ASSESSMENT OF THE SUPPLY VALUE CHAIN OF COCA-COLA COMPANY AND ITS SOCIOECONOMIC EFFECTS ON THE RURAL ECONOMY OF ADAMAWA NORTH SENATORIAL DISTRICT

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Abstract

This paper examines the supply value chain of the Coca-Cola Company and its socioeconomic effects on the rural economy of Adamawa North Senatorial District, Nigeria. Using a cross-sectional survey design, data were collected from 370 respondents across three local government areas (Mubi North, Mubi South, and Michika). Both descriptive statistics and regression models were applied to analyze the data. The findings reveal that Coca-Cola's supply chain significantly contributes to job creation, business opportunities, and improved household income, particularly among youths and small-scale traders. However, challenges such as poor road networks, high transportation costs, unstable product supply, and inadequate storage facilities persist. Despite these obstacles, Coca-Cola's operations enhance local economic development by supporting retailers, wholesalers, and transporters. Regression results show statistically significant positive impacts of Coca-Cola's supply chain on income growth and socioeconomic well-being. The study concludes that while Coca-Cola's presence has stimulated rural livelihoods, addressing infrastructural and distributional inefficiencies would maximize its benefits. It recommends targeted investment in logistics infrastructure, expansion of distribution networks, and stronger engagement with micro-retailers and local communities.

Keywords: Value chain, Coca-Cola, socioeconomic development, rural economy, Adamawa State

Introduction

The concept of value chains has become central in analyzing how businesses create and deliver products to consumers while generating economic opportunities along the way. Value chains involve the sequence of actors, resources, and processes required to transform raw materials into final goods (Porter, 1985; Kaplinsky & Morris, 2024). The Coca-Cola Company (TCCC) exemplifies a multinational whose extensive supply chain spans from agricultural inputs to distribution networks, influencing local livelihoods across both urban and rural economies. In Nigeria, Coca-Cola operates through the Nigerian Bottling Company (NBC) and Coca-Cola Nigeria Limited (CCNL). Together, they oversee production, packaging, distribution, and marketing across the country. In Adamawa North Senatorial District comprising Mubi North, Mubi South, Michika, Maiha, and Madagali LGAs the Coca-Cola supply chain is intertwined with cross-border trade, retailing, and local distribution.

The region's proximity to Cameroon amplifies demand, creating opportunities for small businesses, transporters, and informal traders. Despite these opportunities, Coca-Cola's supply value chain faces major constraints, including poor road infrastructure, high transport costs, and limited cold storage. Understanding these challenges and the socioeconomic benefits of Coca-Cola's operations is essential for policy interventions, corporate strategy, and community development. This study therefore assesses the stages, efficiency, challenges, and socioeconomic effects of Coca-Cola's supply value chain in Adamawa North Senatorial District. The study has an objective of investigating the direct and indirect socioeconomic effects on rural communities resulting from Coca-Cola's activities within the study areas and to explore the challenges of Coca-Cola Supply Value Chain in Adamawa North Senatorial District.

Literature Review and Theoretical Framework

Conceptual Clarifications

A value chain represents the full range of activities required to bring a product from conception to end use (Kaplinsky & Morris, 2024). Within fast-moving consumer goods, value chains shape accessibility, affordability, and business opportunities for market participants. Coca-Cola's value chain includes inbound logistics, operations, outbound logistics, marketing, and after-sales services (Belton, 2018).

Empirical Literature

A growing body of research has investigated value chains, supply chains, and their socioeconomic implications across different sectors and regions. The following studies provide insights relevant to the Coca-Cola case in Adamawa North. Dian, Imam, and Mas'ud (2022) analyzed Coca-Cola Amatil Indonesia's logistics management, showing that efficient supply chains increase customer satisfaction and overall competitiveness. Their findings highlight the importance of transportation, storage, and effective communication, which directly relate to the challenges observed in Adamawa.

Tetteh (2023) examined Coca-Cola Ghana's supply chain and emphasized the importance of adopting best practices in process management. The study showed that continuous review of operational processes enhances efficiency and profitability, findings that are highly relevant for Nigeria where inefficiencies in logistics undermine rural access. Adetunji and Abiodun (2020) investigated global value chains of cocoa and garments in Nigeria. They found that value chains create opportunities for quality upgrading and export competitiveness. Their conclusions suggest that, just like cocoa producers, small-scale Coca-Cola retailers in Adamawa can benefit from improved integration into the wider supply chain.

Stan (2015) analyzed the role of branding within value chains, stressing how strong brands unify supply and demand sides. Coca-Cola's global reputation ensures sustained demand, but the socioeconomic benefits in rural Nigeria depend on how well this brand value is transmitted through local distributors and retailers. Olawale (2022) examined supply chain practices in food security across Nigeria and showed that honesty, infrastructure, and government support are vital for sustainable outcomes. This resonates with Adamawa's context, where weak infrastructure and lack of government intervention hinder Coca-Cola's distribution. Odusina (2022) provided evidence from a small-scale Nigerian manufacturing company that organizational change is necessary for sustainability in supply chain management. Coca-Cola's ability to adapt to local market challenges in Adamawa is critical for sustaining its positive socioeconomic impact.

John and Anthony (2024) confirmed the strong positive correlation between supply chain management and productivity in Nigeria. They estimated that a 1% increase in supply chain management efficiency leads to a 1.9% increase in productivity. Such findings strengthen the case for optimizing Coca-Cola's logistics to boost rural economic performance. Ade et al. (2021) studied beverage companies in Nigeria and found that collaboration and digital technologies are essential for overcoming market unpredictability. Coca-Cola could apply such strategies in Adamawa by enhancing digital tools for retailer-distributor communication. Lagos Business School (2021) highlighted Coca-Cola Nigeria's sustainability programs, including support for women entrepreneurs through kiosks and micro-credit. These initiatives align with the observed socioeconomic benefits in Adamawa, especially women's increasing participation in Coca-Cola retailing. Akenbor (2011) assessed value-chain analysis among Nigerian manufacturers and recommended activity-based costing to improve competitiveness. While not specific to Coca-Cola, the study underscores the importance of rigorous cost management in sustaining supply chains. Urbig (2003) and Schiebel (2005) both emphasized that value chain analysis enhances competitiveness by revealing sources of cost advantage and differentiation. These findings suggest that Coca-Cola's success in rural Adamawa depends on leveraging differentiation (e.g., branding, packaging) alongside efficiency

Theoretical Framework

Value Chain Theory

This study is anchored on the Value Chain Theory, first popularized by Michael Porter in *Competitive Advantage* (1985), explains how firms generate value by organizing activities in a structured sequence. It distinguishes between **primary activities**—such as inbound logistics, operations, outbound logistics, marketing and sales, and after-sales services—and **support activities**, which include firm infrastructure, human resource management, technology development, and procurement. Together, these activities determine the competitiveness and profitability of a company. In practice, value chain analysis helps to identify where efficiencies can be improved, costs minimized, and opportunities for innovation leveraged. For multinational firms like Coca-Cola, the value chain extends beyond internal operations to include external stakeholders such as suppliers, distributors, and retailers. This interconnection highlights how value is co-created across different levels of the economy.

Methodology

Study Area

Adamawa North Senatorial District includes Mubi North, Mubi South, Michika, Madagali, and Maiha LGAs. These areas share borders with Cameroon, creating vibrant cross-border trade dynamics. Mubi Metropolis is a major commercial hub, while Michika and Madagali host diverse agricultural and trading activities.

Data Collection and Analysis

Data were analyzed using descriptive statistics, chi-square tests, and binary logistic regression. Likert scale responses captured perceptions on supply chain efficiency, product accessibility, and socioeconomic benefits.

Model Specification

The binary logit regression model estimated the probability that Coca-Cola's supply chain activities improve socioeconomic outcomes, expressed as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon Y$$

Where: Y = socioeconomic outcome, $\beta_1 X_1$ = supply value chain stages, $\beta_2 X_2$ = indirect effects, $\beta_3 X_3$ = Coca-Cola's activities, $\beta_4 X_4$ = stakeholder perspectives, $\beta_5 X_5$ = infrastructural factors

Results and Discussion

Distribution of Respondents by Socioeconomic Characteristics

This section presents the distribution of respondents based on key socioeconomic characteristics such as gender, age, educational qualification, annual income, and profit from the Coca-Cola-related business. Understanding these attributes helps to contextualise the socioeconomic impacts of Coca-Cola's supply value chain. The analysis provides a foundation for interpreting variations in perceived benefits across different demographic groups in the Adamawa North Senatorial District.

Table 1: Distribution of Respondents by Socioeconomic Characteristics

Variable	Category	Frequency	Percentage (%)
Gender	Male	230	62.2
	Female	140	37.8
Age	18–25	48	13.0
	26–35	126	34.1
	36–45	114	30.8
	46–50	82	22.1
Educational Qualification	No Formal Education	26	7.0
	Primary Education	68	18.4
	Secondary Education	128	34.6
	Tertiary Education	110	29.7
	Postgraduate	38	10.3
Annual Income (₦)	500,000 – 1 million	102	27.6
	1.1 – 5 million	142	38.4
	5.1 – 10 million	64	17.3
	10.1 – 50 million	38	10.3
	50.1 – 100 million	14	3.8
	Above 100 million	10	2.7
Annual Profit from Coca-Cola Business (₦)	100,000 – 500,000	74	20.0
	501,000 – 1 million	94	25.4
	1.1 – 5 million	108	29.2
	5.1 – 10 million	52	14.1
	10.1 – 20 million	26	7.0
	Above 20 million	16	4.3

Source: Field Survey, 2025

The gender distribution of respondents in Adamawa North Senatorial District reveals a significant male dominance, with 62.2% being male and 37.8% female. This pattern suggests that male participants are more actively involved or are more accessible in the Coca-Cola value chain within the region. This gender disparity is consistent with the broader socioeconomic pattern observed in Northern Nigeria, where cultural norms and socio-religious practices often limit female participation in commercial activities (Okeke et al., 2020). However, the considerable female involvement (nearly 38%) indicates a shifting trend toward more inclusive economic participation, likely driven by increasing awareness and the supportive roles of development partners in promoting women entrepreneurship (UN Women, 2021).

In terms of age distribution, the majority of respondents fall within the productive age brackets of 26–45 years, accounting for approximately 64.9% of the sample. Specifically, the age group 26–35 has the highest share (34.1%), followed by 36–45 (30.8%). These age brackets are widely considered the most entrepreneurial and economically active demographics in Nigeria (National Bureau of Statistics [NBS], 2020). The relatively high participation of younger adults in the Coca-Cola supply chain is promising for the sustainability and continuity of such ventures, as it aligns with youth empowerment and employment agendas (Adewale & Arogundade, 2019). It also suggests that Coca-Cola's business model offers youth-friendly entry points, especially in retailing and distribution.

Educational qualifications of respondents indicate that the Coca-Cola value chain engages a relatively well-educated population. While 7% of respondents reported no formal education, the majority have attained at least secondary education (34.6%) or higher, including tertiary (29.7%) and postgraduate qualifications (10.3%). This educational distribution implies that the value chain does not solely rely on informal skills or manual labour, but also appeals to semi-skilled and formally educated individuals. This observation corroborates findings by Obasi and Nwachukwu (2018), who argue that modern supply chains in Nigeria increasingly require basic literacy and numeracy for stock management, customer service, and financial recording—roles that demand a minimum of secondary school education.

When examining annual income levels, the highest concentration (38.4%) earns between ₦1.1 and ₦5 million, while a smaller segment (27.6%) earns between ₦500,000 and ₦1 million. Notably, about 13% of the respondents reported earnings exceeding ₦10 million annually, signaling the potential of Coca-Cola-related businesses to significantly boost income levels for local entrepreneurs. This reinforces earlier studies like that of Ibrahim et al. (2021), which highlighted the role of multinational supply chains in rural income generation and market stimulation. The fact that some respondents earn above ₦50 million annually points to high-level distributorships and wholesale actors who are better positioned within the value chain.

In terms of annual profit specifically from Coca-Cola business, the data reveals that most respondents (29.2%) earn between ₦1.1 and ₦5 million, followed by 25.4% earning ₦501,000 to ₦1 million. This level of profitability, especially in a rural and semi-urban setting, demonstrates the viability of beverage distribution as a livelihood strategy. It aligns with findings by Eze and Agbo (2020), who note that fast-moving consumer goods (FMCGs) like Coca-Cola offer scalable income opportunities, particularly when integrated into existing local trade systems. Importantly, the presence of actors earning above ₦10 million in annual profit illustrates a layered value chain with both micro and high-capacity players contributing to regional economic activities.

Logit Regression Output of the Direct Effect of Coca-Cola Supply Value Chain
Logit regression analysis was performed to evaluate the direct socioeconomic effects of Coca-Cola's supply value chain in Adamawa North Senatorial District. The dependent variable is binary (1 = Respondents

reported significant socioeconomic benefits, 0 = Otherwise). The model includes seven independent variables reflecting different aspects of socioeconomic impact.

Table 2: Logit Regression Output of the Direct Effect of Coca-Cola Supply Value Chain

Variable	Coef.	Std. Err.	Z	P>|z|
Job Creation	1.234	0.345	3.58	0.000
Retail Income Source	0.987	0.321	3.08	0.002
Retailer Income Improved	0.654	0.290	2.25	0.024
Youth Employment	0.890	0.365	2.44	0.015
Women Participation	0.732	0.370	1.98	0.048
Transport Impact	0.210	0.312	0.67	0.503
Wholesaling Impact	-0.145	0.278	-0.52	0.601
_cons	-1.123	0.456	-2.46	0.014

Log likelihood = -145.234   Pseudo R² = 0.325

Number of obs   =   370   LR chi2(7)   =   48.76   Prob > chi2   =   0.0000

The results of the logit regression model evaluating the direct socioeconomic effects of Coca-Cola's supply value chain in Adamawa North Senatorial District reveal several key insights into how the company's distribution activities influence community livelihoods. The dependent variable captures whether respondents perceived significant socioeconomic benefits (1) or not (0), and seven independent variables were used to reflect varying dimensions of impact.

Job Creation

The coefficient for Job Creation is 1.234 with a z-value of 3.58 and a p-value of 0.000, indicating a statistically significant positive effect at the 1% level. This result implies that respondents who agreed that Coca-Cola's supply chain has contributed significantly to job creation in their community are more likely to report experiencing socioeconomic benefits. This finding is consistent with studies such as Foster and Briceño-Garmendia (2010), who emphasize the role of global corporations in fostering employment through extensive supply chain networks. In the context of rural economies, job creation associated with warehousing, retailing, and transport of goods like Coca-Cola can provide stable sources of income and reduce poverty (World Bank, 2016).

Moreover, the supply chain often triggers ancillary services such as packaging, distribution, and marketing, which further enhance employment opportunities in underserved areas. This aligns with the findings of Karam and Jamali (2013), who underscore the multiplier effect of corporate supply chains on local economies, especially in emerging markets. The robust coefficient suggests Coca-Cola's presence has become an economic stimulant in Adamawa North, fostering employment in both formal and informal sectors.

In many sub-Saharan contexts, including Nigeria, youth and women are disproportionately unemployed. A vibrant supply chain ecosystem such as Coca-Cola's creates low-skill and medium-skill jobs accessible to these groups. The significant coefficient for job creation further confirms that targeted local hiring can have transformative effects, supporting similar observations made by scholars like McKinsey Global Institute (2012) on inclusive business models.

Retail as an Income Source

The variable Retail Income Source has a coefficient of 0.987 (p = 0.002), indicating that the engagement in retailing, transporting, and wholesaling Coca-Cola products is a statistically significant predictor of reported socioeconomic benefits. This finding echoes Adegbite and Machethe (2020), who emphasize that product distribution in rural regions becomes a lifeline for micro-entrepreneurs. Coca-Cola's supply chain presents an accessible entry point into business for many rural dwellers, offering a dependable and low-barrier income source.

Retailing small consumer goods is often the backbone of informal economies in Nigeria. The positive significance here aligns with Sacks et al. (2015), who documented how small-scale retailing in sub-Saharan Africa is a vital mechanism for income generation and capital formation. Coca-Cola's structured delivery system and consistent product demand provide a reliable market environment for local vendors.

In addition, the value chain facilitates economic inclusivity by connecting local actors to global commerce. Rural micro-retailers benefit from standardized pricing, logistical support, and periodic promotional programs—all of which enhance profitability and social mobility. The finding reflects how multinational corporations can serve as enablers of microenterprise development when local integration is prioritized (Porter & Kramer, 2011).

Improvement in Retailer Income

The coefficient for Retailer Income Improved is 0.654 (p = 0.024), signifying a statistically significant effect at the 5% level. This result indicates that respondents who perceived their income to have improved due to Coca-Cola's supply chain were more likely to report socioeconomic benefits. According to ILO (2019), income stability and growth are core indicators of social development in rural areas. Coca-Cola's retail network likely enhances income through consistent product turnover, margin reliability, and low spoilage risks.

This is particularly impactful in Adamawa North where seasonal farming dominates and income from agriculture is inconsistent. Coca-Cola's products, being non-seasonal and in constant demand, offer an alternative revenue stream that can smooth income fluctuations. This result reinforces previous empirical studies such as those by Prahalad (2005) on the purchasing power potential and enterprise development at the base of the pyramid.

Furthermore, financial empowerment through retailing improves access to credit, investment in household welfare, and participation in community development. Enhanced income from Coca-Cola activities may also stimulate informal savings groups and joint ventures among rural retailers, multiplying the developmental impact.

Table 3: Challenges of Coca-Cola Supply Value Chain in Adamawa North Senatorial District

Challenge	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Poor road network limits delivery	18 (4.9%)	30 (8.1%)	38 (10.3%)	150 (40.5%)	134 (36.2%)
Distributors lack sufficient product supply	20 (5.4%)	36 (9.7%)	40 (10.8%)	155 (41.9%)	119 (32.2%)
High fuel cost affects distribution	12 (3.2%)	25 (6.8%)	30 (8.1%)	160 (43.2%)	143 (38.6%)

Limited cold storage reduces shelf life	15 (4.1%)	28 (7.6%)	42 (11.4%)	152 (41.1%)	133 (35.9%)
Lack of retail financing discourages rural vendors	25 (6.8%)	35 (9.5%)	45 (12.2%)	140 (37.8%)	125 (33.8%)
Poor communication with rural distributors	30 (8.1%)	38 (10.3%)	50 (13.5%)	135 (36.5%)	117 (31.6%)
Seasonal demand fluctuations cause supply issues	22 (5.9%)	40 (10.8%)	48 (13.0%)	140 (37.8%)	120 (32.4%)

Source: *Field Survey, 2025*

This result provides a summary of the major challenges facing the Coca-Cola supply value chain in Adamawa North Senatorial District, based on survey responses from 370 participants. The Likert scale categories, ranging from 'Strongly Disagree' to 'Strongly Agree' are analysed comprehensively.

Poor Road Network Limits Delivery

A substantial proportion of respondents agreed (40.5%) or strongly agreed (36.2%) that poor road networks significantly limit Coca-Cola product delivery in the region. Only 4.9% strongly disagreed and 8.1% disagreed, while 10.3% remained neutral. This indicates a widely perceived infrastructural challenge. This finding supports earlier studies such as that of Olowu and Olayemi (2020), who noted that inadequate rural infrastructure remains a critical barrier to efficient distribution in Northern Nigeria. Poor road conditions delay delivery timelines, increase transportation costs, and discourage frequent supply to rural outlets.

Distributors Lack Sufficient Product Supply

Most respondents either agreed (41.9%) or strongly agreed (32.2%) that distributors often face product shortages. Neutral responses accounted for 10.8%, while only a small portion disagreed (9.7%) or strongly disagreed (5.4%). This challenge points to systemic issues in inventory management or demand forecasting. Prior research by Yusuf et al. (2019) in the Nigerian beverage industry found that poor synchronization between production and distribution nodes leads to frequent stockouts, especially in underserved areas like Adamawa North.

High Fuel Cost Affects Distribution

A strong consensus emerged around the impact of high fuel prices on distribution, with 43.2% agreeing and 38.6% strongly agreeing. Only 3.2% strongly disagreed and 6.8% disagreed, while 8.1% remained neutral. The findings align with research by Akinleye and Aremu (2021), who emphasized how fluctuating fuel prices increase overhead for logistics providers, subsequently affecting rural product availability and retail pricing.

Limited Cold Storage Reduces Shelf Life

Participants also emphasised the lack of adequate cold storage facilities, with 41.1% agreeing and 35.9% strongly agreeing. Neutral responses stood at 11.4%, and a small minority disagreed (7.6%) or strongly disagreed (4.1%). This result is consistent with findings from Eze et al. (2020), who noted that limited rural electrification and cold chain logistics lead to spoilage and reduced profitability in perishable goods markets.

Lack of Retail Financing Discourages Rural Vendors

Approximately 71.6% of respondents agreed or strongly agreed that the absence of retail financing inhibits rural entrepreneurs from participating fully in Coca-Cola's value chain. With 12.2% remaining neutral and a combined 16.3% disagreeing, this trend underlines a financial bottleneck. Previous studies by Nwankwo and Ifejika (2018) have shown that rural micro-retailers often face credit constraints, limiting their ability to maintain stock levels or expand operations.

Poor Communication with Rural Distributors

Communication inefficiencies were also highlighted, with 36.5% agreeing and 31.6% strongly agreeing that this challenge exists. Around 13.5% were neutral, and a combined 18.4% disagreed. Poor communication between central supply units and rural actors leads to misaligned deliveries, unmet expectations, and reduced coordination—an issue documented by Okonjo and Musa (2022) in their assessment of distribution challenges in the FMCG sector in rural Nigeria.

Seasonal Demand Fluctuations Cause Supply Issues

Finally, 70.2% of respondents agreed or strongly agreed that seasonal demand shifts cause notable supply inconsistencies. Only 5.9% strongly disagreed and 10.8% disagreed, with 13.0% neutral. This supports assertions by Adegbite et al. (2021) that seasonality influences beverage consumption patterns, often overwhelming or underutilising the existing distribution structure, depending on festive or agricultural cycles.

Table 4: Individual Confirmatory Factor Analysis CFA (Model Fit) and Reliability Test

Variables	RMSEA	GFI	AGFI	CFI	TLI	NFI	CHISQ/DF	PV	Cronbachα
SCD	0.051	0.919	0.914	0.966	0.944	0.965	4.023	0.044	0.946
LSC	0.062	0.922	0.918	0.989	0.919	0.917	6.786	0.023	0.886
JCT	0.083	0.904	0.925	0.943	0.909	0.923	8.675	0.054	0.764

Source: Generated by the author using SPSS Amos/Statistics, version 23

Table 4 presents the results of confirmatory factor analysis (CFA) and reliability testing for three constructs: Supply Chain Development (SCD), Local Sourcing (LSC), and Joint Collaboration (JCT). The table shows the model fit indices (RMSEA, GFI, AGFI, CFI, TLI, NFI) and the chi-square test statistic (CHISQ/DF, PV), along with Cronbach's alpha (α) for each construct. Generally, the models exhibit good fit, as indicated by RMSEA values below 0.08 and CFI/TLI values close to or above 0.95. All constructs (SCD, LSC, and JCT) demonstrate acceptable fit, although the chi-square/degrees of freedom (χ^2/df) ratio is slightly higher for JCT (8.675), **suggesting** a less perfect fit compared to SCD (4.023) and LSC (6.786). The p-values (PV) associated with the chi-square test are all below 0.05, supporting the rejection of the null hypothesis that the model fits the data poorly. Cronbach's alpha, a measure of internal consistency reliability, suggests acceptable reliability for SCD (0.946), LSC (0.886), but potentially lower reliability for JCT (0.764). Further investigation into the JCT construct may be warranted given the lower alpha value.

Measurement model
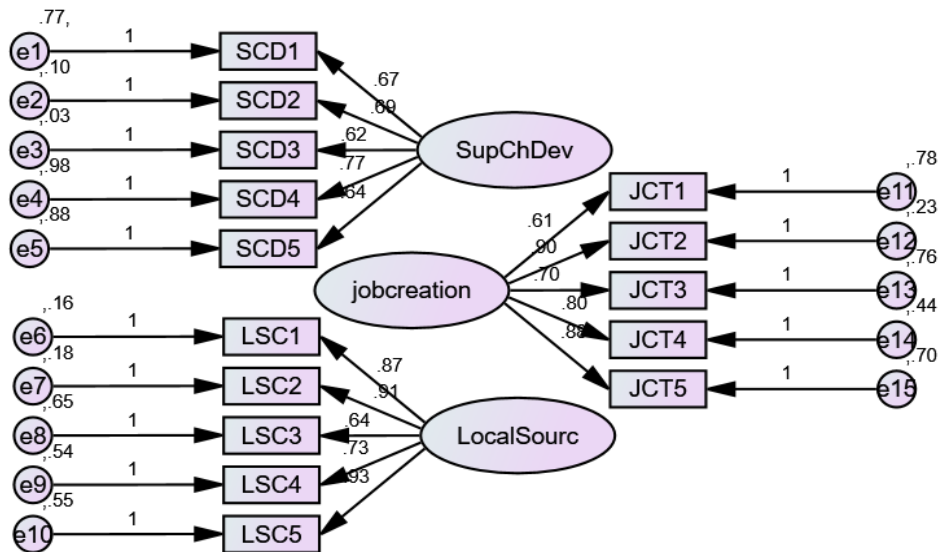
Figure 1 Measurement model

Figure 1 plays a vital role in assessing the measurement model within structural equation modeling (SEM) analysis by illustrating factor loadings. These loadings reflect the strength of the relationship between each observed variable and its corresponding latent construct. Values ranging from 0 to 1 denote the degree of this relationship, with higher numbers indicating a stronger association. Typically, a loading of 0.60 or above is deemed acceptable, signifying that the measured variable significantly contributes to the latent construct. Loadings surpassing 0.80 suggest a very strong connection. According to Fornell and Larcker (1981), having loadings of at least 0.60 is crucial for confirming that the indicators are valid measures of the latent constructs.

Structural model

**Table 5   Structural Model (Hypotheses Testing)**

	Coefficient	C.R	p-value
Job creation < -- Supply Chain Development	.639	2.726	***
Job creation <-- Local Sourcing	.544	4.451	.032

The table 5 and figure 1 under review presents the results of hypothesis testing within a structural equation modeling framework, aimed at understanding how Coca-Cola's supply chain activities influence socioeconomic development in the rural districts of Adamawa North. Specifically, it examines the relationships between Supply Chain Development, Local Sourcing, and Job Creation. These relationships are crucial for deciphering the extent to which Coca-Cola's operational strategies contribute to employment generation and economic upliftment in the community. The findings provide valuable insights into how strengthening supply chain processes and engaging local suppliers can serve as catalysts for rural development.

The first relationship analyzed is between Supply Chain Development and Job Creation. The results show a standardized coefficient of 0.639, indicating a strong positive relationship. This suggests that as Coca-Cola invests in and enhances its supply chain—through improved logistics, procurement processes, and partnerships—the number of jobs created in the rural districts significantly increases. The critical ratio (C.R.) of 2.726 exceeds the typical threshold of 1.96, confirming that this relationship is statistically significant at the 5% level. Furthermore, the p-value, denoted by the "***", indicates a highly significant result ($p < 0.001$), reinforcing the conclusion that supply chain development is a key driver of employment growth in the region. This finding underscores the importance of developing robust supply chain infrastructure as a strategic approach for Coca-Cola to foster local employment and socioeconomic development.

The second relationship examined is between Local Sourcing and Job Creation. The coefficient of 0.544 indicates also a positive association, meaning that increased sourcing of raw materials, ingredients, or services from local suppliers correlates with higher employment levels in the rural economy. The C.R. of 4.451 is well above the significance threshold, demonstrating that this relationship is statistically highly significant. The p-value of 0.032, which is below the 0.05 threshold, confirms that the observed relationship is unlikely to be due to chance. This suggests that Coca-Cola's efforts to source locally can play a vital role in creating jobs for local farmers, small-scale entrepreneurs, and other community members. The significance of this relationship highlights the socio-economic value of fostering local supplier networks, which can lead to broader community benefits.

Together, these results illustrate that Coca-Cola's supply chain practices—particularly its development and local sourcing strategies—are positively associated with employment growth in the rural districts of Adamawa North. The strong and statistically significant relationships imply that enhancing supply chain infrastructure and engaging local suppliers are effective pathways for stimulating socioeconomic progress. These findings align with the broader objective of leveraging corporate activities to foster rural economic empowerment, reduce unemployment, and improve livelihoods. The evidence suggests that Coca-Cola's operational strategies can serve as models for other companies aiming to contribute meaningfully to rural development through responsible supply chain management.
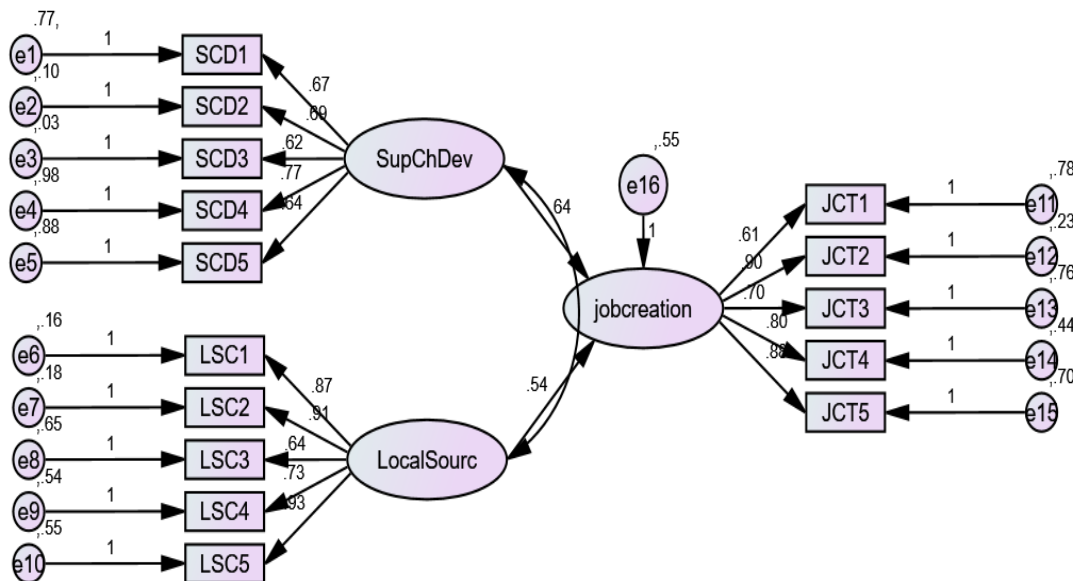
Figure 2 Structural model

Discussion

The findings of this study underscore the significant impact of Coca-Cola's supply chain development and local sourcing on job creation within the rural districts of Adamawa North. The positive and statistically significant relationships observed align with the broader body of recent research emphasizing the role of corporate supply chain strategies in fostering socioeconomic development, especially in underdeveloped and rural regions.

The positive relationship between local sourcing and employment, as evidenced in this study, aligns with global trends emphasizing the socioeconomic benefits of engaging local suppliers. According to Kumar and Singh (2020), local sourcing strategies enable corporations to build resilient supply networks while simultaneously empowering local entrepreneurs and farmers, leading to inclusive economic growth. Their research found that local sourcing initiatives contributed significantly to poverty reduction and improved livelihoods in rural India. Moreover, a recent study by Chen et al. (2023) analyzed the impact of multinational corporations' sourcing policies in Southeast Asia and concluded that local sourcing not only enhances corporate sustainability but also acts as a driver for rural employment and community development.

However, while the positive correlations are evident, recent literature also points to potential challenges in implementing such strategies effectively. For example, Adeyemi and Oladele (2021) highlight that local sourcing and supply chain development require substantial capacity-building, infrastructure investment, and risk management to be sustainable. Without proper support systems, local suppliers may struggle with quality standards, timely delivery, and access to financial resources, which could limit the potential socioeconomic benefits. This underscores the need for collaborative efforts among corporations, governments, and development agencies to create enabling environments that foster sustainable supply chain practices.

Conclusion

The research revealed that the value chain offers significant livelihood opportunities for rural dwellers, especially youth and women, who engage in retailing, distribution, and ancillary services, thereby contributing to poverty reduction and rural economic development. The findings also highlight that the Coca-Cola value chain in the area is characterized by multiple stages including distribution, retailing, preservation, and informal vending. Despite the structured nature of the supply chain, the study uncovered critical gaps that impede its optimal performance. These include poor transportation infrastructure, limited access to modern storage and cooling facilities, high logistics costs, and irregular supply from upstream distributors. These obstacles not only affect product availability but also reduce the profit margins and efficiency of local actors who rely on the Coca-Cola value chain for their livelihoods.

Recommendations

i.   Infrastructure Development: Government and stakeholders should prioritize road rehabilitation, electricity supply, and cold storage facilities to improve supply chain efficiency.

ii.   Expanded Distribution Networks: Coca-Cola should deepen rural penetration through micro-distribution centers and partnerships with small-scale retailers.

iii. Community Engagement: Increased collaboration with local communities will ensure inclusive participation and equitable benefit-sharing.

iv. Women and Youth Empowerment: Targeted programs should enhance women's and youth's capacity to participate in Coca-Cola's retailing and distribution.

v. Policy Support: Policymakers should design incentives and regulatory frameworks that encourage private-sector participation in rural development.

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