

# Sustainable Supply Chain Management Practices And Competitive Advantage Of Brewery Firms In Nigeria.

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**Abstract:** *The study examined the effect of sustainable supply chain management practices on competitive advantage of brewery companies in Anambra State, Nigeria. The cross-sectional survey research design method was adopted for the study. A sample size of 152 employees of the selected companies was randomly selected from the total population of 250 by using Krejcie and Morgan (1970) sample size determination table. The stratified random sampling technique was used for the study. The study used structured questionnaire as instrument of data collection. To validate the instrument for data collection, content validity was adopted for the study. To establish the reliability of the instrument, a test-retest method was employed. This study employed descriptive statistics and Correlation statistical technique. Findings showed that there is a strong and positive correlation between supply chain collaboration ( $r = 0.537, p < 0.01$ ), corporate social responsibility ( $r = 0.325, p < 0.01$ ) supply chain transparency ( $r = 0.573, p < 0.01$ ), reverse logistics ( $r = 0.554, p < 0.01$ ) and competitive advantage of brewery companies in Anambra State, Nigeria. The study concluded that sustainable supply chain management practice has significant relationship with competitive advantage of brewery companies in Anambra State, Nigeria. The study recommended amongst others, that sampled companies should evolve tracking systems to track products throughout the supply chain, providing visibility into the origin, movement, and handling of goods. This enables better quality control, regulatory compliance, and identification of potential risks and remediation.*

**Keywords:** Supply chain management, brewery firms, competitive advantage, reverse logistics, corporate social responsibility

## INTRODUCTION

The increasing awareness of environmental challenges, such as climate change, resource depletion, pollution and intense competition have led to growing concerns about the sustainability of supply chains. The alarming environmental scenario has persuaded all the corporate entities to extend their commitment towards the adoption and execution of sustainable and responsible business initiatives (Sharma, & Singla, 2021). Sustainable supply chain management includes environmental challenges, social and ethical considerations, economic benefits, legal and regulatory context and competitiveness. The step ahead towards the adoption of sustainability criteria enables the firms to demonstrate their concerns about multiple concerned stakeholders and the environment (Das, 2020). The manufacturing companies are adopting more environmentally amiable and greener practices by encapsulating the best possible ways from procurement of raw materials to the supply of finished goods to the end-users by evaluating and selecting the suppliers on sustainability criteria to attain global diversification and better organizational performance to survive in the highly competitive business environment (Mitra, 2016). Enterprises make major sustainable decisions by filtering through the supply chain of their entire operations (Kenton, 2019).

Nowadays, rapid transformations are occurring in all corporate landscapes and organizations, and the marketplace is characterized by heated competition, economic pressures, short-term market potential, and dynamic changes in consumers (Shekarian, Ijadi, Zare, & Majava, 2022). Therefore, supply chains can no longer be redeployed overnight to acquire, create, transfer, or sell the right products or services to the right extent and in the right places (Wu, Yue, Jin, & Yen, 2016; Das, 2018). A growing number of multinational firms have made the commitment in recent years to only conduct business with companies that maintain environmental and social criteria (Aguilera-Caracuel, Guerrero-Villegas, & García-Sánchez, 2017; Clementino, & Perkins, 2021). These multinational enterprises often demand adherence from their first-tier suppliers, who are then asked to request compliance from their vendors, who should ideally want the same from their supply chain partners (Govindan, Shaw, & Majumdar, 2021). Their goal is to establish a chain reaction of sustainable behaviors that seamlessly move down the supply chain management (SCM) ladder to attain its goal. Organizations now realize that to thrive in the face of increased global competition, their supply chains systems must be managed functionally to attain strategic goals.

Competitive advantage is a component or combination of factors, altogether connected to a system, that, when compared with the different organizations in a competitive marketplace, renders a firm more competent in a way that is not conveniently imitated by those competitors (Ekakitie, Kifordu and Nwaegbeni, 2022). In an organization, it might be challenging to develop a competitive advantage through internal growth alone (Lee, 2021) and, consequently, businesses must come up with strategies to build new

competencies to adapt to changing environmental conditions and growing global competition. Adoption of sustainability supply chain management (SSCM) places enormous pressure on organizations to modify their existing supply chains to meet sustainability requirements (Gurzawska, 2020; Prasad, Pradhan, Gaurav, & Sabat, 2020).

Coordination among the supply chain components is key to incorporating environmental concerns into SSCM. Li, Zhang, Xu, and Feng (2019) have demonstrated that SCM techniques at greater tiers can boost competitive edge and maximize organizational performance. Similarly, Baah, and Jin (2019) observed a positive relationship between CA and SCM in their study. In a recent study, Zekhnini, Cherrafi, Bouhaddou, Benghabrit, and Garza-Reyes (2021) demonstrated that smarter supply chains are required to successfully address the emerging obstacles of taking competitive advantages. The implementation of sustainable supply chain management (SSCM) has been recognized as a vital factor in business sustainability (Ahi, Mohamad & Jaber, 2016).

Sustainable Supply Chain Management involves integrating environmentally and financially viable practices such as recycling, refurbishing, waste management etc. into the complete supply chain lifecycle. From product design and development, material selection (including raw material extraction or agricultural production) down to manufacturing, packaging, transportation, warehousing, distribution, consumption, return and disposal. All supply chains can be optimized using sustainable practices. Organizations are extending their commitment to responsible business practices to their value chains. They do so not only because of the inherent social and environmental (Ekakitie, 2019) risks or because of the governance challenges the supply chain poses, but also because of the many rewards supply chain sustainability can deliver. Given the above discussion, the study aims to ascertain the influence of supply chain collaboration, chain transparency, social responsibility among others to determine their collective impact on competitive advantage. The outcome of these variables will pose interesting issues for consideration as far as issues of competitive advantages within the context of supply chain administration is concerned.

The research questions that guide the study are stated as follows

1. What effects does supply chain collaboration have on competitive advantage of brewery companies in Anambra State, Nigeria?
2. What effects does corporate social responsibility have on competitive advantage of brewery companies in Anambra State, Nigeria?
3. What degree of influence does supply chain transparency exert on competitive advantage of brewery companies in Anambra State, Nigeria?
4. What impact has reverse logistics on competitive advantage of brewery companies in Anambra State, Nigeria?

### **Significance of the Study**

The study's essence is to add to the existing body of knowledge on supply chain sustainability and to gain insight on the issues of sustainability practice in supply chain management and its contribution to the economy. The understanding of how SSCM practices contribute to competitive advantage would enable brewery companies to meet these expectations, attract investment, enhance customer loyalty, and attract and retain top talent. Studying the impact of SSCM practices on competitive advantage can help brewery companies ensure compliance with current and future regulations, avoiding potential penalties and reputational damage.

## **REVIEW OF RELATED LITERATURE**

### **Conceptual Review**

#### **Sustainable Supply Chain Management (SSCM)**

Sustainable supply chain management is the practice of incorporating environmentally, socially, and economically responsible principles into the planning, design, operation, and control of supply chains. It involves considering the environmental, social, and economic impacts of supply chain activities and making decisions that minimize negative impacts and promote positive impacts on sustainability. Hong, Zhang, and Ding (2018) stated that SSCM practices consist of the internal and external practices of companies to make the supply chain more sustainable in terms of all three sustainability dimensions. Gold and Schleper (2017) aver that some of the concepts related to SSCM include management of inventories, green design, planning and supervision of production process, modification of the products as well as the management of energy usage, wastes, and logistics, and the reduction of emissions. Raut, Narkhede, and Gardas (2017) opined that it is the management process that involves integrating environmental, social, and economic contributions. The variations in the demands made by customers and the complexities associated with product components have led to a significant internal competition between businesses in addition to the prevalent global competition. Panigrahi, Bahinipati, and Jain (2019) asserted that it is a management process which involves integrating environmental, social, and economic contributions.

Whoever and however sustainable supply chains are elucidated, its conceptual meaning and how the supply chain mechanics works within defined environments are needful of appraisal.

**Environmental sustainability:** The concept implies minimizing the negative environmental impacts of supply chain activities, such as reducing greenhouse gas emissions, minimizing waste generation, conserving resources, and promoting sustainable resource management practices. Scholars have touted that factors such as human capital, political stability, globalization, and advanced technology should not be overlooked when dealing with environmental sustainability (Ekakitie and Alagba, 2022; Wang, 2019). The proponents posit that human capital is more likely to improve environmental quality and ensure awareness of environmentally friendly behaviour (Ahmed, Zafar, Ali & Danish, 2020). The notion is that information and knowledge concerning environmentally friendly behaviour go a long way, leading to pro-environment steps that reduce environmental degradation.

**Social sustainability:** This concept suggests promoting social responsibility and ethical practices throughout the supply chain, such as ensuring safe and healthy working conditions, fair labor practices, human rights, diversity, and inclusion, and respecting the rights and well-being of local communities. Boström (2012) describes social sustainability as including both substantive and procedural aspects. By substantive, he means it is required to achieve social sustainability, whereas by procedural aspects, he means how to achieve it. For him, “aspects overlap, and it is not always easy to distinguish between substantive and procedural aspects, as they may reinforce one another. Boyer, Peterson, Arora and Caldwell (2016) classifies the current ideas about the social pillar in what they name five approaches to social sustainability. In their considered opinion, social sustainability has been approached as (1) a stand-alone objective or third pillar; (2) a constraint upon economic and environmental imperatives; (3) a precondition for thriving economic and environmental systems or social capital; (4) a causal mechanism of environmental and economic change; and (5) a fully integrated, locally rooted, and process-oriented approach to sustainability. The fifth approach is considered to be the most suitable, as it is claimed to provide a more systemic and integrated view of sustainability simultaneously be grounded in local knowledge and experience.

**Economic sustainability:** This concerns ensuring the economic viability and resilience of the supply chain, such as fostering fair trade practices, promoting economic development in local communities, and creating value for all stakeholders along the supply chain (Azhar and Mehmood, 2018; Kyere & Ausloos, 2020).

**Collaboration and transparency:** This involves fostering collaboration and partnership among supply chain stakeholders, including suppliers, manufacturers, distributors, customers, and other relevant parties, to collectively work towards sustainability goals. It also involves transparency in reporting and communication of sustainability performance and progress. Since consumers, and stakeholders at large, do not differentiate between the supply chain actors, it is the brand owner that is deemed liable to extend sustainability along the chain (Hartmann & Moeller, 2014).

**Innovation and continuous improvement:** This involves fostering innovation and continuous improvement in supply chain practices to identify and implement more sustainable solutions, technologies, and business models that can drive positive sustainability outcomes. By adopting sustainable supply chain management practices, organizations can reduce their environmental footprint, mitigate social risks, enhance their reputation, and create long-term value for their stakeholders, while contributing to the overall sustainability of the planet. The term CI derives from the Japanese word Kaizen that was developed by Masaaki Imai (Sanchez & Blanco, 2014). Scholars define CI as a planned, organized, and systematic approach to improving organizational performance (González-Aleu & Van Aken, 2016).

## COMPETITIVE ADVANTAGE

Competitive advantage (CA) involves the deployment of a strategic approach not currently being employed by other organizations that enables a decrease in costs, the use of business opportunities, and/or the neutralization of competitive challenges (Ekakitie & Olafare, 2016). Without a competitive edge, attracting and retaining clients on a sustained basis is practically inconceivable, and without a regular consumer base, the business cannot continuously generate revenues (Peters, Wagner, & Pakšiová, 2021). Without adequate revenues, the company cannot fix or replace depreciating assets, develop innovative products and services, or hire and train workers as the company grows or employees leave (Karim, Majid, Omar, & Aburumman, 2021). Furthermore, it cannot restructure systems, implement new work methodologies, or acquire new technology in response to shifting market needs. In other words, the firm would fail eventually without a competitive edge that distinguishes it from its rivals. The quality of the product or service plays great importance in ensuring competitive advantage. The concept of competitive advantage recommends that businesses develop policies that always prioritize the production of high-quality goods that can be offered at competitive pricing (Baah, & Jin, 2019). A firm's competitive advantages produce increased value for the company and its shareholders as a result of particular strengths or situations, for instance, cost advantage and differentiation advantage.

The greater the durability of competitive advantage, the more challenging it is for rivals to nullify it. Ekakitie & Alagba (2022) observed that a strong relationship with customers is one of the core competencies of an organization and a potential source of

competitive advantage. Nearly all organizations exhibit a strong correlation between a firm's competitive edge and its performance, and these advantages contribute to the success of the business. Sustainable competitive advantage (CA) is the value that a company is able to create for its customers on an ongoing basis (Agbonifoh, 2008). Sustainable competitive advantage was observed from the perspective of the accuracy associated with the products provided in the market by a company and the responses they provide to the complaints made by consumers in relation to their needs, quality of products, mastery of new market, and ensuring continuous innovation for products (Ekakitie and Uyere, 2023). Moreover, a company has a sustainable competitive advantage when its products cannot be duplicated or very expensive to be imitated by a potential competitor.

A company has a CA when it is able to create economic value more than competitors. Economic value is defined as the variation between the benefits associated with the products or services offered to customers and their economic costs. Consistent with this view Yunas, Primiana, Cahyandito, and Kaltum (2016), concluded that competitive advantage includes resources or capabilities that are difficult to imitate and are essential in helping an organization outperform its competitors in the marketplace. So, the advantage is the supply chain's strategic ability to manage capabilities, for example integrated information exchange, system level coordination, integration between companies and supply chains.

## VARIABLES DEFINITION & HYPOTHESES STATEMENTS

### Supply Chain Collaboration and Competitive Advantage

It is the opinion of Oliveira (2016) that collaborative practices in the supply chain are directly related to better performance in the quality of products and services offered, in the reduction of production and delivery times (lead time), and in facilitating operations. Collaboration practices in the supply chain are commonly designated by collaborative culture, joint planning, joint problem solving, and sharing of resources and information. In turn, collaboration in the supply chain is designated as an opportunity to increase the overall value of the entire chain, proposing specific business objectives between two or more parties (Burnette & Dittmann 2018).

Kumar et al. (2017) asserted that the main objective of the collaboration is twofold: one is to make internal functions effective and efficient and the other is to expand market share or make market-oriented strategies. Burnette and Dittmann (2018) stated that the collaborative culture is built on visible activities of incentives such as strategies, remuneration, employee benefits, hiring, and promotions, among others.

Creating a culture of collaboration is not simple and requires long-term thinking, never aiming to achieve immediate goals. Oliveira (2016) adds that some corporate cultures face challenges in implementation due to the influence of globalization, Kumar et al. (2017) asserts that joint problem solving, combined with performance measurement, is positively related to joint planning to increase market share as well as a collaborative culture.

#### Hypothesis 1

*H01: Supply chain collaboration has no significant relationship with competitive advantage of brewery companies in Anambra State, Nigeria.*

### Corporate Social Responsibility and Competitive Advantage

Corporate social responsibility (CSR) is a self-regulating business model that helps a company be socially accountable to itself, its stakeholders, and the public. Several forces encourage organizations to adopt CSR. For instance, the Business Roundtable has recently declared that the purpose of a corporation is not only to serve shareholders, but to create value for all stakeholders (Business Roundtable, 2019). The supply chain plays a significant role in business performance. Therefore, the incorporation of CSR in supply chains has great importance. Companies have begun to incorporate CSR in supply chains in order to be sustainable in the market for the long run (Raj et al., 2018).

Scholars such as (Ekakitie 2020) have agreed that CSR has added value to the concept of competitive advantage and indeed have good influence on the stakeholders' interest and performance. Agbonifoh (2008) opined that it supports performance especially in free market economies.

#### Hypothesis 2

*H02: Corporate social responsibility has no significant relationship with competitive advantage of brewery companies in Anambra State, Nigeria.*

### Supply Chain Transparency and Competitive Advantage



Transparency is underscored to mean “that we are not hiding anything” (Ekakitie, 2020). Transparency is to provide relevant imperative information in a timely manner free from bias and without cost, delay, and discrimination (Parris, Dapko, Arnold, & Arnold, 2016), receiving feedback and demonstrating consistency between words and actions according to the idea ‘what you see is what you get’ technology has improved the process of transparency (Men, 2014), whereas the internet shows the transparency levels of any business. Ekakitie and Odanibeh (2016) aver that a transparent organization always internally shares information across the logistical team from both top down and bottom up, which further builds trust, engages the logisticians in their job, formulates and implements strategies, and enhances performance. The term “transparency” refers to the social contract’s general visibility. The degree to which all shareholders have general knowledge of and access to the information they require, without loss, interference, delay, or distortion, is the measure of an SC’s transparency. Organizations can boost transparency as a crucial input by implementing traceability, which can therefore make consumers feel more satisfied when perceiving safer products (Sarpong, 2014). Hence, based on the prevailing discussion, it may be argued that traceability is mediating between emerging technologies and transparency in supply chains and their management. For supply chains to attain optimality it must be integrated and interwoven by the string of transparency and objectivity (Ekakitie, 2020), anything less than this will result to and encourage corporate theft.

### Hypothesis 3

*H03: Supply chain transparency has no significant relationship with competitive advantage of brewery companies in Anambra State, Nigeria.*

### Reverse Logistics and Competitive Advantage

Scholars like Oyewobi, Windapo and Cattell (2014) highlighted that the concept of competitiveness is deep-rooted in the early theories of comparative advantage. The concept pertains to “a set of activities that is conducted after the sale of a product to recapture value and end the product’s lifecycle”, Wikipedia (2022). It has to do with returning a product to the manufacturer or distributor or forwarding it on for servicing, refurbishment or recycling. (Ali, Zalavadia, Barakat and Eid (2018) measured the impact of reverse logistics on performance indicators, specifically, cost, recycling efficiency, time, quality and waste, on sustainability performances in FMCG industries. It was found in their study that reverse logistics performance indicators have a significant positive impact on environmental performance. Economic performance was also positively influenced by recycling efficiency and quality. Their results also indicated that recycling efficiency positively influenced social performance. Barney (1991) “a firm is said to have a competitive advantage when employing a value-creating strategy not concurrently being employed by another firm or competitor”. According to Mvubu and Naude (2016), there are typically low-profit margins of goods and services in the FMCG sector; therefore, selling large volumes to FMCG retailers can lead to competitive advantages. Hove-Sibanda, Bereng, and Igwe (2020) argued that for firms to improve their competitive advantage, they have to deliver distinctive final goods that cannot be easily imitated, or they need to lead in cost efficiency through their firm’s practices compared to their rivals and further differentiate themselves from the rest. This is especially possible where a firm has policies of reverse logistics to curb total losses and enhance capacity to transfer losses to initial makers or owners of the product/service. Ekakitie and Ehimen (2015) posits that reverse logistics is a value yielding strategy that enhances distribution chains and its management especially in the petroleum industry.

### Hypothesis 4

*H04: Reverse logistics has no significant relationship with competitive advantage of brewery companies in Anambra State, Nigeria.*

## REVIEW OF THEORY

### Stakeholder Theory

Stakeholder theory is a business ethics concept that suggests that businesses should consider the interests and well-being of all stakeholders affected by their actions, rather than just focusing solely on maximizing profits for shareholders. In 1984, R. Edward Freeman originally detailed the Stakeholder Theory of organizational management and business ethics that addresses morals and values in managing an organization. According to him, a stakeholder is any individual or group that can affect or is affected by the actions, decisions, policies, or goals of an organization. The traditional view of business places shareholders as the primary stakeholders, and the goal of the organization is to maximize the shareholder wealth. However, stakeholder theory argues that businesses have a broader responsibility to consider the interests of various stakeholders, which may include employees, customers, suppliers, local communities, government, non-governmental organizations (NGOs), and the environment. Proponents of stakeholder theory argue that by taking into account the concerns and interests of all stakeholders, businesses can create long-term value and sustainable success. They believe that a focus on stakeholder management can lead to better relationships, improved reputation, reduced risk, increased innovation, and enhanced overall performance.

Stakeholder theory emphasizes the need for businesses to engage in dialogue, collaboration, and negotiation with stakeholders to understand their interests and find ways to meet their expectations. This approach involves considering both the direct and indirect

impacts of business decisions on various stakeholders and incorporating their perspectives into the decision-making process. Stakeholder theory has gained significant recognition and influence in both academia and corporate practice. Many companies have adopted stakeholder-oriented approaches and developed frameworks for stakeholder engagement and management.

This theory connects with the study in that supply chain members need to have an orientation of 'togetherness' and 'common' heritage as they all must collaborate to ensure that the goal of supply chains firms are synergized in order to deliver value to the target market (Agbonifoh, 2008). The need for innovation and continuous evolution of new strategies to attain optimality in chain relationships and the essence of collaboration and transparency cannot be over emphasized; notwithstanding the need to make profit, etc. All must be subsumed in the quest to achieve economic sustainability. The issue of CSR is therefore a catalyst element needed to elicit entrenched 'commitment' from stakeholders and which must at all times endure and not used up (Ekakitie, 2020).

### **EMPIRICAL STUDIES REVIEW**

Several studies lend themselves to explaining the antecedent, relational and consequential outcomes of supply chains and competitive advantage. Attia (2023) studied the effect of Sustainable Supply Chain Management and Customer Relationship Management on Organizational Performance in the Context of the Egyptian Textile Industry.. The proposed research model and hypotheses were tested using correlation analysis and structural equation modeling based on data collected from 148 companies working in the Egyptian textile industry. Data were collected through an online survey from 147 supply chain managers in the Egyptian textile industry to test the research hypotheses. The results suggest that the successful implementation of sustainable supply chain management helped in improving customer relationship management, competitive advantage, and organizational performance.

In a related study, Mukhsin, and Suryanto (2022) examined the effect of sustainable supply chain management on company performance mediated by competitive advantage, the subjects of this study were the actors of the Pottery Joint Business Group (JBG) in Banten Province, Indonesia. This type of research is quantitative research with descriptive research and causal research using questionnaires distributed directly to the JBG Pottery actors to 100 respondents. Moreover, Structural Equation Model (SEM) in the SmartPLS Software version 3.0.m3 (SmartPLS GmbH: Bönningstedt, Germany) was used for data analysis. The results of the study found that sustainable supply chain management affects competitive advantage, company performance was also observed to be influenced by sustainable supply chain management and competitive advantage while company performance was also found to be affected by sustainable supply chain management through the mediating effect of competitive advantage. The significant implication of this study is for managers to ensure competitiveness in the process of implementing sustainability supply chain to improve company performance, while providing recommendations to the government through Disperindagkop and SMEs in conducting the assistance process to MSMEs.

Furthermore, Novitasari, and Agustia (2022) examined the role of green supply chain management and green innovation in the effect of corporate social responsibility on firm performance in Indonesia. This was quantitative research. PROPER companies listed on the Indonesia Stock Exchange from 2015 to 2019 comprised the study's population. The sample for this study was 211 companies' annual reports and financial statements, which were obtained through a purposive sampling method. STATA was used to test the data in this study. The results of the study revealed that green supply chain management mediated the effect of corporate social responsibility on firm performance, green innovation did not mediate the effect of corporate social responsibility on firm performance; green supply chain management mediated the effect of corporate social responsibility on green innovation, and green innovation did not mediate the effect of green supply chain management on firm performance.

To, Than, Nguyen, and Nguyen (2021) analyzed the impact of sustainable supply chain management, and supply chain dynamic capabilities on the sustainable development of exporting enterprises in Vietnam. The research model and survey are designed based on previous studies after surveying export enterprises. With 185 samples collected from export enterprises. The Structural Equation Modeling (SEM) analysis technique is used. Data analysis is performed on SPSS and AMOS software (Reliability test, Confirmatory Factor Analysis, SEM). Sustainable supply chain management and supply chain dynamic capabilities all have positive effects on the sustainable development of businesses (sustainable development is measured by distribution: measuring economic efficiency, social efficiency, and environmental performance). From the results of this study, the authors also made several recommendations to help export enterprises develop sustainability based on sustainable supply chain management and supply chain dynamic capabilities.

### **RESEARCH METHODOLOGY**

The cross-sectional survey research design method was adopted for the study – this is because it aids the collection of first-hand data from the respondents at a particular point in time. A cross-sectional survey research design method was adopted using questionnaire instrument. The justification for this method is that survey research design is very feasible for the time frame available for the completion of the study and also it is economical in nature.

This study population covered three selected breweries in Anambra State, Nigeria. This research took the form of a field survey, and it is expedient to mention that the population of the study was restricted to the brewery industry. Hence, the population consisted of two hundred and fifty (250) distributors or supply chain members. The lists of the 3 selected breweries were presented in table 3.1:

**Table 3.1 List of selected breweries and their number of staff**

S/N	Breweries	Supply chain members
1	Intafact Beverages Limited	83
2	International Breweries Plc.	82
3	Guinness Nigeria, Plc.	85
Total		250

Source: Human Resources Department of Breweries, 2023.

The sample size was determined by using Krejcie and Morgan (1970) sample size determination table. To make up this subset, the approximate number was one hundred and fifty two (152) respondents. Therefore, a sample size of 152 distributors as supply chain members of the selected companies was randomly selected from the total population of 250. To validate the instrument for data collection, content validity was adopted for the study in other to ensure that the instrument measured what it ought to measure.

To establish the reliability of the instrument, a test-retest method was employed. Cronbach’s Alpha based text was employed to test for the reliability coefficient. A reliability coefficient of 0.7 and above is considered high and is acceptable while a reliability coefficient of 0.6 and below shows poor reliability (Sekaran, 2003). Since all coefficient values in table 3.3 were above 0.6, which are greater than the common threshold recommended by Seckaran (2003) this shows that the instrument was reliable.

**Table 3.3: Reliability test for all items in the Questionnaire**

	Variables	Alpha ( $\alpha$ ) value
1	Supply chain collaboration	0.722
2	Corporate social responsibility	0.743
3	Supply chain transparency	0.723
4	Reverse logistics	0.735
5	Competitive Advantage	0.737

### 3.10 Data Analysis Techniques

This study employed the use of frequency and percentages, in answering research questions and demographic data of the respondents. The Spearman Rank Order Correlation Coefficient was used in testing the hypotheses formulated in the study, at 0.05 level of significance. This technique was utilized because it is more effective in determining whether two non-parametric data samples with ties are correlated. Also, it is used in analyzing ordinal data, such as this. Spearman Rank Order Correlation is a versatile and useful statistical measure in various research contexts. It provides insights into the strength and direction of associations, aiding in data exploration, hypothesis generation, and further statistical analysis.

## PRESENTATION OF DATA

**Table 4.1 Analysis from the field survey on response rate**

Questionnaire	Number	Percentage
Total questionnaires distributed	152	100
Questionnaire collected and completely filled	151	99

Source: Distributed Questionnaire (2023)

Out of the 152 copies of questionnaire administered, 151 were returned, properly filled, and were useable. Therefore, the analysis was based on the response rate of 99%.

### 4.3 Analysis of Other Research Data

This section focused on the analysis of responses to the main research questions which were split into twenty (20) sub questions using the 5 point Likert scale. They were analyzed using correlation analysis.

**Table 4.3 Spearman Correlation between supply chain collaboration and competitive advantage**

#### Correlations

Supply chain collaboration | Competitive advantage

Spearman's rho	Supply chain collaboration	Correlation Coefficient	1.000	.537**
		Sig. (2-tailed)	.	.000
	N	151	151	
	Competitive advantage	Correlation Coefficient	.537**	1.000
		Sig. (2-tailed)	.000	.
	N	151	151	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From table 4.3 the correlation coefficient ( $r = 0.537^{**}$ ) between supply chain collaboration and competitive advantage of brewery companies sampled is considered strong and positive. The significant value of 0.000 ( $p < 0.01$ ) reveals a significant relationship. Based on that, the null hypothesis was rejected. Therefore, supply chain collaboration has positive effect on competitive advantage of the brewery companies. Collaboration in the supply chain system is designated as an opportunity to increase the overall value of the entire chain, proposing specific business objectives between two or more parties (Burnette & Dittmann 2018).

**Table 4.4 Spearman Correlation between corporate social responsibility and competitive advantage Correlations**

		Corporate social responsibility	Competitive advantage
Spearman's rho	Corporate social responsibility	Correlation Coefficient	1.000
		Sig. (2-tailed)	.000
	N	151	151
	Competitive advantage	Correlation Coefficient	.325**
		Sig. (2-tailed)	.000
	N	151	151

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From Table 4.4, the correlation coefficient ( $r = 0.325$ ) between corporate social responsibility and competitive advantage of brewery companies sampled is moderate and positive. The significant value of 0.000 ( $p < 0.01$ ) reveals a significant relationship. Based on that, the null hypothesis was rejected. Therefore, corporate social responsibility has positive relationship with competitive advantage of brewery companies in Anambra State, Nigeria. Internally, corporate social responsibility can boost short-term profits, while externally; it can boost benefits for long-term market value (Yoon & Chung, 2018). Companies have begun to incorporate CSR in supply chains in order to be sustainable in the market for the long run (Raj et al., 2018).

**Table 4.5 Spearman Correlation between supply chain transparency and competitive advantage Correlations**

		Supply chain transparency	Competitive advantage
Spearman's rho	Supply chain transparency	Correlation Coefficient	1.000
		Sig. (2-tailed)	.000
	N	151	151
	Competitive advantage	Correlation Coefficient	.573**
		Sig. (2-tailed)	.000
	N	151	151

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From table 4.5 the correlation coefficient ( $r = 0.573$ ) between supply chain transparency and competitive advantage of brewery companies sampled is strong and positive. The significant value of 0.000 ( $p < 0.01$ ) reveals a significant relationship. Based on that, the null hypothesis was rejected. Therefore, supply chain transparency has significant relationship with competitive advantage of brewery companies sampled Parris, et al., (2016) asserted that a transparent organization always internally shares information across the logistical team from both top down and bottom up, which further builds trust, engages the logisticians in their job, formulates and implements strategies, and enhances performance.

**Table 4.6 Spearman Correlation between reverse logistics and competitive advantage**



Correlations			Reverse logistics	Competitive advantage
Spearman's rho	Reverse logistics	Correlation Coefficient	1.000	.554**
		Sig. (2-tailed)	.	.000
		N	151	151
	Competitive advantage	Correlation Coefficient	.554**	1.000
		Sig. (2-tailed)	.000	.
		N	151	151

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From table 4.6 the correlation coefficient ( $r = 0.554$ ) between reverse logistics and competitive advantage of brewery companies in Anambra State, Nigeria is strong and positive. The significant value of 0.000 ( $p < 0.01$ ) reveals a significant relationship. Based on that, the null hypothesis was rejected. Therefore, reverse logistics has significant relationship with competitive advantage of brewery companies sampled. Anne, et al (2015) found that reverse logistics allows firms to manage waste and improve their competitiveness through their improved environmental efficiency. A study by Sorkun and Onay (2018) associated reverse logistics with benefits such as absorbing customers, saving costs, improving environmental performance and improving company images.

### 5.1 Summary of Findings

It was shown on the gender composition that majority (61%) of the sample were males. The age bracket of the respondents showed that majority of their age (35%) falls within the age bracket of 31-40 years. The marital composition of the respondents showed that majority 54% of the respondents were married. On the educational background of the sample, it was indicated that most of the respondents (39%) were HND/ BSc holders. The result showed majority 68% of the respondents have below 10years working experience.

Findings showed that there is a strong and positive correlation ( $r = 0.537$ ) between supply chain collaboration and competitive advantage of brewery companies in Anambra State, Nigeria.

Findings showed that there is a moderate and positive correlation ( $r = 0.325$ ) between corporate social responsibility and competitive advantage of brewery companies in Anambra State, Nigeria.

Findings also showed that there is a strong and positive correlation ( $r = 0.573$ ) between supply chain transparency and competitive advantage of brewery companies in Anambra State, Nigeria.

Findings showed that there is a strong and positive correlation ( $r = 0.554$ ) between reverse logistics and competitive advantage of brewery companies in Anambra State, Nigeria.

### 5.2 Conclusion

The study concluded that sustainable supply chain management practice has significant relationship with competitive advantage of brewery companies sampled in the study. The dimensions of sustainable supply chain management practice such as supply chain collaboration, corporate social responsibility, supply chain transparency and reverse logistics have significant relationship with competitive advantage.

Collaboration among supply chain partners fosters information sharing, joint decision-making, and coordinated actions. By collaborating effectively, organizations can enhance supply chain efficiency, responsiveness, and innovation. This collaboration leads to improved customer satisfaction, reduced costs, and increased flexibility, which in turn contribute to gaining a competitive advantage.

Embracing CSR practices involves considering the social, environmental, and ethical impacts of supply chain activities. Organizations that integrate CSR principles into their supply chain operations build trust, enhance their reputation, and attract socially conscious customers. This positive perception can differentiate them from competitors, resulting in a competitive advantage.

Supply chain transparency involves sharing information regarding product origins, production processes, and environmental and social performance. Transparent supply chains promote trust and accountability among stakeholders, including customers, suppliers, and regulatory bodies. Improved transparency helps organizations manage risks, meet regulatory requirements, and enhance their brand reputation, thereby creating a competitive advantage.

Efficient reverse logistics practices can lead to cost savings, waste reduction, and improved customer satisfaction. Organizations that effectively implement reverse logistics processes gain a competitive advantage by minimizing losses, maximizing resource utilization, and demonstrating a commitment to sustainability.

### 5.3 Recommendations

1. Brewery firms should engage in collaborative demand planning and decision-making processes to align goals and objectives. They should jointly develop strategies to address supply chain challenges and improve performance.
2. Sampled firms should implement sustainable practices policies and programmes throughout the supply chain, such as reducing waste, energy consumption, and carbon emissions. Promote the use of renewable resources and support recycling initiatives.
3. The sampled firms should implement systems to track and trace products throughout the supply chain, providing visibility into the origin, movement, and handling of goods. This enables better quality control, regulatory compliance, and identification of potential risks.
4. Brewery organizations should develop a structured process for handling product returns, repairs, or replacements. Efficiently manage reverse logistics, including reverse distribution, repair, refurbishment, recycling, or disposal.

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