypothesis three revealed that technical innovation management has a significant positive effect on customer retention in the construction aggregates haulage business in Akamkpa. This finding is backed by the study of Hassan and Wang (2019), which revealed that technical innovation management had a significant positive effect on customer retention among logistics companies in the Thai construction sector. The finding is also backed by the study of Mohammed and Zhang (2018), which revealed that technical innovation management had a significant positive effect on customer loyalty in the Pakistani logistics sector. In the context of this study, the implication of this finding

is that the adoption of innovative technical solutions in service recovery enhances the overall operational efficiency of construction aggregates haulage companies. This could involve the implementation of advanced tracking systems, real-time monitoring, or streamlined logistics processes. By leveraging technology, companies can minimize downtime, reduce errors, and address service disruptions promptly. This heightened efficiency contributes directly to improved customer satisfaction, as customers experience a smoother and more dependable service, even in the face of unexpected challenges.

Conclusion and Recommendation

In the face of unpredictable service failures prevailing business sectors around the world, practitioners and scholars have resorted to several service recovery strategies to guard against disruptions and enhance customer value. This study centered on determining the effects of post-failure analysis, communication management and technical innovation management on customer retention in the construction aggregates haulage business in Akamkpa, Cross River State. To that end, the study sought and obtained primary data from relevant personnel of logistics companies in Akamkpa through a structured questionnaire survey. The data obtained were statistically analyzed and the study's hypotheses were tested accordingly. Consequently, the findings made indicate that post-failure analysis, communication management and technical management had significant positive effects on customer retention in the construction aggregates haulage business in Akamkpa, Cross River State. Communication management emerged the most influential service recovery strategy, thereby signifying the need for ongoing and transparent communications with customers especially during service recoveries. On the basis of the findings made, this study concludes that service recovery is a vital strategy that must be initiated promptly in the aftermath of failure incidents to appease customers, provide them with value and improve their satisfaction.

For this to be achieved, the following practical insights could be useful:

i. Logistics companies should initiate a well-coordinated post-failure analytical exercise in the aftermath of every failure incident in order to identify the type of failure that has occurred, its root causes, impact on its operations and the recovery measures required to address the incidents. By thoroughly understanding these dynamics, logistics companies can not only rectify issues but also demonstrate a commitment to customer satisfaction and continuous improvement in their services.
ii. Logistics companies should prioritize effective communication during service failures by providing factual, timely, and transparent information to customers in an empathetic way to lessen the adverse impacts of the incidents on customers and to provide confidence in their recovery capabilities. Prioritizing clear and factual communication helps manage customer expectations and reduces uncertainty. By providing timely updates, logistics companies demonstrate transparency and keep customers informed about the reasons behind the service failures.
iii. To guard against intermittent incidents of service failures, logistics companies should embark on a continuous technical innovation management agenda by

upgrading their equipment, empowering staff technically to operate them and servicing technological infrastructure to reliably satisfy customers' requirements. By investing in the latest technology and machinery, companies can ensure greater reliability and efficiency in their operations. Upgraded equipment is often equipped with advanced features and capabilities, reducing the likelihood of service failures or disruptions.

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