COST LEADERSHIP STRATEGY AND PERFORMANCE OF MILK PROCESSING FIRMS IN KENYA

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DECLARATION

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To my wife Esther Wanjiru and sons Larry Kimiti and Lenny Saiyalel for their encouragement, support and prayers during the entire academic journey so far, all my siblings for their love and my parents John Kimiti and Miriam Wanjiru for laying the foundation of academic journey by sending me to school.

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OPERATIONAL DEFINITION OF TERMS

Capabilities : Capabilities are abilities that enable a firm built competitive advantage through distinctive transformational and output related expertise.

Competitive Advantage : Competitive advantage is a unique position developed by a firm through possession of unique capabilities and tacit knowledge. It enables the firm achieve a higher level of performance relative to players in the same industry.

Cost Leadership Strategy : Cost leadership strategy is an orientation characterized by economies of scale, economies of scope and operational efficiency which helps firms achieve competitive advantage through low cost of operation.

Economies of Scale : Economies of scale refer to an approach to business operations involving large scale production, purchasing in bulk, industry support and increased innovation. These result in cost advantages through large scale operations.

Economies of Scope : Economies of scope comprise of advantages arising from multitasking of resources, functional linkages, better resource exploitation and ability to redeploy resources which lead to cost advantages as firms expand into related product lines but within the same industry.

Firm Performance : Firm performance describes how well a firm attains it's stated and predefined objectives characterized by financial, customer, internal processes and learning dimensions.

Knowledge	:	Knowledge refers to knowhow to uniquely perform a task thereby gaining an advantage and it is characterized by tacitness indicating that it is ingrained in personal experiences and thus understood without being openly expressed.
Macroeconomic Environment	:	Macroeconomic environment refers to external economic factors that influence a firm's operations and eventual performance and comprises of cost of debt financing and inflation.
Milk Processing Firm	:	An organization dealing with purchase of raw milk, processing it into various milk products before packaging the same for sale.
Operational Efficiency	:	Operational efficiency is proficiency in converting inputs into outputs by firms leading to cost advantages. This is through usage of appropriate technical skills, relevant technologies, managing operating risk as well as having stable supply cycles.

ABBREVIATIONS AND ACRONYMS

BSC	Balanced Score Card
CBK	Central Bank of Kenya
CLS	Cost Leadership Strategy
CPI	Consumer Price Index
DC	Dynamic Capabilities
DEA	Data Envelopment Analysis
ERP	Enterprise Resource Planning
GDP	Gross Domestic Product
GMM	Generalized Methods of Moments
ICT	Information and Communication Technology
KDB	Kenya Dairy Board
KNBS	Kenya National Bureau of Statistics
MFIs	Microfinance Institutions
MIX	Microfinance Information Exchange
NACOSTI	National Commission for Science, Technology and Innovation
NBFIs	Non-Bank Financial Institutions
RBV	Resource Based View
ROA	Return on Asset
ROE	Return on Equity
SEM	Structural Equation Modelling
SMEs	Small and Medium Sized Enterprises
UHT	Ultra-Heat Treated
UK	United Kingdom
US	United States

ABSTRACT

Performance of milk processing firms in Kenya continues to be impended by cost related performance challenges. It is hypothesized that cost leadership strategy could address these challenges through economies of scale, economies of scope and operational efficiency. However, available literature does not adequately address how the milk processors employ this strategy due to lack of focus on cost management and its effect on performance. Studies done in other sectors have arrived at contradicting conclusions in regard to the effect of drivers of cost leadership. This study was therefore an investigation of the effect that cost leadership strategy has on performance of milk processing firms in Kenya. The specific objectives included to assess the effect of economies of scale, economies of scope and operational efficiency on performance of milk processing firms in Kenya; to establish the mediating effect of competitive advantage and the moderating effect of macroeconomic environment on the relationship between cost leadership strategy and performance of milk processing firms in Kenya. The study was anchored on the resource based view supported by dynamic capability theory, the balanced scorecard model, contingency theory and stakeholder theory. The study adopted a positivist approach and used descriptive and explanatory research designs. The study's population encompassed all the 29 milk processing firms that were in operation between June 2016 and June 2019 and registered with Kenya Dairy Board. A census survey was conducted where the unit of analysis was milk processing firm and unit of observation was the functional area in the processors. Five functional areas comprising of executive, operations, production, finance and marketing were identified for each milk processor from which 194 respondents were drawn. Both primary and secondary data was used in the study. Primary data was obtained using self-administered semi-structured questionnaires whereas secondary data was collected through review of reports on cost of debt financing and inflation levels from Kenya National Bureau of Statistics and Central Bank of Kenya. Face and content validity was ensured through improvements following the pilot test while construct validity was guaranteed through review of relevant literature and suggestions from experts. Reliability was tested using Cronbach's alpha. Descriptive statistics were used to summarize data in terms of percentages, means and standard deviations. Multiple regression analysis was used to test hypothesis and draw conclusions. The results were summarized in narratives and tables. The findings indicated that economies of scale, economies of scope and operational efficiency had positive and statistically significant effect on performance of the milk processing firms. Competitive advantage was a partial mediator while macroeconomic environment did not moderate the direct relationship. The study concluded that for firms in the milk processing industry to perform better, they need to pursue relevant approaches to lower costs. It thus has both practical and theoretical value and recommends that milk processors pursue bulk production and invest in related businesses, adopt robust promotional efforts, encourage bulk purchases and innovate to support broader operations. The government as well as other regulatory bodies should implement support programs for large scale operations, facilitate licensing, patent innovations by milk processors, ensure conducive climate for dairy farming and implement credible livestock disease fighting programs. It recommends that further studies include small home-based milk processors not registered with KDB, examine other factors besides cost leadership strategy that affect performance of milk processors and consider other indicators of macro-economic environment like exchange rate and GDP growth that might moderate the direct relationship.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Scholars have associated firm performance with diverse broad dimensions; financial, non-financial, social, ecological, operational as well as customer-related domains (Kathama, 2012; Karanja, Muathe & Thuo, 2014) suggesting that performance describes how well a firm realizes the various domains relative to set objectives (Kaplan & Norton, 1992; Kirima & Murigi, 2019). This makes superior firm performance a dominant theme in strategic management academia and practice (Ongeti, 2014; Njoroge, Ongeti, Kinuu & Kasomi, 2016; Kimiti & Kilika, 2018; Echwa & Murigi, 2019).

Kiiru (2015) asserted that well performing firms play important roles for individuals as well as national economy. They provide employment both directly or through support services and also create wealth for the owners (Wambugu, Kirimi & Opiyo, 2011; Ongeti, 2014). Performance influences a firm's market share, its price levels, its promotional efforts and its operating costs (Ong, Ismail & Goh, 2011; Arasa & Gathinji, 2014). Performance is also the central factor defining the firm's position in an industry and therefore the higher the performance the better a firm is relative to competitors (Kimiti, Muathe & Murigi, 2020).

Consequently, understanding performance of milk processing firms being a key industry in the larger food processing sector is crucial. The firms produce essential commodities and significantly contribute to the well-being of populations globally (Spicka, 2015; Mwangi, Kabare & Wanja, 2018). However, the processors face enormous cost related performance challenges world over. In their study on dairy processors in the European

Union, Gardebroek, Turi and Wijnands (2010) indicated that milk processors faced various cost challenges leading to poor performance due to low efficiency and small scale of operations. Spicka (2015) on the other hand observed strong competition among corporate milk processors in Central Europe and noted that poor performance among the processors was attributed to low operational efficiency hence high costs.

In Africa, a report by International Dairy Federation (2010) indicated that milk processors are influenced by the macroeconomic environment as they heavily depend on access to credit to fund their operations where high interest rates have contributed to high costs. Ugandan Dairy Development Authority report (2013) observed that 98% of milk processing plants in the country operated below available capacities hence high business costs which had led to general dismal performance in the industry. In Kenya, Chege and Bula (2015) noted collapse of some milk processors due to similar performance challenges.

Such performance challenges require firms to adopt certain approaches to assist them outperform their competitors (Barney, Ketchen & Wright, 2011). These approaches reflect the strategies that firms adopt to guide collective endeavour by focusing efforts towards specified objectives (Elif & Şengül, 2015). Lechner and Gudmundsson (2014) observed an interaction among strategy, competitive advantage and superior firm performance.

Cost orientation which relates to Porter's cost leadership strategy is among the strategic orientations which have attracted enormous scholarly attention (Theodosiou, Kehagias & Katsikea, 2012; Nyauncho & Nyamweya, 2015; Atikiya, Mukulu, Kihoro & Waiganjo, 2015; Gorondutse & Gawuna, 2017; Kimiti *et al*. 2020). Dobson (2007) advocated that milk processing firms be large-scale and low-cost producers in order to have sustainable profitability. Atikiya (2017) observed that cost leadership strategy allows firms to create defendable positions that contribute to competitiveness through cost advantages. In contrast, Birjandi, Jahromi, Darasi and Birjandi (2014) concluded that cost advantages do not lead to superior performance in all situations. The emerging phenomenon of cost related performance challenges among milk processing firms in Kenya has however not been adequately addressed by extant literature (Kimiti *et al*., 2020).

While as high firm performance is related to management of costs, other variables influence this relationship. The firm's environment is arguably a crucial variable in strategic management where performance is a subject. Njoroge (2015) observed that environmental influence on firm activities cannot be stopped. Egbunike and Okerekeoti (2018) on the other hand specifically argued that macroeconomic factors impact on firm performance and therefore an important consideration in any study on firm performance. This study therefore sought to examine how cost leadership strategy affect performance of milk processors in Kenya while evaluating the influence of competitive advantage and macroeconomic environment.

1.1.1 Firm Performance

Though different researchers attach different meaning to firm performance (Kirima & Murigi, 2019), a common thread exists with scholars agreeing that good performance is the ultimate aim for firms. Firm performance thus characterises the achievements by a firm from the lens of set objectives in an effective and efficient manner (Lebans & Euske, 2006; Rasula, Vuksic & Stemberger, 2012; Muchemi, 2014, Talaja, Miocevic, Pavicic & Alfirevic, 2017). Indeed, most effort in strategic management is geared towards explaining performance and why firms differ in performance (Gavrea & Stegerean, 2011; Bolo, Muchemi & Ogutu, 2011; Muchemi, 2014; Kinyua, Muathe & Kilika, 2015; Njoroge, 2015; Mohamud & Mohamud, 2015; Echwa & Murigi, 2019).

Interestingly, despite the many studies on firm performance, debates still exist on how performance should be operationalized (Ongeti, 2014; Njoroge *et al*., 2016). Measurement involves indicators that avail information on the quality of processes undertaken by firms towards achieving their objectives (Gavrea & Stegerean, 2011). Majority of scholars base operationalization of firm performance on financial aspects using dimensions like total assets, market share, return on assets (ROA), share price, profit before tax and sales revenue (Muchemi, 2014).

This approach though objective has been criticized for being too narrow in focus, internally oriented and more relevant to the private sector as it has more interest in the aforementioned measures (Ongeti, 2014; Kimiti & Kilika, 2018). Conversely, non-financial measures are highly subjective but provide a better picture on employment of resources, competitive position and preparedness of a firm to operate in the ever changing business environment (Chong, 2008). Consequently, there is need for a shift to include the non-financial indicators.

Kimiti and Kilika (2018) advocated that performance be based on a wider concept namely overall firm performance. Recommended measurement tools include Kaplan and Norton (1992) Balance Scorecard (BSC) and Tripple Bottom Line (Elkington, 1997) which seek to address the limitations in the traditional measures based on financial indicators. Relatively, the BSC has been more widely adopted by firms compared to the Tripple Bottom Line. It comprises of financial, customer, internal business and learning/growth dimensions.

The financial aspect deals with shareholder's satisfaction (Niven, 2011). Consequently, the measures are those of importance to the shareholder including profitability, shares growth, return on capital, ROA, sales revenue, cash flow, market share and total assets among others (Tjader, May, Shang, Vargas & Gao, 2014). The customer dimension emphasizes how the organization should appear to the customer. It thus focuses on meeting the customers' requirements in terms of efficiency of delivery, product quality, related services and prices/cost.

Conversely, internal business dimension addresses the processes in which a firm must excel in line with shareholders' and customers' needs (Booyse, 2018). The measure thus highlights crucial skills, processes and technological orientation that a firm requires to achieve sustainable superior performance. Finally, learning/growth dimension integrate the aforementioned dimensions with a focus on the future performance. The dimension is concerned with the ability of a firm to have sustained change and improvement (Kaplan & Norton, 1996).

The study adopted the BSC approach to determine firm performance. This allowed combining both financial and non-financial aspects using financial, customer, internal business and learning/growth dimensions which provided a balanced assessment by including diverse stakeholders' perspectives. It also allowed better focus on the drivers of performance and addressed limitations associated with using either financial or non-financial measures (Chong, 2008; Hubbard, 2009; Fatoki, 2011; Kimiti & Kilika, 2018; Echwa & Murigi, 2019).

1.1.2 Cost Leadership Strategy

The strategies that firms adopt have been argued to be the most important possessions (Kariuki, Awino & Ogutu, 2011; Ndung'u, Otieno & Rotich, 2016; Echwa & Murigi, 2019). Cost leadership is among the dominant strategies in strategic management (Atikiya *et al*. 2015). The strategy's practical significance is in the management of costs to achieve superior performance. Nandakumar, Ghobadian and O'Regan (2011) operationalized cost leadership strategy through efficiency, overhead control and experience curve directives, Hilman and Kaliappen (2014) through operational efficiency, economies of scope, reduction of transaction costs and improvement of business processes while Nyauncho and Nyamweya (2015) operationalized the variable through efficiency, mass production, high volume sales, control over the supply cycle and operational excellence.

Conversely, Atikiya *et al*. (2015) operationalized the variable using 15 items that define scale economies, scope economies and operational efficiency. This study adopted Atikiya *et al*. (2015) operationalization of cost leadership strategy by use of economies of scale, economies of scope and operational efficiency indicators as it summarizes the measures used by various scholars. The approaches adopted give a firm low cost position relative to competitors hence better performance as it continues to enjoy returns after others have competed away profits.

Economies of scale reflect reduced costs of operation through improved training, better positioning, additional time on the firm and better technology (Mosheim & Lovell, 2009). Conversely, Barney and Hesterly (2009) viewed economies of scale as falling average cost per unit produced as quantity increases. Scale economies in production may either be internal or external (Gill & Goh, 2009). Internal scale economies describe the cost advantages that a firm enjoys by being a large firm and through division of labor owing to large scale operations. Internal economies of scale as such arise from pure size of a firm without reference to the industry or market (Anwar & Ali, 2015). Under internal scale economies, better exploitation of fixed costs is achieved by employing large scale production methods, acquisition of inputs in bulk hence discounts and proportionately lower administrative costs due to wider spread.

External scale economies on the other hand relate to benefits from outside a firm but within an industry (Anwar & Ali, 2015). Here, advantages arise from better access to industry support, specialization, increased innovation and mutual supplier relationships. Economies of scale can also be measured by volume of sales, summated assets, size of labour, number of owners, market equity and market capitalization (Richter, 2014; Shah, Tahir, Anwar & Ahmad, 2016). This study considered both internal and external economies of scale. It operationalized economies of scale using the dimensions of large scale production, bulk purchases, industry support and increased innovation.

Economies of scope on the other hand focus on combining production activities rather than quantity. It describes the benefits realized by producing two or more unique products in situations where doing so is less costly than producing each product separately. Such integration of operations by firms contributes to reduced production cost hence better performance. The combination of production processes allows firms to efficiently multi-task related skills or resources, optimally exploit available resources, achieve synergies in business operations and also facilitate redeployment of resources (Zahavi & Lavie, 2013).

Economies of scope thus allow resources to be shared among business areas or withdrawn from one business and redeployed in another (Sakhartov, 2017). Such sharing results in cost advantages through joint production processes. In this study, economies of scope was operationalized through the dimensions of multitasking resources, functional synergies, effective resource exploitation and resource redeployment.

Operational efficiency on the other hand is a product of cost control. Gill, Singh, Mathur and Mand (2014) posited that to survive and prosper, firms should operate efficiently by consuming same input to produce more, producing same output with less input, reducing operating risk and reducing operating costs. Operational efficiency is influenced by effectiveness in execution of organizational processes (Espirah & Murigi, 2019). Additionally, the levels of managerial skills and innovation are crucial factors leading to operational efficiency. Azad, Raza and Zaidi (2018) argued that skilled labour, appropriate technologies and stable supply cycle contribute to efficiency.

Sporta, Ngugi, Ngumi and Nanjala (2017) noted that operational efficiency influences performance and consists of controls over routine expenditure, appropriate levels of staff costs and other expenditures measured through net worth turnover ratio as well as current and fixed assets turnover ratios. It enhances the productivity of a firm while minimizing the cost of routine operations (Dhillon & Vachhrajani, 2012). The dimensions of technical expertise, relevant technologies, reduced operating risk and supply cycle were used to measure operational efficiency. Subsequently, the study sought to ascertain the effects that economies of scale, economies of scope and operational efficiency as drivers of cost leadership strategy had on performance of milk processing firms in Kenya.

Choice of cost leadership strategy from among Porter's generic competitive strategies was informed by extant scholarly debates on application of the strategies. Each strategy requires distinctive resources, organizational arrangements and skill set (Porter, 1985; He & Wong, 2004). Thus, pursuing multiple strategies simultaneously is not viable for small firms. Further, cost leadership is the most pursued competitive option and even for large firms pursuing hybrid strategies, success depends on the inclusion of low cost as the dominant component (Spanos, Zaralis & Lioukas, 2004; Hansen, Nybakk & Panwar, 2015). This phenomenon and the fact that the milk processors in Kenya are generally small and sell generic products make cost leadership the most relevant strategy in the current context.

1.1.3 Competitive Advantage

Competitive advantage refers to benefits that firms gain through unique combination of possessions to perform better than competitors (Porter, 2008). It thus reinforces the association between strategies and firm performance. The variable has been operationalized differently in different studies. Cater (2004) operationalized competitive advantage based on origin. Under this operationalization, the industrial organisation school argues that competitive advantage is externally based whereas the resource, capability and knowledge-based schools hold that competitive edge is internal.

Internally, competitive advantage is based on resources (Wernerfelt, 1984, Barney, 2001; Ismail *et al*., 2012; Njoroge *et al*., 2016), capabilities (Mutuku, Muathe & James, 2019; Kyengo, Muathe & Kinyua, 2019) and knowledge (Zack, 1999, Njoroge *et al*., 2016; Kyengo *et al*., 2019). Cost is a principal element in both externally and internally based competitive advantage. Further, the non-physical factors are less inimitable and hence more relevant in measuring competitive advantage. These include knowledge which based on ease of imitation can be distinguished into explicit and tacit knowledge (Teece, 1998; Kinyua *et al*., 2015).

Capabilities on the other hand have been identified differently including distinctive capabilities, organisational capabilities, dynamic capabilities and core competencies. Capabilities can also be conceptualized as input-based, output-based, transformational and managerial types. Others are customization, transaction, information and back-end integration capabilities (Mutuku *et al*., 2019) and marketing capabilities (Kyengo *et al*., 2019).

Ong *et al*. (2010) alternatively operationalized competitive advantage using the dimensions of distinct efficiency and distinct value representing lower cost and differentiation measures respectively. Competitive advantage has also been assessed using competencies characterized by unique knowledge and skilled expertise (Majeed, 2011). Vahid, Mirzajani, Izadi, Honarmandyar and Negahdary (2013) approached operationalization of competitive advantage using dimensions of quality, efficiency, innovation and responsiveness to customers. Njoroge (2015) operationalized the concept using corporate reputation and organizational culture.

Talaja *et al*. (2017) operationalized competitive advantage through perceptual assessment of a firm's performance on six items; relative general advantage, sustainability of acquired advantage, product quality, price of products, production/delivery cost and customer satisfaction. Conversely, Sihite (2018) argued that competitive advantage in a service industry could be operationalized using cost, flexibility, delivery, and quality dimensions. Wanjiru *et al*. (2019) conceptualized competitive advantage through market leadership, value chain integration and innovation. Mutuku *et al*. (2019) used customer satisfaction index to operationalize competitive advantage.

From the foregoing, it emerges that scholars have applied diverse indicators to operationalize competitive advantage. However, among these different dimensions, the most relevant dimensions of competitive advantage is tacit knowledge which is specific and personal (Njoroge *et al*., 2016) and internal capabilities required for transforming input into output (Salim, Rahman & Abd Wahab, 2019). Kinyua *et al*. (2015) observed that tacit knowledge is inimitable and thus a key possession for firms to dominate an industry. Conversely, capabilities are crucial to attain sustainable superior performance in an era when the mean duration over which firms can sustain competitive advantage has been decreasing (Wang, 2014; Breznik & Lahovnik, 2016). Competitive advantage in this study was thus operationalized along the two dimensions of capabilities and tacit knowledge.

Firms that possess relevant capabilities and knowledge are able to apply strategies in a unique ways thus achieve better performance. They are able to navigate the modern business operating environment that is ever changing, is uncertain and complex (Wang, Chen & Chen, 2012). Competitive advantage allows firms to sustain superior performance arising from the strategies that they apply (Salavou & Halikias, 2009; Wanjiru, Muathe & Kinyua-Njuguna, 2019).

1.1.4 Macro Economic Environment

The nature of the environment where a firm operates influences its operations by creating opportunities and threats. The macro environment consists of economic, legal environmental, technological, political, and social factors (Johnson, Scholes & Whittington, 2008; Ibrahim & Primiana, 2015). These factors have been observed to have considerable effect on firm operations with mixed findings (Neneh & Vanzyl, 2012; Tu, 2012). Dut (2015) argued that the observed variability in the findings is attributable to the national or regional economic context which signifies the centrality of the macroeconomic variable.

Macroeconomic environment refers to economic factors external to the firm and therefore not under the management's control (Dioha, Mohammed & Okpanachi, 2018). Nevertheless, macroeconomic factors exert material effect on firm performance by influencing the firm's microeconomic behavior. The key macro-economic factors include taxation rate, rate of inflation, interest rates, unemployment, uncertainty from regulatory policies, macroeconomic volatility, economic growth rate, availability of loans and interest rates (Commander, Svejnar & Tinn, 2008; Nguimkeu, 2013).

Broadstock, Shu and Xu (2011) operationalized macroeconomic environment through Gross Domestic Product (GDP), corporate tax rate, unemployment, stock market index, Consumer Price Index (CPI) and interest rates. Pacini, Mayer, Attar and Azam (2018) on the other hand viewed macroeconomic environment as comprising of inflation rate, money supply, state debt, exchange rate, foreign direct investment, GDP, unemployment, harmonized CPI, industrial production index, interest rate, volume of trade and bank loans among others.

These factors indicate the overall state of a country's economy (Musau, Muathe & Mwangi, 2018) which have practical effect on firm performance. Egbunike and Okerekeoti (2018) for example indicated that volatility in exchange rate, inflation and interest rate influenced performance in Nigerian manufacturing sector. This study narrowed its focus on the macroeconomic environment of the firms as suggested by Dut (2015) to be the most important aspect of firm's operating environment. The measures for macroeconomic environment found to have been widely used and consequently considered in this study were interest rate, inflation rate and exchange rate (Ghareli & Mohammadi, 2016, Musau *et al.*, 2018; Pacini *et al.*, 2018; Ruhomaun, Saeedi & Nagavhi, 2019). Exchange rate was however not adopted in the current study as most milk processing firms did not export their products.

1.1.5 Milk Processing Firms in Kenya

The milk processing industry in Kenya is among the most vibrant industries processing millions of litres of milk every year (Kenya Dairy Board - KDB, 2019). Milk processing firms fall under the dairy sector regulated by the KDB. According to Kamundi (2014), about 84% of raw milk in the country is sold directly to the market unprocessed. The remaining 16% is processed with the products mostly being consumed locally. The products from the industry are generic including pasteurized milk, Ultra Heat Treated

(UHT), low fat and full cream homogenized milk, fermented milk, full cream powder, cheese, yoghurt, flavoured yoghurt, butter oil, ice cream and long life milk among others. Others include therapeutic spreads and infant formulations.

There are 29 registered milk processing firms in Kenya (KDB, 2019) that are spread throughout the country. The dairy industry plays important nutritional and economic roles in the lives of many people (Wambugu, Kirimi & Opiyo, 2011). In terms of employment, the milk industry generated around 500,000 direct jobs and an additional 750,000 jobs in related supportive services (Mwangi & Gakobo, 2018). Due to its importance, numerous reforms and policy support to the industry have been set up including tax rebates on new investments and zero rating of milk processing inputs (Ministry of Agriculture, Livestock and Fisheries, 2013).

The industry is extremely competitive necessitating firms to adopt appropriate strategic orientation to control costs and perform well. Rivalry in the local market has been worsened by import of processed milk products from Europe (Kimiti *et al*., 2020). The firms' main competitive challenge is thus ability to lower production costs to outperform competitors in the industry. The study population composed of all the milk processors in Kenya (Appendix IV) to answer the question of how the firms use cost leadership strategy to attain competitive advantage and subsequently superior performance.

1.2 Statement of the Problem

Industry trends indicate poor performance related to high costs among milk processors. Gardebroek *et al*. (2010) observed that cost challenges hampered performance of milk processors in the European Union while Spicka (2015) argued that corporate milk processors in Central Europe performed poorly due to inefficiency hence high costs. Regionally, the International Dairy Federation (2010) and Ugandan Dairy Development Authority (2013) indicated that milk processing firms exhibited low performance due to high costs of accessing credit as well as costs associated with low efficiency. This situation is replicated among the milk processing firms in Kenya where despite opportunities and potential for growth, the processors continue to record poor performance characterized by low profit margins of between 10 and 20% (Bebe, Rademaker, Lee, Kilelu & Tonui, 2017).

Milk uptake by the processors declined from 58% in 2000 to about 30% in 2017 further suggesting declining performance (Chege & Oloko, 2017) despite rising demand for dairy products (Kenya Agribusiness & Agroindustry Alliance, 2014). Poor performance has also led to collapse of some of the processors while others show stunted growth (Chege & Bula, 2015; Mwangi & Gakobo, 2018). Kyengo *et al*. (2019) further observed that general contribution of the food processing sector, to which milk processors belong, to the GDP has been declining over time.

Cost leadership is a potentially beneficial strategic orientation for firms in such situations to navigate the cost challenges and create an advantage for superior performance (Growitsch & Wetzel, 2009; Dhillon & Vachhrajani, 2012). The cost advantages can be attained via application of economies of scale (Mosheim & Lovell, 2009), economies of scope (Nyauncho & Nyamweya, 2015) and operational efficiency (Gill *et al*., 2014). These dimensions have been recognized in extant literature as important drivers of cost leadership with potential to positively influence performance (Hilman & Kaliappen, 2014; Atikiya *et al*., 2015).

Previous studies in milk processing industry however have not addressed cost challenges making it difficult to give empirical evidence on how cost leadership affects performance. Kariuki (2016) considered the influence product diversification drivers had on dairy enterprises performance. The drivers had significant positive linear correlation with dairy enterprises performance. Mwangi and Gakobo (2018) considered performance of milk processors in Kenya but focused on growth strategies which were found to have a positive effect. Neither study however addressed the cost challenges facing the milk processors.

Further, different conclusions have been arrived at in regard to the effects that drivers of cost leadership have. Kasman (2012) study for instance showed linear relationship between economies of scale and firm performance while Matejova, Placek, Krapek, Pucek and Ochrana (2014) indicated that the relationship was U-shaped. Similarly, Growitsch and Wetzel (2009) found that economies of scope linearly affected firm performance, Zahavi and Lavie (2013) indicated that the relationship was U-shaped while Hashai (2015) concluded it was S-shaped. These diverse findings present inconsistency in research findings.

In addition, most empirical studies on cost leadership strategy are based on other sectors and/or outside Kenya (Theodosiou *et al*., 2012; Gorondutse & Gawuna, 2017) making generalization of findings to the local setting improbable. Very few of these studies have addressed milk processors and even those cited above focused on strategies at corporate level as opposed to business level. They thus sought to address with whom the milk processing firms compete rather than how they compete as addressed by business level strategies.

Moreover, previous studies on cost leadership strategy did not consider competitive advantage and macroeconomic environment in their conceptualization. Contradicting findings on the two variables have also been arrived at by previous studies (Monsur & Yoshi, 2012; Sihite, 2018; Ruhomaun *et al*., 2019). Additionally, Kariuki (2016) study geographical scope was limited to Kiambu County while Mwangi and Gakobo (2018) study used non-probabilistic sampling technique. Further, by incorporating the influence of macroeconomic environment, this study responded to scholarly calls to consider the external environment while examining firm performance (Huczynski & Buchanan, 2013; Njoroge, 2015).

From the foregoing, there is lack of sufficient conceptual and empirical literature on how cost leadership strategy affects performance of milk processors and diverse viewpoints on the effect the strategy has on firm performance as well as methodological gaps which have direct practical translations. The study therefore aimed at addressing those gaps by answering a key question as to whether cost leadership strategy affects performance of milk processing firms in Kenya while examining the mediating and moderating roles of competitive advantage and macro-economic environment respectively on the direct relationship.

1.3 Objectives of the study

The study's objectives were as follows:

1.3.1 General Objective

The general objective was to investigate the effect of cost leadership strategy on performance of milk processing firms in Kenya.

1.3.2 Specific Objectives

The following specific objectives served as a guide for the study:

i. To assess the effect of economies of scale on performance of milk processing firms in Kenya.
ii. To establish the effect of economies of scope on performance of milk processing firms in Kenya.
iii. To determine the effect of operational efficiency on performance of milk processing firms in Kenya.
iv. To establish the mediating effect of competitive advantage on the relationship between cost leadership strategy and performance of milk processing firms in Kenya.
v. To assess the moderating effect of macroeconomic environment on the relationship between cost leadership strategy and performance of milk processing firms in Kenya.

1.4 Research Hypotheses

Based on the specific objectives, the following null hypotheses were tested:

H_{01} Economies of scale have no significant effect on performance of milk processing firms in Kenya.

H_{02} Economies of scope have no significant effect on performance of milk processing firms in Kenya.

H_{03} Operational efficiency has no significant effect on performance of milk processing firms in Kenya.

H_{04} Competitive advantage has no significant mediating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya.

H_{05} Macroeconomic environment has no significant moderating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya.

1.5 Significance of the Study

To the management, the study provides better understanding of the impact that cost leadership drivers have on performance of firms hence helps the owners of the processors appropriately integrate the drivers in their firm operations to boost performance. The study further gives guidance to managers on prioritization of cost leadership drivers based on their explanatory power for the best performance results.

Policy wise, the findings enable the government to appreciate the role that the variables considered play in the performance of the milk processors and thus inform supportive programs. Additionally, regulators like KDB will be better informed about factors that affect performance of the milk processors to inform regulatory decisions. The study's findings will also guide policy direction in other sectors. Moreover, the study has addressed direct calls for empirical efforts with direct practical application in the industry.

Theoretically, the study establishes the linkage between cost leadership strategy and performance of milk processing firms in Kenya particularly in regard to economies of scale, economies of scope and operational efficiency dimensions. The study also broadens this understanding by incorporating the impact of competitive advantage and macroeconomic environment on the direct relationship. As a consequence, the study expands the extant literature on the variables considered. Further, the study provides a basis for further research through appropriate recommendations.

1.6 Scope of the Study

The study was limited to the 29 milk processing firms in Kenya which were registered with KDB as at June 2019. The firms are spread across the country with the heaviest concentrations being in Nairobi, Central and Rift Valley regions. It considered the effects that cost leadership strategy had on performance of the milk processors limited to economies of scale, economies of scope and operational efficiency aspects. Competitive advantage was limited to capabilities and knowledge while macroeconomic environment was limited to cost of debt financing and inflation.

The firms were categorized based on the amount of milk they processed per day. The key respondents were the heads and deputies of executive, operations, production, finance and marketing functional areas because they had the relevant information concerning cost approaches that were employed. The study period covered milk processors that had been operation for at least three years from June 2016 to June 2019.

1.7 Limitations of the Study

The author encountered unwillingness of respondents to reply to certain aspects in the questionnaire and more so to provide financial information. This was addressed by guaranteeing the respondents that data given would be treated in confidence and further availing the relevant authorizations to conduct the research. Moreover, data collected using self-administered questionnaires particularly on measurement of performance was based on respondents' perception hence it's only accurate to the extent to which the respondents were honest.

Such self-reporting might however have created self-generated validity and consequently inflated causal linkage (Muathe, 2010). This risk was addressed by having multiple respondents per firm. Some respondents were also not cooperative due to other commitments during data collection and effects of COVID-19 pandemic particularly restriction of movement and related health advisories. This was addressed by creation of an online survey questionnaire which was shared with the respondents via email.

1.8 Organization of the Study

The study organization includes a preliminary pages section followed by five chapters. Chapter one encompasses the background and describes the variables. It then presents the problem, research objectives and hypotheses, significance, scope, limitations and how the study is organized. Chapter two deals with review of theoretical and empirical literature, summary of research gaps and then presents a conceptual framework.

Chapter three gives the study's methodology comprising of the research philosophy, the research design used, population and sampling procedure, data collection instruments and procedures, data analysis approaches and finally ethical issues. Chapter four gives the research findings and discussions. Finally, chapter five gives the summary, contribution of the study to knowledge, conclusions, recommendations for policy and practice and eventually recommendations for future research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter examines and presents review of available theoretical and empirical literature relevant to the research variables. It also presents a summary of research gaps and proposes a conceptual framework showing interactions between the research variables.

2.2 Theoretical Literature Review

The section presents reviewed theoretical arguments on the relationships between the study variables. The study was anchored on the Resource Based View (RBV). The supporting theories/model were Dynamic Capabilities (DC) theory, the Balanced Scorecard (BSC) model, contingency theory and stakeholder theory.

2.2.1 Resource Based View

RBV arose from the seminal works of Penrose (1959) who suggested that competitive advantage arise from firm resources. Since then, the RBV received contributions from Wernerfelt (1984) and Barney (1991) among other scholars. The theory integrates firm and industry perspectives on strategy. Armstrong and Baron (2004) observed that the greatest value of RBV lay in realizing that competitive advantage originates from doing things differently. Firms may therefore gain an advantage over competitors by pursuing different drivers to cost leadership.

RBV advances two principal arguments. These are resource heterogeneity and resource immobility. Resource heterogeneity distinguishes firms from competitors (Barney, 1991) hence ability to pursue unique strategic orientation to attain competitive edge over competitors. Conversely, resource immobility holds that resources are largely stationary across organizations leading to sustained heterogeneity (Selznick, 1957) and consequently sustained advantage.

The two principal dimensions derive from the unique characteristics that resources must have to lead to competitive advantage. Barney (2001) postulated that they must be valuable, rare, inimitable, and non-substitutable (VRIN) to distinguish a firm that has possession from the other firms. This proposition is however not without assumptions. Ouma and Oloko (2015) posited that the firm environment needs to be adequately stable to enable features like rarity and value to be significant over time.

Ormanidhi and Stringa (2008) argued that sustainability of competitive advantage is achieved when four criteria are satisfied. The resources should be sufficiently heterogeneous to lead to differences in the efficiency and rents of firms, be ex-ante economical, be ex-post non-imitable and not perfectly mobile across firms. In reflecting on Porter's competitive model, the first two conditions are met as firms attempt to attain lower cost or differentiation advantages.

Rose, Abdullah and Ismad (2010) observed that for firms to achieve competitive advantage, they must understand how internal resources, competitive advantage and performance relate. Resources provide means on which firms formulate and implement certain advantageous strategies leading to competitive advantage hence superior performance. However, due to competitors' imitation efforts the advantage is often lost or reduced. As a counterbalance, firms should be aware of what resource advantages competitors have and make efforts to imitate them or find substitutes.

A possible extension of the RBV application in regard to competitive strategies and advantage is difference in the human resources and knowledge possession by firms and in the potential for absorbing it in the future. Implementation of competitive strategies requires firms to be aware of the dynamics of competition. Through its tacitness, causal ambiguity and social complexity, firm's knowledge is a principal determinant of the resultant competitive advantage (Ormanidhi & Stringa, 2008).

The higher the stock of knowledge about the competitive environment a firm has, the better it is in identifying and implementing the best strategic orientation. In addition, innovation ability by firms is based on its absorptive capacity signifying the ability to gain knowledge and use it profitably to attain superior advantage. The level of absorptive capacity itself is in turn influenced by the current knowledge resource possession.

The centrality of RBV makes it rarely possible to discuss firm performance without taking recourse to the view. It supports the explanatory and outcome variables in its argument that resources are the foundations upon which strategies are formulated and it is through implementation of strategies that firms harness their potential. Firms are identified by the amount and type of resources they possess which gives the very basic distinction hence ability to pursue unique approaches. Further, it is the human resources who scan the environment and determine the strategic orientation to pursue. On the mediating variable, RBV advances knowledge as a crucial source of competitive advantage.

2.2.2 Dynamic Capability Theory

Dynamic capabilities theory was introduced by Stalk, Evans and Shulman (1992) and later received major contributions from Teece and Pisano (1994). It advocates that firms build and renew resources and capabilities to create competitive advantage (Harreld, O'Reilly & Tushman, 2007; Muithya & Muathe, 2020). The proponents of the theory argued that these renewals were critical to the attainment of superior firm performance.

In this regard, Monsur and Yoshi (2012) noted that dynamic capabilities theory logically extends Porter's generic competitive strategy. The theory thrives on the fact that firms operate in highly competitive environment that is continuously changing and therefore the competitive advantage a firm enjoys today may be irrelevant in the future. Consequently, the theory posits that to sustain competitive advantage, firms require to constantly adjust to competitive pressures in the environment.

Dynamic capabilities theory thus advocates for creation of relevant capabilities to address changing competitive environment (Teece, Pisano & Shuen, 1997; Muithya & Muathe, 2020). Capabilities are the abilities that allow firms to attain novel and innovative types of competitive advantage considering existing market positions. Barney (2001) argued that to create any advantage, a firm needs to develop such capabilities to transform strategy from theory into practice. While as cost leadership strategy may confer firms with competitive advantages, it is through capabilities that such advantages are sustained.

The theory supports the mediating variable by recognising that in the application of strategy, firms must build and regularly renew appropriate capabilities to gain competitive advantage. Firms must remain responsive to be able to navigate the actions of competitors leading to superior performance. In cost leadership, firms should be able to switch among component cost approaches so as to charge above costs prices even after competitors have worn out their profit margins. By remaining flexible, the competitive advantage created by the various cost approaches will be sustained leading to sustained superior performance.

2.2.3 Balanced Scorecard Model

BSC is an introduction from the works of Kaplan and Norton (1992). It comprises of four perspectives as depicted in Figure 2.1.

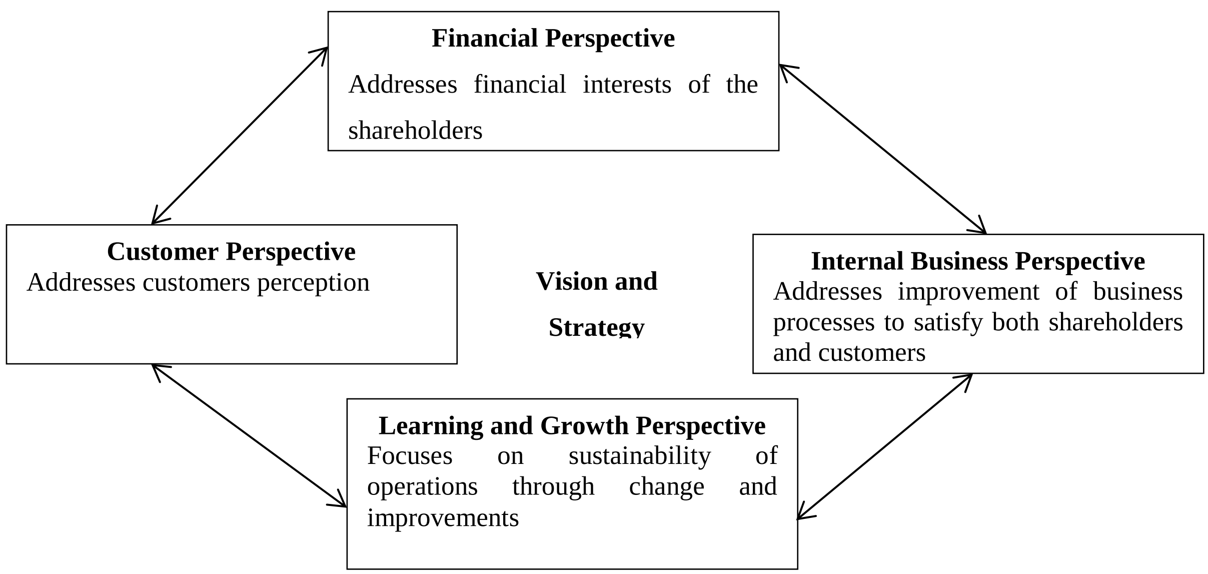


Figure 2.1 Balance Scorecard Dimensions

Source: Kaplan and Norton (1996)

The financial perspective views growth, comparability and risk from the shareholders' viewpoint (Martello, Watson & Fischer, 2016). Under this perspective, firms seek to build the shareholder's worth through increased revenues and enhanced productivity. Thus, the basic measures include sales growth, return on capital employed, industry leadership, profitability, cost savings and market share among others (Tjader *et al*., 2014). Financial metrics have however been faulted for being short-term and internally looking.

The customer perspective looks at value from the customer's viewpoint. This perspective thus assesses who are the firm's customers, their expectations and the value proposition in meeting those expectations (Niven, 2011). It focuses on the customers' concerns including quality, delivery time, product availability, cost and price stability. The firm's concern under this perspective thus is how the customer perceives it in terms of products, services, value-added and relationships (Asosheh, Nalchigar & Jamporazmey, 2010).

The internal business perspective on the other hand relates to business processes which lead to customer and shareholder satisfaction. Measures encompass crucial skills and competencies, technologies and processes that support present and future firm success. A firm that effectively identifies the internal actions and retooling required achieves breakthrough performance (Booyse, 2018).

Finally, learning and growth perspective describes approaches that facilitate an environment conducive to innovation and growth. The perspective comprises of establishment of employee skills, technology and a corporate environment that supports a strategy. Martello *et al*. (2016) argued that these must be in tandem with strategies in the rest of the perspectives for coherence among the four perspectives. The perspective seeks to encourage change and investing for future growth and opportunities.

Therefore, BSC measures performance broadly which allows guidance and assessment of a firm's strategy through a variety of financial and non-financial tools. It seeks to balance the inherent accuracy and reliability of financial metrics with the wide foundation of future financial performance that caters for more stakeholders (Hubbard, 2009; Sundin, Granlund & Brown, 2010; Niven, 2011; Hoque, 2014). Here, performance measurement is based on the extent to which indirect costs are minimised thus creating competitive advantage as recommended by Mailat, Stoica, Surgun, Trastaru and Vranceanu (2019).

Owing to its popular adoption, the BSC has over time developed into an instrument for the management to explain, propagate and execute strategy (Kaplan, 2009). In this way, BSC is employed to offer theoretical explanations. As a theory, BSC has been employed to guide research questions and methodology in various studies (Krylov, 2019; Sainaghi, Phillips & d'Angella, 2019). BSC has also been used as a theoretical basis to interpret research findings (Marquez, Guillem, Vicens-Salort & Vivas, 2018) while Tuan (2020) used it as a theoretical basis for broad assessment of how Vietnamese commercial banks performed.

The model supports the outcome variable through recommendation that firm performance should be assessed through a mix of indicators and recognising that a firm's objectives are more than generating profits for the shareholders. It also anchors the relationship between the explanatory and outcome variables arguing that as firms manage costs, this must relate to the broad performance objectives. The model also recognizes the value of competitive advantage in that it is those firms that better position themselves to address the four perspectives of BSC that attain the highest performance. Conversely, the centrality of the firm's environment is emphasized by the model in calling for need for continuous organizational learning.

2.2.4 Contingency Theory

The contingency theory is an introduction of Gareth (1986). It argues that firm's strategic actions hinge on the specific situation facing the firm. The theory posits that firms are basically organized, choose their strategies and conduct operations to establish a fit with their environments. Islam and Hu (2012) noted that the theory is crucial in understanding firm behaviour through illustrating how contextual factors like the operating environment affect the structure and operations of firms. Firm performance depends on fit among several factors (Van de Ven & Drazin, 1985). Fit is described by the dimensions of selection, interaction and systems.

Selection demands that firm's strategy be aligned to its context while interaction describes an interface between the firm's structure and context on performance (Khandwalla, 1977). Systems approach on the other hand advocates that the design of a firm be based on the contingencies of the firm (Van de Ven & Drazin, 1985). Porter (1980) while analysing fragmented industries observed that the impact of competitive strategies was contingent on the structure of the industry. Porter (1985) amplified this argument when he noted that cost advantage and differentiation strategies stemmed from industry structure.

However, there exists no one best way in the selection, interaction and systems approach to fit which necessitates powerful analysis of contingent factors to influence strategy choice. Dut (2015) recognized macroeconomic environment as the most influential factor in a firm’s context and the determinant of performance variability. Ogot (2014) in reflecting on the context of generic strategies observed that contingency theory seeks to link the generic competitive strategies to environmental preconditions. Consequently, choice of a given competitive strategy by a firm is influenced by its context.

Customer perception of a firm’s product offerings is an influential environmental precondition in regard to the exploitation of generic strategies by firms to gain competitive advantage (Day, 1984). Where consumers see a product’s features as being at parity with other offerings, firms should seek to gain competitive advantage through cost leadership approaches. This is the case with milk processing firms which sell generic products. On a similar tone and when cautioning about viewing all strategic approaches as equally viable in a given industry, Hambrick (1983) advocated for contingency lens while looking at their value. Murray (1988) on cue advocated for theoretically based contingent view to the exploitation of Porter’s generic strategies to attain competitive edge.

Contingency theory supports the moderating variable in the study. It views behaviour and choice of strategy by firms as addressing certain competitive conditions in its environment. The theory advocates that the strategic orientation adopted must aim to improve the fit between the firm and its context if it is to gain competitive advantage as a gateway to superior performance. The theory thus provides a case for consideration of relevant aspects of the environment while studying firm performance. The theory also supports choice of cost leadership strategy for the study’s context as the products are of the same class.

2.2.5 Stakeholder Theory

Stakeholder theory was introduced by Edward Freeman in 1984 (Freeman, 1999). It comprises of three mutually supportive and unique aspects (Donaldson & Preston, 1995). These are the descriptive perspective which focuses on the nature and behaviours of firms, the instrumental perspective which seeks to establish the interaction between management of various stakeholders and the attainment of firm's objectives and the normative perspective which relates to firm's functions.

The theory highlights the interaction between the firm and its environment (Mutua & Murigi, 2019). It is thus concerned with multiple groups, both internal and external, that are impacted upon by the activities of a firm. These stakeholders include customers, creditors, suppliers, employees, local communities, investors and the government among others. Ongeti (2014) argued that stakeholders are influenced by and similarly influence firm's operations. The theory thus views the aims of a firm as being more than just growing the wealth of the shareholders but extending further to serving other stakeholders.

Consequently, the outcome of a firm should be measured to show how well it is meeting the needs of all its stakeholders. This calls for broad measurement of firm performance beyond the traditionally narrowly focused financial measures (Hubbard, 2009). The effect that the stakeholders have on the firm is also important in influencing performance (Mallin, 2010). Some stakeholders provide the firm with resources, others with markets and yet others regulate its activities. It is thus necessary that firms continuously scan relevant aspects of its environment in order to align its strategy with those conditions. These include the macroeconomic environment of the firm.

Stakeholder theory supports both the outcome and moderating variables. With respect to the outcome variable, the theory recognizes that a firm has more interest groups beyond its owners and therefore a justification for measurement of firm's performance through a blend of financial and non-financial indicators. Conversely, by acknowledging that external factors influence firm's activities, the theory anchors the moderating variable by calling on firms to examine key aspects of their context like the macroeconomic environment.

Table 2.1 Summary of the Theories Anchoring the Study

Proponent	**Argument of the Theory/Model**	**Contribution to the Current Study**
RBV (Penrose, 1959; Wernerfelt, 1984; Barney, 1991)	Competitive advantage originates from doing things differently. Resources provide means on which firms formulate and implement certain advantageous strategies to attain competitive advantage and consequently high performance. Human resource is central as a source of unique knowledge.	Supports the explanatory variable by giving distinction between firms based on the amount and type of resources hence ability to pursue unique strategic orientation. Human resources determine firm strategy. Firms use resources to implement chosen strategy. Knowledge identified as key to gaining competitive advantage.
Dynamic Capabilities Theory (Stalk, Evans & Shulman, 1992; Teece & Pisano,1994)	Firms operate in dynamic environment where competitive advantage is transient. Firms require capabilities to transform strategy from theory into practice and sustain competitive advantage.	Supports the mediating variable by arguing that firms must build and regularly renew appropriate capabilities to gain competitive advantage. They should be flexible by switching between component cost advantages.

BSC (Kaplan & Norton, 1992)	Proposes that performance be broadly assessed on the basis of financial, customer, internal process, and learning and growth perspectives. Firm's strategy should be aligned to the broad objectives to create competitive advantage. Firms must continuously grow and learn.	Supports the outcome variable by recognizing that firms do more than just generating profits for shareholders. Calls for building of competitive advantage by addressing all performance objectives. Encourages analysis of firm environment.
Contingency Theory (Gareth, 1986)	Firms are organized, choose their strategy and conduct operations to fit their environments. It seeks to link cost leadership strategy to environmental preconditions.	Supports the moderating variable by advocating consideration of relevant aspects of the environment while studying firm performance.
Stakeholder Theory (Freeman, 1984)	Views a firm as concerned with multiple groups, both internal and external, that are impacted upon by its activities and it is in turn impacted by the environment.	Supports the outcome variable by calling for measurement of performance broadly. Anchors the moderating variable by advocating for examination of firms' context.

Source: Author (2019)

2.3 Empirical Literature Review

This section gives summary of empirical studies focusing on the interaction among the variables of the study.

2.3.1 Economies of Scale and Firm Performance

Kasman (2012) examined how cost-efficiency and economies of scale affected performance of Turkish commercial banks in a ten year period. The study focused on whether large banks enjoyed cost related performance advantages compared to the smaller banks. Panel data on 60 commercial banks was collected from the banks' annual reports dated 1988 to 1998. A usable sample of 48 private commercial banks was obtained. The findings indicated that large banks recorded better financial performance compared to smaller banks. The study sampling approach was largely purposive and it focused on economic models to establish the interaction among variables to the detriment of non-financial measures. The current study adopted stratified random sampling approach and performance was assessed through financial and non-financial indicators.

Pervan and Visic (2012) study sought to establish how economies of scale related to firm performance. The study observed that the traditional neoclassical view of the firm linked large scale operations to profitability. The authors however acknowledged different conclusions that suggested that the two variables were negatively related. To test the debate, the study collected data on 2,050 firms per year in the period 2002-2010 which was subsequently analysed using correlation and regression analysis. Results of correlation analysis indicated negative relationship between economies of scale and profitability while regression analysis showed a positive and significant relationship. The study focused on multiple sectors hence risk of industry variability. The current study focused on a single industry to which findings are generalized.

Scale of operations has been hypothesized to be correlated to economic performance of firms (Matejova, Placek, Krapek, Pucek & Ochrana, 2014). Matejova *et al*. (2014) in a study in Czech Republic observed that past empirical studies had failed to give conclusive findings on how performance interacted with economies of scale. The study used data on the local government pre-schools and primary schools. Empirical analysis was done using quadratic and hyperbolic regression functions. The study found U-shaped cost curve indicative of increasing economies of scale as size increased up to a certain level beyond which, cost disadvantages on performance begin to set in. The study was entirely based on public service entities that may not necessarily pursue cost minimization strategies. This was addressed by focusing on both public and private firms eager to manage costs to boost performance.

Richter (2014) in a study on manufacturing firms in Germany argued that internationalization of business operations is accompanied by increased information and/or transaction costs. Internal informational costs could however decline hence superior performance due to economies of scale owing to spread over larger or more markets thus lowered cost per unit. The study sample was 107 firms. Group and panel financial data for the period 2000 to 2006 was used. Data analysis was through ordinary least squares. The findings indicated that internal information costs per unit decreased as foreign sales volume increased which led to better performance. The study considered economies of scale alongside variables which do not necessarily address performance challenges related to costs. This study considered economies of scale alongside indicators that address performance challenges related to cost.

The size of a firm has been argued to positively affect performance through strong resource foundation, diverse capabilities, economy of production costs and formalization of procedures (Shah, Tahir, Anwar & Ahmad, 2016). Shah *et al*. (2016) however noted that large scale operations also lead to higher agency costs and consequently poor performance. The study surveyed 153 listed firms for the period 2004-2013. Data was analysed using descriptive, correlational, ratio and regression analyses. Descriptive analysis indicated that large firms had better financial performance, correlation analysis showed insignificant but positive relationship between size of firm and performance while ratio and regression analyses showed positive interaction between firms' size and performance. The study was multi-sectoral hence the resultant variability could affect generalization of findings to a specific industry. The current study focused on a single sector to which findings were generalized.

2.3.2 Economies of Scope and Firm Performance

Mayen, Balagtas and Alexander (2009) in a study among grains and forages dairy farms in the US sought to understand the effect of economies of scope on firm performance. The study argued that vertical economies of scope resulted when the internal transfer of the intermediate product as input for the subsequent stage is cheaper than the market rate. A usable sample of 527 conventional and 205 organic dairy farms was obtained. The study found that the effect of economies of scope in organic dairy farms was significant but insignificant in conventional dairy farms. The study did not robustly operationalize vertical economies of scope to clarify the dimensions. It focused on dairy farms in contrast to dairy firms as in the current study. These gaps were addressed by robustly operationalizing variables through extensive literature review and focusing on milk industry.

Pros and cons of joint and separate production have attracted scholarly attention. Growitsch and Wetzel (2009) for example in a study on European railways argued that economies of scope arising from integration of business operations could lead to technical or transactional advantages that give rise to better performance. The study targeted 54 European railway firms for the period 2000 to 2004. The data comprised of published railway statistics and the companies' annual reports and statistics. Analysis was done using non-parametric Data Envelopment Analysis (DEA). The findings indicated that integrated railway firms were more efficient and enjoyed performance benefits from economies of scope. The study used economic models for analysis leaving out non-financial aspects of performance. It was based on European environment hence the findings are not generalizable to current context. The current study adopted broad measurement of performance of milk processing firms in Kenya.

Hartarska, Parmeter and Nadolnyak (2010) studied the concept of economies of scope among rural microfinance institutions (MFIs). The study argued that expansion in scope could improve performance if done by the same MFIs. It used semi parametric smooth coefficient model to estimate scope economies. Data on 882 MFIs from 93 countries was collected from the Microfinance Information Exchange (MIX) Market database. The study found that economies of scope were non-linear but on average positive indicating improved performance. The study was cross-country hence high degree of environmental variability. It also narrowly operationalized the concept of economies of scope by considering fixed cost and cost complementarities only. The current study focused on a single country and considered several indicators of economies of scope.

Zahavi and Lavie (2013) study observed that expansion into related product lines by a firm improved performance. The study conducted a pooled time-series analysis of 156 firms operating between 1990 and 2001 using historical data from 1985. Data was analysed using descriptive statistics and regression. The study concluded that expansion into related business areas leads to a U-shaped performance effect in that too much product relatedness creates negative transfer effects effectively countering the sharing of resources across related products hence negative cost and performance consequences.

The study was based on diverse industries hence difficulty in generalizing the findings to a specific sector. The current study focused on a single industry to which findings were generalized.

Economies of scope contribute to improved firm performance by enabling organizations exploit firm-specific surplus resources, particularly intangible ones, across several product classes. Hashai (2015) sought to test this theorization by collecting primary and secondary data on 147 Israeli high technology Small and Medium Sized Enterprises (SMEs) from multiple sources. Descriptive statistics, correlation and regression were utilized to analyse the data. The study found that economies of scope had an S-shaped non-linear relationship with firm performance where performance declines at low and high scope economies and increases at moderate levels. The study focused on a developed economy whose results may not be generalized to a developing economy. The current study was based on a developing economy.

2.3.3 Operational Efficiency and Firm Performance

Profitability has been considered a key measure of firm performance by many scholars. Farah and Rahman (2013) study on profitability indicators among Non-Bank Financial Institutions (NBFIs) in Bangladesh argued that high performance among the institutions could partly be attributed to operational efficiency. The study collected secondary data from annual reports of all the 30 NBFIs for the period 2006 to 2008 in addition to other publications. The data was analysed by way of multiple regression models. The study concluded that operational efficiency had significant positive influence on profitability. The study relied on secondary data which could be source biased to create favourable perception. The gap was addressed by collecting primary data from multiple respondents per firm.

Operational efficiency is a key component in improving present and future organizational performance (Gill, Singh, Mathur & Mand, 2014). A study on Indian manufacturing firms by Gill *et al*. (2014) sampled 244 firms and obtained historical financial data between 2008 and 2013. Operational efficiency was measured in terms of operating expenses, asset turnover, conversion cycle and operating cash flow while performance was measured in terms of changes in share price. Descriptive statistics, correlation and regression were utilized to analyse data. The results illustrated that operating expenses, operating risk and cash conversion cycle were negatively related to firm performance while operating cash flow and total asset turnover were positively related. The study limited measurement of firm performance to one aspect only. Financial performance in the current study was measured using multiple dimensions.

Subburaj, Babu and Subramonian (2015) examined how operational efficiency of dairy supply chain could be strengthened. The authors observed that despite India being among the largest world milk producers, it still experienced huge deficits in milk supply hence motivation for the study. The study adopted survey design and diverse data was collected using questionnaires in five zones of Tamil Nadu from 2010 to 2012. The sample comprised of 125 respondents. Data analysis was through descriptive statistics. High milk production costs and inadequate milk procurement price were identified as the major constraints limiting the supply chain. Use of descriptive statistics only limited the study findings to describing the phenomenon without elucidating the causal-effect relationship between variables. Cause-effect relationships were established in the current study through regression analysis.

Operational efficiency reaffirms the notion of increasing competitiveness and therefore better performance among firms (Sporta, Ngugi, Ngumi & Nanjala, 2017). A study by Sporta *et al*. (2017) collected secondary financial data on commercial banks in Kenya for the period 2005 to 2015. Data analysis was both descriptive and inferential. The results indicated that operational efficiency was positively related to financial performance of banks in Kenya. Contextual differences of the study make generalizability of findings to current setting improbable. The current study focused on the milk processing sector in Kenya to validate the conclusion in a different context.

Azad, Raza and Zaidi (2018) argued that efficiency affects firm performance and as a consequence the aim of management is to improve the effectiveness of business operations. In a study on empirical relationship between operational efficiency and firm profitability, Azad *et al*. (2018) surveyed secondary data of four gas and oil exploration companies from 2010 to 2015. No sampling was done due to the limited number of firms. Analysis was done using descriptive statistics, correlation and ordinary least squares. The study concluded that operational efficiency impacted on firm's profitability. The sample size used by the study was too small hence validity concerns. This gap was addressed by having a big sample.

2.3.4 Cost Leadership Strategy, Competitive Advantage and Firm Performance

Monsur and Yoshi (2012) sought to assess if competitive advantage mediated the relationship between performance and vertical integration strategy. The authors observed that firms faced fierce competition as a result of availability of low cost labour thus resulting to selected strategies to generate competitive advantage. The study surveyed 180 firms from which questionnaires were utilized to collect data. Analysis was done using Structural Equation Modelling (SEM). The study concluded that vertical integration positively and significantly influenced competitive advantage which in turn significantly affected performance of apparel firms in Bangladesh. It measured performance using financial measures alone thus ignored calls for broad assessment of performance. The current study employed financial and non-financial indicators.

Vahid, Mirzajani, Izadi, Honarmandyar and Negahdary (2013) examined how competitive advantage and export performance related. In this study, descriptive research design was utilized and data collected using questionnaires. Testing of hypotheses was done using Pearson correlation analysis. Competitive advantage was found to significantly explain performance of firms exporting biotech products in Iran. The research used competitive advantage as an explanatory variable whereas in the current study it is considered as a mediator variable. Further, the approach used to analyse data does not establish cause effect relationship between variables. This was addressed through use of regression analysis.

Talaja, Miocevic, Pavicic and Alfirevic (2017) explored the indirect effects between market orientation, competitive advantage and firm performance. The authors observed that previous studies had identified market orientation as a contributor to competitive advantage through which it influenced firm performance. They used a survey research design targeting a total of 1,017 medium and large-sized firms. Data collection was by mailed questionnaires. Data analysis was done using partial least square regression. The study concluded that competitive advantage mediated between market orientation and performance. The study considered market orientation as the explanatory variable thus failed to link cost leadership with competitive advantage as a mediator. This gap was addressed by considering cost leadership strategy as the explanatory variable.

Different strategies like diversification are employed to improve firm competitiveness and thus ensure superior performance. Sihite (2018) investigated the mediating effect competitive advantage had on the interaction between diversification strategy and corporate sustainability performance. The study used descriptive research design and focused on 43 Business Unit Directors. Data was collected using questionnaires. Correlation was adopted for data analysis. The study findings indicated a positive correlation of diversification and competitive advantage, positive correlation of competitive advantage and corporate sustainability performance and that competitive advantage was a partial mediator in the relationship. The study utilized correlation to analyse data hence did establish the explanatory power of the independent variable on the dependent variable. The current study adopted regression analysis to establish explanatory effects of independent variables.

Mutuku, Muathe and James (2019) examined how e-commerce capability and performance related among Kenyan commercial banks as mediated by competitive advantage. They argued that the banking industry was very competitive thus requiring competitive advantage as well performing banks were of interest to many parties. The study adopted explanatory research design and surveyed all the 43 commercial banks in operations in Kenya as at 31 December 2016. It used secondary data from banks' websites as well as financial statements and supervision reports on the banks. It found out that competitive advantage was a partial mediator. The study adopted a narrow lens of viewing firm performance by using financial measures only. The current study measured performance broadly.

Various strategic tools and models such as corporate strategies are employed to achieve competitive advantage hence superior performance. Wanjiru, Muathe and Kinyua-Njuguna, (2019) examined how competitive advantage mediated the interaction between corporate strategies and firm performance. They used descriptive and explanatory survey designs allowing triangulation of findings thus raising validity of results. It targeted 189 large manufacturing firms in Nairobi City with data collected through semi-structured questionnaires. Analysis was both descriptive and inferential with findings showing that competitive advantage was a mediator in the relationship. The study's explanatory variable was corporate strategies hence focused on whom firms competed with rather than how they competed. The current study's explanatory variable was cost leadership strategy hence addressed cost related performance challenges.

2.3.5 Cost Leadership Strategy, Macro Economic Environment and Performance

Pacini, Mayer, Attar and Azam (2018) examined the impact that selected macroeconomic factors had on performance. The study used panel data for top 100 firms in UK for the period from 2000 to 2014. Relationship between the variables was established using dynamic factor estimators approach in an equation containing individual effects and lagged dependent variables. Study findings showed that GDP and inflation rate positively affected firm performance. Exchange and interest rates had a negative effect. The study used macroeconomic environment as an explanatory variable whereas the current study treats it as a moderator variable. Inclusion of the lagged independent variable may also bias the coefficient of the other independent variables downward. This was addressed by not including lagged variables in the current study.

It has been argued that macroeconomic environment influences performance related decision making by firms. Egbunike and Okerekeoti (2018) examined how macroeconomic factors and firm characteristics related with financial performance. The study adopted ex post facto research design with the sample drawn from companies dealing with consumer goods through purposive sampling. Analysis was through descriptive statistics and multiple linear regression. The results showed that interest and exchange rate did not significantly affect ROA but inflation and GDP growth rate significantly affected ROA. The study used purposive sampling hence risk of bias and relied on financial measures of performance while excluding non-financial aspects. The gaps were addressed by using stratified random sampling and broad measurement of firm performance.

Musau, Muathe and Mwangi (2018) examined whether GDP was a moderator in the interaction between financial inclusion and credit risk of Kenyan commercial banks. The study observed that macro-economic environment influence utilization of the financial sector and indicators like GDP growth improves profitability hence stability. It used descriptive and explanatory research designs and surveyed 43 banks. Secondary data from Central Bank of Kenya (CBK), the commercial banks and Kenya National Bureau of Statistics (KNBS) dating 2007 to 2015 was utilized. Analysis was both descriptive and inferential. Findings indicated that GDP growth rate was a partial moderator in the relationship. The study considered GDP growth rate as the sole indicator of macroeconomic environment. The current study considered two indicators of macroeconomic environment.

Ruhomaun, Saeedi and Nagavhi (2019) assessed the influence that chosen economic variables had on firm performance. The variables considered were interest rate, financial distress, exchange rate and derivatives usage. The study drew panel data from 196 firms out of a population of 264 firms. Analysis was conducted using descriptive statistics and Generalized Methods of Moments (GMM) econometric analysis. The study findings indicated that exchange rate had insignificant negative effect, interest rate and financial distress had significant negative effect, while derivatives usage had significant positive effect. The study considered both micro and macroeconomic factors while the current study focused on macroeconomic factors only.

At firm external operating environment comprise of factors that affect strategic choice and influence performance. Wanjiru, Muathe and Kinyua-Njuguna (2019) examined whether external operating environment was a moderator in the interaction between corporate strategies and performance among manufacturing firms in Nairobi. It adopted a combination of descriptive and explanatory survey designs and collected data from 148 firms with the sample drawn through multi-stage sampling. Descriptive and inferential statistics were utilized to analyse data. The findings illustrated that external operating environment was a significant moderator. The study considered external operating environment in general without focusing on key aspects. The current study focused on macroeconomic environment as the critical aspect of a firm's external environment.

2.4 Summary of Empirical Literature and Research Gaps

From the reviewed empirical literature, there is evidence that cost leadership strategy as indicated by economies of scale, economies of scope and operational efficiency influences firm performance (Hartarska *et al*., 2010; Shah *et al*., 2016; Sporta *et al*., 2017). However despite these conclusions, most of the studies reviewed were extra-national and extra-continental making the findings ungeneralizable to the Kenyan context. Further, even for the studies conducted in Kenya, none has addressed performance of milk processing firms specifically from the perspective of cost leadership. The mediating role of competitive advantage and moderating role of macroeconomic environment have also been illustrated by the literature reviewed. However, contextual differences make it difficult to apply these results in the current setting.

The literature reviewed has also presented contradicting findings. Matejova *et al*. (2014) for example concluded that economies of scale had U-shaped effect on firm performance while Richter (2014) found that the relationship was direct. On the other hand, Egbunike and Okerekeoti (2018) found that interest rate did not have significant moderating effect while Ruhomaun *et al*. (2019) concluded that interest rate was a significant moderator. These phenomena present a justification for further assessment of the variables.

Methodological gaps have also emerged from the reviewed empirical literature. Kasman (2012) and Gill *et al*. (2014) measured firm performance using financial indicators only thereby limiting linkage of the effect of the explanatory variable to a single aspect of firms' objectives. Vahid *et al*. (2013) and Sihite (2018) adopted correlational analysis to establish relationships between variables hence the studies did not assess the existing cause-effect relationships. Subburaj *et al*. (2015) on the other hand used descriptive statistics only limiting the study's findings to merely describing the research phenomenon. Table 2.2 presents a summary of the reviewed empirical literature and the research gaps that were identified.

Table 2.2 Summary of Empirical Literature and Research Gaps

Authors & Year	Focus of the study	Finding(s)	Identified gap(s)	Focus of the current study
Kasman (2012)	How cost efficiency and scale economies affect technological progress of banks.	The study found that large banks enjoyed better performance than the smaller banks.	The study purposively selected the sample and also heavily focused on economic models to estimate the variables using financial indicators.	Selected sample using stratified random approach. Firm performance measured using both financial and non-financial measures.
Pervan and Visic (2012)	How firm size affects business success	Correlation analysis indicated negative relationship between economies of scale and profitability while regression analysis showed a positive and significant relationship.	The study focused on multiple sectors hence risk of industry variability.	Focused on a single industry to which findings were generalized.
Matejova, Placek, Krapek, Pucek and Ochrana (2014)	Interaction between municipality size and economic performance.	U-shaped cost curve indicative of increasing economies of scale as size increased up to a certain level beyond which, performance disadvantages begin to set in.	The study was entirely based on public service entities that may not necessarily pursue cost minimization strategies.	Focused on both public and private firms eager to manage costs to boost performance.
Richter (2014)	How economies of scale, cultural diversity and decentralization affect cost performance in international business.	The study found that internal per unit information costs decreased as foreign sales increased hence better performance.	The study considered economies of scale as the only driver to cost leadership alongside cultural diversity and decentralization which do not address cost related performance challenges.	Considered economies of scale alongside other indicators that address cost related performance challenges.

Shah, Tahir, Anwar and Ahmad (2016)	Interaction between size and performance of listed Pakistani firms.	Firm size positively affected performance.	The study was multi-sectoral hence variability could affect generalization of findings to a specific industry.	Focused on a single sector to which findings were generalized.
Mayen, Balagtas and Alexander (2009)	How vertical economies of scope influences performance of dairy farms.	The study found negligible effect in conventional dairy farms but significant effect in organic dairy production.	The study did not robustly operationalize economies of scale to clarify the dimensions. It also focused on dairy farms.	Robustly operationalized all variables through intense theoretical and empirical review. Focused on milk processing firms.
Growitsch and Wetzel (2009)	How economies of scope affect performance of European railways.	The findings indicated that integrated railway firms were more efficient and enjoyed benefits from the economies of scope.	The study used economic models for analysis leaving out non-financial aspects of performance. It was based on European environment hence the findings are not generalizable to current context.	Focused on broad measurement of performance using a mix of indicators among milk processing firms in Kenya.
Hartarska, Parmeter and Nadolnyak (2010)	How scope economies affect performance of microfinance institutions.	The findings indicated that scope economies were on average positive mostly due to fixed cost hence better performance.	The study was cross-country hence high degree of environmental variability. It also narrowly operationalized the concept of economies of scope.	Focused on a single country. It considered several indicators of economies of scope.
Zahavi and Lavie (2013)	Impact of expansion of scope of operations on firm performance.	The findings indicated that diversification leads to a U-shaped performance effect.	The study was based of diverse industries making it difficult to generalize the findings to a specific sector.	Focused on a single industry to which findings were generalized.
Hashai (2015)	How within industry expansion affects performance.	The study found that economies of scope had an S-shaped relationship with firm performance.	The study focused on a developed economy hence findings not generalizable to a developing economy.	Study focused on a developing economy.
Farah and Rahman (2013)	Factors influencing profitability of Non-Bank Financial institutions.	The study concluded that operational efficiency had positive influence on firm profitability.	The study relied on secondary data which could be source biased to create favorable perception.	Focused on collecting primary data.

Gill, Singh, Mathur and Mand (2014)	How operational efficiency affected Indian manufacturing firms future performance.	Cash operating expenses, conversion cycle and operating risk negatively influenced future firm performance while operating cash flow and total asset turnover had positive effect.	The study limited measurement of firm performance to one only aspect of financial indicator.	Study adopted multiple dimensions of financial indicator.
Subburaj, Babu and Subramonian (2015)	Influence of operational efficiency on performance of dairy supply chain in India.	The study identified high milk production costs and poor milk purchase price as the major constraints limiting the supply chain.	Use of descriptive statistics only limited the study findings to describing the phenomenon without elucidating the causal-effect relationship between variables.	Focused on multiple approaches to analysis through descriptive statistics and regression analysis to establish cause-effect relationships.
Sporta, Ngugi, Ngumi and Nanjala (2017)	Impact of operational efficiency on Kenyan commercial banks performance.	Operational efficiency and financial performance positive correlated.	The study considered a different sector.	Focused on the milk processing sector in Kenya.
Azad, Raza and Zaidi (2018)	Effect of operational efficiency on profitability of Pakistan energy firms.	The study found that operational efficiency impacted on firm's profitability.	The study's sample size was too small hence validity concerns.	Considered a big sample to address possible validity concerns.
Monsur and Yoshi (2012)	Understanding mediating role of competitive advantage on vertical integration and performance interaction among Bangladesh clothing firms.	The study found that vertical integration positively and significantly influenced competitive advantage which subsequently significantly affected performance.	The study ignored calls for broad assessment of performance by using financial measures only.	The study used a mix of indicators to assess firm performance.

Vahid, Mirzajani, Izadi, Honarmandyar and Negahdary (2013)	How competitive advantage affects export performance of Iranian biotech firms.	Findings indicated that competitive advantage was a significant predictor of performance of Iranian biotech firms.	The study used competitive advantage as an explanatory variable. Further, the approach used to analyse data does not establish cause-effect relationship between variables.	Considered competitive advantage as a mediator variable. Data analysed using both descriptive and inferential analysis to establish explanatory power of independent variables.
Talaja, Miocevic, Pavicic and Alfirevic (2017)	Establishing mediating function of competitive advantage on market orientation and performance interaction among Croatian firms.	Competitive advantage was significant mediator.	The study considered market orientation as the explanatory variable thus failed to link cost leadership with competitive advantage as a mediator.	Focused on examining cost as a key variable in performance by considering cost leadership strategy as the explanatory variable.
Sihite (2018)	Understanding whether interaction between diversification strategy and corporate sustainability performance was affected by competitive advantage.	Findings indicated that competitive advantage was a partial mediator.	The study used correlation to analyze data hence did establish the explanatory effect between variables.	Focused on establishing the explanatory effect between variables by adopting regression to analyse data.
Mutuku, Muathe and James (2019)	Whether competitive advantage had a role in how e-commerce capability and banks performance interacted.	Findings showed partial mediating effect of competitive advantage.	The study adopted a narrow lens of viewing firm performance by using financial measures only.	Study heeded to calls for broad measurement of performance through use of a mix of indicators.
Wanjiru, Muathe and Kinyua-Njuguna (2019)	Whether corporate strategies and performance interaction was impacted upon by competitive advantage.	The study concluded that competitive advantage was a significant mediator.	The study focused on corporate strategies thus not how firms compete.	Study focused on business level strategy hence examined how firms competed.

Pacini, Mayer, Attar and Azam (2018)	Impact of macroeconomic environment on performance of firms in United Kingdom.	GDP and inflation rate had positive performance effect. Exchange rate and interest rate effect was negative.	Study included lagged independent variable hence risk of biasing the coefficients of the other independent variables downward.	Study did not include lagged independent variables in the models.
Egbunike and Okerekeoti (2018)	Whether firm characteristics and financial performance interaction is influenced by macroeconomic factors.	Exchange rate and interest rate had insignificant effect while GDP growth and inflation rate had significant effect.	The study used purposive sampling hence risk of bias. Used ROA to measure performance.	Study used stratified random sampling and adopted a broad measurement of performance.
Musau, Muathe and Mwangi (2018)	Understanding moderating effect of GDP on financial inclusion and credit risk relationship.	GDP growth rate was a partial moderator.	The study considered GDP growth rate as the sole indicator of macroeconomic environment.	Study conceptualized macro-economic environment through cost of debt financing and inflation rate.
Ruhomaun, Saeedi and Nagavhi (2019)	Impact of select macro and micro economic factors on Malaysian firms' performance.	Exchange rate had insignificant negative effect, financial distress and interest rate had significant negative effect while derivatives usage had significant positive effect.	Both micro and macroeconomic factors were considered.	Considered macroeconomic factors only as moderator variable.
Wanjiru, Muathe and Kinyua-Njuguna (2019)	Influence of external operating environment on corporate strategies and performance interaction.	The study concluded that external operating environment was a significant moderator.	Study considered external operating environment in general without focusing on key aspects.	The study focused on macroeconomic environment as the critical aspect of a firm's external environment.

Source: Author and literature review (2019)

2.5 Conceptual Framework

Figure 2.2 presents a conceptual framework showing the relationship among the study variables.

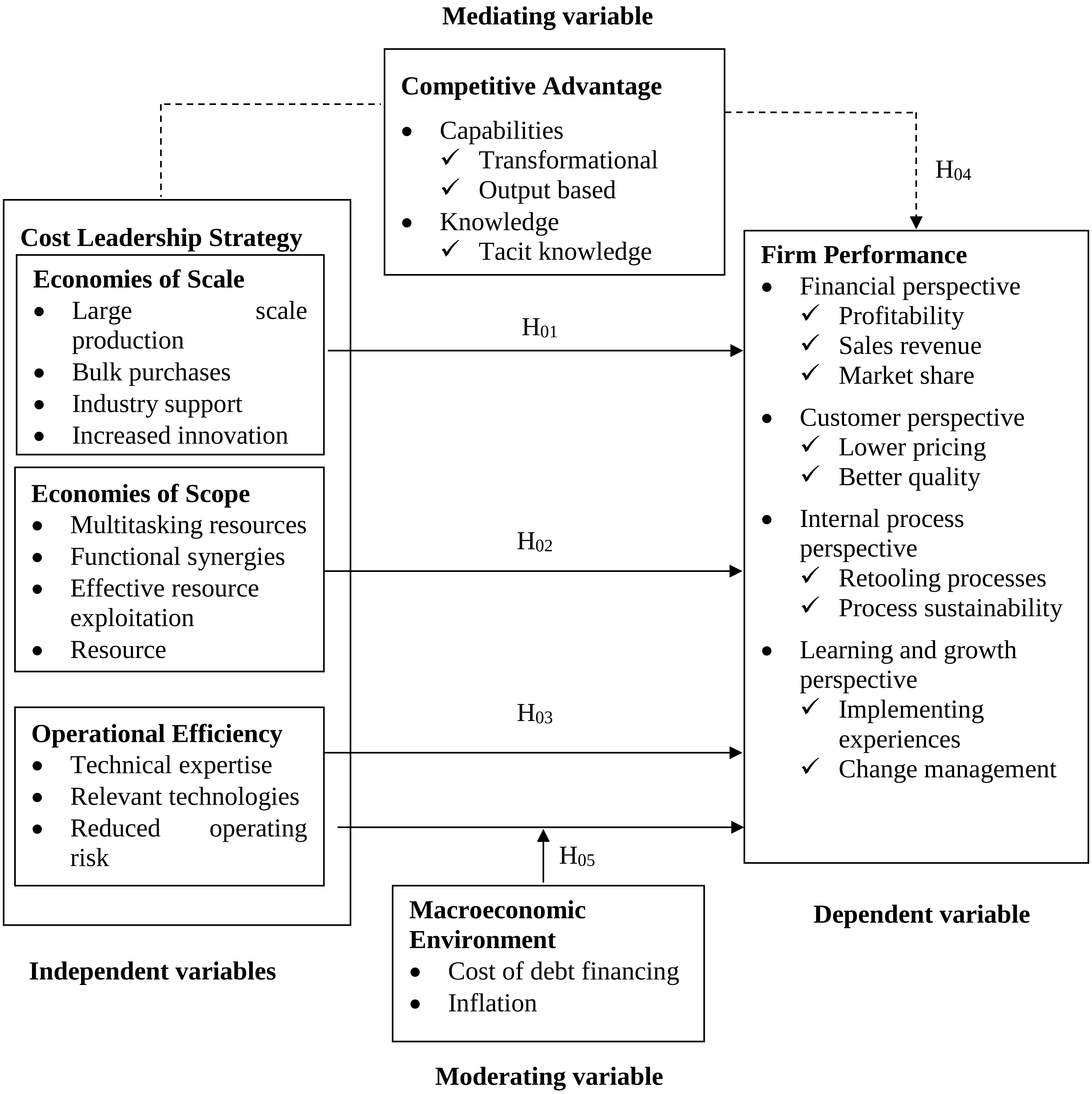


Figure 2.2 Conceptual Framework

Source: Author (2019)

This study hypothesised that cost leadership strategy affects performance of milk processing firms in Kenya. Cost leadership strategy was indicated by economies of scale, economies of scope and operational efficiency as the explanatory variables while the outcome variable was firm performance indicated by financial, customer, internal process and learning and growth dimensions. Conversely, competitive advantage was hypothesised as mediating the relationship between cost leadership strategy and performance indicated by capabilities and knowledge. Finally, macroeconomic environment was hypothesized to moderate the relationship and was indicated by cost of debt financing and inflation.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives the research methodology which was utilized to establish the linkage between study variables. These consist of the research philosophy, research design, empirical models, target population, sampling procedure, data collection procedure, operationalization of variables, validity and reliability of the research instrument, analysis and presentation of data, diagnostics tests, test of hypotheses and finally ethical considerations.

3.2 Research Philosophy

A research philosophy assists the researcher broadly present the approach adopted in a particular study. The study adopted a positivist philosophy due to its objectivity and therefore scientific value. Hussey and Hussey (1997) argued that positivism assumes that the observer is independent from the phenomenon being studied and as a consequence allows for impartial measurement of data. Consequently, the findings of such study have more contributory value to the area of research. Thorpe and Jackson (2008) noted that positivism is founded on traits of truth, validity and reason and purely concentrates on facts assessed empirically by use of scientific approaches.

The philosophy is an objective approach that allows for testing of hypotheses from existing theories (Saunders, Lewis & Thornhill, 2009). Saunders (2011) posited that positivism is factual where hypotheses are developed, empirically tested and either fully supported, partially supported or refuted. It is on the basis of these arguments and the objectivity principle of positivism that it was adopted to guide analysis of the collected data on the study variables, testing of hypotheses and subsequently making of inferences.

3.3 Research Design

The study utilized both descriptive and explanatory research designs. Combining different designs is good for optimum outcomes (Saunders *et al*., 2009). Similarly, Creswell and Creswell (2017) recommended for combination of designs to capture the best out of them. The approach also allows triangulation of research findings thus raising their validity (Wanjiru *et al*., 2019). Descriptive design was chosen as it enables a researcher to summarize and organize data into few meaningful indices to describe a phenomenon (Mugenda & Mugenda, 2003; Muathe, 2010; Muathe, Wawire & Ofafa, 2013). The design thus allowed collection of data to explain the status of the variables. Conversely, explanatory design is appropriate for depicting causal interactions between variables (Saunders *et al*., 2009).

The combined designs allowed the author to describe the extent of adoption of cost leadership strategy by milk processors and the resultant performance levels through the descriptive component and concurrently illustrate the explanatory power that drivers of cost leadership had on performance through the explanatory component. The approach fits into the positivist philosophical orientation by enabling the researcher to objectively collect large quantities of data on the population to facilitate testing of hypotheses. It also aligns well with the aim of the study which was to assess the effect that cost leadership strategy had on performance of milk processing firms.

3.4 Empirical Model

The dependent variable, firm performance, was measured on a continuous scale and hence linear multiple regression models were employed to assess the explanatory power of each of the three explanatory variables as recommended by Field (2013). In addition, step-by-step path analysis was employed to assess the strengths of the mediator and moderator variables.

To calculate the composite indices of performance, joint explanatory variable (cost leadership strategy) as well as summarize multiple responses to one numerical indicator for the variables, harmonic mean formula as recommended by Gupta (2008) was utilized.

$$C_i = \sum_{i=1}^{N} \left(\left(\frac{n}{\sum_{i=1}^{n} \frac{1}{x_i}} \right) W_i \right)$$

Where,

Ci = Composite index for variable i (economies of scale, economies of scope, operational efficiency, competitive advantage, macroeconomic environment and firm performance).

N= Number of constituent components for the variable.

n= Number of respondents for the given part of the instrument.

x_i=Percentage mean score per component in each firm.

Wi=The relative weight per component in a particular variable.

3.4.1 Direct Relationship

To establish the power of the explanatory variables, economies of scale, economies of scope and operational efficiency were regressed against performance as follows:

$$P = \beta_0 + \beta_1 ESA + \beta_2 ESO + \beta_3 OE + \varepsilon \ldots\ldots 3.1$$

Where; P = Composite index of performance

ESA = Economies of scale

ESO = Economies of scope

OE = Operational efficiency

β_i= Beta Coefficient

ε= Error Term

3.4.2 Mediation

To test for mediation, the author used a causal steps approach proposed by Baron and Kenny (1986) and used by Kinyua (2014) and Kiiru (2015). The four causal steps were as follows:

Step 1. Assessing the relationship between the explanatory variable (cost leadership strategy) and the outcome variable (firm performance) using model 3.2.

Step 2. Establishing the relationship between the mediating variable (competitive advantage) and the explanatory variable (cost leadership strategy) using model 3.3.

Step 3. Establishing that the mediating variable (competitive advantage) affects the outcome variable (firm performance) in a regression equation with cost leadership strategy and competitive advantage as predictors using model 3.4.

Step 4. Assessing the extent of mediation whether total, partial or non-existent on the relationship between the explanatory variable (cost leadership strategy) and the outcome variable (performance) using model 3.4.

$$\mathbf{P = \beta_0 + \beta_4\, CLS + \varepsilon} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{3.2}$$

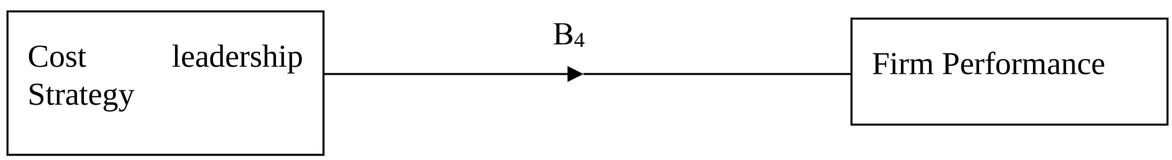
Where; CLS = Cost Leadership Strategy (Composite index for economies of scale, economies of scope and operational efficiency)

$$\mathbf{M = \beta_0 + \beta_5\, CLS + \varepsilon} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{3.3}$$

Where; M = Mediating Variable (Competitive advantage)

$$\mathbf{P = \beta_0 + \beta_6\, CLS + \beta_7\, M + \varepsilon} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{3.4}$$

Schematically, the causal steps approach that guided testing for mediation was as follows:



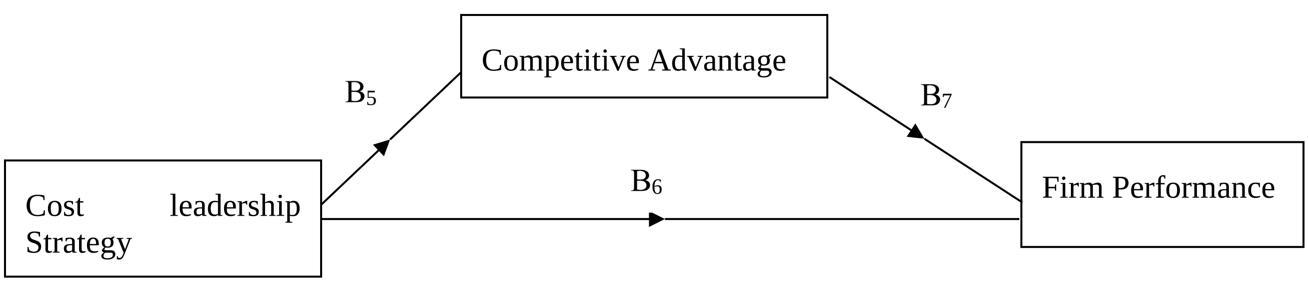


Figure 3.1 Mediation Model

Source: Baron and Kenny (1986)

The criteria in Table 3.1 was adopted to establish if mediation existed.

Table 3.1 Criteria for Mediation Decision

	Outcomes	Conclusions
1.	If β_4 is significant If β_5 is significant If β_6 is not significant and β_7 is significant	Total Mediation
2.	If β_4 is significant If β_5 is significant If β_6 is significant but less than β_4 and β_7 is significant	Partial Mediation
3.	If β_4 is significant If β_5 is not significant If β_6 is significant and equal to β_4 and β_7 is not significant	No Mediation

Source: Baron and Kenny (1986)

3.4.3 Moderation

To test for moderating effect of macroeconomic environment on the relationship between cost leadership strategy and performance of milk processing firms, a three causal paths model proposed by Baron and Kenny (1986) as shown in Figure 3.2 was used.

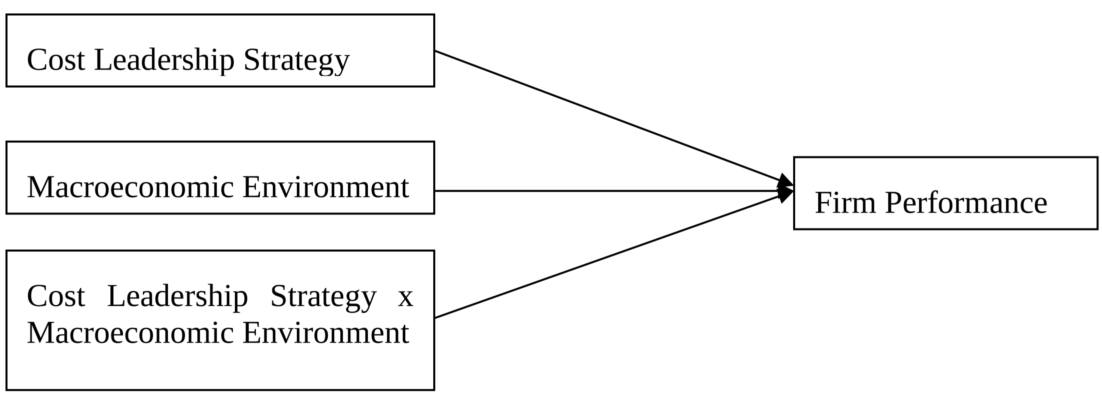


Figure 3.2 Moderator Model

Source: Baron and Kenny (1986)

Three models helped determine if the coefficient for the interaction term statistically differed from zero. Model 3.5 formed the base model to establish whether a significant relationship existed between the explanatory variable (cost leadership strategy) and the outcome variable (firm performance).

$$P = \beta_0 + \beta_4\ CLS + \varepsilon \qquad (3.5)$$

Model 3.6 was utilized to assess the outcome variable (firm performance) following introduction of the moderating variable (macroeconomic environment).

$$P = \beta_0 + \beta_8\ CLS + \beta_9\ MEV + \varepsilon \qquad (3.6)$$

Where; MEV = Macroeconomic environment

In addition, model 3.7 was utilized to show direction on significance of the interaction term.

$$P = \beta_0 + \beta_{10}\ CLS + \beta_{11}\ MEV + \beta_{12}\ CLS * MEV + \varepsilon \qquad (3.7)$$

Baron and Kenny (1986) posited that the moderator hypothesis is supported when the interaction is significant along the following criteria.

Table 3.2 Criteria for Moderation Decision

	Outcomes	**Conclusions**
1.	If β_4 is not significant	No overall effect to moderate
2.	If β_8 is significant If β_{11} is not significant	Moderator variable is an explanatory variable
3.	If β_8 is significant If β_{11} is significant If β_{12} is significant	Moderator variable has a moderating effect * β_{12} yields the strength and direction of the moderating effect

Source: Adopted from Baron and Kenny (1986)

Further to the basic criteria above, Baron and Kenny (1986) indicated that the moderator variable should not be correlated with both the explanatory and outcome variables to allow for clear interpretation of the interaction term.

3.5 Target Population

The study's population encompassed the 29 milk processors that had been in operation for at least three years and registered with KDB as at June 2019 - Appendix IV (KDB, 2019). The firms were categorized as large if they processed 100,000 litres and above per day and small if they processed less than 100,000 litres of milk per day as shown in Table 3.3.

Table 3.3 Distribution of Target Population

Category	Frequency	Percentage
Large	5	17
Small	24	83
Total	**29**	**100**

Source: KDB (2019)

Table 3.3 indicates that there were 24 small firms translating to 83% and 5 large firms translating to 17%.

3.6 Sample Size and Sampling Design

A census of all the registered milk processing firms was conducted. This was due to the small number of milk processors totalling 29. The unit of analysis used in the study was milk processing firm while the unit of observation was functional area in the milk processors. Five functional areas comprising of executive, operations, production, finance and marketing were identified. These functional areas were either involved in making decisions on costs, implementing cost reduction measures or managed cost performance of the firms.

The manager and deputy of each of the functional areas were picked as respondents. The five large processors had all the identified functional areas by virtue of their size hence a total of 10 respondents per firm. The small processors on the other hand combined some of the functions but had at least three functional areas out of the five hence 6 respondents per firm. Proportionate samples were picked from each stratum which gave a total of 194 respondents. Table 3.4 presents the distribution of the sample.

Table 3.4 Distribution of Sample Size

Category	**Size of Stratum**	**Functional Areas**	**Multiplier Factor (x 2)**	**Sample Frequency**	**Percentage**
Large	5	5	2	50	26%
Small	24	3	2	144	74%
Total	**29**			**194**	**100**

Source: Author (2019)

From Table 3.4, the sample comprised of 74% drawn from the small firms and 26% drawn from the large firms.

3.7 Data Collection Instruments

This study utilized both primary and secondary data. Primary data was on the explanatory, mediating and outcome variables while secondary data was on the moderating variable. Primary data was obtained from executive, operations, production, finance and marketing functional areas using self-administered semi-structured questionnaires. The close-ended questions provided structured data for quantitative analysis to test hypotheses and draw conclusions while the open-ended questions provided additional data that was not easily quantifiable. Panel data on the two dimensions of macroeconomic environment (prevailing cost of debt financing and inflation) was collected from KNBS and CBK reports for the period from June 2016 to June 2019. Table 3.5 shows variables of the study, their operationalization, how they were measured and the scale used.

Table 3.5 Operationalization and Measurement of Research Variables

Variable	Operationalization	Measures	Scale Used
Economies of Scale	An approach to business operations that results in cost advantages through large scale operations.	• Large scale production • Bulk purchases • Industry support • Increased innovation	5 - point Likert type
Economies of Scope	Advantages that arise as firms expand into related product lines but within the same industry.	• Multitasking resources • Functional synergies • Effective resource exploitation • Resource redeployment	5 - point Likert type
Operational Efficiency	Proficiency in converting inputs into outputs by firms leading to cost advantages.	• Technical expertise • Relevant technologies • Reduced operating risk • Supply cycle	5- point Likert type
Competitive Advantage	A unique position which when possessed by a firm enables it attain a higher level of performance relative to players in the same industry.	• Capabilities • Knowledge	5 - point Likert type
Macroeconomic Environment	External economic factors that influence a firm's operations.	• Cost of debt financing • Inflation	Ratio
Firm Performance	An assessment of the extent to which a firm attains its broad objectives.	• Financial perspective • Customer perspective • Internal process perspective • Learning & growth perspective	5 - point Likert type

Source: Author and Literature Review (2019)

3.8 Test of Validity of Research Instrument

3.8.1 Pilot Study

A pilot study utilizing 20 respondents who were excluded in the final study was conducted. This was consistent with Mugenda and Mugenda (2003) recommendation for use of 10% of a sample for pilot study. The pilot study purposed to establish whether the questions in the instrument were clear, relevant and comprehensible in addition to assessing the time necessary to complete the questionnaire. Some of the questions were found to be too technical for the general understanding and therefore translated into common English.

3.8.2 Validity

Mugenda and Mugenda (2003) described validity as how accurately the data utilized in a study represents the variables. Liu (2010) viewed validity in terms of how accurately a measuring instrument actually measures what it is meant to measure. Face and content validity in this study was ensured through improvements based on suggestions obtained from the pilot study. Expert judgement from subject matter experts as well as opinions from course-mates was also used to ensure face and content validity. This assisted in counter checking to make certain that all the key areas of the study were captured by the instrument.

Conversely, construct validity was guaranteed through review of relevant literature which aided discovery of the appropriate indicators for the study variables. This allowed proper operationalization of the variables as guided by the extant literature and was used as a justification for the conceptual framework of the study. Table 3.6 presents the theoretical and empirical literature which was reviewed.

Table 3.6 Literature Reviewed to Guarantee Construct Validity

Variable	Literature Reviewed
Cost leadership strategy	Barney (1991); Armstrong & Baron (2004); Ormanidhi & Stringa (2008); Rose *et al*. (2010); Nandakumar *et al*. (2011); Zahavi & Lavie (2013); Richter, (2014); Hilman & Kaliappen (2014); Gill *et al*. (2014); Nyauncho & Nyamweya (2015); Atikiya *et al*. (2015); Anwar & Ali (2015); Shah *et al*. (2016); Azad *et al*. (2018)
Competitive advantage	Stalk *et al*. (1992); Barney (2001); Harreld *et al*. (2007); Ong *et al*. (2010); Rose *et al*. (2010); Majeed (2011); Monsur & Yoshi (2012) Ismail *et al*. (2012); Wang (2014); Kinyua *et al*. (2015); Njoroge *et al*. (2016); Breznik & Lahovnik (2016); Sihite (2018); Kyengo *et al*. (2019); Mutuku *et al*. (2019); Salim *et al*. (2019)
Macroeconomic environment	Gareth (1986); Teece *et al*. (1997); Freeman (1999); Broadstock (2011); Ogot (2014); Dut (2015); Ghareli & Mohammadi (2016); Commander *et al*. (2008); Nguimkeu (2013); Pacini *et al*. (2018); Musau *et al*. (2018); Egbunike & Okerekeoti (2018); Mutua & Murigi (2019); Ruhomaun *et al*. (2019).
Firm performance	Kaplan & Norton (1992); Hubbard (2009); Fatoki (2011); Muchemi (2014); Ongeti (2014); Kimiti & Kilika (2018); Echwa & Murigi (2019)

Source: Author and Literature Review (2019)

3.8.3 Reliability

The questionnaire was subjected to reliability test to assess the extent of consistency of the instrument in generating results in the aspect being measured (Hair, Black, Babin, Anderson & Tatham, 1998; Crano & Brewer, 2002). Reliability was tested using Cronbach's alpha (α) which establishes the internal consistency of a research instrument. A Cronbach's alpha value of 0.5 or more is considered an indicator of reliability (Field, 2009).

Kline (2013) however recommended a higher threshold for reliability with $0.7 \leq \alpha < 0.9$ considered good and $0.6 \leq \alpha < 0.7$ acceptable. Field (2013) also contends that a value of

0.7 is good for most tests. The study adopted the higher value of 0.7 or above as indicating satisfactory reliability. Reliability test results are presented in Table 3.7.

Table 3.7 Results of Reliability Test

	Reliability Statistics		
Variable	No of Items	Cronbach's Alpha	Remarks
Economies of scale	8	0.837	Reliable
Economies of scope	8	0.758	Reliable
Operational Efficiency	8	0.811	Reliable
Competitive Advantage	8	0.824	Reliable
Firm Performance	15	0.906	Reliable
Overall reliability	47	0.930	Reliable

Source: Pilot Test Data (2020)

From table 3.7, firm performance had the highest Cronbach's Alpha value of 0.906, economies of scale followed with 0.837 and then competitive advantage 0.824. Operational efficiency value was 0.811 while economies of scope had the lowest Cronbach's Alpha value of 0.758. The overall reliability value was 0.930. All the scores therefore satisfied the threshold of 0.7 which gave confidence to proceed to the data collection stage (Kline, 2013; Field, 2013).

3.9 Data Collection Procedure

The author obtained a letter of introduction from Kenyatta University to collect data from the targeted firms. Further, a research permit to conduct the study was sought from NACOSTI before beginning the exercise. From the firms, the author sought authorization from the leadership to allow collection of data from the relevant personnel. The questionnaires were delivered by hand or emailed to respondents who were given two weeks to respond. Appropriate follow-up through office calls was done where there were delays.

3.10 Data Analysis and Presentation

Once the questionnaires were received, the author commenced preparation of the data for statistical analysis. The questionnaires were suitably referenced and cleaned by ensuring that they were complete, accurate, clear and consistent. Then, coding was done to allow keying of quantitative data. After this, descriptive statistics were ran and interpreted. This served to condense the data using frequencies, mean scores, standard deviations and percentages facilitating meaningful description of distribution of scores through limited indices as recommended by Taylor, Bogdan and DeVault (2015).

Cross-tabulation was also conducted to establish the association between gender and functional area in the firm. Cross-tabulation was recommended by Byrne (2007) as a quick visual analysis tool of relatedness while Johnson (2014) posited that it can also indicate the strength of the association. Multiple regression analysis was utilized to test hypotheses. This helped to establish the variables that affected the outcome variable in addition to showing the strength and nature of the influence. A Statistical Package for Social Sciences software was utilized to aid analysis of quantitative data.

Qualitative data on the other hand was analysed using conceptual content analysis. Conceptual content analysis involves establishing the presence and number of concepts represented by words of phrases in a text. This was done to establish meanings, make interpretations and draw conclusions based on the identified concepts as recommended by Glesne (2015). Tables were utilized to summarize, organize and present quantitative data after analysis. Conversely, qualitative data after analysis was presented in narrative form.

Adjusted coefficient of determination (R^2) was utilized to determine the significance of the regression model and establish the explanatory power the predictor variables had on the outcome variable. Significance level of 0.05 was used to test hypotheses as per Mugenda and Mugenda (2003) recommendations for business and social research. Caution given by Chatterjee and Hadi (2012) to make sure that regression estimates are not biased, regression coefficients are accurate and confidence levels and significance tests are trustworthy was also observed.

As a consequence, the appropriate diagnostic tests were carried out to ensure that the data utilized for inferential analysis met the assumptions needed to make valid conclusions. In line with recommendations by Field (2009), tests for sampling adequacy, normality, autocorrelation, linearity, multicollinearity and heteroscedasticity were conducted.

3.10.1 Sample Adequacy Test

Sampling adequacy of the data collected for the research variables was tested using Keiser-Meyer-Olkin (KMO). The statistic runs between 0 and 1 (Field, 2009). Williams, Brown and Onsman (2012) observed that values greater than 0.5 reflect acceptable sampling adequacy. On the other hand, values below 0.5 require collection of more data or reconsidering the variables to include in a study. The study adopted a similar threshold.

3.10.2 Normality Test

Normality signifies the probability that observations are well-modelled by a normal distribution. Normality test is important as multiple regression analysis depends on the assumption of normality (Field, 2013). This study utilized Shapiro-Wilk test to assess normality as it is more powerful in detecting deviations from normal distribution (Field, 2009). Razali and Wah (2011) posited that Shapiro-Wilk statistic runs between 0 and 1 with probabilities greater than 0.05 signifying normal distribution. Conversely, probabilities less than 0.05 indicate deviation from normal distribution. A similar criteria was adopted in this study.

3.10.3 Autocorrelation Test

Autocorrelation relates to non-independence of error terms and leads to invalid confidence intervals and significance tests (Field, 2013). The author used Durbin Watson (DW) statistic to test for autocorrelation. DW statistic ranges from zero to four. The study adopted the guideline given by Garson (2012) where values from 1.5 to 2.5 indicate absence of autocorrelation between error terms.

3.10.4 Linearity Test

Linearity was determined by assessing the correlation between the study's explanatory and outcome variables as recommended by Field (2013). Pearson's correlation coefficient was adopted to determine whether the variables were linearly related (Dancey & Reidy, 2004). This indicated the strength as well direction of the linear relationships. A positive value shows a direct relationship in which both variables increase. Conversely, a negative correlation shows an inverse relationship where increasing one variable, decreases the other variable while a correlation of zero signifies no relationship between the variables (Field, 2013).

3.10.5 Multicollinearity Test

Multicollinearity exists when there is strong correlation between two or more explanatory variables. The reliability of multiple regression models is affected by multicollinearity since as collinearity rises it leads to untrustworthy bs, limits the size of R and creates difficulty in determining importance of predictors (Field, 2013). In this study, multicollinearity was evaluated using Variance Inflation Factor (VIF). Values of VIF in excess of 10 suggested a cause for concern while mean VIF significantly more than 1 signaled that the regression may be biased (Landau & Everitt, 2004).

3.10.6 Heteroscedasticity Test

Multiple regression presumes equal variance of the error terms (Field, 2013). The study adopted Levene test to assess homoscedasticity as proposed by Field (2009). A Levene statistic greater than p-value of 0.05 indicates that the variances are equal and thus allow use of regression to analyze data. Breach of homoscedasticity (referred to as heteroscedasticity) leads to unreliable regression coefficients.

Once all the statistical assumptions for the data were satisfied, the hypotheses were tested in line with the study objectives to predict performance of milk processing firms in Kenya based on economies of scale, economies of scope and operational efficiency. Hypotheses testing also revealed the influence competitive advantage and macroeconomic environment had on the direct relationship. The decision criteria for hypotheses testing was if $p \leq 0.05$, reject the null hypothesis.

Table 3.8 Test of Hypotheses

Objective	Hypothesis	Statistical Approach	Interpretation
To assess the effect of economies of scale on performance of milk processing firms in Kenya.	Economies of scale have no significant effect on performance of milk processing firms in Kenya.	Multiple regression analysis $P = \beta_0 + \beta_1 ESA + \beta_2 ESO + \beta_3 OE + \varepsilon$	Adjusted r^2 β_i F-value Level of significance 0.05 $P \leq 0.05$ reject null hypothesis
To establish the effect of economies of scope on performance of milk processing firms in Kenya.	Economies of scope have no significant effect on performance of milk processing firms in Kenya.		
To determine the effect of operational efficiency on performance of milk processing firms in Kenya.	Operational efficiency has no significant effect on performance of milk processing firms in Kenya.		
To establish the mediating effect of competitive advantage on the relationship between cost leadership strategy and performance of milk processing firms in Kenya.	Competitive advantage has no significant mediating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya.	Path analysis **Step 1**: $P = \beta_0 + \beta_4 CLS + \varepsilon$ **Step 2**: $M = \beta_0 + \beta_5 CLS + \varepsilon$ **Step 3**: $P = \beta_0 + \beta_6 CLS + \beta_7 M + \varepsilon$	Adjusted r^2 β_i F-value Level of significance 0.05 $P \leq 0.05$ reject null hypothesis
To assess the moderating effect of macroeconomic environment on the relationship between cost leadership strategy and performance of milk processing firms in Kenya.	Macroeconomic environment has no significant moderating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya.	Path analysis **Step 1**: $P = \beta_0 + \beta_4 CLS + \varepsilon$ **Step 2**: $P = \beta_0 + \beta_8 CLS + \beta_9 MEV + \varepsilon$ **Step 3**: $P = \beta_0 + \beta_{10} CLS + \beta_{11} MEV + \beta_{12} CLS * MEV + \varepsilon$	Adjusted r^2 β_i F-value Level of significance 0.05 $P \leq 0.05$ reject null hypothesis

Source: Author (2019)

3.11 Ethical Considerations

Ethical issues affect the ultimate acceptability of research findings and through guiding human behavior have considerable effect on human welfare (Minja, 2009). To comply with ethical requirements, authority to carry out the study was sought from the relevant authorities including Kenyatta University and NACOSTI. Consent was also sought from the leadership of the targeted firms to allow collection of data.

Confidentiality was addressed through guarantee that data collection was solely for academic purpose. The respondents were made aware that taking part in the study was optional and were requested to complete the Informed Consent form prior to filling the questionnaire. The respondents were also sensitized that there would be neither benefit nor loss for participating or refusing to take part in the study.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter gives the study's findings from both descriptive and inferential statistics which are subsequently discussed on the basis of the reviewed literature. Results of the diagnostic tests carried out are also presented and discussed.

4.2 Response Rate

The author administered 174 questionnaires after excluding the 20 questionnaires used in the pilot study. Out of this 148 questionnaires representing a response rate of 85% were filled and returned. Therefore, the analysis presented in the study is based on a response rate of 85% which was sufficient. According to Mugenda and Mugenda (2003) and Babbie (2004) recommendations, 70% and above represents a very good response rate.

4.3 Descriptive Statistics

This section gives and discusses the respondents' general characteristics and a summary of responses to the research questions by way of frequencies, mean scores, standard deviations and percentages.

4.3.1 Background Information

The section presents background information of the respondents which include gender, functional area in the firm and the duration of the firm in operations. The results are summarized in Table 4.1.

Table 4.1 Respondents Background Information

		Frequency	Percent
Gender of respondent	Male	90	60.8
	Female	58	39.2
	Total	148	100
Functional area in the firm	Executive	31	20.9
	Operations	30	20.3
	Production	35	23.6
	Finance	23	15.5
	Marketing	29	19.6
	Total	148	100
Length of firm in operation	3 - 5 yrs	38	25.7
	5 -10 yrs	52	35.1
	11 -15 yrs	20	13.5
	Over 15 yrs	38	25.7
	Total	148	100

Source: Survey Data (2020)

The results in Table 4.1 indicate that male respondents constituted 60.8% while female respondents constituted 39.2%. These findings implied that majority of the managers and their deputies in the milk processing firms in Kenya are male. In terms of functional areas in the firm, the results show that 23.6% respondents were from production, 20.9% were from management, 20.3% were from operations while 19.6% and 15.5% were from marketing and finance respectively. These findings illustrate that the study's sample was representative in regards to functional areas in the firms.

The results further show that 35.1% of the firms had been in operation for between 5 and 10 years, 25.7% each had been in operation for between 3 and 5 years and over 15 years and 13.5% firms had operated for between 11 and 15 years. Therefore, over 74% of the firms had been operation for at least 5 years and all of the firms had operated for at least 3 years. Two-year averages can be used to ascertain performance in the short-term, three year averages for medium term performance while five year averages are appropriate for assessing performance in the long-term (Brauer, 2013). Consequently, all the firms met the minimum threshold recommended for assessment of firm performance.

4.3.2 Cross-Tabulation of Gender and Functional Area

Cross-tabulation between gender and functional area of the respondents was conducted which allowed quick visual analysis of association between the two characteristics as recommended by Byrne (2007). The results of the cross-tabulation are presented in Table 4.2.

Table 4.2 Gender of Respondent and Functional Area in the Firm Cross-Tabulation

			Functional Area in the Firm					
			Executive	Operations	Production	Finance	Marketing	Total
Gender of respondent	Male	Count	23	19	22	11	15	90
		% of Total	15.5%	12.8%	14.9%	7.4%	10.1%	60.8%
	Female	Count	8	11	13	12	14	58
		% of Total	5.4%	7.4%	8.8%	8.1%	9.5%	39.2%
Total		Count	31	30	35	23	29	148
		% of Total	20.9%	20.3%	23.6%	15.5%	19.6%	100.0%

Source: Survey Data (2020)

The results in Table 4.2 show that in executive, male were 15.5% of total respondents while female were 5.4%. In operations, male were 12.8% of total respondents while female were 7.4%. There were 14.9% male out of the total respondents in production while female accounted for 8.8%. In finance, female respondents surpassed the male at 8.1% of the total compared to 7.4% male. In marketing, male respondents accounted for 10.1% of total respondents and female were 9.5%. Overall, male respondents accounted for 60.8% while female accounted for 39.2%. This meant that there were generally more male respondents than female.

4.3.3 Economies of Scale

Economies of scale was measured using four indicators comprising of large scale production, bulk purchases, industry support and increased innovation. Descriptive statistics for the indicators are presented in Table 4.3 and discussed below.

Table 4.3 Descriptive Analysis for Economies of Scale

	n	Max	Min	Mean	Std Dev
Large scale production	148	1	5	3.91	0.92
Bulk purchases	148	1	5	4.05	0.98
Industry support	148	1	5	3.74	0.98
Increased innovation	148	1	5	4.17	0.89
Aggregate scores for economies of scale	**148**			**3.97**	**0.94**

Source: Survey Data (2020)

Table 4.3 indicates that large scale production had an aggregate mean score of 3.91 which nears 4 (agree) on the study's Likert scale. This coupled with low dispersion of responses as depicted by an aggregate standard deviation of 0.92 showed that activities related to large scale production were prevalent among the milk processing firms. There was also agreement that milk processing firms purchased inputs in bulk as illustrated by the aggregate mean of 4.05 and further supported by a low aggregate standard deviation of 0.98. This illustrated that the milk processing firms considered bulk purchases a crucial avenue to large scale operations.

Further, the results indicate an aggregate mean score of 3.74 for industry support which approximates 4 (agree) on the study's Likert scale. There was low dispersion of responses as shown by an aggregate standard deviation of 0.98 meaning that aspects related to external services support were high. In addition, increased innovation had an aggregate mean score of 4.17 and aggregate standard deviation of 0.89. This indicated that there was general agreement that innovative activities were present among milk processing firms.

The aggregate mean for the four indicators of economies of scale was 3.97 which approximates 4 (agree) on the study's Likert scale. This implies that economies of scale is a critical driver of cost leadership in milk industry and subsequently high performance. Further, the low aggregate standard deviation of 0.94 illustrates narrow dispersion of the responses indicating high agreement with the role that economies of scale plays in enhancing performance. These findings support those of Kasman (2012) and Shah *et al*. 2016) who concluded that large scale operations contributed to better performance.

4.3.4 Economies of Scope

Economies of scope was operationalized through four indicators; multitasking resources, functional synergies, effective resource exploitation and resource redeployment. Descriptive statistics for the four indicators are presented in Table 4.4 and discussed below.

Table 4.4 Descriptive Analysis for Economies of Scope

	n	Min	Max	Mean	Std Dev
Multitasking resources	148	1	5	4.01	0.93
Functional synergies	148	1	5	3.42	1.09
Effective resource exploitation	148	2	5	4.02	0.87
Resource redeployment	148	1	5	3.57	1.07
Aggregate scores for economies of scope	**148**			**3.75**	**0.99**

Source: Survey Data (2020)

Table 4.4 shows that activities related to multitasking of resources had an aggregate mean score of 4.01 and an aggregate standard deviation of 0.93. This illustrated that milk processors employed each resource for multiple tasks. The narrow dispersion of responses is an indicator that multitasking resources is an important factor of economies of scope. Conversely, items related to functional synergies had an aggregate mean score of 3.42 which tends to 3 (neural) on the Likert scale used in the study. This indicates a split in opinion on activities related to functional synergies among milk processing firms. The low dispersion of the responses around the mean indicated by low aggregate standard deviation of 1.09 illustrates that some firms achieved functional synergies when others did not.

For responses to items under effective exploitation of resources, the aggregate mean score was 4.02 and aggregate standard deviation 0.87. This indicated that effectiveness in resource exploitation by milk processors was high. The low dispersion of responses around the mean score showed that effective exploitation of resources is an important contributor to economies of scope. Moreover, the aggregate mean score for responses under resource redeployment was 3.56 which approximates 4 (agree) on the study's Likert scale. Responses varied narrowly from the mean with the aggregate standard deviation being 1.07. This gives evidence that resource redeployment by milk processing firms is high.

The aggregate mean for all the indicators of economies of scope was 3.75 which tends to 4 (agree) on the study's Likert scale. This illustrates agreement among the respondents that economies of scope is important to the performance of milk processing firms. The low aggregate standard deviation of 0.99 confirms that the mean response score for economies of scope reliably estimates the true mean. The findings support those of Zahavi and Lavie (2013) who argued that combination of production processes allows firms to efficiently multi-task related skills or resources, optimally exploit available resources, achieve synergies in business operations and also facilitate redeployment of resources. The findings also support those of Nyauncho and Nyamweya (2015) who argued that increased asset utilization through such synergies lead to cost advantages hence better performance.

4.3.5 Operational Efficiency

The study measured operational efficiency through four indicators comprising of technical expertise, relevant technologies, reduced operating risk and supply cycle. Descriptive statistics for these indicators are presented in Table 4.5 and thereafter discussed.

Table 4.5 Descriptive Analysis for Operational Efficiency

	n	Min	Max	Mean	Std Dev
Technical expertise	148	2	5	4.29	0.78
Relevant technologies	148	3	5	4.36	0.66
Reduced operating risk	148	2	5	4.30	0.74
Supply cycle	148	3	5	4.36	0.77
Aggregate scores for operational efficiency	**148**			**4.33**	**0.74**

Source: Survey Data (2020)

Table 4.5 indicates that items for technical expertise had a high aggregate mean score of 4.29. The low aggregate standard deviation of 0.78 indicates narrow dispersion of responses around the mean score. These results show that technical expertise among milk processing firms is high. The low dispersion indicates that technical expertise is central to achieving efficiency. Responses to items on relevant technologies on the other hand had an aggregate mean score of 4.36 and an aggregate standard deviation of 0.66. These confirm that adoption of relevant technologies by milk processors is high with the low dispersion of responses indicating the importance of technology to building efficiency.

Conversely, items under reduced operating risk had a high aggregate mean score of 4.30. This reveals agreement among the respondents that activities related to reducing operating risk were exercised by milk processing firms. Further, the score of 0.74 on aggregate standard deviation means that responses are closely clustered indicating that reduced operating risk plays a crucial role in attaining operational efficiency. Activities associated to supply cycle had an aggregate mean score of 4.36 and an aggregate standard deviation of 0.77. This illustrates agreement by respondents that a reliable supply cycle is critical to achieving operational efficiency. The narrow dispersion of responses around the mean reinforces the importance of a stable supply cycle.

In addition, the aggregate mean response score for all items on operational efficiency was high at 4.33 which illustrate agreement among respondents on the centrality of operational efficiency to performance of milk processing firms. The narrow dispersion of responses represented by low aggregate standard deviation of 0.74 affirms that the mean response for operational efficiency reliably estimates the true mean. The high minimum responses of between 2 and 3 further illustrate the importance of operational efficiency to performance. The study findings corroborate those of Sporta *et al*. (2017) who noted that operational efficiency positively influences performance. It also supports Gill *et al*. (2014) conclusion that operating risk was negatively related to firm performance.

4.3.6 Competitive Advantage

The study operationalized competitive advantage using the indicators of capabilities and knowledge. The indicators' descriptive statistics are presented in Table 4.6 and thereafter discussed.

Table 4.6 Descriptive Analysis for Competitive Advantage

	n	Min	Max	Mean	Std Dev
Capabilities	148	3	5	4.38	0.68
Knowledge	148	2	5	4.06	0.78
Aggregate scores for competitive advantage	**148**			**4.22**	**0.73**

Source: Survey Data (2020)

Table 4.6 shows that items on capabilities had a high aggregate mean score of 4.38 illustrating agreement by respondents that appropriate capabilities were prevalent among milk processing firms. The narrow dispersion of responses around the mean represented by the low aggregate standard deviation of 0.68 implies that capabilities are an important feature for building competitive advantage by milk processors. Further, the aggregate mean score for responses under knowledge was 4.06 whereas the aggregate standard deviation was 0.78. This illustrates that milk processing firms possessed the relevant knowledge in industry. The low dispersion of responses from the aggregate mean response indicates that knowledge is crucial for generation of competitive advantage.

In addition, the aggregate mean score for the two indicators on competitive advantage was 4.22 and aggregate standard deviation 0.73. This illustrates that competitive advantage among milk processors was high. The low aggregate standard deviation indicates narrow dispersion of responses and therefore agreement among respondents that competitive advantage has a crucial role in firm performance. The high minimum mean responses of between 2 and 3 confirm the centrality of competitive advantage to performance. These results support argument by Wang *et al*. (2012) that modern business operating environments are characterized by numerous performance challenges which raises a critical need for firms to have competitive edge over rivals to attain and sustain superior performance.

4.3.7 Macroeconomic Environment

Macroeconomic environment was operationalized using the indicators of cost of debt financing and inflation. Table 4.7 presents descriptive statistics for the indicators which are subsequently discussed.

Table 4.7 Descriptive Statistics for Macroeconomic Environment

Variable	Obs	Mean	Std. Dev.	Min	Max
Cost of Debt Financing	3	9.6	0.63	9	10.25
Inflation Rates	3	7.23	1.44	6.25	8.9

Source: Survey Data (2020)

The aggregate mean for cost of debt financing during the period June 2016 to June 2019 was 9.6 while maximum and minimum interest rates were 10.25 and 9 respectively. On the other hand, the aggregate mean for inflation rates during the period was 7.23 with a maximum of 8.9 and a minimum of 6.25. Trend analysis for items on macroeconomic environment is presented in Figure 4.1.

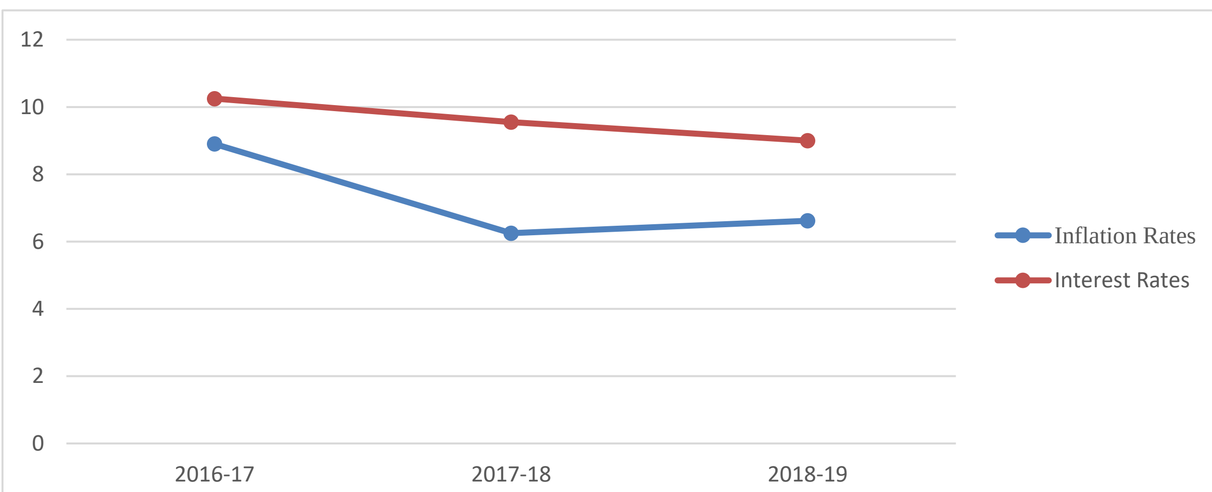


Figure 4.1 Trends Analysis for Macroeconomic Environment

Source: Survey Data (2020)

4.3.8 Firm Performance

Firm performance was measured through four indicators; financial, customer, internal process and learning and growth. The descriptive statistics for firm performance are presented in Table 4.8 and discussed below.

Table 4.8 Descriptive Analysis for Firm Performance

	n	Min	Max	Mean	Std Dev
Financial perspective	148	2	5	4.15	0.77
Customer perspective	148	2	5	4.19	0.79
Internal process perspective	148	2	5	4.13	0.75
Learning and growth perspective	148	2	5	4.11	0.71
Aggregate scores for firm performance	**148**			**4.15**	**0.76**

Source: Survey Data (2020)

Table 4.8 indicates that items under firm performance had aggregate mean scores between 4.11 and 4.19. Aggregate standard deviation from mean scores on the other hand was between 0.71 and 0.79. This illustrates that the indicators used to measure performance were appropriate for milk processing firms. The narrow dispersion of responses around the mean confirm that each indicator is important in measuring performance.

Further, all items on firm performance had aggregate mean response score and standard deviation of 4.15 and 0.76 respectively. This confirms that overall performance is crucial among milk processing firms. This is in line with call for broad measurement of performance by combining financial and non-financial indicators and recognition of limitations associated with using just one approach (Chong, 2008; Fatoki, 2011; Kimiti & Kilika, 2018; Echwa & Murigi, 2019).

4.4 Inferential Statistics

This section gives results of regression analysis which was used to test the hypotheses. This was preceded by several diagnostic tests to ensure that the data collected was adequate and appropriate to make inferences and draw conclusions.

4.4.1 Diagnostics Tests

This section presents diagnostics tests conducted to ensure that regression assumptions were adhered to and data was suitable for regression modelling. These tests further ensured that results obtained were not spurious and could be used to predict the relationship between explanatory and outcome variables. They comprised of sample adequacy, normality, autocorrelation, linearity, multicollinearity and heteroscedasticity tests.

4.4.1.1 Sample Adequacy Test

Sampling adequacy of the data collected for the research variables was tested using Keiser-Meyer-Olkin (KMO). Table 4.9 presents the test's results.

Table 4.9 KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.828
Bartlett's Test of Sphericity	Approx. Chi-Square	3708.462
	df	1081
	Sig.	0.000

Source: Survey Data (2020)

From Table 4.9, the results indicate a KMO statistic of 0.828. This was consistent with the Bartlett's test of sphericity whose chi-square value of 3708.462 had a p value of 0.000 < 0.05. KMO statistic of 0.828 is above 0.5 hence adequacy of the sample size (Field, 2013). Similarly, a p value of below 0.05 signifies a strong relationship among the study variables and a highly significant Bartlett's test. The survey data therefore met the threshold of adequacy to allow further statistical analysis as recommended by Williams *et al.*, (2012).

4.4.1.2 Normality Test

Normality in this study was assessed through Shapiro-Wilk statistic and Table 4.10 gives the results of the test.

Table 4.10 Tests of Normality

Tests of Normality	Shapiro-Wilk Statistic	df	Sig.
Economies of scale	0.905	148	0.12
Economies of scope	0.973	148	0.098
Operational Efficiency	0.949	148	0.067
Competitive Advantage	0.957	148	0.077
Macroeconomic Environment	0.734	148	0.109
Firm Performance	0.963	148	0.193

Source: Survey Data (2020)

From Table 4.10, the results indicate that all variables had Shapiro-Wilk statistic above 0.05. Consequently, the study concluded that data was normally distributed in line with recommendations by Razali and Wah (2011). This allowed application of regression analysis which requires that data used in analysis be normally distributed (Field, 2013).

4.4.1.3 Autocorrelation Test

The study tested for autocorrelation using Durbin-Watson statistic. Table 4.11 gives the results of the test.

Table 4.11 Autocorrelation Test

Model	Durbin-Watson
1	2.08

Source: Survey Data (2020)

The results in Table 4.11 show a Durbin-Watson statistic of 2.08. This indicated that there was no autocorrelation in the data (Garson, 2012). The findings implied that the variables were not correlated in any statistically significant way and this ensured the independence of error terms thus allowed analysis of the data through regression models (Garson, 2012; Field, 2013).

4.4.1.4 Linearity Test

Pearson's correlation coefficient was adopted to establish linearity of the relationship between firm performance and the hypothesized explanatory variables. Table 4.12 presents results of linearity test.

Table 4.12 Correlation Matrix

		Economies of scale	Economies of scope	Operational Efficiency	Competitive Advantage	Macroeconomic Environment	Firm Performance
Economies of scale	Pearson Correlation	1					
Economies of scope	Pearson Correlation	.480**	1				
Operational Efficiency	Pearson Correlation	.329**	.176*	1			
Competitive Advantage	Pearson Correlation	.436**	.340**	.601**	1		
Macroeconomic Environment	Pearson Correlation	0.049	-0.014	0.048	0.01	1	
Firm Performance	Pearson Correlation	.421**	.350**	.572**	.677**	0.026	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.753	
	N	148	148	148	148	148	148

Source: Survey Data (2020)

From Table 4.12 and in line with Field (2013) recommendations, results indicated medium, positive correlation between firm performance and economies of scale, and this was statistically significant ($r = .421, n = 148, p = .001$), medium, positive correlation between firm performance and economies of scope, and this was statistically significant ($r = .350, n = 148, p = .001$) and strong, positive correlation between firm performance and operational efficiency, and this was also statistically significant ($r = .572, n = 148, p = .001$). These imply change in the variables in the same direction. Wooldridge (2000) however argued that correlation is not necessarily an indicator of a causal relationship. It rather merely indicates presence of predictive power by the explanatory variable allowing further causal analysis through regression analysis.

4.4.1.5 Multicollinearity Test

Variance Inflation Factor (VIF) was utilized to establish presence of multicollinearity. Table 4.13 presents the results of the test.

Table 4.13 Multicollinearity Test

	Collinearity Statistics	
	Tolerance	VIF
Economies of scale	0.674	1.484
Economies of scope	0.742	1.347
Operational Efficiency	0.628	1.593
Competitive Advantage	0.556	1.799
Macroeconomic Environment	0.994	1.006

Source: Survey Data (2020)

The results in Table 4.13 show VIFs less than 10 supported by tolerances greater than 0.2 for all the variables. These are within thresholds for potential multicollinearity meaning that there was no threat of multicollinearity (Field, 2009). Poole and O'Farrell (1971) argue that when multicollinearity assumption is not met, it results in unidentifiable individual regression coefficients for the variables. The results illustrate that multicollinearity assumption was satisfied hence assuring reliability of multiple regression models (Field, 2013).

4.4.1.6 Heteroscedasticity Test

The study utilized Levene test to assess homoscedasticity as proposed by Field (2009). Table 4.14 presents the results from this test.

Table 4.14 Test of Homogeneity of Variances

Test of Homogeneity of Variances	Levene Statistic	Sig.
Economies of scale	1.751	0.099
Economies of scope	0.062	0.961
Operational Efficiency	0.105	0.746
Competitive Advantage	1.051	0.154
Macroeconomic Environment	1.911	0.090

Source: Survey Data (2020)

From the results in Table 4.14, Levene statistics for all variables had p-value above 0.05. Therefore, the study failed to reject null hypothesis that data is homoscedastic, thus allowing regression analysis (Field, 2013). The results are corroborated by Vynck (2017) who posited that overlooking existence of heteroscedasticity while using regression analysis (an approach that relies on assumption of homoscedasticity) leads to invalid regression parameter estimators and skewed and unreliable covariance matrix estimator.

4.4.2 Testing of Hypotheses

This section presents results on test of hypotheses which were carried out using multivariate regression analysis. Multivariate regression was fitted to test whether drivers of cost leadership strategy significantly predicted performance of milk processing firms in Kenya. The results of the analysis are given in Table 4.15.

Table 4.15 Regression Analysis Results

R	R Square	Adjusted R Square	Std. Error of the Estimate				
.643a	0.413	0.401	0.38517				
	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**		
Regression	15.021	3	5.007	33.749	.000[b]		
Residual	21.364	144	.148				
Total	36.384	147					
	β	**Std. Error**	**Beta**	**t**	**Sig.**	**Lower Bound**	**Upper Bound**
(Constant)	0.923	0.324		2.849	0.005	0.283	1.564
Economies of Scale	0.135	0.059	0.175	2.307	0.022	0.019	0.251
Economies of Scope	0.148	0.06	0.18	2.476	0.014	0.03	0.266
Operational Efficiency	0.493	0.069	0.483	7.134	0.000	0.356	0.63

a. Dependent Variable: Firm Performance

b. Predictors: (Constant), Operational Efficiency, Economies of scope, Economies of scale

Source: Survey Data (2020)

Table 4.15 shows that the model fitted had an adjusted R square of 0.401 which shows that economies of scale, economies of scope and operational efficiency explained 40.1% of the change in performance of milk processing firms in Kenya. These findings show that drivers of cost leadership strategy are significant predictor variables of firm performance. Further, the findings suggest that the remaining 59.9% variation in performance is explained by other strategies pursued by the milk processor to boost performance.

The results of ANOVA indicated F-statistics = 33.749, p-value = 0.000 which was lower than the significance level of 0.05. These findings imply that the data was appropriate for drawing statistical conclusions. Consequently, it was established that cost leadership strategy significantly predicted performance of milk processing firms in Kenya since the model was statistically significant.

The optimal model therefore became;

P = 0.923 + 0.135 ESA + 0.148 ESO + 0.493 OE+ ε

Where

P = Composite index of performance

ESA = Economies of scale

ESO = Economies of scope

OE = Operational efficiency

ε= Error Term

4.4.2.1 Economies of Scale and Firm Performance

Objective one of the study was to establish the effect of economies of scale on performance of milk processing firms in Kenya. The results in Table 4.15 show that the coefficient for economies of scale was $\beta=0.135$, $p=0.022<0.05$. The findings illustrate that economies of scale had a positive and significant effect on performance of milk processing firms in Kenya. These results in addition show that increase in economies of scale by one unit would result in rise in performance of milk processing firms by 0.135 units. On these basis, the study rejected H_{01} that economies of scale have no significant effect on performance of milk processing firms in Kenya and concluded that economies of scale significantly influence performance.

The study findings emphasize the role that large scale operations play in reducing costs and as a consequence contribute to better firm performance. Firms should therefore seek to enlarge their operations to enjoy cost benefits. However in addition to the influence that economies of scale have on firm performance, bulk purchases and increased innovation had higher impact in comparison to large scale production and industry support. This means that milk processing firms in pursuing economies of scale should focus more on acquiring inputs in bulk as well as being innovative to enhance scale of operations.

These findings support Barney and Hesterly (2009) conclusion that large scale operations lead to better performance. They also corroborate Shah *et al*. (2016) study which found that large firms had better financial performance. Kasman (2012) and Richter (2014) similarly concluded that large firms enjoyed cost advantages over the smaller firms hence performed better. However, Matejova *et al*. (2014) concluded that positive influence of economies of scale on performance persisted only up to certain level and thereafter cost disadvantages set in.

The difference in conclusion can however be explained by the fact that Matejova *et al*. (2014) study was based on public service entities whose primary goal may not necessarily be cost minimization. From a theoretical perspective, the RBV argues that firms can perform better in an industry by doing things differently (Armstrong & Baron, 2004). Such superior advantage can be attained by applying various aspects of economies of scale in a unique manner. This should be aligned to the context of the firm as proposed by the contingency theory (Ogot, 2014).

4.4.2.2 Economies of Scope and Firm Performance

Objective two of the study was to determine the effect of economies of scope on performance of milk processing firms in Kenya. The results in Table 4.15 show that the coefficient for economies of scope was $\beta=0.148$, $p=0.014<0.05$. This implies that economies of scope had a positive and significant effect on performance of milk processing firms in Kenya. Further, the results illustrate that increase in economies of scope by one unit would result in increase in performance of milk processing firms in Kenya by 0.148 units. The study thus rejected H_{02} that economies of scope have no significant effect on performance of milk processing firms in Kenya and concluded that economies of scope significantly influences firm performance.

The contribution of economies of scope is affirmed by this conclusion. Among the indicators considered for the variable in this study, multitasking resources and effective resource exploitation were found to have a higher contribution towards economies of scope compared to functional synergies and resource redeployment. Thus, despite the effect that economies of scope have on firm performance, milk processors should focus more on using available resources for multiple tasks in addition to encouraging effective exploitation of resources.

These findings agree with Nyauncho and Nyamweya (2015) conclusion that firms which pursue joint production activities perform better. The findings also corroborate empirical conclusions by Growitsch and Wetzel (2009), Mayen *et al*. (2009) and Hartarska *et al*. (2010) in regard to the effect of economies of scope on performance. Conversely, the findings partially contradict Zahavi and Lavie (2013) study conclusion of a U-shaped performance effect from economies of scope. This means that even as firms expand into related areas, they must be aware of possible negative cost and performance outcomes. These outcomes need to be examined broadly as advocated by BSC (Kaplan & Norton, 1992) and stakeholders' theory (Freeman, 1984).

4.4.2.3 Operational Efficiency and Firm Performance

Objective three of the study was to determine the effect operational efficiency had on performance of milk processing firms in Kenya. The results in Table 4.15 show that the coefficient for operational efficiency was $\beta=0.493$, $p=0.000<0.05$. These results illustrate that operational efficiency had a positive and significant effect on performance of milk processing firms in Kenya. They imply that increase in operational efficiency by one unit would result in increase in performance of milk processing firms in Kenya by 0.493 units. The study therefore rejected H_{03} that operational efficiency has no significant effect on performance of milk processing firms in Kenya and concluded that operational efficiency significantly influences firm performance.

The indicators of operational efficiency were found to have great contribution to cost advantages and hence performance as indicated by high aggregate mean scores as well as high minimum responses. This implies that among the drivers of cost leadership strategy considered in the study, milk processing should focus more on aspects that improve their operational efficiency. Of particular interest, firms should strive to improve technical skills among employees, pursue relevant technologies, effectively manage operating risks and have stable supply cycles.

The findings support conclusions by Espirah and Murigi (2019) and Sporta *et al*. (2017) that operational efficiency positively influences performance. They further corroborate Azad *et al*. (2018) observations that operational efficiency significantly impacts firm's profitability. The findings are also consistent with observations made by Gill *et al*. (2014) that operating risk negatively affects firm performance. The findings further support dynamic capabilities theory postulate that firms operate in dynamic environment requiring operational efficiency to cope with the changes.

4.4.2.4 Cost Leadership Strategy, Competitive Advantage and Firm Performance

Objective four of the study was to establish the mediating effect competitive advantage had on the relationship between cost leadership strategy and performance of milk processing firms in Kenya. The study utilized Baron and Kenny (1986) model to assess mediation.

Step One: CLS Predicting Firm Performance

Table 4.16 (a) Step One Test for Mediation

R	R Square	Adjusted R Square	Std. Error of the Estimate
.583a	0.340	0.336	0.40555

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.372	1	12.372	75.225	.000[b]
Residual	24.012	146	.164		
Total	36.384	147			

	β	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	1.472	0.31		4.745	0.000	0.859	2.085
CLS	0.666	0.077	0.583	8.673	0.000	0.514	0.818

a. Dependent Variable: Firm Performance

b. Predictors: (Constant), CLS

Source: Survey Data (2020)

The study fitted a model to test whether cost leadership strategy predicted firm performance. The results in Table 4.16 (a) show an adjusted R-square of 0.336 which signified that cost leadership strategy accounted for 33.6% of the variation in firm performance. The F-statistics = 75.225 (p=0.000) shows that the model was statistically significant. The results from regression analysis show that cost leadership strategy composite had a β coefficient of 0.666, p-value =0.000 meaning that cost leadership strategy had a positive and significant effect on performance of milk processing firms in Kenya. The first criterion for mediation was therefore achieved where β_4 was statistically significant.

Step Two: CLS Predicting Competitive Advantage

Table 4.16 (b) Step Two Test for Mediation

R	R Square	Adjusted R Square	Std. Error of the Estimate
.597a	0.356	0.352	0.38169

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	11.759	1	11.759	80.717	.000b
Residual	21.270	146	.146		
Total	33.029	147			

	β	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	1.693	0.292		5.799	0.000	1.116	2.27
CLS	0.65	0.072	0.597	8.984	0.000	0.507	0.792

a. Dependent Variable: Competitive Advantage
b. Predictors: (Constant), CLS

Source: Survey Data (2020)

The results in Table 4.16 (b) show an adjusted R-square of 0.352 which signified that cost leadership strategy accounted for 35.2% of the variation in competitive advantage. The results for ANOVA (F-statistics = 80.717 (p=0.000) confirmed that cost leadership strategy significantly predicted competitive advantage since the model was significant. Regression analysis results indicate that cost leadership strategy composite had a β coefficient of 0.65, p-value =0.000 meaning that cost leadership strategy had a positive and significant effect on competitive advantage among milk processing firms in Kenya.

The second criterion for mediation was therefore achieved where β_5 was statistically significant.

Step Three: CLS and Competitive Advantage Predicting Firm Performance

Finally, the model was fitted to test whether cost leadership strategy predicted firm performance in the presence of competitive advantage (mediating variable).

Table 4.16 (c) Step Three Test for Mediation

R	R Square	Adjusted R Square	Std. Error of the Estimate
.713a	0.508	0.501	0.3513

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	18.489	2	9.245	74.908	.000[b]
Residual	17.895	145	.123		
Total	36.384	147			

	β	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	0.564	0.298		1.892	0.061	-0.025	1.153
CLS	0.318	0.083	0.278	3.834	0.000	0.154	0.482
Competitive Advantage	0.536	0.076	0.511	7.04	0.000	0.386	0.687

a. Dependent Variable: Firm Performance

b. Predictors: (Constant), Competitive Advantage, CLS

Source: Survey Data (2020)

The results in Table 4.16 (c) show an adjusted R-square of 0.501 signifying that cost leadership strategy and competitive advantage were responsible for 50.1% of the change in firm performance. The results for ANOVA (F-statistics = 74.908 (p=0.000) confirmed that cost leadership strategy and competitive advantage significantly predicted firm performance since the model was significant. The results from regression analysis show that both cost leadership strategy (β= 0.318, p-value =0.000) and competitive advantage (β= 0.536, p-value =0.000) had a positive and significant effect on firm performance. The third criterion for mediation was therefore achieved where β_6 and β_7 were statistically significant and $\beta_6 < \beta_4$.

Table 4.16 (d) Summary of Mediation Test

Model	Step	Result	Conclusion
P= 1.472+ 0.666CLS +ε	1	P<0.05	Significant
P= 1.693+ 0.65CLS +ε	2	p<0.05	Significant
P= 0.564+ 0.318CLS+ 0.536CA +ε	3	p<0.05	Significant

Source: Survey Data (2020)

Consequently, the study rejected H_{04} that competitive advantage has no significant mediating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya and concluded that competitive advantage partially mediates the relationship.

The results of this study are supported by the argument that it is not the strategies that firms pursue that directly lead to superior performance but the resultant competitive advantage that arises from such strategies (Salavou & Halikias, 2009). Ismail *et al*. (2012) argued that operating at lower costs in comparison with competitors results in competitive advantage. The study findings support those of Monsur and Yoshi (2012) who illustrated that competitive advantage was a mediator in the interaction between vertical integration and performance of apparel firms in Bangladesh. Talaja *et al*. (2017) conclusion that the interaction between market orientation and firm performance is mediated by competitive advantage also support current study's findings.

Wanjiru *et al*. (2019) similarly support the current findings having illustrated that competitive advantage was a mediator in the interaction between corporate strategies and manufacturing firms' performance. All these studies illustrated that competitive advantage fully mediated the relationships between the explanatory and outcome variables signifying that the explanatory variable had no direct explanatory effect in the presence of the mediator.

Sihite (2018) however concluded that competitive advantage partially mediated the interaction between diversification and corporate sustainability performance thus fully supporting the findings of the current study. This means that cost leadership strategy has some direct explanatory effect even in the presence of competitive advantage. These findings are also corroborated by Mutuku *et al*. (2019) who found that competitive advantage was a partial mediator in e-commerce capability and performance relationship among Kenyan commercial banks. From a theoretical view, the findings support dynamic capabilities theory postulate that to survive and flourish in a competitive environment, firms should create a competitive edge over competitors.

4.4.2.5 Cost Leadership Strategy, Macroeconomic Environment and Firm Performance

Objective five of this study was to establish the moderating effect of macroeconomic environment on the relationship between cost leadership strategy and performance of milk processing firms in Kenya. Two regression models as presented in Table 4.17(a) and 4.17(b) were used to test for moderation. In the first model, macroeconomic environment was treated as an explanatory variable while in the second model it acted as a moderating variable where it was interacted with cost leadership strategy composite to create an interaction variable (CLS*MEV).

Table 4.17 (a) Step One Test for Moderation Effect

	β	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	1.469	0.313		4.689	0.000	0.85	2.089
CLS	0.666	0.077	0.583	8.635	0.000	0.514	0.819
Macroecon Env	0.44	0.001	0.005	0.077	0.938	-0.001	0.001

R	R Square	Adjusted R Square	Std. Error of the Estimate
.583a	0.34	0.331	0.40693

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.373	2	6.187	37.359	.000[b]
Residual	24.011	145	.166		
Total	36.384	147			

	β	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	1.469	0.313		4.689	0.000	0.85	2.089
CLS	0.666	0.077	0.583	8.635	0.000	0.514	0.819
Macroecon Env	0.44	0.001	0.005	0.077	0.938	-0.001	0.001

a. Dependent Variable: Firm Performance

b. Predictors: (Constant), Macroeconomic Environment, CLS

Source: Survey Data (2020)

The results in Table 4.17(a) indicate that macroeconomic environment had a β = 0.44, p-value = 0.938>0.05. This shows that macroeconomic environment had a positive explanatory effect on firm performance but this was not statistically significant.

Table 4.17 (b) Step Two Test for Moderation Effect

R	R Square	Adjusted R Square	Std. Error of the Estimate
.589a	0.347	0.333	0.40623

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.621	3	4.207	25.492	.000[b]
Residual	23.764	144	.165		
Total	36.384	147			

	β	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	2.05	0.568		3.609	0.000	0.927	3.173
CLS	0.52	0.142	0.456	3.675	0.000	0.241	0.8
Macroeconomic Environment	-0.008	0.006	-0.899	-1.213	0.227	-0.02	0.005
CLS*MEV	0.002	0.002	0.922	1.225	0.223	-0.001	0.005

a. Dependent Variable: Firm Performance

b. Predictors: (Constant), CLS*MEV, CLS, Macroeconomic Environment

Source: Survey Data (2020)

The results in Table 4.17 (b) indicate that when macroeconomic environment was considered as moderating variable (CLS*MEV), it had a $\beta = 0.002$, p-value = 0.223, which implied that macroeconomic environment had no significant moderating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya. The study thus failed to reject H_{05} that macroeconomic environment has no significant moderating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya and concluded that macroeconomic environment was not a significant moderator variable in the relationship.

The study findings contrast arguments by various scholars that the operating environment exerts significant moderating influence where firm performance is a subject (Kariuki *et al*., 2011; Dut, 2015; Njoroge, 2015; Njoroge *et al*., 2016). They are also inconsistent with those of Musau *et al*. (2018) and Wanjiru *et al*. (2019) all of whom specifically concluded that macroeconomic environment had significant moderating effect. The findings also defy the assertion by the contingency theory that strategies are essentially put in place by firms to navigate their operating environments.

These findings however attest to contradicting conclusions on the effect of firm's macroeconomic environment. Pacini *et al*. (2018) for example found that GDP and inflation rate directly affected firm performance while interest rate and exchange rate were found to have a negative effect. Egbunike and Okerekeoti (2018) concluded that that interest rate and exchange rate did not significantly effect ROA among manufacturing firms in Nigeria but inflation rate and GDP growth rate significantly affected ROA. This may imply that the effect of various macroeconomic factors is dependent on the industry in question. Table 4.18 below shows the hypotheses tests carried out, their results and findings.

Table 4.18 Overall Summary of Test of Hypotheses

Hypothesis	**Analysis Results**	**Conclusion**
H_{01} Economies of scale have no significant effect on performance of milk processing firms in Kenya	β=0.135, p=0.022<0.05	Rejected H_{01}
H_{02} Economies of scope have no significant effect on performance of milk processing firms in Kenya	β=0.148, p=0.014<0.05	Rejected H_{02}
H_{03} Operational efficiency has no significant effect on performance of milk processing firms in Kenya	β=0.493, p=0.000<0.05	Rejected H_{03}
H_{04} Competitive advantage has no significant mediating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya	$P= 1.472+ 0.666CLS +\varepsilon$ $P= 1.693+ 0.65CLS +\varepsilon$ $P= 0.564+ 0.318CLS+ 0.536CA +\varepsilon$ (β_4, β_5, β_6 β_7 were significant) partial mediation achieved)	Rejected H_{04}
H_{05} Macroeconomic environment has no significant moderating effect on the relationship between cost leadership strategy and performance of milk processing firms in Kenya	β= 0.002, p-value =0.223>0.05	Failed to Reject H_{05}

Source: Survey Data (2020)

4.5 Qualitative Data Analysis

Qualitative data obtained from the open-ended questions was analysed based on common themes as per the research variables. Table 4.19 presents results from qualitative analysis.

Table 4.19 Qualitative Data Analysis

Theme	Description
Economies of scale	Firms enjoyed lower operating costs through large scale operations, being more innovative and acquiring inputs in big volumes. They were also able to sell at lower prices and satisfy their market. Some respondents however cautioned against risk of wastage in case of lack of ready market.
Economies of scope	Firms achieved sustainable and efficient use of resources by investing in related business areas, reduced production and marketing costs through diversification, made efficient use of market opportunities and had diversified revenue streams.
Operational efficiency	Firms valued improved efficiency by encouraging proficiency at work, pursuit of dynamic technologies, encouraging smooth flow of operations and paying critical interest in reliable supplies.
Competitive advantage	Firms had improved input output capabilities, stability of operations and improved operations through effective use of past experiences.
Firm performance	Cost leadership strategy was an important driver towards the achievement of superior firm performance.

Source: Survey Data (2020)

From Table 4.19, milk processing firms broadened their operations to manage costs. Cost reduction was pursued in operations as well as acquisition of raw materials. Better managed costs meant that the firms were also able to sell their products at lower prices relative to competitors and were better placed to satisfy the market. Large scale operations also created opportunities for innovativeness further enhancing performance. These views supported those of Barney and Hesterly (2009) who argued that average costs fell as production increased. These findings agree with those of regression analysis which indicated that economies of scale positively and significantly influence firm performance.

The respondents considered economies of scope as contributing to cost advantage through re-use and multiple use of both human and materials resources. These reduced wastage and created synergy in firm operations. It also contributed to diversified revenue streams. The views are supported by Zahavi and Lavie (2013) who observed that diversification into related business areas facilitated multi-tasking and exploitation of resources hence reduction of costs. Regression results support these views through conclusion that economies of scope is a significant explanatory variable of firm performance.

Further, respondents noted that firms encouraged efficiency to enhance execution of operational processes. This was through building technical expertise, technological mobility and having stable supply cycles to control routine costs. These views concur with Gill *et al*. (2014) argument that for firms to prosper, they must manage costs by operating efficiently. Regression analysis illustrated that operational efficiency was the main driver of cost leadership and consequently should be the focus by the milk processors.

On competitive advantage, milk processors had enhanced input output capabilities and built competitive experiences that were effectively propagated within the firms. This made advantages derived from cost leadership strategy sustainable. This concurs with Breznik and Lahovnik (2016) observations that capabilities are central to sustainable superior performance and Njoroge *et al*. (2016) findings that specific knowledge from experience was a strong foundation for competitive edge. In addition as indicated by Hansen *et al*. (2015), the respondents revealed that cost leadership strategy is a dominant strategy and a driver for superior performance.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter presents summary of research findings, contribution of the study to knowledge and conclusions. The chapter further presents recommendations for policy and practice as well as recommendations for future research.

5.2 Summary

The study's first objective aimed to establish the effect of economies of scale on performance of milk processing firms in Kenya. This objective focused on performance improvement that the milk processors enjoyed as a result of large scale operations. The study confirmed that large scale production, bulk purchases, industry support and increased innovation contributed to economies of scale. Bulk purchases and increased innovation had the most contribution to economies of scale compared to large scale production and industry support. From regression analysis, it was illustrated that economies of scale influenced performance of the milk processors.

The study's second objective was to assess the effect of economies of scope on performance of milk processing firms in Kenya. The objective focused on how milk processing firms boosted performance through expansion into related business areas. It was determined that the four indicators; multitasking resources, functional synergies, effective resource exploitation and resource redeployment contributed to economies of scope. Multitasking resources and effective resource had higher contribution in comparison to functional synergies and resource redeployment. Further statistical analysis established that economies of scope influenced performance among milk processing firms. It was also established that economies of scope had the lowest influence on performance compared to economies of scale and operational efficiency.

The study's third objective was to establish the effect of operational efficiency on performance of milk processing firms in Kenya. Under this objective, the focus was on how proficiency in operations assisted milk processing firms perform better in the industry. It was established that technical expertise, relevant technologies, reduced operating risk and stable supply cycle contributed highly to operational efficiency. In addition, operational efficiency was found to have the most influence on performance of milk processing firms in comparison to economies of scale and economies of scope. Moreover, from statistical analysis it was concluded that operational efficiency affected performance of the milk processors.

The study's fourth objective was to determine the mediating effect of competitive advantage on the relationship between cost leadership strategy and performance of milk processing firms in Kenya. It focused on the unique positions that milk processing firms gained in the industry to outperform competitors through application of cost leadership strategy. Both capabilities and knowledge were found to contribute to competitive advantage with the former having higher contribution. Results from further statistical analysis established that competitive advantage was a partial mediator in the direct relationship.

The study's fifth objective was to assess the moderating effect of macroeconomic environment on the relationship between cost leadership strategy and performance of milk processing firms in Kenya. The objective focussed on cost of debt financing and inflation rates. Statistical analysis for moderation indicated that macroeconomic environment had no moderating effect on the relationship between cost leadership strategy and firm performance.

5.3 Contribution of the Study to Knowledge

The study expanded the application of various theories and models used to anchor the research. Resource based view was expounded as relating to doing things differently hence adoption of different drivers of cost leadership advantage to boost performance. The BSC model value in explaining broad measurement of performance of milk processing firms in light of the adopted strategic orientation was also established. Contingency theory applicability was expanded to explaining that milk processors adopted certain strategic disposition to fit to their environments.

Further, though previous studies established a relationship between cost leadership strategy and firm performance, these were based on different contextual setting. This study bridged this gap through contribution to empirical literature by illustrating that cost leadership strategy positively and significantly influenced performance of milk processing firms in Kenya. In addition, the study enriches scholarly debates on variables hypothesized to contribute to firm performance through examination of the influence that cost leadership has on performance.

It also enhances conceptualization of this interaction by encompassing competitive advantage as a mediator variable and macroeconomic environment as a moderator variable in the study's conceptual framework. Furthermore, the study has contributed to knowledge by successfully testing various hypotheses to arrive at findings with empirical significance. The integrated model and the study findings also have significant implications to strategic management theory and research.

5.4 Conclusions

Superior firm performance is a central strategic goal of all firms. This study aimed to ascertain the effect of cost leadership strategy on performance of milk processing firms in Kenya. From the findings, various conclusions were made. From the first objective, coefficient for economies of scale was positive and statistically significant indicating a relationship between economies of scale and firm performance. From the second objective, coefficient for economies of scope was positive and statistically significant signifying a relationship between economies of scope and firm performance. Likewise, from the third objective, coefficient for operational efficiency was positive and statistically significant thus confirmation of an association between operational efficiency and firm performance.

From objective number four, the explanatory power of cost leadership strategy reduced when the mediating variable was introduced. Consequently, conclusion was made that competitive advantage was a partial mediator in the relationship between cost leadership strategy and firm performance. Finally, from the fifth objective, the interaction term was not statistically significant and therefore conclusion was made that macroeconomic environment did not moderate the direct relationship.

5.5 Recommendations for Policy and Practice

The study's findings have significant implications to various stakeholders both policy wise and practically. These are presented in line with the conclusions reached. In this regard, owners of milk processors should have policies that support bulk production. These should involve robust promotional efforts, advancing quantity discounts as well adopting appropriate long term storage facilities for finished goods.

Milk processing firms should also have mechanisms to support bulk purchases of inputs through adequate budgetary allocation, contractual arrangements and having storage spaces for inputs. To further support large scale production, milk processors should invest in relevant innovations to increase shelf life of products, enhance production capacity and widen markets through innovative promotional approaches.

Membership in key supportive bodies and partnership with relevant institutions should form key agenda in firm's strategic decisions in such areas as financing and marketing. Further, milk processors should be deliberate in investing in related business areas like owning dairy firms or opening wholesale and retail outlets. The processors should also institute organizational reforms and policies that facilitate functional mobility for maximum exploitation of the human resource. Firms also need to institutionalize a culture of reuse and recycling across different business areas.

In addition, milk processing firms should emphasize on technical training of critical staff. The processors also need to invest in appropriate technologies to reduce costs. This could be through robust employment of Information and Communication Technology (ICT) to promote products, manage firm processes through Enterprise Resource Planning (ERP) softwares and improve tracking of costs through accounting packages. To reduce operating risks, the processors should implement credible risk mitigation systems. Workers should also be trained on risk management practices. The firms should also have mechanisms to ensure reliable flow of inputs and shield the supply chain from environmental disruptions including weather, politics and financial depression.

Furthermore, the milk processors should acknowledge that competitive advantage is highly transient and therefore seek approaches to sustain any relative advantage arising from cost leadership strategy. Thus, they should have relevant transformational and input-output capabilities to enable them operate at low costs even when the competitors cannot. These capabilities would enable transformation of strategy from a mere theoretical statement into a practical tool for achieving superior performance. In addition, the firms must seek to protect tacit knowledge gained from operational experience through robust human resource management policies for workers' retention. This should be coupled with healthy knowledge propagation mechanisms including couching and apprenticeship programs.

On the other hand, the government as well as other regulatory bodies like KDB should come up with policies and reforms that support widening of operations by firms. These could include tax rebates and zero rating inputs. The government should also have policies in place to patent innovations by the milk processing firms. Further, regulatory bodies should facilitate acquisition of operating licences by milk processors willing to venture into related businesses.

The government should also encourage upgrade of production technologies through tax incentives to milk processors. Regulators including the government should issue safety standards to be followed by the milk processing firms to mitigate operating risks. This should be in addition to outlining minimum thresholds for technical skills that must be met for key positions in firms' operations. Further, regulators should stipulate appropriate wage levels to ensure milk processors are able to retain critical staff. The government should in addition provide conducive economic and political environment for milk production and have credible disease outbreak counter-measures in place.

5.6 Recommendations for Future Research

Future studies should include small home-based milk processors that may not be registered with KDB but nevertheless may have significant impact on the industry. To validate data on financial performance of the firms collected using perceptual scales, replicative studies should be done using financial performance data from secondary sources. Further studies should also consider other factors besides the drivers of cost leadership strategy studied that explain the remaining 59.9% of the variation in performance of milk processing firms in Kenya.

Moreover, future studies should assess whether different indicators of macroeconomic environment besides cost of debt financing and inflation rate have moderating effect in a similar context. Further, to corroborate the findings of this study in other settings, similar studies should be conducted in different context. Furthermore, future research should consider the mediating and moderating effect of other variables on the relationship between cost leadership strategy and firm performance.

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APPENDICES

Appendix I: Informed Consent

I am Paul Gicheru Kimiti Reg No D86/CTY/32224/2015 and a PhD student in Business Administration at Kenyatta University. I am undertaking a research on cost leadership strategy and performance of milk processing firms in Kenya to examine how the firms use various drivers of cost reduction to boost their performance outcomes.

To enable me conduct the research, I wish to ask you some questions which you may voluntarily answer. You reserve the right to make clarifications about the research at any time and may terminate your participation at will without consequences. Some of the questions may relate to private business information which you may refrain to answer if you choose so. However, your total participation in completing the questionnaire will enable me understand how cost leadership strategy influences performance of the milk processors. Any data given will remain confidential and solely for academic purposes.

Any clarification may be sought from Dr. Stephen Muathe (PhD) through muathe.stephen@ku.ac.ke or Dr. Elishiba Murigi (PhD) through murigi.elishiba@ku.ac.ke.

Respondent's Consent

I have understood the above information in regard to my participation in the study which is on a voluntary basis. All my clarifications (if any) have been addressed in full and to my satisfaction.

Signature:.. Date: ....

Appendix II: Questionnaire

This questionnaire is intended to collect data solely for academic purposes. The research is on cost leadership strategy and performance of milk processing firms in Kenya**.** The data provided will remain confidential. Do not identify yourself on the questionnaire.

Section A: General Information

Instructions: Kindly tick as appropriate.

1. Gender of the respondent:

   a) Male [ ]
   b) Female [ ]

2. Functional area in the organization

   a) Executive [ ]
   b) Operations [ ]
   c) Production [ ]
   d) Finance [ ]
   e) Marketing [ ]

3. How long has the firm been in operation?

   a) 3 - 5 years [ ]
   b) 5-10 years [ ]
   c) 11-15 years [ ]
   d) over 15 years [ ]

Section B: Economies of Scale

4. The following statements relate to large scale operations by firms to reduce costs. Please indicate using a tick your level of agreement of the extent to which they apply to your firm.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
We produce in big volumes					
Our customers buy in large quantities					
We enjoy discounts through buying in bulk					

We reduce purchasing transactions costs through bulk purchases					
Our firm enjoy better access to industry supportive services as production increases					
We benefit more from external support through large scale production					
Innovations arise in our firm as level of production increases					
Need to produce more is a catalyst to innovation in our firm					

5. What is your opinion, on the effect of economies of scale on performance of your milk processing firm?……..………………………………………………………………

…………………………………………………………….……………………………...

………………………………………………………..……………………………………..

Section C: Economies of Scope

6. The following statements relate to how firms combine production activities to reduce costs. Please indicate using a tick your level of agreement of the degree to which they apply to your firm.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
We use resources for more than one productive activity					
Multiple employment of resources contributes to reduced costs					
Our functional areas serve more than one related businesses in our firm					
Our staff members do not require retraining to serve in similar functional areas within the firm					
We experience better exploitation of resources through extended business activities					
Wastage of resources is considerably reduced in our firm					
Movement of resources across business areas in our firm is possible					

Resources do not require reconfiguration before redeployment within our firm					

7. What is your opinion on the effect that economies of scope has on performance of your milk processing firm? …………..………..……..………………………………………

Section D: Operational Efficiency

8. The following statements relate to how manage costs by improving efficiency in their operations. Please indicate rate your level of agreement of the extent to which they apply to your firm.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
We emphasize high technical skills level for our staff					
Our firm regularly carries out technical training for employees					
We make conscious effort to acquire relevant technologies for our firm					
Technology advancement is key to reducing costs in our firm					
We are cautious of disruptive effects of risks at work					
Our firm makes efforts to minimize operational risks					
Our supply cycle is stable and reliable					
We consciously strive to maintain good relationship with our suppliers					

9. In your own opinion, how does operational efficiency affect performance of your milk processing firm?…..………..………..……………………………………..……

Section E: Competitive Advantage

10. The following statements relate to how well firms build advantage in industry in order to outperform competitors. Please show using a tick your level of agreement of the extent to which your firm has achieved the advantages.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Our firm possesses a defined strategic driving force to guide transformation					
The firm’s strategic driving force is understood by employees					
The strategic driving force link strategy to firm objectives					
Planning in our firm is based on the strategic driving force					
Firm output goals are well outlined					
Employees relate firm strategy to currently observable product					
Experiential knowledge is critical in our firm					
Our firm has mechanisms to propagate experiential knowledge to new employees					

11 Has your firm gained competitive advantage from pursuing cost leadership strategy?………..…………………………………………………………………...….…

…………………………………………………………………………………………………

…………………………………………………………………………………………………

Section F: Firm Performance

12. The following statements relate to broad indicators of firm performance. Please rate using a tick your level of agreement of the degree to which your firm has achieved the various aspects.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Firm has registered increased profitability					
Firm has registered high sales revenues					

Firm has acquired more market for its products					
Firm has expanded to new geographical areas					
Firm has competitive prices in the market					
Firm does regular price surveys					
Firm has strategies to enhance product quality					
Firm improves existing products					
Firm keeps track of customer and shareholders' interests					
Firm constantly refines internal processes to meet customer and shareholders' interests					
Firm pursues beneficial processes and technologies					
Firm implements new processes					
Firm readily reacts to industry conditions					
Firm implements lessons learnt to boost performance					
Firm experiences inform future investments					

13. In your opinion, what role does cost leadership strategy play in your firm's performance?...

....

....

Thank you for your participation.

Appendix III: Document Review Guide

Macroeconomic Variable Review Tool

Indicator	Reported Average Cost of Debt Financing (June 2016 – June 2019)	Reported Average Inflation Rate (June 2016 – June 2019)
KNBS Reports		
CBK Reports		
Average		

Appendix IV: Milk Processing Firms in Kenya (Study Population)

Ser	Firm	Litres Processed per Day
1	Brookside Dairy	500,000
2	New KCC	300,000
3	Githunguri DFCS	200,000
4	New Sameer A&L	150,000
5	Countryside Dairy	100,000
6	Meru CFU	85,000
7	Kinangop Dairy	50,000
8	Aspendos Dairy	50,000
9	Uplands Premium Dairies	30,000
10	Wakulima Dairy	20,000
11	Kabianga Dairy	20,000
12	Lattana Dairy	15,000
13	Sunpower Products	10,000
14	Raka Milk Processors	10,000
15	Doinyo Lessos	10,000
16	Insta Products EPZ	10,000
17	Nestle Kenya Limited	10,000
18	Vital Camel Milk	5,000
19	Eldoville	5,000
20	Happy Cow Limited	5,000
21	Bio Food Products	5,000
22	Egerton University Dairy	2,000
23	Crown Creameries	2,000
24	Palmhouse Dairies	2,000
25	Afrodane Industries	2,000
26	Stanley & Sons Limited	2,000
27	RAZCO Limited	1,000
28	Glacier Limited	1,000
29	Kibidav Limited Goat Milk	1,000

(Source: KDB, 2019)

Appendix V: Approval of Research Proposal

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 57530

Internal Memo

FROM: Dean, Graduate School

DATE: 11th September, 2019

REF: D86/CTY/32224/15

TO: Mr. Paul G. Kimiti
C/o Department of Business Administration
KENYATTA UNIVERSITY

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that the Graduate School Board at its meeting 4th September, 2019 approved your Ph.D. Research Proposal entitled **"Cost Leadership Strategy and Performance of Milk Processing Firms in Kenya".**

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision Tracking Forms per semester. The form has been developed to replace the progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

By copy of this letter, the Registrar (Academic) is hereby requested to grant you substantive registration for your Ph.D. studies.

Thank you.

REUBEN MURIUKI
FOR: DEAN, GRADUATE SCHOOL

c.c. Registrar (Academic) Att; Mrs. Lucy Njenga
Chairman, Department of Business Administration

Supervisors:

1. Dr. Stephen Muathe
   Department Business Administration
   KENYATTA UNIVERSITY

2. Dr. Elishiba Murigi
   Department of Business Administration
   KENYATTA UNIVERSITY

RM/cao

Appendix VI: Research Authorization

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: D86/CTY/32244/15 **Date:** 11th September, 2019

The Director General,
National Commission for Science, Technology & Innovation,
P.O. Box 30623-00100,
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR MR.PAUL G. KIMITI- REG. NO. D86/CTY/32224/15

I write to introduce Mr. Kimiti who is a Postgraduate Student of this University. He is registered for a Ph.D. degree programme in the **Department of Business Administration in the School of Business.**

Mr. Kimiti intends to conduct research for Ph.D. thesis entitled, **"Cost Leadership Strategy and Performance of Milk Processing Firms in Kenya".**

Any assistance given will be highly appreciated.

Yours faithfully,

PROF. ELISHIBA KIMANI
DEAN, GRADUATE SCHOOL

RM/cao

Appendix VII: NACOSTI Research Permit

This is to Certify that Mr.. Kimiti Paul of Kenyatta University, has been licensed to conduct research in Kiambu, Kirinyaga, Laikipia, Meru, Mombasa, Muranga, Nairobi, Nakuru, Nyandarua, Nyeri, Transnzoia, Uasin-Gishu on the topic: Cost Leadership Strategy and Performance of Milk Processing Firms in Kenya for the period ending : 10/October/2020.

License No: **NACOSTI/P/19/1962**

483102

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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