



Consumer-Driven Supply Chains Agility Practices and Performance of Steel Manufacturing Firms in Kenya

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Abstract

The performance of steel manufacturing firms in Kenya has been constrained by persistent supply chain inefficiencies, including long lead times, high inventory costs, stockouts, and weak responsiveness to fluctuating customer demand. This study examined the influence of consumer-driven supply chain agility practices on the performance of steel manufacturing firms in Kenya. Grounded in Dynamic Capabilities Theory, the study adopted a pragmatism philosophy and employed a descriptive and correlational research design. Data were collected from 163 respondents drawn from steel manufacturing firms using stratified random sampling and analyzed using descriptive statistics, Pearson correlation, and multiple regression analysis. The findings revealed a positive and statistically significant relationship between consumer-driven supply chain agility practices and firm performance ($r = 0.612$, $p < 0.05$). Regression results further indicated that consumer-driven supply chain agility practices significantly predict firm performance ($\beta = 0.688$, $p < 0.05$), explaining 64.3% of the variation in performance outcomes ($R^2 = 0.643$). The model was also statistically significant ($F = 312.568$, $p < 0.05$), confirming the robustness of the relationship. The study established that customer integration, demand sensing, data analytics, and responsive logistics enhance operational efficiency, reduce lead times, and improve customer satisfaction. The study concludes that consumer-driven supply chain agility is a key determinant of performance in Kenya's steel manufacturing sector. The study further recommends increased investment in digital supply chain systems, enhanced cross-functional coordination, and strengthened demand-driven planning to improve responsiveness and competitiveness.

Keywords: *Consumer-driven supply chain, firm performance, steel manufacturing.*

JEL Classification codes: *P36.*

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Introduction

A consumer-driven supply chain is a supply chain model that is structured around consumer preferences, behaviours, and demand patterns, with the aim of enhancing responsiveness, flexibility, and competitiveness across the value chain (Sha et al., 2025). Unlike traditional supply

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chains that are often production-oriented and driven by supplier capabilities, consumer-driven supply chains prioritize the customer as the central driver of decision-making in sourcing, production, distribution, and service delivery (Bernett, 2025). This model emphasizes agility the ability of firms to rapidly sense, respond, and adapt to changing consumer needs, market dynamics, and environmental uncertainties (Dhiman et al., 2015). Agility in supply chains entails flexibility in production processes, quick responsiveness to fluctuating demand, and the capacity to reconfigure operations to align with consumer expectations (Gligor & Holcomb, 2012). In consumer-driven contexts, agility is enabled by demand visibility, real-time information sharing, collaborative planning, and the integration of digital technologies that enhance decision-making speed and accuracy (Tse et al., 2016). As a result, consumer-driven supply chains are able to minimize inefficiencies, reduce lead times, improve customer satisfaction, and ultimately drive superior organizational performance (Narayanan, Narasimhan & Schoenherr, 2015).

On a global scale, consumer-driven supply chains are increasingly recognized as a transformative approach to enhancing competitiveness, resilience, and customer satisfaction across industries. Unlike traditional supply chains that are often supplier-driven and rigid, consumer-driven supply chains place the customer at the center of decision-making, emphasizing responsiveness, customization, and agility (Christopher, 2016). In volatile global markets characterized by fluctuating demand, shorter product lifecycles, and rising customer expectations, supply chain agility defined as the ability to rapidly sense, adapt, and respond to changes has emerged as a critical driver of performance (Yusuf et al., 2014). Multinational firms in manufacturing, retail, and automotive sectors are leveraging digital technologies such as real-time data analytics, demand forecasting, and AI-powered planning systems to enhance visibility and align supply chain operations with evolving consumer needs (Gligor & Holcomb, 2012). This shift links efficiency, customer satisfaction, and profitability, underscoring the strategic importance of agility in consumer-driven supply chains on a global stage.

Across Africa, consumer-driven supply chain agility is increasingly viewed as both a necessity and an opportunity, given the continent's rapidly growing consumer markets, infrastructure gaps, and exposure to external shocks (Taddei et al., 2022). African manufacturing sectors including steel, cement, and fast-moving consumer goods—face challenges such as demand volatility, limited supply chain integration, and competition from imports (Chinomona & Bikissa-Macongue, 2022). To remain competitive, firms are adopting agile supply chain practices such as demand-driven production, localized sourcing, and flexible distribution networks. Pilot initiatives in South Africa and Nigeria illustrate how digital platforms for demand visibility and collaborative planning can improve responsiveness, reduce stockouts, and align production with market needs (Schmidt et al., 2021). However, the widespread adoption of consumer-driven agility is often hindered by weak infrastructure, policy gaps, and limited technological adoption. Nevertheless, regional development frameworks like the African Continental Free Trade Area (AfCFTA) emphasize competitiveness and value chain integration, positioning consumer-driven supply chains as enablers of industrial growth.

In the context of Kenya's steel manufacturing industry, consumer-driven supply chain agility is particularly critical. Steel plays a central role in national development, being the backbone of construction, real estate, and infrastructure projects under Kenya's Vision 2030 (KAM, 2021). Yet the sector is highly vulnerable to fluctuating demand patterns, rising energy costs, and intense competition from imported steel products. Traditional supply chain models characterized by long lead times, rigid production schedules, and heavy dependence on imported raw materials often constrain responsiveness and erode competitiveness. By embedding consumer-driven agility, steel firms in Kenya can better align production with market demand, respond rapidly to project requirements, optimize resource utilization, and improve overall performance in terms of cost efficiency, service delivery, and customer satisfaction (World Bank, 2020). This paradigm not only



strengthens resilience against market disruptions but also provides a strategic pathway for Kenyan steel manufacturers to enhance competitiveness and contribute more effectively to the country's industrialization and infrastructure agenda.

Problem Statement

Kenya's steel manufacturing sector plays a vital role in supporting infrastructure and housing projects under Vision 2030, yet it continues to face major challenges in supply chain responsiveness and competitiveness. The country imported 8,256 shipments of steel between October 2023 and September 2024, a 34% increase from the previous year, highlighting the sector's heavy reliance on imports and exposure to price volatility and global supply shocks. Despite growing domestic demand, most local steel manufacturers operate under rigid, supplier-driven supply chain models characterized by long lead times, inflexible production schedules, and limited responsiveness to fluctuating consumer demand. This results in frequent stockouts, high inventory costs, and delayed deliveries, undermining customer satisfaction and eroding competitiveness against cheaper imports. In addition, rising energy costs and infrastructure bottlenecks further constrain firms' ability to respond quickly to dynamic market needs, limiting their overall performance in terms of efficiency, service delivery, and profitability. Although global literature shows that consumer-driven supply chain agility through demand sensing, flexible sourcing, and rapid responsiveness enhances firm performance (Christopher, 2016; Yusuf et al., 2014; Gligor & Holcomb, 2012), there is limited empirical evidence on its application within Kenya's steel manufacturing sector. Existing studies have focused on supply chain collaboration and efficiency in Kenyan industries. However, few studies have systematically examined how consumer-driven agility practices specifically influence performance outcomes such as cost reduction, lead-time reliability, and customer satisfaction in steel firms. Moreover, little is known about how agility interacts with Kenya's unique challenges such as high import dependence, fluctuating infrastructure demand, and logistical inefficiencies. This creates a clear research gap: the performance implications of consumer-driven supply chain agility in Kenya's steel manufacturing industry remain underexplored, leaving policymakers and practitioners without evidence-based strategies to enhance competitiveness and resilience in this critical sector.

Research Hypothesis

H₀₁: There is no statistically significant relationship between consumer-driven supply chains agility and Performance of Steel Manufacturing Firms in Kenya

Theoretical Review

A relevant theory for examining Consumer-Driven Supply Chains Agility and Performance of Steel Manufacturing Firms in Kenya is the Dynamic Capabilities Theory (Teece, Pisano & Shuen, 1997). The theory posits that firms achieve superior performance by sensing changes in the market, seizing opportunities, and reconfiguring internal and external resources to respond to environmental volatility. In consumer-driven supply chains, this theory explains how steel manufacturing firms can continuously align production schedules, inventory systems, supplier coordination, and logistics processes with evolving customer preferences and demand fluctuations. For steel manufacturers in Kenya, where infrastructure projects, construction demand, and imported substitutes create volatile market conditions, dynamic capabilities support agility through rapid demand forecasting, flexible procurement, and customer-responsive production systems. Studies on supply chain agility in Kenyan manufacturing firms have linked adaptability, sourcing flexibility, and market responsiveness with improved organizational performance, reinforcing the theory's propositions.



Despite its relevance, Dynamic Capabilities Theory has notable limitations. Critics argue that the theory is conceptually broad and difficult to operationalize because constructs such as “sensing,” “seizing,” and “reconfiguring” are often abstract and lack universally accepted measurement scales. This creates methodological challenges when empirically testing the exact mechanisms through which dynamic capabilities influence supply chain agility and firm performance. Additionally, the theory tends to emphasize internal managerial competencies while underestimating external institutional constraints such as government regulations, infrastructure deficiencies, foreign competition, and supply disruptions—factors highly relevant to Kenyan steel manufacturers. In developing economies, firms may possess strong adaptive capabilities but still face performance limitations due to macroeconomic volatility, logistics bottlenecks, or high production costs. Thus, Dynamic Capabilities Theory may not fully explain performance outcomes without considering contextual environmental factors.

The applicability of Dynamic Capabilities Theory to this study is strong because consumer-driven supply chains fundamentally require firms to remain responsive to changing customer needs while maintaining operational efficiency. Kenyan steel manufacturers operate in a competitive environment characterized by fluctuating construction demand, price-sensitive customers, and growing expectations for customized steel products, timely delivery, and quality consistency. The theory provides a suitable lens for explaining how firms that integrate customer information into procurement, production planning, inventory management, and distribution decisions can enhance supply chain agility and ultimately improve firm performance. Specifically, consumer demand visibility enables steel firms to redesign processes, reduce lead times, optimize stock levels, and improve customer satisfaction, making Dynamic Capabilities Theory an appropriate foundation for linking consumer-driven supply chains, agility, and organizational performance in the Kenyan steel sector.

Empirical Review

Bennett (2025) examined customer-centric supply chains and the role of marketing innovations in improving operational efficiency and customer satisfaction across industries. Using a qualitative approach based on semi-structured interviews with supply chain stakeholders, the study found that customer-centric strategies require organizations to prioritize understanding and anticipating customer needs at all operational levels. The findings further revealed that digital marketing tools, data analytics, e-commerce platforms, and social media significantly enhance demand forecasting, inventory optimization, agility, and responsiveness within supply chains. Additionally, collaboration among supply chain partners, sustainability practices, entrepreneurship, and emotional intelligence were identified as important enablers of efficient and customer-focused supply chain systems.

Shah et al. (2025) examined the market-driven supply chains and their relationship with consumer demand, logistics integration, and business growth. Using a mixed-methods approach involving surveys of 168 supply chain professionals from manufacturing, retail, and logistics sectors, alongside expert interviews, the study found that digital technology adoption, market responsiveness, and logistics collaboration significantly and positively influence economic efficiency and business performance. The results further showed that firms adopting market-driven supply chain strategies outperform those relying on traditional forecast- and production-driven models, with AI-powered demand forecasting and real-time analytics emerging as critical drivers of responsive supply chain decisions. This study is relevant to consumer-driven supply chains, agility, and performance of steel manufacturing firms in Kenya because it demonstrates that aligning logistics and production systems with real-time consumer demand enhances responsiveness, operational efficiency, and competitive performance in dynamic manufacturing environments.



Kottala and Kotzab (2020) investigated the relationship between Supply Chain Operations Reference (SCOR) model practices and supply chain performance in the manufacturing sector. The study developed and validated a measurement scale for SCOR-related performance indicators using five core supply chain constructs: planning, sourcing, making, delivering, and returning. Using data collected from 155 respondents in Indian manufacturing firms and analyzed through structural equation modeling, the findings established a significant relationship between SCOR-related practices and overall supply chain performance indicators. The study further found that organizational characteristics such as employee size, company age, and company type significantly moderate the relationship between SCOR practices and supply chain performance. This study is relevant to consumer-driven supply chains, agility, and performance of steel manufacturing firms in Kenya because it demonstrates that structured supply chain processes and performance measurement systems improve operational efficiency and responsiveness.

Madhani (2020) examined customer-focused supply chain strategy and developed the 4Rs framework responsiveness, resiliency, reliability, and realignment as key drivers of competitive advantage and improved firm performance. Published in the *International Journal of Services and Operations Management*, the study established that customer-focused supply chains enable firms to respond to consumer demand in real time, enhance customer experience, reduce operational costs, and optimize productivity. The findings further indicated that firms implementing customer-focused supply chain strategies achieve better performance outcomes in terms of sales growth, profitability, market share, and customer satisfaction, while strengthening their capacity to adapt to rapidly changing business environments. This study is relevant to consumer-driven supply chains, agility, and performance of steel manufacturing firms in Kenya because it highlights how responsiveness, resilience, reliability, and strategic alignment with supply chain partners can improve operational flexibility, service delivery, and competitiveness in Kenya's steel manufacturing sector, where firms face fluctuating customer demand, cost pressures, and market uncertainty.

Junfeng and Butkouskaya (2025) investigated the relationship between customer agility and sustainability performance among tourism firms of different sizes. The study collected 472 valid survey responses from middle and senior managers of Chinese tourism organizations and analyzed the data using structural equation modelling (SEM) and multi-group analysis. The findings revealed that customer agility, particularly customer sensing and customer responding capabilities, positively influences economic, social, and environmental sustainability performance. The study further established that firm size moderates the relationship between customer sensing capabilities and sustainability outcomes, while its influence on customer responding capabilities varies across specific sustainability dimensions. This study is relevant to consumer-driven supply chains, agility, and performance of steel manufacturing firms in Kenya because it demonstrates that firms capable of sensing and responding quickly to customer needs can improve operational performance and long-term competitiveness.

Shah and Piragine (2018) examined the role of autonomous transportation technologies in global supply chains with a focus on consumer-driven demand chains. Presented at the 8th International Conference on Operations and Supply Chain Management, the study explored the principles, applications, and implications of autonomous vehicles in transportation and logistics. The authors found that autonomous transportation technologies improve supply chain efficiency through cost reduction, enhanced safety, fuel efficiency, productivity gains, and reduced environmental impact. The study further highlighted that autonomous vehicles support demand-driven supply chains by enabling faster, more reliable, and more efficient logistics operations, although challenges such as legal constraints, high implementation costs, security risks, and ethical concerns limit widespread adoption. This study is relevant to consumer-driven supply chains, agility, and performance of steel manufacturing firms in Kenya because it demonstrates how advanced logistics technologies can



strengthen supply chain responsiveness, reduce transportation inefficiencies, and improve cost competitiveness.

Dhiman et al. (2025) examined consumer-centric marketing management as a pathway to competitive advantage in the retail sector. The conceptual study developed a framework showing that personalized marketing, customer engagement, value co-creation, data-driven decision-making, and long-term relationship management are critical drivers of competitive performance. The study found that consumer-centric marketing should be treated as a strategic orientation rather than a tactical activity, emphasizing alignment of organizational decisions with customer needs, preferences, and behavioral insights. Additionally, emotional connection, trust, satisfaction, digital transformation, and omnichannel systems were identified as factors that strengthen responsiveness and improve the customer journey. This study is relevant to consumer-driven supply chains, agility, and performance of steel manufacturing firms in Kenya because it demonstrates that integrating customer insights, data analytics, and responsive operational systems can improve demand responsiveness, customer satisfaction, and competitive performance.

Critical Review

he reviewed studies consistently demonstrate that consumer-driven and customer-focused supply chains enhance organizational agility and performance by aligning operations with evolving customer needs. Bennett (2025) emphasizes that customer-centric supply chains rely on digital marketing tools, data analytics, e-commerce, and social media to improve demand forecasting, inventory optimization, and operational responsiveness. Similarly, Shah et al. (2025) found that market-driven supply chains supported by digital technology, AI-powered demand forecasting, and logistics collaboration significantly improve economic efficiency and business performance. Madhani (2020) complements these findings by proposing the 4Rs framework—responsiveness, resiliency, reliability, and realignment as critical capabilities enabling firms to respond to consumer demand in real time while improving productivity, profitability, and customer satisfaction. Collectively, these studies suggest that consumer-driven supply chains create competitive advantage through customer responsiveness, operational flexibility, and technology-enabled decision-making.

Despite these contributions, several methodological and contextual limitations are evident across the reviewed literature. First, Bennett (2025) and Dhiman et al. (2025) are largely conceptual or qualitative, limiting the generalizability and empirical robustness of their conclusions. While these studies provide useful theoretical insights into customer-centric strategies, they do not offer measurable causal evidence linking such practices directly to firm performance outcomes. Additionally, Junfeng and Butkouskaya (2025) focused on tourism firms in China, while Kottala and Kotzab (2020) examined Indian manufacturing firms, raising concerns about contextual transferability to Kenya's steel manufacturing sector. Likewise, Shah and Piragine (2018) discuss autonomous transportation technologies in global supply chains, but their emphasis on advanced logistics technologies may be less practical in developing-country contexts characterized by infrastructure constraints, capital limitations, and regulatory challenges. Thus, much of the literature lacks direct empirical focus on African manufacturing settings, particularly the steel industry.

The reviewed studies remain highly relevant to the current study on consumer-driven supply chains, agility, and performance of steel manufacturing firms in Kenya. Kottala and Kotzab (2020) provide a useful operational lens through SCOR practices, showing how planning, sourcing, making, delivering, and returning improve supply chain performance and responsiveness. This is particularly applicable to Kenyan steel manufacturers, which require efficient procurement, production scheduling, and distribution systems to respond to volatile construction demand and imported competition. Furthermore, findings by Shah et al. (2025), Madhani (2020), and Dhiman et al. (2025) reinforce the importance of integrating customer insights, digital technologies, and



collaborative supply chain practices to improve agility and competitiveness. However, the literature reveals a contextual gap because most studies are conducted in developed or Asian markets, creating the need for empirical investigation into how consumer-driven supply chains influence agility and firm performance specifically within Kenya's steel manufacturing industry.

Conceptual framework can be defined as a set of broad ideas and principles taken from relevant fields of inquiry and used to structure a subsequent presentation (Myers, 2013). Figure 1 show the conceptual framework which will be used in this study and depicts the interrelationship between the study variables. The independent variable is customer-driven supply chains and performance of steel manufacturing firms is the dependent variable. These variables and hypothetical causal paths and relationships are presented in Figure 1;

Figure 1. Conceptual Framework

This study adopted a pragmatism research philosophy, which emphasizes practical problem-solving and the use of methods best suited to addressing real-world research problems through methodological flexibility. Pragmatism was considered appropriate because consumer-driven supply chain agility in steel manufacturing involve both measurable operational processes and contextual business dynamics such as customer demand fluctuations, technological adaptation, supplier coordination, and market competition. The study employed a mixed-methods approach using descriptive and correlational research designs. The descriptive design enabled the researcher to examine the current status of consumer-driven supply chain practices, agility capabilities, and performance indicators among steel manufacturing firms in Kenya, while the correlational design facilitated analysis of the relationships between consumer-driven supply agility, and firm performance. The target population comprised 276 employees and managers drawn from selected steel manufacturing firms in Kenya, including supply chain managers, procurement officers, production managers, logistics officers, marketing managers, and operations staff. These respondents were selected because of their direct involvement in supply chain decision-making, customer demand management, procurement, production scheduling, and logistics coordination. Using Slovin's formula, a sample size of 163 respondents was determined and selected through stratified random sampling to ensure proportional representation across management and operational categories. Data were collected using structured complemented by secondary data obtained from company reports, industry publications, and government manufacturing statistics. Quantitative data were analyzed using descriptive statistics, Pearson correlation analysis and

multiple regression analysis to test the relationships between consumer-driven supply chains agility and firm performance.

Results and Discussion

The Pearson correlation analysis revealed that consumer-driven supply chain agility has a positive and statistically significant relationship with supply chain agility and performance in steel manufacturing firms in Kenya. The correlation coefficient between consumer-driven supply chain practices and firm performance was $r = 0.612$ ($p < 0.05$), indicating a moderate to strong positive association.

This result implies that improvements in consumer-driven supply chain agility lead to enhanced supply chain performance in steel manufacturing firms. The finding suggests that firms that actively integrate customer feedback, demand signals, and real-time market intelligence into procurement, production, and distribution decisions are more likely to achieve improved agility, efficiency, and responsiveness. Such practices enable firms to reduce lead times, optimize inventory levels, and align production schedules with actual market demand, thereby minimizing inefficiencies and improving service delivery. The positive relationship highlights the importance of customer integration, data-driven decision-making, and cross-functional coordination in enhancing supply chain responsiveness. In the context of Kenyan steel manufacturing firms, where demand fluctuations, import competition, and infrastructure constraints are common, consumer-driven practices ensure that firms can quickly adjust production and distribution strategies to meet changing customer requirements. This reduces stockouts, overproduction, and delays while improving customer satisfaction and competitive positioning. These findings are consistent with earlier studies that emphasize the importance of customer-centric and market-driven supply chain approaches in improving organizational performance (Madhani, 2020; Shah et al., 2025; Bennett, 2025). Based on the statistically significant relationship observed, the null hypothesis H_{01} , which stated that consumer-driven supply chain agility practices have no statistically significant influence on supply chain performance, was rejected. This confirms that consumer-driven supply chain agility practices play a significant role in enhancing agility and performance of steel manufacturing firms in Kenya.

Table 1. Correlation Results

Variables Compared	N	Pearson Correlation (r)	Sig. (2-tailed)	Interpretation
Consumer-Driven Supply Chain vs firm Performance	163	0.612**	0.000	Moderate positive and statistically significant relationship

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

Multiple regression analysis was conducted to assess the effect of consumer-driven supply chain agility practices on supply chain performance in steel manufacturing firms in Kenya. The regression results indicated a positive and statistically significant influence on firm performance. The model summary shows an R value of 0.802, indicating a strong relationship between consumer-driven supply chain agility practices and firm performance. The R^2 value of 0.643 implies that approximately 64.3% of the variation in firm performance is explained by consumer-driven supply chain agility practices, while the adjusted R^2 of 0.601 confirms that the model remains robust after adjusting for sample variations.



Table 2. Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.802	0.643	0.601	0.22145

Further regression analysis revealed that consumer-driven supply chain agility had an unstandardized coefficient (β) of 0.688, a standardized beta (β) of 0.642, and a t-value of 4.231 with a significance level of $p = 0.000$, which is below the 0.05 threshold. This indicates that, holding other factors constant, a unit improvement in consumer-driven supply chain agility results in a significant increase in firm performance. The findings suggest that effective use of customer data, demand forecasting systems, and responsive logistics planning significantly enhances agility, operational efficiency, and performance outcomes in steel manufacturing firms.

Table 3. Regression Coefficients

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	T	Sig.
Constant	1.102	0.118	—	9.339	0.000
Consumer-Driven Supply Chain Agility	0.688	0.163	0.642	4.231	0.000

Hypothesis Test Decision

H01 is rejected. There is a statistically significant positive relationship between consumer driven supply chain agility and performance of steel manufacturing firms in Kenya.

The empirical evidence supports the conclusion that supply chain agility driven by consumer responsiveness is a critical determinant of performance in the steel manufacturing sector. Enhancing agility capabilities therefore represents a strategic lever for improving operational effectiveness and organizational outcomes.

The ANOVA results further confirmed the validity of the regression model, with an F-statistic of 312.568 ($p < 0.05$), indicating that the model is statistically significant and that consumer-driven supply chain agility have a meaningful linear relationship with firm performance.

Table 4. ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	512.774	1	512.774	312.568	0.000
Residual	285.331	161	1.772	—	—
Total	798.105	162	—	—	—

The regression results demonstrate that consumer-driven supply chain agility have a positive and statistically significant influence on supply chain agility and performance in steel manufacturing firms in Kenya. This finding indicates that firms that integrate customer demand signals into operational processes are better positioned to improve responsiveness, reduce inefficiencies, and enhance service delivery. In highly competitive and volatile environments such as the Kenyan steel industry, aligning production, procurement, and logistics with real-time customer needs enables firms to minimize waste, improve planning accuracy, and respond faster to market changes. These findings are consistent with earlier studies that emphasize the importance of customer-centric and market-responsive supply chain systems. Madhani (2020) highlights that customer-focused supply chain strategies enhance responsiveness and resilience, while Shah et al. (2025) demonstrate that



market-driven supply chains supported by digital technologies improve efficiency and performance. Bennett (2025) further emphasizes that data analytics and customer insights significantly enhance agility and operational responsiveness. Collectively, the evidence suggests that consumer-driven supply chain practices provide a critical foundation for improving agility, competitiveness and performance in steel manufacturing firms in Kenya.

Optimal Model

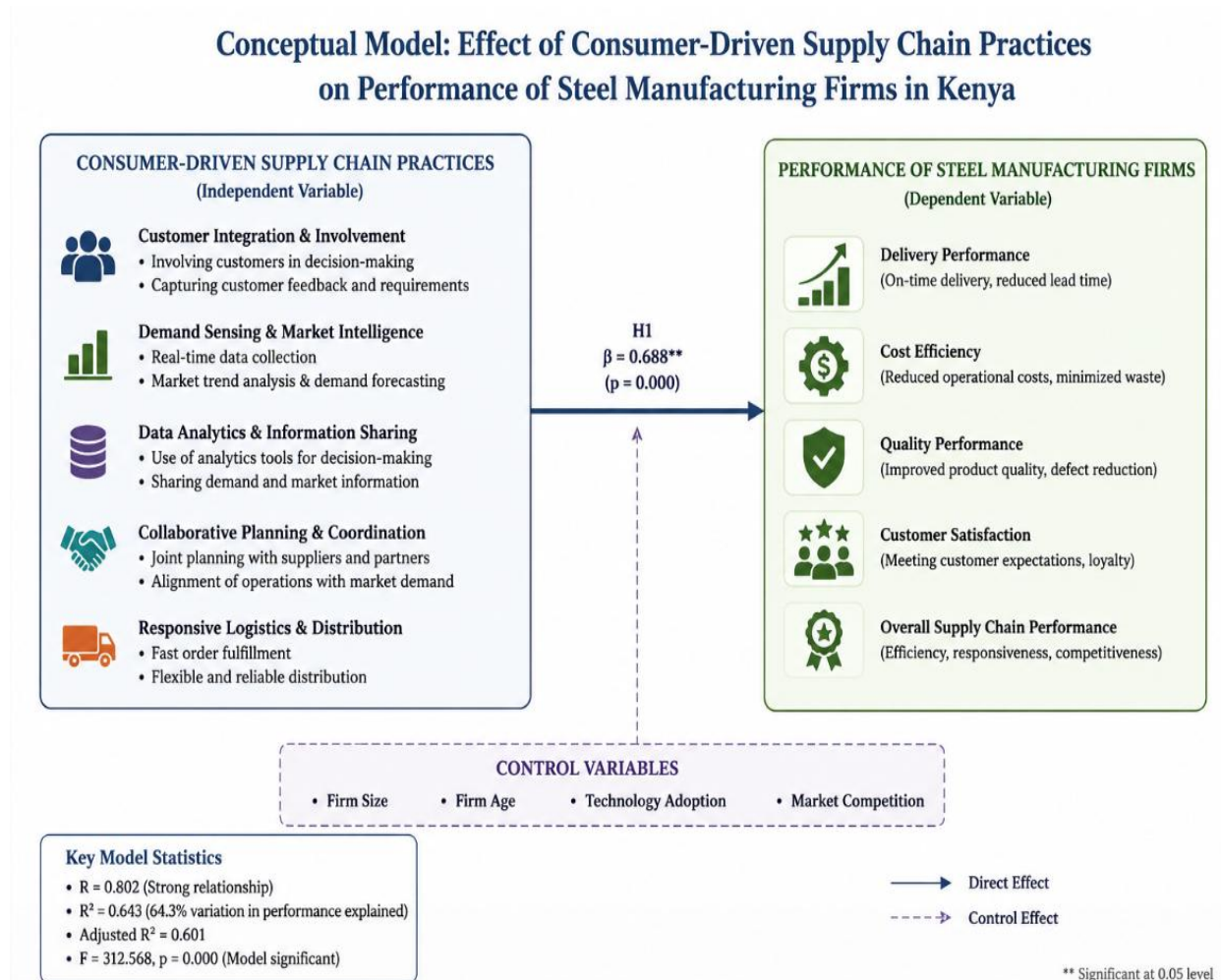


Figure 2. Optimal Model

The optimal model presented in the figure 2 illustrates that consumer-driven supply chain practices have a direct and statistically significant effect on the performance of steel manufacturing firms in Kenya, without the mediation of intermediate variables. The consolidation of practices such as customer integration, demand sensing, data analytics, collaborative planning, and responsive logistics into a single construct indicates that these elements collectively function as a unified capability rather than isolated functions. The strong positive coefficient ($\beta = 0.688$, $p < 0.05$) implies that firms that more actively embed customer insights into operational processes achieve higher levels of delivery performance, cost efficiency, product quality, and customer satisfaction. This reinforces the idea that supply chain performance in manufacturing is increasingly driven by real-time responsiveness to consumer demand, particularly in environments characterized by uncertainty, such as the Kenyan steel industry. Similar conclusions are reflected in Madhani (2020), who emphasized that customer-focused supply chains improve responsiveness and competitive



advantage through the 4Rs framework, and in Shah and Gul (2025), who found that market-driven supply chains significantly enhance efficiency and business performance through digital integration and demand responsiveness.

The implication of the model further aligns with broader literature suggesting that integration of customer intelligence and operational responsiveness is central to supply chain competitiveness. The absence of a mediating variable in the model highlights the direct strategic importance of consumer-driven practices in shaping performance outcomes, suggesting that agility is embedded within the practices themselves rather than acting as an intermediate mechanism. This supports findings by Kottala and Herbert (2020), who demonstrated that structured supply chain practices (such as planning, sourcing, and delivery systems) directly improve overall performance in manufacturing firms. It also resonates with Junfeng and Butkouskaya (2025), who established that customer sensing and responding capabilities directly enhance organizational outcomes across economic, social, and environmental dimensions. In the Kenyan steel manufacturing context, these findings imply that firms must prioritize real-time customer integration and digital responsiveness as core operational strategies rather than supplementary functions, especially given increasing market volatility, import competition, and fluctuating construction demand.

Conclusion

In conclusion, the study establishes that consumer-driven supply chain agility and performance in steel manufacturing firms in Kenya. Effective integration of customer demand signals, real-time market data, and feedback mechanisms into procurement, production and distribution processes enhances responsiveness, improves demand forecasting accuracy, and strengthens operational efficiency. These practices enable firms to reduce lead times, optimize inventory levels and align production with actual market needs thereby improving overall competitiveness and customer satisfaction. Although consumer-driven supply chain agility operates alongside other internal and external factors, they provide a critical strategic foundation for enhancing agility and sustaining performance in a highly competitive and demand-volatile manufacturing environment.

Recommendations

Based on the study findings, it is recommended that steel manufacturing firms in Kenya prioritize the adoption of consumer-driven supply chain agility by strengthening systems for capturing and analyzing customer demand data. This can be achieved through investment in digital technologies such as data analytics platforms, customer relationship management (CRM) systems, and integrated supply chain information systems that enable real-time visibility of demand trends. At the managerial level, firms should enhance cross-functional coordination between marketing, procurement, production, and logistics departments to ensure that customer requirements are effectively translated into operational decisions. Regular demand reviews and agile production planning should also be institutionalized to improve responsiveness.

From a policy and industry perspective, it is recommended that government agencies and industry associations support the digital transformation of manufacturing supply chains by promoting access to affordable technology infrastructure, training programs, and innovation hubs. Capacity-building initiatives should be implemented to equip supply chain managers with skills in data-driven decision-making, demand forecasting, and agile supply chain management. Additionally, collaboration between steel manufacturers, suppliers, and logistics providers should be strengthened to enhance supply chain integration, reduce inefficiencies, and improve responsiveness to dynamic market demands in Kenya's manufacturing sector.



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