
Influence of Backward Integration Strategy on Organizational Efficiency in the Cement Industry in Kenya

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Abstract: The study sought to establish the influence backward integration has on organizational efficiency in cement manufacturing companies in Kenya. The study was based on two theories: Resource Dependence Theory (RDT) and Transaction Cost Theory (TCT). Descriptive survey research design was used in this study. The population for this study was the eight cement-manufacturing companies in Kenya. This study adopted the primary method for collecting data through the questionnaire method. The questionnaires were administered using the drop and pick later basis. The study targeted top and middle-level managers from eight cement companies as respondents. From each company, questionnaires were administered to quality control, production, finance, marketing and procurement departments and chief executive officers. The collected data were quantitative and thus were analyzed using descriptive and inferential statistics. The study carried out a regression analysis with the study establishing that the backward integration strategy was highly adopted by cement manufacturing companies. The influence of the backward integration strategy on organizational efficiency was positive and statistically significant. The positive influence implies that improved backward integration leads to improved organizational efficiency of the cement-manufacturing firms. Based on the study findings, the study concluded that the backward integration strategy was highly adopted by cement manufacturing firms in Kenya. The study further concludes that the influence of backward integration strategy on organizational efficiency was statistically significant. Cement manufacturing firms can thus enhance their efficiency through the adoption of a backward integration strategy.

Keywords: Backward Integration, Organizational Efficiency, Resource Dependency, Transaction Cost

1. Introduction

The argument behind this research proposal rests on the notion that the Backward Integration Strategy is linked to organizational efficiency which in turn leads to organizational excellence. Kibet, Koyier and Wachira (2017) maintain that backward integration enables organizations to reduce their costs because they can access information on supply prices and conditions which in turn leads to the firms' efficient production schedules as well as avoid rent incurred on its supplies. Managers and owners of organizations make strategic decisions meant to ensure that they stay competitive in their industry which is instrumental in ensuring their survival, profitability and ongoing concern (Olanrewaju, 2016). Backward integration strategy has been employed by Bamburi Cement, ARM Africa, Mombasa Cement, National Cement and East African Portland Cement who internally produce and supply their clinker, the key raw material required in cement production. This in turn reduces the quantities being imported by the firms considerably. Savannah Cement on the other hand is in the process of setting up a clinker factory in Kitui to enable it to produce its clinker instead of importing which has proved to be costly (Ndeta, n.d). The backward integration strategy has been anchored on the Resource Dependence Theory (RTD) and Transaction Cost Theory (TCT). The RDT is attributed to Pfeffer and Salancik (1978). It holds that organizational survival is greatly attributed to the ability the organization possesses in terms of acquisition, procurement and maintenance of its critical resources required

for effective functioning. TCT was initiated by Coase (1937) in his work, "The Nature of the Firm". It states that all transactions an organization undertakes have a cost implication attached to it. He came up with mechanisms that will drive managers of the firm to decide whether to produce internally or buy from the market depending on the transaction costs involved. The structure of an organization determines the control it has on transactions which in turn controls costs incurred. The cement industry is the building block of a country's construction industry (Portland Cement Association, 2013) because almost all construction projects require cement in their execution. Ohimain (2014) maintains that cement production and utilization are related to the prevailing state of the country's development. Cement demand and consumption were on an upward trend in Kenya until 2017 when it drastically dropped, which was also observed in the national development trend. The cement industry in Kenya continues to experience intense competition as well as diverse changes attributed to the entrance of new players into the market leading to the shift in market shares (Simiyu & Rugami, 2018).

Backward integration strategy stems from vertical integration strategy where an organization embarks on fulfilling tasks previously done by businesses in the supply chain by merging with or acquiring these businesses, or doing it on their own (Kenton, 2019). An organization may decide to invest in processes that enable it to become its supplier of raw materials required for the production process. Wallstreetmojo (2019) defines backward integration as the means through which an organization integrates its operations with those of its suppliers with the main purpose of gaining control over suppliers of its raw materials by integrating them with its ongoing business. The Corporate Finance Institute (2019) looks at backward integration as the process through which an organization merges with or acquires another business that supplies it with raw materials required in the production of its finished product aiming at cutting costs, increasing revenues and improving production efficiency as well as gaining competitive advantage over its competitors. Backward integration is considered by the Business Professor, LLC (n.d) as an essential strategy in business operations because when well executed, costs emanating from procurement, production and transportation of raw materials from suppliers can be controlled in a better and more efficient manner. This in turn may make a company more competitive leading to improvement of its bottom line. Backward integration enables a company to gain control over the supply chain thus gaining direct access to the required raw materials and in the process achieving efficiency (Kenton, 2019). When this happens, the company can achieve competitiveness over others in the industry. Zhang (2013) postulates that several organizations have opted to gain better control over the supply of raw materials through vertical integration, over their supply chain. Organizations require an adequate and timely supply of required raw materials to effectively operate in terms of production of goods thus increasing their organizational efficiency. When there are limited suppliers in the external environment for the required raw materials, a backward integration strategy may be adopted by the organization to navigate this situation which shall enable the organization to avoid delays experienced in terms of supply of raw materials. Apart from the firm having direct access to and control of the resources, it also reduces the risks that come with the uncertainty in terms of quality, timely supply and price uncertainties that accompany outsourcing (Kaplan Financial Knowledge Bank, n.d).

Efficiency is a dynamic concept that has been defined by scholars in different ways. Billyard and Donohue (2015) define efficiency simply as the best output-to-input ratios and term effectiveness as a companion measure of efficiency. Drucker (2011) defines efficiency as doing things right (in the right way) within an organization and maintains that efficiency is the demonstration of inner fulfilment of an organization's planned objectives using available scarce resources whereas Lon (1994) defines efficiency as the degree of the economy in which resources, time and money are consumed. Pinprayong and Siengthai (2012) argue that excellent organizational efficiency contributes towards improved organizational performance in productivity, management, quality as well as profitability. Robbins (2000) posited that the main measures of the firm's performance are efficiency and effectiveness. On one hand, effectiveness is about achieving the firm's objectives whereas efficiency is inclined towards how the organization will achieve these objectives mostly through reduction of operational costs. He further notes that efficient and effective organizations demonstrate excellent organizational performance and strategic planning. Bennet (2007) affirms that through efficiency, an organization can minimize cost by using fewer inputs in the production process. This in turn results in reduced wastage of raw materials, money and streamlined processes while increasing the output as well as reducing errors and defects. Inefficiency can taint an organization's corporate image and reputation which can be unattractive to the potential shareholders and affects customer retention as well. Allen Consulting Group (2013) confirms that efficiency can be measured by the use of labour costs to determine how much it takes to produce a product, cycle time per unit to determine the start and end of the process, queue time per unit when serving customers and delivery timelines. Companies need to be vigilant in ensuring that their key performance indicator is efficiency. This is so because it shall be the basis for attracting more customers and in the process increasing their market share. Efficient organizations can comfortably market themselves

Kenya is home to eight cement manufacturing companies. Kenya's mature and well-established cement industry has been recognized as a cement production hub for East Africa serving the local market, North of Tanzania, Uganda, Rwanda DRC and Southern Sudan. The cement industry in Kenya dates back to the 1930s when EAPCC then owned by the Blue Circle Industries (UK) was founded. BCL is Kenya's largest cement producer. It was founded in 1951 but began cement production in 1954 with a cement grinding capacity of 140,000 per annum (Mwangi, 2017). BCL's current grinding capacity is 2.1 million

tonnes per annum (The Report: Kenya 2016) with grinding plants in Bamburi and Athi River. BCL produces the Nguvu Cement” brand. Statistics from KNBS (2018) put BCL as controlling a market share of 32.6%. It also owns shares in EAPCC and is a subsidiary of Hima Cement in Uganda. EAPCC is considered as Kenya’s pioneer in cement manufacturing having been founded in 1933 by Blue Circle Industries. Initially, EAPCC served the local market by importing cement. It began cement production in 1956 in Athi River with a grinding capacity of 60,000 tonnes per year. EAPCC now has an installed grinding capacity of 1.3 million tonnes per annum (The Report: Kenya 2016). EAPCC is associated with the “Blue Triangle Cement Brand and in 2018, it controlled a market share of 15.1% (KNBS, 2018). MCL was founded in 2007 in Kenya but began operations in Athi River in 2013 (Indeje, 2017). The company has an installed grinding capacity of 1.6 million tonnes per annum (The Report: Kenya 2016). MCL is the second-largest cement manufacturing company in Kenya and controls a market share of 15.8% (KNBS, 2018). It is associated with the "Nyumba Cement” brand. ARM Africa Limited, previously trading as Athi River Mining was founded by the Paunrama family as a family business in the year 1974 (Mwangi, 2017). It began its operations in Kenya extracting and processing minerals until 1994 when it commenced cement production. ARM is the fifth largest cement manufacturing company in Kenya with an installed grinding capacity of 1.0 million per annum. It is associated with the “Rhino Cement” brand and in 2018 had a market share of 13.5% (KNBS, 2018). NCL, a subsidiary of Devki Group was founded in 2008 (Mwangi, 2017). It is the sixth largest company with an installed grinding capacity of 1.0m tonnes per annum and produces the “Simba Cement” brand and had a market share of 13% in 2018 (KNBS, 2018). SCL, the fourth largest cement manufacturer in Kenya began its operations in 2012 in Athi River (Mwangi, 2017). It has an installed cement grinding capacity of 1.5 million tonnes per annum and is associated with the “Savannah Cement” brand. In 2018, it controlled 15% of the market share (KNBS, 2018). Ndovu and Rai cement companies are the latest entrants into the cement industry. Ndovu cement brand is owned by Karsan Ramji & Sons who have investments in quarry mining. They have put up a cement plant in Athi River with a grinding capacity of 700 tonnes per day. Rai Cement began producing cement in Kenya in 2017. It is located in the Muhoroni area of Kisumu County. It is owned by the Rai family who have investment roots in the sugar industry. The Rai cement brand serves primarily the Western and Rift Valley parts of Kenya as indicated by the firm’s Marketing Manager, Mr. Suneel Menon (n.d). The presence of eight cement manufacturing companies in Kenya has led to intensified competition in the cement industry and this has put a strain on their already slim profit margins (Simiyu and Rugami, 2018). This has forced the companies to look for ways of ensuring their success and survival in the cement business. Companies able to create a niche for themselves have survived whereas those that haven't have been axed off the market. It is perhaps this competition, coupled with other management issues that has led to the acquisition of ARM Africa by National Cement (Guguyu, 2019). Rono and Moronge (2015) point out that increased competition in an industry threatens that industry's attractiveness thereby reducing the profitability of the industry players. According to Indeje (2017), this has seen the firms which were enjoying the lion’s share in the market like BCL, EAPCC and ARM cede their commanding margins to newer firms like NCL, SCL and MCL. The gap identified in the lack of adequate research in this field is the driving force and motivation for the choice of research leading to the research question: Does backward integration affect organizational efficiency in the cement industry in Kenya? The objective of this study was to establish the perceived influence backward integration has on organizational efficiency in cement manufacturing companies in Kenya.

2. Literature Review

2.1 Theoretical Foundation

This section looked at various schools of thought used to guide the study of the influence backward integration has on organizational efficiency. The study was guided by two theories: Resource Dependence Theory (RDT) and Transaction Cost Theory (TCT)

2.1.1 Resource Dependence Theory

The guiding principle of this Theory is that there must be an engagement in transactions between an organization and other organizations within its environment for the acquisition of resources. Even though these transactions are beneficial, they often lead to dependencies. Organizations depend on the environment for the supply of the required resources for the production of their goods (Child, 1972). Due to the unpredictability and instability of the external environment, required resources may sometimes be scarce and not readily available. This situation generates power-dependence relationships between these organizations (Ulrich and Barney, 1984). Interdependencies coupled with uncertainties in the external environment result in a situation where the survival of the organization and its continued success also becomes uncertain. Walter and Barney (1990) reiterate that it is the managers' responsibility to learn to navigate these situations by coining tactics and strategies for dealing with these dependencies to secure ample access to required resources to minimize disruptions in their operations. The strategies to be employed vary depending on the nature of the business. It is therefore of utmost importance for managers to employ the least constraining mechanism to manage relationships and partner with firms that offer minimal dependence and uncertainty at the same time maximizing their autonomy. RDT deals with the impact resource acquisition has on organizational behavior more so the ability of the firm to gather and exploit resources faster than its competitors. Pfeffer and Salancik (1978)

state that organizational survival is attributed to the ability of an organization to acquire, procure and maintain its required critical resources for its effective functioning. The theory emphasizes the vital role resources play as key to a firm's survival and that successful access and control of its critical resources becomes a basis of power. Ulrich & Barney (1981) reiterate that organizations should be able to control the necessary resources required for their survival. Resource dependency analysis begins with identifying an organization's critical and required resources, and then tracing them to their sources. According to (Hillman et al, 2009) firms use this Theory to make key strategic decisions within an organization.

2.1.2 Transaction Cost Theory

This theory traces its roots to Coase (1937) through his work *The Nature of the Firm*. He noted that there exist transaction costs in using the market when obtaining goods or services. These costs include sourcing and information costs, negotiation/bargaining costs, confidentiality costs, transportation costs, taxation costs, policing and enforcement costs and dispute resolution costs. All these costs increase the costs of procuring from the market. He further affirms that organizations explore the option of internal production to avoid these costs. Transaction costs deal with consideration of all costs incurred during the outsourcing of product production which enables an organization to decide whether to buy or make the product (www.businessdictionary.com). Every activity involving purchase or supply from the market has a cost implication attached to it. It is the responsibility of the organizational management to compare the cost of transactions vis a vis the costs to be incurred when production is done within the organization and this enables them to make a strategic decision on the strategy the organization will follow. Cement manufacturing is a highly competitive industry. With the ever-increasing production and operational costs, unstable and highly unpredictable access to raw materials and dwindling profits, companies are adopting strategies to enable them to survive and remain relevant in the industry (Njuguna, et al, 2018). Companies have thus opted to adopt generic strategies with integration, backward integration being the most commonly adopted strategy.

2.2 Empirical Studies and Knowledge Gaps

Backward Integration strategy is a subject that has been widely explored in Nigeria because of the many scholars that have undertaken studies on it. Olanrewaju, (2016) affirms that backward integration has been considered as one of the strategies employed by organizations to gain control in the business industry by increasing its market share. The success of the backward integration strategy in Nigeria was further corroborated in October 2017 when Lolu Alade-Akinyemi, the then Procurement Director of Lafarge Nigeria confirmed that harnessing limestone deposits, one of the raw materials required for cement manufacturing saved the cement industry in Nigeria 240 billion Naira per year (Maduenyi, 2017). Olanrewaju (2016) carried out a study to find out what effect backward integration has on rural development in Nigeria with a special focus on the agriculture sector. The findings of his study were that many manufacturing companies in this sector practised backward integration by acquiring the source of their raw materials supply. Even though the findings indicated that engagement of these companies in backward integration positively contributed to the general development of the surrounding people and community at large and that the companies were able to increase and have control over the timely supply of raw materials, it does not confirm that the strategy resulted to improved organizational efficiency. There are however many studies that have been undertaken on vertical integration strategy. For instance, Oloda (2017) undertook a study on the impact of vertical integration strategy on the organizational survival of manufacturing firms in Port Harcourt Nigeria. The population sample of 205 managers from six selected companies used primary and secondary data collection methods and analyzed the collected data using the Spearman Rank-Order Correlation coefficient. The findings confirmed that indeed, a positive relationship existed between vertical (both backward and forward) integration and organizational survival. The study further confirmed that the corporate performance of the vertically integrated firms was better than that of the non-vertically integrated firms. It is not however clear why the researcher chose to use both primary and secondary methods to collect data when the primary method through questionnaire would have been sufficient.

Njuguna, Kwasira and Orwa (2018) undertook a study on the influence of vertical integration strategy performance of non-financial firms listed at the Nairobi Securities Exchange in Kenya. The population of the study were all 45 non-financial companies listed at NSE. Data was collected using primary (semi-structured questionnaire) and secondary (audited financial statements). They used descriptive, regression and correlation methods to analyze the collected data. The findings from this study were that the use of a vertical integration strategy plays a role in reducing the costs of transactions, an increase of market power and improving the organizations' technical efficiencies. As much as this study was conclusive, there was a need to venture into the manufacturing industry and narrow it down to the cement industry and undertake similar studies to ascertain concurrence in the findings. Gitonga (2011) undertook a study to ascertain the relationship vertical integration has on the performance of construction firms in Kenya. The population of the study was sixty construction firms registered under Class A with the Ministry of Works in 2009. The researcher collected data by use of primary (using a structured questionnaire) and secondary methods. He analyzed the collected data using the descriptive, regression and correlation analysis methods. The findings of this study were that vertical integration had no relationship with the performance of construction firms in Kenya

and that transaction costs in the construction industry do not have any significant influence on the firm's performance. However, it was observed that over 50% of the respondents did not return duly completed questionnaires and this sheds some doubt on the credibility of the findings. This then creates a gap and opens a window for further research to be undertaken to clear any inconsistencies that may have arisen from this study.

3. Methodology

The study adopted the descriptive survey research design through the census study method. Because of the existence of few cement companies in Kenya, data was collected from all the manufacturing companies and therefore, the census survey method was ideal for this study. The population for this study was drawn from all eight cement-manufacturing companies in Kenya. The study adopted a census survey where all eight cement-manufacturing firms formed part of the population. This study adopted the primary method as an exclusive way for collecting data through the questionnaire method. A semi-structured questionnaire was used in this study. The study targeted six (6) top and middle-level managers from the eight cement companies as respondents. From each company, the questionnaires were administered to the Quality Control, Production, Finance, Sales & Marketing and Procurement Departments as well as the executive forming a total sample size of 48 respondents. The collected data were quantitative and thus were analyzed using the descriptive method as well as inferential statistics using the regression method. Since this research aimed to find out the relationship between backward integration and organizational efficiency, it was an ideal method for analyzing the collected data.

4. Results

4.1 Response Rate and Reliability

The researcher issued 48 questionnaires to the heads of departments in the eight cement manufacturing firms in Kenya. The questionnaires were to be filled by management staff in the position of Quality Control, Production, Finance, Sales and Marketing, Production, Procurement and Administration. The questionnaires returned were thirty-nine (39). The questionnaire return rate was 80.12%, which was considered adequate for further analysis. The researcher was able to achieve a higher response rate through making follow up with respondents through phone calls and emails. The respondents were also assured of the confidential nature by which the data collected would be handled. The findings are presented in Table 1.

Table 1: Response Rate

Questionnaires	Frequency	Percentage (%)
Returned	39	81.25
Not returned	9	18.75
Total	48	100.00

The study also examined the reliability of the questionnaire used in the study. Reliability is the quality of the data collection instrument, questionnaires in this case, to measure what it is supposed to measure consistently. The questionnaire can give consistent results when a repeat study is carried out with the same sample (Kothari, 2004). The study adopted an internal consistency measure of reliability where Cronbach Alpha was calculated. A Cronbach alpha equal to or greater than 0.7 is considered reliable enough. The study established that all the variables were reliable given that the backward integration strategy has a Cronbach alpha of 0.747 and organizational efficiency has a Cronbach alpha of 0.741. Table 2 presents the reliability results.

Table 2: Cronbach Alpha

Variable	Cronbach Alpha	No of items	Conclusion
Backward Integration Strategy	0.747	9	Reliable
Operational Efficiency	0.741	10	Reliable

4.2 Demographic Information

Demographic information relates to the population characteristic factors associated with the respondents in the study. The study examined the respondents' demographics in three areas: the department of the respondent, duration of the respondent in the company and duration of the respondent in their current employment position. The study established that 6 (15.4%) respondents were in executive positions, 4 (10.3%) were from finance, 7 (17.9%) were from marketing, 4 (10.3%) were from

procurement, 12 (30.8%) were from production and 6 (15.4%) were from quality control. The findings revealed that the majority of the respondents were from production, and the department was actively involved in ensuring the operational efficiency of the respective firms. The majority of the respondents (84.6%) had stayed in the firms for between 6-15 years. This was followed by 10.3% of the respondents who had stayed for less than 5 years and finally 5.1% of the respondents who had stayed in the respective firms for more than 15 years. Given that the majority of the respondents had stayed with their respective firms for between 6-15 years, it can be concluded that they are very experienced in issues of backward integration and organizational efficiency in their respective firms. Finally, the study sought to establish the experience level of the employees in the positions they were occupying. The study established that the majority (53.8%) of the respondents were occupying the positions they were in for less than 5 years implying that they were relatively experienced. Forty-three-point six (43.6%) per cent of the respondents had experience level of between 6-10 years in their respective positions. Only about 2% of the respondents had stayed in their respective positions for more than 11 years. The study thus concluded that the firm had a mix of experiences with relevant skills necessary to ensure the firm implemented a backward integration strategy to enhance organizational efficiency. The findings are shown in Table 3.

Table 3: Demographic Characteristics

Variable	Category	Frequency	Per cent
Department	Executive	6	15.4
	Finance	4	10.2
	Marketing	7	17.9
	Procurement	4	10.3
	Production	12	30.8
	Quality	6	15.4
	Total	39	100.0
Duration of stay in the firm	less than 5 years	4	10.3
	6-10 years	20	51.3
	11-15 years	13	33.3
	over 15 years	2	5.1
	Total	39	100.0
Duration of stay in the position	less than 5 years	21	53.8
	6-10 years	17	43.6
	11-15 years	1	2.6
	Total	39	100.0

4.3 Descriptive Analysis of Study Variables

4.3.1 Backward Integration Strategy

Backward integration strategy stems from vertical integration strategy where an organization embarks on fulfilling tasks previously done by businesses in the supply chain by merging with or acquiring these businesses, or doing it on their own (Kenton, 2019). The study used a 5-point Likert scale to measure the perception of the respondents regarding the state of backward integration in their respective firms. The study findings are presented in Table 4. The response to the statement that the firms procure clinker using more than one source was supported with the majority of the respondents agreeing to a large extent that their firms were using more sources of clinker as depicted by a mean and standard deviation of (M = 4.00 and SD = 1). The response to the statement that the firms have an adequate monthly supply of clinker was supported by the majority of the respondents as depicted by a mean (M = 4.0769) and Standard deviation (SD = .73930). Concerning the statement on direct control over the delivery of clinker, the majority of the respondents were positive implying that they have integrated with transport companies. This was evidenced by the mean response and standard deviation agreement to a large extent (M = 4.0256 and SD = 1.08790). The study also revealed that the firms have some level of control over the price of clinker as shown by a mean response and standard deviation to a moderate extent (M = 3.5385 and SD = 1.23216). The statement on experience of minimal interruptions in their production process, the response as shown by the mean response and standard deviation of agreement to moderate extent (M = 3.7692 and SD = 1.11122). Concerning the statement on the firms' direct control over the quality of clinker, the study revealed the existence of better control as evidenced by the mean response and standard deviation of an agreement to a large extent (M = 4.1538 and SD = .96077). The study also sought to establish the level of product differentiation. The majority of the respondents revealed that their products are differentiated from those of the competitors as depicted by the mean response (M = 4.4103) and standard deviation (SD = .75107) of agreement to a large extent.

Regarding the statement on the firm's increased market share in the last 5 years, the respondents thought that their market shares had not changed much as depicted by mean (M = 3.7692) and standard deviation (SD = 1.20222) of agreement to a moderate agreement. This implies that there is stiff competition in the Kenyan market for cement products. The majority of respondents supported the statement that the firms have control over the transaction costs with the mean response of (M = 3.94)

of agreement to a moderate extent. The Overall mean score and standard deviation for the statements about backward integration strategy showed agreement to a moderate extent ($M= 3.9658$ and $SD=1.009254$). This implies that the majority of cement manufacturing firms in Kenya have implemented a backward integration strategy to enhance organizational efficiencies.

Table 4: Perception of Backward Integration Strategy

Statements	Mean	Std. Devi.
We procure our clinker using more than one source	4.0000	1.00000
We have an adequate monthly supply of clinker	4.0769	.73930
We have direct control over the delivery of our clinker	4.0256	1.08790
We have direct control over the price of our clinker	3.5385	1.23216
We experience interruptions in our production process	3.7692	1.11122
We directly control the quality of our clinker	4.1538	.96077
Our products are differentiated from our competitors	4.4103	.75107
We have increased our market share in the last 5 years	3.7692	1.20222
We have control over the transaction costs	3.9487	.99865
Overall Mean Score	3.9658	1.009254

4.3.2 Organizational Efficiency

Billyard and Donohue (2015) defined efficiency simply as the best output-to-input ratios and term effectiveness as a companion measure of efficiency. The study sought to establish the level of organizational efficiency in cement manufacturing firms in Kenya. The study adopted a 5-point Likert scale where 1 is not at all, 2 is to a small extent, 3 is to a large extent, 4 is to a large extent and 5 is to a very large extent. The findings are presented in Table 5. The statement that the firms have reduced costs from procurement of clinker was fairly supported with most respondents agreeing to a moderate extent as evidenced by the mean and standard deviation ($M=3.7949$ and $SD=1.15119$). Regarding the statement that the firms have uninterrupted production processes, the study revealed that the production process was not interrupted much as shown by the mean and standard deviation of agreement to a moderate extent ($M=3.6667$ and $SD=.86855$). The study also established that respective cement manufacturing firms had greatly reduced wastage of raw materials as shown by responses tilting towards agreement to a large extent ($M= 4.1026$ and $SD=.85208$). The statement that the respective cement manufacturing firms had increased their production output was supported by most respondents to a large extent ($M= 4.1282$ and $SD = 1.00471$). The respondents also revealed that their firms have low labour costs which could only mean the firms have adopted technology to replace labour. The finding is supported by the mean response ($M=4.0513$) and standard deviation ($SD=.85682$) of agreement to a large extent. The respondents further revealed that their respective firms have low levels of product errors and defects as depicted by the mean response and standard deviation to a large extent ($M=4.2821$ and $SD=.72361$). Regarding the statement that the firms have high-quality issues with products, the respondents agreed with the statement to a moderate extent ($M=3.4615$ and $SD=1.44816$). The study also sought to establish whether the firms have a backlog in customer delivery timelines. The study revealed that customer backlog is there in a small percentage as shown by mean response and standard of agreement to a moderate extent ($M= 3.3846$ and $SD =1.33012$). The statement that firms have reduced the cycle time per unit was supported by the majority of the respondents and is depicted by the mean and standard deviation of agreement to a large extent ($M=4.0769$ and $SD=.80735$). The study also established that the firms have a low cost per unit output as shown by a mean of 3.8462 and a standard deviation of 1.13644. The overall mean score for statements regarding organizational efficiency was 3.7795 which was in agreement to a moderate extent with statements about organizational efficiency in the cement-manufacturing firms in Kenya.

Table 5: Perception of Organizational Efficiency

Statements	Mean	Std. Deviation
We have reduced costs from the procurement of clinker	3.7949	1.15119
We have uninterrupted production processes	3.6667	.86855
We have greatly reduced wastage of raw materials	4.1026	.85208
We have increased our production (output)	4.1282	1.00471
We have low labour costs	4.0513	.85682
We have low levels of product errors and defects	4.2821	.72361
We have high-quality issues with products	3.4615	1.44816
We have a backlog in customer delivery timelines	3.3846	1.33012
We have reduced the cycle time per unit	4.0769	.80735
We have a high cost-per-unit output	2.8462	1.13644
Overall Mean score	3.7795	1.017903

4.4 Correlation Analysis

The study sought to establish the relationship between the study variables. The study adopted the Pearson correlation

analysis to establish the relationship between backward integration strategy and organizational efficiency. The findings are presented in Table 6. The correlations between backward integration strategy and organizational efficiency were positive and strong ($r = .765$, $P\text{-value} = .000 < 0.01$). The positive correlation implies that there was a positive relationship between backward integration and organizational efficiency.

Table 6: Bivariate Pearson Correlation

		Backward Integration Strategy	Organizational Efficiency
Backward Integration Strategy	Pearson Correlation	1	.765**
	Sig. (1-tailed)		.000
	N	39	39
Organizational efficiency	Pearson Correlation	.765**	1
	Sig. (1-tailed)	.000	
	N	39	39

** . Correlation is significant at the 0.01 level (1-tailed).

4.5 Regression Analysis

The study sought to establish the influence backward integration strategy has on organizational efficiency in cement manufacturing firms in Kenya. The study adopted a univariate Ordinary Least Squares (OLS) regression model to examine the influence backward integration strategy has on organizational efficiency. The findings are presented in Tables 7, 8 and 9. Table 7 presents the model summary of the study. The model summary reveals that the coefficient of determination (R^2) was .585 implying that backward integration strategy in cement manufacturing firms explained 58.5 % of the variation in organization efficiency with the remaining unobserved variables not covered by this study explaining 41.5% of the variation in organizational efficiency.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.765 ^a	.585	.573	.37314

a. Predictors: (Constant), Backward Integration Strategy

Table 8 presents the analysis of variances (ANOVA). The study revealed that the calculated significance was lower than 0.05 level of significance implying that backward integration has a significant influence on organization efficiency ($F = 52.085$, $P\text{-value} = .000 < .05$).

Table 8: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.252	1	7.252	52.085	.000 ^b
	Residual	5.152	37	.139		
	Total	12.404	38			

a. Dependent Variable: Organizational efficiency

b. Predictors: (Constant), Backward integration strategy

Table 9 presents the regression coefficients. The intercept term ($\beta_0 = .933$) implies that organizational efficiency was .933 when backwards integration was held constant at zero. The study established that the backward integration strategy was highly adopted by cement manufacturing companies. The influence of backward integration strategy on organizational efficiency was positive and statistically significant ($\beta_1 = .743$, $t = 7.217$, $p = 0.00 < .05$). The positive influence implies that improvement in backward integration by one unit leads to improved organizational efficiency of cement-manufacturing firms by 0.743 units.

Table 9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	.933	.413		2.262	.030
	Backward integration strategy	.743	.103	.765	7.217	.000

a. Dependent Variable: organizational efficiency

5. Discussion

The study has examined the relationship between backward integration strategy on organizational efficiency in the cement industry in Kenya. The correlation analysis revealed that the correlations between backward integration strategy and organizational efficiency were positive and strong ($r = .765$, $P\text{-value} = .000 < 0.01$). The positive correlation implies that there was a relationship between backward integration and organizational efficiency. These findings are in agreement with Jurevics (2013) who stated that if backward integration is well executed, it could lead to reduced costs of raw materials due to the elimination of transaction costs leading to increased organizational efficiency. Additionally, Olanrewaju (2016) indicated that the engagement of companies in backward integration positively contributed to the general development of the surrounding people and community at large and that the companies were able to increase and have control over the timely supply of raw materials. The findings are in agreement with empirical literature given that they share the context of the manufacturing environment. The study has examined the influence of backward integration strategy on organizational efficiency in the cement industry in Kenya. The study adopted simple regression with the ANOVA revealing that backward integration has a significant influence on organization efficiency ($F=52.085$, $P\text{-value} = .000 < .05$). The study findings agree with Oloda (2017) who established that a significant relationship existed between vertical (both backward and forward) integration and organizational survival. The study further confirmed that the corporate performance of the vertically integrated firms was better than that of the non-vertically integrated firms. The findings agree with Olada (2017) given that both studies adopted descriptive survey design and were carried out in a manufacturing context. Finally, the regression coefficient showed that the intercept term was ($\beta_0 = .933$) implying that organizational efficiency was .933 when backward integration was held constant at zero. Further, the study established that the influence of backward integration strategy on organizational efficiency was positive and statistically significant ($\beta_1 = .743$, $t=7.217$, $p= 0.00 < .05$). The positive influence implies that an improvement in backward integration by one unit influences organizational efficiency of the cement manufacturing firms by 0.743 units. The research findings are in congruence with Decker (2019) who argues that backward integration enables organizations to secure a steady supply of raw materials and keep costs associated with external supply under control thus dealing with the problem of price uncertainty within the market. A timely supply of quality raw materials required for production leads to efficiency in the production process. The positive influence can be explained by the reduction in transaction costs incurred by cement manufacturing firms during the ordering process from their suppliers.

6. Conclusions

6.1 Conclusion

Based on the research findings, the study concludes that the backward integration strategy was highly adopted by cement manufacturing firms in Kenya as evidenced by mean responses of agreement to a large extent. The study further concludes that the influence of backward integration strategy on organizational efficiency was statistically significant. The cement-manufacturing firms can thus enhance their efficiency through the adoption of a backward integration strategy. This could be achieved through collaboration, acquisition, or merger with firms on the backstream end of the supply chain for cement manufacturing firms. Based on the findings that backward integration strategy has a significant influence on organizational efficiency among cement manufacturing firms, the study recommends that management of manufacturing firms aggressively pursue backward integration strategy to enhance efficiency in their operations. The firms should integrate with firms on the upstream end of the supply chain from the cement-manufacturing firms. The firms in the upstream end include limestone and clinker suppliers. The limestone and clinker act as the raw materials in the manufacturing of cement. The firms upstream of cement manufacturing firms are the mining and exploration firms that extract the limestone and clinker from the rocks. The integration could be achieved through acquisition, merger and strategic alliance.

6.2 Implications of the Study

6.2.1 Theoretical Implications

The study has implications for theory. The study findings have shown that backward integration has a positive significant influence on organizational efficiency. The findings are critical for theory building by extending the breadth of knowledge regarding the theoretical relationship between backward integration and organizational efficiency among cement manufacturing firms. Further, the study extends the application of resource dependency theory in studying the relationship between backward integration and organizational efficiency in the cement manufacturing set-up. The study reveals that cement-manufacturing firms can resource dependency theory by identifying an organization's critical and required resources, and then tracing them to their sources.

6.2.2 Practical Implications

The study will have practical implications for managers and policymakers. The study is critical for managers of cement manufacturing firms regarding decisions and strategy formulation. The positive influence of backward integration on the organizational efficiency of cement manufacturing firms shows that the management of cement firms ought to consider backward integration as a strategy to achieve efficiency. Backward integration is useful for managers of cement manufacturing firms when looking for strategies for combating stiff competition and improving their efficiency. The management of cement manufacturing firms can integrate with limestone and clinker mining firms. The study is also critical for policy purposes. Regulators of cement manufacturing firms including the Ministry of Minerals and Mining will find the study findings useful. The study findings provide insight to the Ministry of Minerals and Mining on ways of enhancing the operational efficiency of cement manufacturing firms. Based on the study findings, the ministry should advise cement-manufacturing firms to consider backward integration to enhance their efficiency. The Kenyan Association of Manufacturers (KAM) should also find this study insightful when organising conferences and seminars targeting their members. The Kenyan Association of Manufacturers should advise their members to adopt a business integration strategy especially the backwards integration with their suppliers to improve their organizational efficiency.

6.3 Limitations of the Study

The current study was limited to the cement manufacturing firms in Kenya hence the results have limited application in the cement manufacturing firms. The results may not be applicable in other manufacturing and non-manufacturing firms. The study relied heavily on primary data collected through questionnaires and thus may not sufficiently capture aspects of organizational efficiency that are best captured using secondary data. Furthermore, the study was limited to one independent variable, the backward integration strategy and this may not fully explain variation in organizational efficiency.

6.4 Areas for Further Studies

Even though the study was successfully carried out, certain gaps exist for future researchers to take advantage of. First, given that the current study was limited to cement manufacturing firms, the results are inclined in this area and may not apply to other manufacturing and non-manufacturing firms. The study therefore recommends that future researchers undertake a similar study in the context of other manufacturing and non-manufacturing firms to enhance the applicability of findings across these firms.

Conflicts of Interest

“The authors declare no conflicts of interest.”

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