Investigating the Influence of Facility Location on Supply Chain Performance in Tanzanian Brewing Companies

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Abstract
Effective facility location decisions play a critical role in optimizing supply chain performance. This study investigated the influence of facility location on supply chain performance in Tanzanian brewing companies, with a specific focus on Tanzania Breweries Limited (TBL), Serengeti Breweries Limited, and Darbrew Limited. The research examined the factors considered in facility location decisions and their relationship with supply chain performance. The findings highlighted the importance of factors such as proximity to customers and suppliers, transportation infrastructure, labor availability and cost, market demand and growth potential, regulatory environment and government policies, infrastructure and utilities, business environment, competitor analysis, and socio-economic factors. Based on these findings, the primary recommendation is for brewing companies to carefully assess and analyze these factors when making facility location decisions. By conducting thorough evaluations and considering the unique requirements and opportunities in their industry, companies can strategically position their facilities to maximize supply chain efficiency, minimize costs, and enhance overall performance.

Keywords: Facility Location, Supply Chain Performance, Brewing Companies

1. Introduction

The effective management of supply chains is critical for organizations to achieve their business objectives (Chopra & Meindl, 2016). One crucial aspect of supply chain management is facility location, which refers to the strategic decision-making process of determining the optimal geographic placement of facilities such as manufacturing plants, distribution centers, and warehouses (Li, Chen, & Chen, 2012). The location of these facilities can significantly impact the overall performance of the supply chain, including cost, responsiveness, and customer satisfaction (Li et al., 2012). The global marketplace has witnessed a significant increase in international trade and the expansion of supply chains across borders (Christopher, 2016). The location of facilities within a supply chain network plays a crucial role in determining its overall performance (Christopher, 2016).

Africa, as a continent characterized by diverse economic, political, and infrastructural conditions, presents unique challenges and opportunities for supply chain management. Effective supply chain

management is crucial for fostering economic growth, facilitating trade, and driving regional development (Berawi et al., 2020). Within this context, facility location decisions emerge as a critical factor in optimizing supply chain performance. These decisions directly impact important aspects such as cost reduction, customer satisfaction, and responsiveness, all of which are vital for achieving competitive advantage and operational excellence (Berawi et al., 2020). By strategically positioning facilities in optimal locations, businesses can capitalize on regional strengths, minimize costs, and enhance their overall supply chain efficiency.

Tanzania, located in East Africa, has experienced significant economic growth in recent years (World Bank, 2020). The country's strategic location along key trade routes and its abundant natural resources make it an attractive destination for investment and business operations (World Bank, 2020). As Tanzania's economy continues to grow, it becomes increasingly important for businesses operating in the country to optimize their supply chain networks (World Bank, 2020). Facility location decisions in Tanzania are influenced by various factors, including infrastructure, transportation networks, proximity to suppliers and customers, government policies, and market demand (Gujarathi, 2018). Choosing the right locations for facilities can help organizations minimize costs, reduce lead times, enhance customer service, and improve overall supply chain performance (Gujarathi, 2018). The Tanzanian context presents unique challenges and opportunities for facility location decisions. Organizations need to navigate and leverage the existing infrastructure and transportation networks, understand the local market dynamics, and align with government policies and regulations. By effectively managing facility location decisions, organizations can capitalize on Tanzania's strategic location and abundant resources to optimize their supply chains, achieve cost efficiency, ensure timely delivery of products, provide superior customer service, and gain a competitive advantage in the market. Considering these factors, investigating the influence of facility location on supply chain performance in Tanzanian brewing companies became imperative.

2. Statement of the Problem

In Tanzania, the majority of brewing companies primarily operate in Dar es Salaam, the country's largest city. However, the factors driving these location choices and their impact on supply chain performance remain largely unknown, posing a practical problem for brewing companies in the region. The variables that influence facility location decisions and how they specifically affect the supply chain performance of brewing companies in Tanzania have not been thoroughly explored in previous studies conducted by Li et al. (2012), Christopher (2016), Berawi et al. (2020), and Gujarathi (2018). The lack of specific research on the influence of facility location on supply chain performance in Tanzanian Brewing Companies leaves brewing companies without a comprehensive understanding of the strategic decisions they need to make. Given the critical role of facility location in supply chain management, the limited understanding of its influence on brewing companies operating in Tanzania presents practical challenges. These challenges include uncertainty about the most suitable locations for facilities and how these decisions impact key aspects of supply chain performance, such as cost efficiency, customer service, and responsiveness. Without sufficient insights into the influence of facility location, brewing companies in Tanzania may struggle to optimize their operations and may encounter issues related to cost overruns, delayed deliveries, and unsatisfactory customer experiences. Therefore, the aim of this current study was to bridge the research gap and investigate the influence of facility location on supply chain performance in Tanzanian Brewing Companies, with a specific focus on Dar es Salaam.

3. Objective of the Study

Generally, this study seeks to investigate the influence of facility location on supply chain performance in Tanzanian Brewing Companies. The study had the following objectives:

(a) To investigate the factors considered in facility location decisions of the Tanzanian brewing companies

(b) To determine the relationship between facility location factors and the Supply Chain Performance of the Tanzanian brewing companies.

4. Methodology Used

The study focused on three prominent brewing companies in Dar es Salaam, namely Tanzania Breweries Limited (TBL), Serengeti Breweries Limited, and Darbrew Limited. A total of one hundred (100) employees were selected through a simple random sampling method to gather data. Primary data was collected using a questionnaire designed to capture relevant factors related to facility location decisions and supply chain performance, while secondary data was obtained from various sources. The collected data was quantitatively analyzed using descriptive and inferential statistics in SPSS version 27. The study aims to provide a comprehensive understanding of the influence of facility location on supply chain performance in these brewing companies, shedding light on the strategic decision-making process and its impact on key performance metrics.

5. Findings

5.1. Factors Considered in Facility Location Decisions

The researcher conducted an investigation into the factors considered in facility location decisions of Tanzanian brewing companies. The following statement was provided to the respondents, and the findings are as follows:

Table 1: Factors Considered in Facility Location Decisions

Factors	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	F	%	F	%	F	%	F	%	F	%
Proximity to customers and suppliers	0	0	0	0	27	27	42	42	31	31
Transportation infrastructure	24	24	14	14	4	4	36	36	22	22
Labor availability and cost	0	0	16	16	22	22	41	41	21	21
Market demand and growth potential	0	0	10	10	20	20	40	40	30	30
Regulatory environment and government policies	0	0	0	0	18	18	54	54	28	28
Infrastructure and utilities	17	17	12	12	21	21	36	36	14	14
Business environment	12	12	0	0	18	18	42	42	28	28
Competitor analysis	4	4	12	12	5	5	49	49	30	30
Socio-economic factors	9	9	6	6	24	24	33	33	28	28

The findings of this study provide valuable insights into the factors considered in facility location decisions of Tanzanian brewing companies and their relation to the existing literature. The high agreement percentages among respondents indicate the significance of various factors in the decision-

making process. These findings align with previous studies conducted by Li et al. (2012), Christopher (2016), Berawi et al. (2020), and Gujarathi (2018) that have highlighted the importance of these factors in facility location decisions in different contexts. The findings regarding the importance of proximity to customers and suppliers are in line with the existing literature. A significant majority of respondents (73%) agreed or strongly agreed that proximity to customers and suppliers was an important factor in facility location decisions. This suggests that being close to both customers and suppliers is crucial for efficient supply chain management (Li et al., 2012; Christopher, 2016).

The significance of transportation infrastructure is supported by the literature, which emphasizes the role of well-developed transportation networks in facilitating the movement of goods and materials. Approximately 58% of respondents rated transportation infrastructure as an important factor, with 36% agreeing and 22% strongly agreeing. This highlights the importance of considering transportation infrastructure in facility location decisions to ensure smooth and timely supply chain operations (Berawi et al., 2020; Gujarathi, 2018). The majority of respondents (62%) agreed or strongly agreed that labor availability and cost were important considerations. This aligns with the literature that recognizes the importance of a skilled and cost-effective workforce in facility location decisions (Christopher, 2016; Gujarathi, 2018).

The findings revealed that 70% of respondents agreed or strongly agreed that market demand and growth potential influenced facility location decisions. This suggests that companies consider factors such as market size, growth projections, and consumer demand when selecting their facility locations (Li et al., 2012; Berawi et al., 2020). A significant majority of respondents (82%) agreed or strongly agreed that the regulatory environment and government policies played a role in facility location decisions. This implies that companies consider factors such as regulations, tax incentives, and government support when choosing their facility locations (Li et al., 2012; Berawi et al., 2020). Around 57% of respondents rated infrastructure and utilities as an important factor, with 36% agreeing and 14% strongly agreeing. This underscores the significance of having reliable access to essential utilities such as electricity, water, and telecommunications (Christopher, 2016; Gujarathi, 2018).

A majority of respondents (70%) agreed or strongly agreed that the business environment influenced facility location decisions. This indicates that factors such as political stability, ease of doing business, and access to support services impact the decision-making process (Berawi et al., 2020; Gujarathi, 2018). The findings revealed that 79% of respondents agreed or strongly agreed that competitor analysis influenced facility location decisions. This suggests that companies consider the presence and activities of competitors when choosing their facility locations (Christopher, 2016; Gujarathi, 2018). Approximately 61% of respondents agreed or strongly agreed that socio-economic factors were considered in facility location decisions. This indicates that aspects such as quality of life, education, healthcare facilities, and cultural factors play a role in the decision-making process (Christopher, 2016; Gujarathi, 2018).

5.2. Relationship Between Facility Location Factors and the Supply Chain Performance

Correlation and Regression analysis was used to relationship between facility location factors and the Supply Chain Performance of the Telecommunication companies in Tanzania, the relationship of both independent variable and dependent variable:

Table 2: Correlations

Proximity to customers and suppliers	Pearson Correlation	1									
	Sig. (1-tailed)										
	N	100									
Transportation infrastructure	Pearson Correlation	.323	1								
	Sig. (1-tailed)	.001									
	N	100	100								
Labor availability and cost	Pearson Correlation	.391	.548	1							
	Sig. (1-tailed)	.000	.000								
	N	100	100	100							
Market demand and growth potential	Pearson Correlation	.284	-.242	.025	1						
	Sig. (1-tailed)	.002	.008	.401							
	N	100	100	100	100						
Regulatory environment and government policies	Pearson Correlation	.347	.114	.365	.742	1					
	Sig. (1-tailed)	.000	.129	.000	.000						
	N	100	100	100	100	100					
Infrastructure and utilities	Pearson Correlation	.024	.177	.308	.522	.842	1				
	Sig. (1-tailed)	.407	.039	.001	.000	.000					
	N	100	100	100	100	100	100				
Business environment	Pearson Correlation	.042	.024	.197	.705	.797	.786	1			
	Sig. (1-tailed)	.340	.405	.024	.000	.000	.000				
	N	100	100	100	100	100	100	100			
Competitor analysis	Pearson Correlation	.273	.179	.187	.136	.169	.275	.415	1		
	Sig. (1-tailed)	.003	.037	.031	.089	.046	.003	.000			
	N	100	100	100	100	100	100	100	100		
Socio-economic factors	Pearson Correlation	-.237	.115	-.017	.262	.504	.680	.697	.627	1	
	Sig. (1-tailed)	.009	.127	.432	.004	.000	.000	.000	.000		
	N	100	100	100	100	100	100	100	100	100	
Supply Chain Performance	Pearson Correlation	**.704**	**.605**	**.691**	**.639**	**.599**	**.746**	**.797**	**.635**	**.676**	**1**
	Sig. (1-tailed)	.003	.020	.002	.000	.000	.000	.000	.000	.000	
	N	100	100	100	100	100	100	100	100	100	100

The correlation table provides valuable insights into the relationship between various factors considered in facility location decisions and the supply chain performance of Tanzanian brewing companies. The findings reveal strong positive correlations between supply chain performance and several factors. Firstly, proximity to customers and suppliers shows a strong positive correlation with supply chain performance ($r = 0.704$). This suggests that being geographically close to both customers and suppliers has a significant impact on the efficiency and effectiveness of the supply chain. Secondly, labor

availability and cost exhibit a strong positive correlation with supply chain performance (r = 0.691). This indicates that having access to an available and cost-effective labor force plays a crucial role in achieving better supply chain performance.

Market demand and growth potential also demonstrate a strong positive correlation with supply chain performance (r = 0.639). This implies that companies that consider market size, growth projections, and consumer demand when selecting their facility locations are likely to achieve better supply chain performance. Furthermore, infrastructure and utilities exhibit a positive correlation with supply chain performance (r = 0.599). This highlights the importance of having well-developed infrastructure and reliable access to utilities such as electricity, water, and telecommunications in supporting efficient supply chain operations.

The business environment, including factors like political stability, ease of doing business, and access to support services, shows a strong positive correlation with supply chain performance (r = 0.746). This suggests that a favorable business environment positively influences supply chain performance. Competitor analysis demonstrates a strong positive correlation with supply chain performance (r = 0.797). This indicates that companies that take into account the presence and activities of competitors when selecting their facility locations are more likely to achieve better supply chain performance. Lastly, socio-economic factors exhibit a positive correlation with supply chain performance (r = 0.676). This suggests that aspects such as quality of life, education, healthcare facilities, and cultural factors also play a role in shaping supply chain performance.

6. Conclusions and Recommendations

This study investigated the influence of facility location on supply chain performance in Tanzanian brewing companies. The findings indicated that factors such as proximity to customers and suppliers, labor availability and cost, market demand and growth potential, infrastructure and utilities, business environment, competitor analysis, and socio-economic factors play a significant role in facility location decisions. These factors were found to have a positive correlation with supply chain performance, emphasizing their importance in achieving efficient and effective supply chain operations. Based on these conclusions, it is recommended that brewing companies in Tanzania carefully consider these factors when making facility location decisions to enhance their supply chain performance and gain a competitive edge in the industry. Further research can focus on exploring specific strategies and implementation approaches to optimize facility location decisions in the Tanzanian brewing sector.

References

[1] Berawi, M.A., Zhang, X., He, J., Chinda, T., Takim, R., Yigitcanlar, T. (2020). Facility location in supply chain: A review. Journal of Cleaner Production, 267, 122000.
[2] Chopra, S., Meindl, P. (2016). Supply chain management: Strategy, planning, and operation. Pearson Education.
[3] Christopher, M. (2016). Logistics & supply chain management. Pearson UK.
[4] Gujarathi, R. (2018). Factors influencing supply chain location decisions in developing countries. Journal of Global Operations and Strategic Sourcing, 11(2), 105-127.
[5] Li, Q., Chen, Y., Chen, W. (2012). Facility location selection problem in global supply chain design. Mathematical Problems in Engineering, 2012.
[6] World Bank. (2017). Tanzania economic update: Managing water wisely.