INFLUENCE OF MANUFACTURING STRATEGY ON FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS IN KENYA.

BY

STEVEN MAKOKHA OKUMU

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DECLARATION

I Steven Makokha Okumu hereby declare that this research project is my original work and has not been submitted to any other university or college for examination.

Signed……..Date……

STEVEN MAKOKHA OKUMU

Reg. No.D61/71442/2014

MBA PROGRAMME

SUPERVISOR'S APPROVAL

This research project by Steven Makokha Okumu has been submitted for examination with my approval as the University of Nairobi Supervisor.

Signature……. Date……...

DR. JAMES GATHUNGU. (PhD) CPS, (K)

SENIOR LECTURER

DEPARTMENT OF BUSINESS ADMINISTRATION

SCHOOL OF BUSINESS

UNIVERSITY OF NAIROBI

DEDICATION

The project is dedicated to my family for their unwavering support and patience through the period that this research was being undertaken.

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ABBREVIATIONS AND ACRONYMS

IL: Internal Learning

EL: External Learning

CO: Cross sectional Orientation

PE: Proprietary Process and Equipment

SEM: Structural Equation Model

ABSTRACT

The objective of the research is to determine the influence of manufacturing strategy on financial performance, for manufacturing firms in Kenya. This was due to the need to examine the influence of the manufacturing strategy on financial performance of manufacturing firms in Kenya. Manufacturing strategy is viewed from the dimensions of learning and innovation of process and equipment in the manufacturing functionality. The research examines the role of resources and capabilities in manufacturing plants that cannot be easily replicated and for which ready substitutes are not available. Such resources are formed by internal learning where ideas are generated through the learning process within the firm; external learning where the input from suppliers and customers is used in the design of process and equipment and innovation; learning is also integrated in the organization through cross sectional orientation where broad based sources of information is used in idea generation and innovation of process equipment. The study therefore examines manufacturing strategy from the dimensions of learning and process equipment and the integration of the dimensions to result in innovative manufacturing processes and equipment which will result in competitive advantage of the manufacturing firms.The generation of innovative processes which are distinct to manufacturing firms enables these firms to have competitive advantage and high performance. The study is based on resource based theory and organizational learning theory. The study employed cross sectional design for sample size of 30 manufacturing firms in Kenya. Questionnaires were administered to plant managers, marketing managers and human resource managers of the manufacturing firms in Kenya. Confirmatory Factor Analysis was used to analyze the data, the correlations of manufacturing strategy and financial performance were obtained using the software Amos. The results indicate that manufacturing strategy has influence in the financial performance of manufacturing firms. The implication is that resources in the manufacturing functionality which are developed within the firm and not obtained in the factor market are more effective in the achievement of competitive advantage of the manufacturing firms. The research also shows the perfect role of learning in developing imperfectly imitable resources.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Manufacturing strategy was described as the effective utilization of manufacturing strengths so as to achieve competitiveness (Swamidass &Newell,1987). Past research in manufacturing strategy has dwelt on market based advancement of resources and balancing between simultaneously seeking objectives like better cost management and quality. Manufacturing strategy in this study describes how manufacturing firms generate resources internally, through learning and innovation, in seeking positive financial performance and sustainable competitive advantage (Schroeder, 2002).

This study is anchored on resource based theory.The resource based theory central idea is to leverage on internal firm resources to generate firm's performance. The resource based view theory emphasizes on the resources that have been internally developed in the firm to enable the firm to compete in its environment (Hoskisson, 1999). The study is additionally anchored on organization learning theory. Further Swamidass and Newell (1987), view learning as one of the dimensions of manufacturing strategy construct, learning is a key contributor and an enabler of innovation in the manufacturing function. Manufacturing firms therefore draw on knowledge generated internally and from the external environment of the firm, learning is further derived from experiences of the firm from both the past and present (Huber, 1991). For effective organization learning, knowledge distribution in the different functional units should occur elaborately (Huber, 1991).

Kenya is viewed as having the biggest and complex manufacturing zone when compared to other countries in the East African region. Kenyan manufacturing sector entails both informal and formal firms with the formal having the small, medium and large firms, the strongest formal sector plants in Kenya in terms of market size are agricultural manufacturing firms; textiles for exports; construction, like steel making and cement processing (Were, 2016).The informal firms which have a large market share include furniture and metal works, which mainly makes farming equipment and supplies to the booming construction sector (Were, 2016). The formal manufacturing firms which had low market share are the sophisticated firms like vehicle assembly and electronics manufacture which utilize high end technology (Were, 2016).

1.1.1 Manufacturing Strategy

Manufacturing strategy is referred to by Skinner (1969), as firm utilization of particular properties in the manufacturing function in order to attain competitive advantage. In past manufacturing strategy literature; manufacturing content is viewed in terms of cost, quality, flexibility and dependability, additionally manufacturing strategy is viewed as persistent routine of decision making in the processing plant linked to corporate strategy (Hayes & Wheelwright, 1984). Hence the need for leveraging on the manufacturing functionality and its strengths in the overall strategy making and implementation is crucial (Hausman, 2002). Evaluation of capability of the manufacturing plants to make distinct deployable resources in the plants that are inimitable forms the bedrock for the firm to attain competitive advantage, therefore manufacturing strategy is implemented by developing superior processes and equipment in-house (Schroeder et al., 2002).

Further Paiva (2007), postulates that plant resources should follow progressive sequential steps so that manufacturing capabilities are more effective. Researchers further postulate proprietary process and equipment entails patented, and unpatented technology; secretly held equipment; and ultra-modern equipment developed solely by the plant (Schroeder et al., 2002). Thus superior processes and equipment developed within manufacturing firms are high value resources which when utilized result in competitive differentiation for manufacturing firms.

In their study Swamidass and Newell (1987), postulates that the construct of manufacturing strategy as encompassing the dimensions of manufacturing capability and learning, where learning is the key contributor to development of the manufacturing functionality resources. Schroeder (2002), address the advancement of distinct manufacturing processes within plants where resources are formed or produced through routine changing routines that transform knowledge into the creative capacity of the production plant and processes. Thus plant resources are a function of the learning within the plant.

Learning can therefore take a myriad of forms in manufacturing firms; Schroeder (2002), posits that firms often take part in finding solutions to problems with disparate firms in methods that work as pattern-changing patterns and thus views learning externally, as inter firm learning through finding problem solutions with customers and suppliers. Learning further can take the form multi-functional interaction and knowledge sharing within manufacturing firms, with a view of generation of competencies and capabilities that give ability to organizations to seize and utilize opportunities (Paiva, 2008). Learning often occur in an emergent and on occasions 'disorganized' method that is hard to systemize, resulting to deployable resources whose effect is causally ambiguous

(Schroeder et al., 2002). The capability of manufacturing firm to integrate learning into the plant process and equipment development and innovation to form the basis for manufacturing strategy, comes out as a key driver of plant performance and by extension financial performance of the firm (Schroeder et al., 2002).

1.1.2 Manufacturing Firms in Kenya

The growth rate for processing sector in Kenya was 3.5% and 3.2% in 2015 and 2014 respectively, contributing 10.3% to GDP (KNBS, 2016). Generally, however, manufacturing has been trailing the economy in terms of growth, which went up by 5.6% in 2015, implying that the proportion of manufacturing in GDP has declined relative to time (Were, 2016).The strongest subsectors in manufacturing subsector in terms of market share are: agro-industry (food and beverages), textiles in the Export Processing Zones (EPZs), pharmaceuticals, construction subsector which includes cement manufacture and metals processing, and high-end furniture (Were, 2016).The Kenya Association of Manufacturers indicates that there are 752 manufacturing plants in Kenya (Kenya Association of Manufacturers, 2016).This is inclusive of small, medium and large enterprises. Although the Government of Kenya is working to improve the ease of doing business in Kenya, particularly for investors in the manufacturing sector some challenges are still facing the manufacturing industry: Registration and Licensing of new manufacturing entities is taking longer as there is no one-stop shop for these services (Were, 2016).

1.2 Research Problem

Manufacturing strategy entails the leverage of the organizational manufacturing resources with the view of achieving competitiveness (Schroeder,2002). It particularly focuses on the innovation and development of manufacturing distinct equipment, processes and technology that are inimitable by competing firms so as to manufacture superior quality products that gives the organization an edge in the product market, enabling the attainment of sustainable competitive advantage. This requires the manufacturing strategy to be a central pillar in the crafting of corporate strategy for manufacturing firms (Skinner, 1969).

The Kenyan manufacturing sector has undergone a sluggish growth of an average of 3.4% for the last five years (KIPPRA, 2016).The world bank notes that the portion of processing value contributed to GDP and the share of processed products exports to total merchandise exports in Kenya, are greater than in the South Sahara African peers, but lower than in the developed countries world over (World Bank, 2016).In view of Kenyan manufacturing firms lower financial performance, the strategies employed by firms have to be revisited with a view of coming up with better strategies to improve financial performance.

Scholars have argued on the need of manufacturing firms to adopt manufacturing strategy, therefore a number of studies have been conducted in this area. Paiva (2007), carried out a study which highlighted the significance of knowledge in manufacturing firms by integrating knowledge based approaches, cross functional orientation, and new technologies, then linking the effect of these variables to manufacturing strategy formulation, The results indicated that the integrated variables had a positive impact on manufacturing strategy.

In their study on the effect marketing and manufacturing functionality collaboration, and their effect on competitive position of the firm establish that an understanding how the aforementioned two functions work together enhances competitive positioning. The findings indicate a strong linkage of marketing and manufacturing functionality harmony to competitive position of the firm (Haussman & Montgomery,2002). Additionally Schroeder (2002), examines the role of resources and capabilities in manufacturing plants that are inimitable and cannot be easily substituted. He therefore links internal and external learning to manufacturing strategy, and eventually measures the effect of manufacturing strategy on competitive advantage which is measured by plant performance. The findings indicate superior plant performance for firms which have adopted innovative processes.

In view of the above studies conducted linking knowledge approaches and manufacturing strategy; marketing function and manufacturing function link to competitive position; Manufacturing strategy and learning linkage to manufacturing performance. The linkage manufacturing strategy (learning and plant innovation and their interaction) to financial performance of the manufacturing firms has not been studied. What is the influence of manufacturing strategy on financial performance of manufacturing firms in Kenya?

1.3 Research Objective

To determine the influence of manufacturing strategy on financial performance of manufacturing firms in Kenya.

1.4 Value of the Study

The study findings are important to academicians by adding to the existing knowledge and providing understanding on the linkages of organizational learning and manufacturing strategy to firm financial performance, therefore offering a fine grained understandings on

the aspects of organizational learning like internal and external learning contribution to financial performance, and also offering the significance of development of manufacturing function and further studies can be done on the effect of manufacturing strategy to corporate strategy.

The findings of the study will benefit senior management by enabling them comprehend the linkages between learning and performance and therefore use the knowledge institute mechanisms to facilitate learning in the organization. Managers will further benefit by findings on the importance of learning which enables new ideas to be developed, building of new knowledge and bringing about firm technical innovativeness, also the propensity of the firm to create or adopt new products and manufacturing process is increased.

The findings of the study will also benefit policy makers by enabling them to learn the external business environment factors that are favorable to manufacturing firms and therefore craft regulations and policies that sets Kenya as an attractive investment destination. It will also enable policy makers to establish the conditions that are necessary for technology development in the manufacturing firms and therefore institute policies that favorable to firms.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter discusses the theoretical foundations and two theories, that is resource based theory and organizational theory that have guided and informed the study of the construct manufacturing strategy.

2.2 Theoretical Foundations

The study discusses resource based theory that explains manufacturing strategy construct where manufacturing function's ability to develop distinct resources which are not imitable, rare, not substitutable and of value, and therefore capable of enabling the firm to attain sustainable competitive advantage. Organizational learning theory explains the organizational learning construct, it anchors the learning of the organization that occurs internally; learning from external environment and the distribution of knowledge to the entire organization (Huber, 1991).

2.2.1 Resource-Based Theory

The resource based theory has been developed by scholars, Wernerfelt (1984), held the view that an organization consists of a collection of assets or resources which are tied semi-permanently to the organization. Researchers classified resources into material, fiscal and human (Ansoff, 1965), the above mentioned progressed to specific firm resources namely: skillfulness, knowledge, as well as, technological knowhow (Hofer, 1978).Resources are, described as; 'total assets, capabilities, firm operations; organizational attributes; knowledge; in control of an organization that empowers it to generate, as well as, effect strategic plans to enhance its efficiency and effectiveness(Barney,2001). Eventually, firms that use resources to effect a 'value creating strategy' not concurrently being effected by any present or prospective competitive firm, can attain differential advantage. He further

advanced a theory of superior performance anchored on the resources a firm makes or obtains to effect product market strategy. His key contribution was acknowledging that resource competitiveness, and competition amid organizations based on their resource profiles, can have important effect to the ability of organizations to attain advantages in effecting product market strategies (Barney, 2001).

Researchers in support of resource based approach contend that strictly strategically essential and beneficial resources and competencies should be regarded as origins of competitive advantage (Barney, 2001). Other researchers have made the distinction between resources which are tangible and intangible ones; the inference made is that intangible resources are often the most essential, strategically thinking (Del Canto & Gonzalez 1999). They contend that intangible resources are a probable source of sustainable competitive advantage compared to tangible resources. Further Barney (1991), argues that if a resource or has the ability to have internally efficient processes, respond to environmental opportunities and threats, it is valuable, and to the extent that a organization is able to effectively utilize such a resource, it will obtain superior performance. It therefore follows that the extent to which a firm attains better performance is determined by its deployment of resources (Newbert, 2008).

For maximum utilization of resources, Schoemaker (1993), reckon that an organization should have access to the right capabilities, which ‘refer to a firm’s capacity to best utilize resources’. Thus resources and capabilities are inextricably linked in the attainment of superior performance (Newbert, 2008). Further Penrose suggests that any efficient use of

resources or capabilities is always viewed in terms of possible combinations with other resources or capabilities (Penrose, 1959). Firms that incorporate efficient process and exploit environmental opportunities and/or neutralize threats, tend to attain superior performance (Newbert, 2008).

These firms are not likely to attain superior performance if the resources they possess and deploy are commonly held, conversely firms derive superior performance from use of resources and capabilities that are rare or owned by few firms to preclude perfect competition (Barney, 1991).The extent of firm resources rarity and the contribution to superior performance is determined by the exploitation of a combination of resources, thus the level of resource-capability combinations is critical (Barney, 1991). It is then conclusive that the criterion of rareness applies to 'resource bundles,' further it seems the pairing of a resource that is rare and one that is common might still yield superior performance. For example if an organization owns a capability a distinct and rare capability (like a chemical process which is patented), it is unnecessary for it to own a reciprocal rare resource in order to translate that capability's latent value into a competitive advantage. To the extent that this rare process is designed to exploit commonly available raw materials the organization may still attain differential advantage over competitors provided that its rare ability allows it to exploit common resources distinctly compared to disparate organizations (Newbert, 2008).

For resources to be a source of superior performance rareness and value do not suffice, resources have got to be imperfectly imitable (Barney, 1991). These resources are

imperfectly imitable if they are path dependent, which refers to the genesis and history by which competences have developed over time (Vergne & Durand, 2011). There is an ambiguous relationship between the resources in terms of Characteristic ambiguity – where the importance of the characteristic itself is hard to discern or comprehend, probably because it is anchored on tacit knowledge, Linkage ambiguity – where competitors cannot discern the interdependence of activities and processes to form linkages (Barney, 2001) They are socially complex, for instance, if they are above and beyond the capability of competing organizations to manage and exploit them systematically (Barney, 1991);There are legal property rights, like patents (Wills-Johnson, 2008). The process of their imitation by other companies is long, for instance due to the time needed to train manpower or to internalize the knowledge necessary to control the resource (Wills-Johnson, 2008).

For resources to be non-substitutable it is critical that there is no strategically equivalence of valuable resources that are widely held by competitors (Barney, 2001). Strategically equivalence of resources here refers to two sets of valuable resources or bundle of resources that can be used disparately to implement the similar strategies (Barney, 2001). Substitutability manifests itself in two forms. First by a firm obtaining a substitute resource owned by a competing firm and exploiting this resource or bundle of resources to originate and implement the same strategies (Barney, 2001). Secondly substitutability occurs when different resources owned by different firms are exploited by these firms to achieve strategically equivalent goals or objectives (Barney, 2001).

2.2.2 Organizational Learning Theory

Organizational learning has deeper meaning by characterizing it in terms of attributes: existence, where an assumption is made that a firm acquires knowledge when its functional areas gets information that it deems of potent use to the firm as whole; Breath, where organizational learning is achieved when a big percentage of organizational units have acquired information that is useful to the organization; Elaborateness, where organizational learning occurs when disparate understandings are advanced because each advancements varies the range of potent behaviors; Thoroughness where knowledge acquisition is viewed to have occurred when uniform comprehensions (understandings in the units of the varied interpretations among them) of various interpretations (Huber,1991).Intentional learning has received a lot of emphasis by organizations and educators alike. An assumption that organizational learning is directed towards improving effectiveness is perverse among scholars (Huber, 1991).Other Scholars have challenged this assumption and argued that learning need not to be necessarily intentional rather learning can take other forms, learning therefore can be viewed to be unintentional and emergent (Huber,1991).

Knowledge can be acquired by experimental learning which can best be captured in terms of, organization experimentation where experiential learning is improved by presence and examination of information feedback; organizational self-appraisal focuses on collecting information about problems, concerns and suggested solutions from firm staff; organizing this information and presenting it to employees and involving them in choice making, planning and effecting of corrective actions to identifiable problems. Experiment organizations are those who operate as experimenting and self-designing state, that is, organizations should keep frequent and nearly continuous change of structures, processes

and objectives, operating in this mode is seen as efficient organizations facing unpredictable environments; Unintentional learning in organizations is portrayed when they adapt a haphazard and multifaceted way of learning.

Firms often take part in getting solutions for problems with disparate firms in methods that work as routine-changing routines (Teece *et al*., 1997). Institutional Theory affirms that firms widely imitate other firms because doing so lowers penalization from stakeholders. Organization knowledge acquisition through searching can be viewed to occur through: Scanning, where organizations scan the environment for changes to ensure that the fit between the environment and the organization is maintained, by gathering the information and restructuring the organization to match the environment; Performance monitoring occurs when organizations formally and often assess how well they are meeting their standards as well as the expectations of the stakeholders (Huber, 1991). Further Huber (1991), posits that information distribution is a function of both occurrence and breath of firm learning. Occurrence of firm learning is viewed in the sense that organizational functional units develop novel information in unison by coalescing parts of information that they source from other organizational units. Organizational information breath is the extent of how widely information is spread in a firm so that a myriad of sources of information is available, increasing the dissemination of the information to the various functional units. Access to this information by the organizational units contribute immensely to the organizational learning as a whole (Huber, 1991).

2.3 Manufacturing Strategy and Performance

Researchers have developed the criteria required for manufacturing process innovation by conducting a study which examines the ability of firms to build distinct capabilities in the plant that are not replicated with no existing substitutes (Schroeder et al., 2002). Further

Wernerfelt (1984), posits that firms integrate privately held knowledge which is utilized to make distinct modes of technology at different times. The resource based view theory differentiates between resources that can be obtained in factor markets and those that are developed within the firm. In order to bestow competitive advantage, resources must be not be available to all competing firms, they should be hard to imitate and replicate by alternative means and contribute positively to performance (Barney,2001).

A cross-sectional design study was carried out in European manufacturing firms on the effect of organizational learning on manufacturing performance (Schroeder, 2002).The study was done using a stratified sample of 164 manufacturing plants. They define manufacturing strategy in terms of the firm leveraging on the manufacturing equipment and processes to attain competitive advantage, therefore in their balanced study they observe that capabilities intrinsic in stationed learning should lead to distinct manufacturing processes, that bestows competitive advantage.

They further postulate proprietary process and equipment entails patented and unpatented technology; secretly held equipment; and ultra-modern equipment developed solely by the plant. The study empirically confirms that proprietary process and equipment are associated with better manufacturing performance and further emphasizes the link of long term investments in manufacturing processes to obtain competitive advantage (Schroeder et al., 2002). The study further describes learning as entailing two aspects, that is internal learning and external learning where internal learning involves training of employees from various functions (Gerwin & Kolodny, 1992); adopting staff ideas into process and product development. External learning is viewed as inter organizational learning through offering solutions to problems in conjunction with customers and suppliers. The findings of

Schroeder and colleagues indicate that there is a significant positive relationship between internal and external learning and manufacturing strategy (Schroeder, et al., 2002).

Further Paiva (2008), conducted a cross-sectional design study on the effect of cross sectional orientation of manufacturing firms on manufacturing strategy, where cross-functional orientation is viewed as the ability of the organization to distribute fundamental and useful information across various functional units in order to improve firm's strategy. A study by Skinner (1969), indicates the significance of cross-functional orientation in the plant strategy making process. It has been argued furthermore that competitive advantage is linked to effective multi-functional perspective in the strategy making (Hayes & Wheelwright, 1985). Further cross functional orientation is viewed as the premise for generation of competencies and capabilities that give ability to organizations to seize, as well as, utilize competitive advantages (Grant, 1996). The study conducted by Paiva (2008), finds a strong linkage of cross sectional knowledge orientation and resource based orientation of the firm.

A study on the effect of organizational learning on organizational performance through a mediating variable product innovation was conducted in Turkey by employing a cross-sectional design where the sample size was 350 senior level managers in manufacturing plants. The findings indicated that the organizational learning had a direct positive relationship with product innovation which in turn led to increased firm performance which was measured in terms of operational performance (Wujiabudula, 2016).

A study on the effect marketing and manufacturing functionality collaboration and their effect on competitive position of the firm establish that an understanding how the aforementioned two functions work together enhances performance. The study was

conducted using the longitudinal research design where data was collected by questionnaires one year apart, the findings indicate a strong linkage of marketing and manufacturing functionality harmony to competitive position of the firm (Haussman & Montgomery 2002).

A study by Caron and Jeffery (1999), on the effect of manufacturing based relatedness, synergy and coordination of business units on competitive advantage was carried out in the USA to a population of `6000 firms. The results of their study indicated that firms which exhibited pattern of manufacturing based relatedness attained competitive advantage (Caron & Jeffery, 1999).

This study therefore describes manufacturing strategy construct in two dimensions of innovative process of the proprietary processes and equipment in the manufacturing unit; and learning that is key to the innovation and further intends to find the influence of manufacturing strategy to financial performance of the firm. Schroeder (2002), posits that a firm can attain competitive advantage through its manufacturing strategy which is measured by manufacturing performance.

2.4 Firm Financial Performance

Research finds indicate that firms with a focus on manufacturing strategy achieve competitive advantage and perform well (Schroeder, 2002). In the study conducted by Schroeder learning is linked to proprietary process and equipment which in turn is linked to manufacturing performance of the firm. Manufacturing performance is measured using accounting and operations measures with the intention of avoiding common bias (Schroeder,2002).

Further investigation has been carried out by Swamidass (2002), where the relationship between business strategy, a multidimensional view of manufacturing strategy and performance is examined. They used survey data from 160 American firms and found empirical support that a given business strategy and manufacturing strategy fit leads to superior performance of the firm. Thus different strategies should be linked to different dimensions of manufacturing strategy for attainment of superior performance.

This study will examine the influence of multidimensional view of manufacturing strategy on firm financial performance through manufacturing performance as intervening variable and firm size and level of sales as control variables. Performance is described as the financial outcomes as a consequence of firm implementation of strategies and execution of decisions (Carton, 2004). This study will use Return on Assets as a measure of financial performance. ROA is the organization's ability to utilize its assets to create profits.

Table 2.1 Summary of Empirical Studies and Knowledge Gaps

Study	Methodology	Findings and Conclusions	Research Gap
Organizational knowledge and the manufacturing strategy making. Ely Laureano Paiva, (2008).	Cross sectional research design and survey was done. The sample size was 243 manufacturing firms in Brazil.	The linkage of information sources and learning was significant and subsequently knowledge leads to multi-functional and resource based view.	The study does not relate organizational knowledge to firm performance
Manufacturing strategy link to manufacturing performance. Schroeder (2002).	Cross sectional research design was used. Data was collected through written questionnaires which were semi structured for a sample size of 164 manufacturing firms Europe. Performance is measured using accounting and operation measures.	The relationship between learning within the firm and manufacturing strategy was strong. The link between external learning and proprietary process is strong. There was a robust link between manufacturing strategy and plant performance.	The study does not relate organizational learning and manufacturing strategy to firm financial performance
Manufacturing based and business units synergy link to competitive advantage Caron (1999).	Cross sectional research design was used. Data was collected through interviews.	Firms which exhibited high manufacturing relatedness and synergy in business units achieved competitive advantage	Exclusive focus on manufacturing firms.
Manufacturing and marketing functions link to competitive position. Haussman (2002).	Longitudinal research design where data was collected one year apart	Manufacturing and marketing functions harmony leads to competitive position	The effect of leadership in creating Marketing and manufacturing harmony should be considered
Organizational learning and Firm Performance. Wujiabudula (2016).	Cross-sectional design where survey method was used	Organizational learning has positive influence on firm financial performance	Effects of other factors like marketing on firm performance

Source, Researcher (2018)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The study adopts positivism philosophy which is grounded in science and makes an assumption that science quantify facts about a single comprehendible reality (Healy & Perry, 2000). Further Troachim (2002), posits that the aim of knowledge is simply to describe the phenomena that we experience hence science is what we can observe and quantify.

3.2 Research Design

Cross sectional design was used hence survey methodology was used for a sample 35 manufacturing firms in Kenya. Plants in the sample represented and Foods and Beverage. Simple random sampling was used to choose a probable equal number of manufacturing firm. The data was collected through structured questionnaires.

3.3 Population of the Study

The population size of the study was 35 firms in the Foods and Beverage industry in Kenya. Research was undertaken on manufacturing firms which are members of the Kenya Association of Manufactures (KAM, 2017). Foods and Beverage industry entails the following subsectors: Alcoholic beverages and spirits; Bakers and millers; Cocoa chocolate sugar and confectionery; Dairy products; Juices, waters and carbonated drinks; Tobacco; Vegetables and oils.

3.4 Sample Size

A sample size of 35 firms formed the target of the study, random sampling was undertaken in the food and beverage industry. The random sampling was applied on the 187 population

size of food and beverage manufacturing firms (KAM, 2017). This represented 16.04% of the population size.

3.5 Data Collection

The study collected both primary and secondary data, the former method of data collection was used for independent variables while the latter gave information on performance the dependent variable. Primary data was collected from plant managers and other functional units' heads in the 30 manufacturing firms. The plant managers furnished the study with information on internal learning in the area of innovation and manufacturing performance.

External learning information was provided by the marketing function heads and plant managers. Cross sectional orientation of the firm was elaborated by senior managers of the firms. Questionnaires were administered directly to the respondents for the firms within Nairobi but for the firms outside Nairobi mailing was done. Objective data on manufacturing performance and financial performance was collected from plant accountants and annual reports respectively.

3.6 Data Analysis

The primary data was collected using questionnaires and the secondary data from financial statements was collated in an excel worksheet. This was done to enable processing of collected data so that they are pliable to analysis. Confirmatory factor analysis was used to determine causal effects among the independent constructs and the dependent construct. Confirmatory factor analysis measured the interaction of learning and proprietary process and equipment and consequently the cumulative effect of these constructs on financial performance of manufacturing firms.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The section entails the collection of data, analysis of data, presentation, interpretation and discussion of the findings that constitute the study. The chapter further entails, description of the data, Measurement of the variables and methods of analysis.

4.2 Response Rate

The data was collected through written questionnaires from a total of 30 food and beverage processing plants in Kenya. Random sampling was done for the food and beverage firms where the response rate of 85.71% was achieved.

4.3 General Characteristics of Respondents

The questionnaires were filled by the Human resource managers; who furnished information on the aspects of internal learning; Marketing managers; who gave information on the external learning and Plant Managers who gave pertinent information on Proprietary process and equipment innovation. The target food and beverage manufacturing firms were of medium size and big size firm.

4.4 Dimensions of Manufacturing Strategy

Manufacturing strategy is viewed by various researchers to constitute several dimensions. An explanation of the general approach to measurement is to consider the plausibility that the concept of manufacturing strategy comprises of disparate dimensions (Lazarsfeld, 1958). This research measured the manufacturing strategy concept using different aspects or components of the manufacturing strategy, therefore the dimensions which make up the manufacturing strategy are: Learning and Proprietary Process and Equipment.

A study by Schroeder (2002), views manufacturing strategy to constitute the dimensions of learning which is further split up into variables like internal learning which reflects the level of learning that occurs within the organization; external learning which shows the level of learning that occurs when the manufacturing firm engages or collaborates with suppliers or customers, cross sectional orientation which occurs when knowledge is adequately distributed in the organization.

4.5 Internal Learning and Performance

The respondents were asked to give responses that indicate whether there is presence of internal learning in their firms and the following is the data collected.

Table 4.1: Internal learning and performance

Statement	**Rating**					MEAN	STD DEVIATION
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**		
Employees are trained across the plant to stand in for colleagues if required (IL 1)	1	4	6	15	4	4.03	0.764
Employees are trained to do manifold activities (IL 2)	1	6	9	10	4	4	0.894
Management are serious on product improvement ideas.(IL 3)	2	5	8	11	4	4.03	0.889
Useful ideas are effected at the plants.(IL 4)	2	7	9	9	3	3.87	0.99

The plant has knowledge on utilization of internal capabilities leading to competitive advantage.(IL 5)	2	2	7	10	9	4.03	0.889

Source: Field data (2018)

Table 4.1 presents data on internal learning and performance, respondents generally agreed to the fact that internal learning occurred in their firms, the target respondents were HR managers. The questions asked for the latent variable internal learning and responses are as follows: Employees are trained across the plant to stand in for colleagues if required, had a mean response of 4.03, which meant that most respondents agreed that employees are trained for further learning to fill positions in the firm; Employees are trained to do manifold activities had a mean response of 4.00 which again was an affirmation of evidence of training; Management are serious on product improvement ideas had an average response of 4.03 which was an agreement that innovation culture is fostered in the firms; . Useful ideas are effected at the plants had a mean response of 3.87 which meant that most respondents just almost agreed that their suggestions were implemented to foster learning; The plant has knowledge on utilization of internal capabilities leading to competitive advantage had a mean response of 4.03.

4.6 External Learning and Performance

The respondents were asked to give responses that indicate whether there is presence of external learning in their firms and the following is the data collected.

Table 4.2: External Learning and Performance

Statement	Rating					MEAN	STD DEVIATION
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**		
The firm works to make long-term collaborations with suppliers.(EL 1)	2	3	8	10	7	4	1.06
The firm communicates with suppliers about quality and design improvements .(EL 2)	4	6	3	13	4	4.07	0.94
Customers have feedback on quality and delivery performance.(EL 3)	4	5	5	11	5	4	0.9
Customers actively contribute in product design .(EL 4)	3	7	4	8	8	4.07	1
The firm monitors the preferences and tastes of customers(EL 5)	5	5	4	11	5	4.03	1.07

Source: Field data (2018)

Table 4.2 presents the data for the external learning and performance, the target respondents in the marketing division of the manufacturing firms generally agreed that external learning by collaborating with customers and suppliers was indeed being practiced in the food and beverage manufacturing firms, this was given credence by the following questions asked; The firm works to make long-term collaborations with suppliers, this had an a mean response of 4.0 signifying the agreement among the firms respondents that there are long term relationships with suppliers with a view of

collaborating and coming up with ideas to bring about competitive advantage; The firm communicates with suppliers about quality and design improvements had a mean response of 4.07, which further affirmed that the collaboration of manufacturing firms with suppliers particularly in the area of quality and design leads to much needed improvements in the products thus resulting in the sale of high quality products which are manufactured by process and equipment which has undergone innovative processes due idea generation from various different sources; Customers have feedback on quality and delivery performance had a mean of 4.0 which was an agreement that customer contribution in the development of processes and equipment and products was happening to the advantage of both the manufacturing firms and the customers; Customers actively contribute in product design had a mean of 4.07 ascertaining that customers played a critical role in designing of equipment in the firms that would result in products that are of high quality and attainment of competitive advantage for the manufacturing firms; The firm monitors the preferences and tastes of customers had a mean response of 4.03 which was also an agreement that which indicated the important aspect of manufacturing firms designing products that are acceptable to customers and therefore raising the sales rate of the products and increasing the revenue.

4.7 Cross sectional orientation and Performance

The respondents were asked to give responses that indicate whether there is presence of cross sectional orientation in their firms and the following is the data collected.

Table 4.3: Cross sectional orientation and Performance

Statement	**Rating**	MEAN	STD DEVIATION

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**		
Decisions are linked to manufacturing, marketing and R&D strategies.(CO 1)	2	3	9	9	7	4	0.87
Cross functional strategy meetings (CO 2)	2	5	10	9	4	4.03	0.89
Manufacturing has knowledge to find more integration with disparate functions in the firm to improve internal capabilities.(CO 3)	4	5	5	13	3	4.03	0.95
The firm uses Information systems to share information in various functional areas.(CO 4)	3	7	8	8	4	4	1
The functional units objectives and mission contribute to the overall firm objectives and	4	5	7	8	6	4.27	1

mission.(CO 5)							

Source: Field data (2018)

Table 4.3 presents field data on cross sectional orientation latent variable and performance. The following questions and responses were given: Decisions are linked to manufacturing, marketing and R&D strategies had a mean response of 4.00 thus there was agreement that the various crucial functionalities in the firm like R&D, manufacturing and marketing elaborately and successfully collaborated in coming up with knowledgeable researched ideas that fed into the innovation engine of the manufacturing firms; Cross functional strategy meetings had a mean response of 4.03 which gave evidence that multifunctional meetings were being held to get synergies in the workings of the functions to result in the attainment of the common objectives; Manufacturing has knowledge to find more integration with disparate functions in the firm to improve internal capabilities had a mean response of 4.03 which meant that the various functionalities collaborated with a view of bringing about efficiency in the utilization of the resources in the firm and thereby bring about lower costs in the operational processes which in turn resulted into profitability of the firm; The firm uses Information systems to share information in various functional areas had a mean response of 4.00, thus an agreement that pertinent important information that pertains to innovative processes and efficient and effective operations is adequately distributed across the various functionalities and to the various employees and expertise that contribute to the attainment of objectives this leads to the innovation of process equipment to manufacture high quality products that increases the sales resulting in the attainment of competitive advantage; The functional units objectives and mission

contribute to the overall firm objectives and mission had a mean response of 4.27 which was very crucial because it indicated the acknowledgement in the manufacturing firms for food and beverage that various functions work in concert in the attainment of singular objectives thus all the activities that that are performed in the various functions are geared up to the holistic and firm wide achievement of the goals that have been set in advance, it indicates the importance of all the functionalities in the firm and the need to invest in the resources of these functions to enable firms to attain competitive advantage.

4.8 Proprietary Process and Equipment and Performance

Proprietary Process and equipment is the second dimension and indicates the aspect of development of processes and equipment through innovation with the intention to enhance the manufacturing performance.

Table 4.4a: Proprietary Process and Equipment and Performance

Statement	**Rating**					MEAN	STD DEVIATION
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**		
Firm has equipment which is patented,(PE 1)	3	4	7	6	10	4.067	1
Distinct equipment leads to attainment of competitive advantage (PE 2)	5	5	5	9	6	4.033	1
Is the process technology at your plant superior to industry competition locally.(PE 3)	4	6	6	9	5	4.067	1

Source: Field data (2018)

Table 4.4a presents field data on proprietary process and equipment in manufacturing firms in Kenya. and was affirmed by the general agreement of the existence of equipment which is patented, having a mean acceptance of 4.06 which meant most firms had undertaken to

research processes which led to innovative processes and equipment and had patented these innovations in order to use them for the aim of attainment of competitive advantage and prevent the spread of technology to their competitors; Distinct equipment leads to attainment of competitive advantage had a mean acceptance of 4.033 which meant that there was resounding agreement that equipment contributed to competitive advantage of the firms therefore underpinned the importance of fostering an innovative environment in the firms and further investment in the resources that directly result to long term profitability of the firms; Is the process technology at your plant superior to industry competition locally had a mean of 4.06 where plant managers who were the respondents agreed that indeed the their firms fared well compared to other firms that had not embraced innovative processes, once again highlighting the importance of investing in innovative processes so as firms can have an edge compared to competing firms. Proprietary process and equipment latent variable showed the ability of the firms to leverage on the firms manufacturing resources to bring about competitive advantage.

Table 4.4b: State of Proprietary Process and Equipment and Performance

Statement	Rating					MEAN	STD DEVIATION
	Near bottom of the industry	Equal to industry average	Better than most of the companies in the industry	Below, the industry average	Absolutely state of the art		
State of the manufacturing equipment (PE 4)	0	2	3	5	20	4.1	1

Source: Field data (2018)

Table 4.4b presents field data on state of equipment in manufacturing firms in Kenya, respondents were asked to rate the state of their equipment whether it was :Absolutely state of the art, above, the industry average, better than competitors, about equal to industry average, poor, near bottom of the industry, the mean response to this question was 4.1, with 66.66 % of the respondents affirming that their equipment was state of the art and the rest constituting 34.34% acknowledging that their equipment was the industry average,about equal to industry average, poor, near bottom of the industry.

4.9 Confirmatory Factor Analysis

The learning and process equipment are modeled unidimensional latent variables with multiple indicator variables. Manufacturing performance was modeled as an index of performance measures that capture the relevant dimensions of manufacturing performance.

The research modeled latent variables which are variables whose effects cannot be directly observed and therefore there values are inferred from observed measured indicators therefore this research considers Internal learning, external learning, cross sectional orientation and proprietary process and equipment as latent variables. Further this variables are modeled as reflective models and hence Thus, in reflective models

(1) The indicators are specified as endogenous, and
(2) Measurement error is represented at the indicator level.

Because the indicators are endogenous, their observed variances and covariances can be compared to values predicted by a reflective measurement model. It is generally assumed that the factors and measurement errors in reflective models are uncorrelated; that is, any omitted systematic cause of scores on the indicators has nothing to do with the factors. The factors themselves are assumed to be continuous variables that represent a single domain (i.e., they are unidimensional) and are normally distributed. There are other statistical techniques, such as latent class analysis, that estimate categorical latent variables with levels that refer to membership in different inferred subpopulations, or *classes*, but SEM analyzes continuous latent variables only (Hoyle,2012).

The paths between the latent variables and their indicators are *directional paths*. The coefficients associated with these paths are regression weights that reflect the amount of change in the outcome (the indicators in this instance) per unit change in the predictor (the latent variables). Such paths might reflect causal claims. Factor loadings between latent variables are the regression slopes for predicting the indicators from the factor. A “factor

variance" expresses the sample variability or dispersion of the factor, that is, the extent to which sample participants' relative standings on the latent dimension are similar or different.

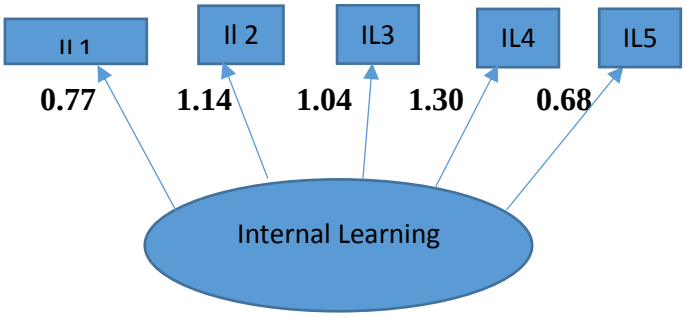
Table 4.5: Internal learning Factor loadings

Factor Loadings	CFA	Std Err	P>z
IL 1	0.775	0.166	0
IL2	1.1405	0.1548	0
IL3	1.0437	0.1594	0
IL4	1.306	0.1421	0.019
IL 5	0.686	0.22072	0.002

Source: Field data (2018)

Table 4.5 presents the analysis showing the factor loadings of the questions asked and internal learning latent variable. The program Amos was used to carry out the analysis and to obtain the factor loadings of internal learning indicators relative to the internal learning latent variable. The table shows a factor loading of. 0.77 for IL 1 (Employees are trained across the plant to stand in for colleagues if required); IL 2 (Employees are trained to do manifold activities.) has a factor loading of 1.14; relation to Internal learning which is stable indicating the strength of the relationship and therefore affirming the robustness of the indicator latent variable measurement; IL 3 (Management are serious on product improvement ideas) was found to have a factor loading of 1.04 further affirming the measurement of the internal learning latent variable; IL 4 (Useful ideas are effected at the plants) had a factor loading of 1.30 contributing to the internal latent variable measurement; IL 5 (The plant has knowledge on utilization of internal capabilities leading to competitive advantage) has a factor loading of 0.68 informing the robustness of the indicator in measuring the latent variable.

Figure 4.1: Internal learning Factor loadings



Source: Researcher (2018)

Figure 4.1 presents analysis showing the factor loadings of the learning latent variable and the questions asked. The figure shows a factor loading of 0.77 for IL 1 (Employees are trained across the plant to stand in for colleagues if required) the factor loading is substantial showing the importance of training to enable employees carry out multiple activities; IL 2 (Employees are trained to do manifold activities.) has a value of 1.14; which is the highest factor loading value indicating the need of training employees for multiple skills ; IL 3 (Management are serious on product improvement ideas) was found to have a factor loading of 1.04 which indicates the importance of improvement of products that leads to greater performance; IL 4 (Useful ideas are effected at the plants.) had a factor loading of 1.30 contributing to the internal latent variable measurement, this also affirmed the need to get suggestions internally and implementing them leading to improvements in the organizations; IL 5 (The plant has knowledge on utilization of internal capabilities leading to competitive advantage) has a factor loading of 0.68, which shows the importance of using the resources in attaining competitive advantage.

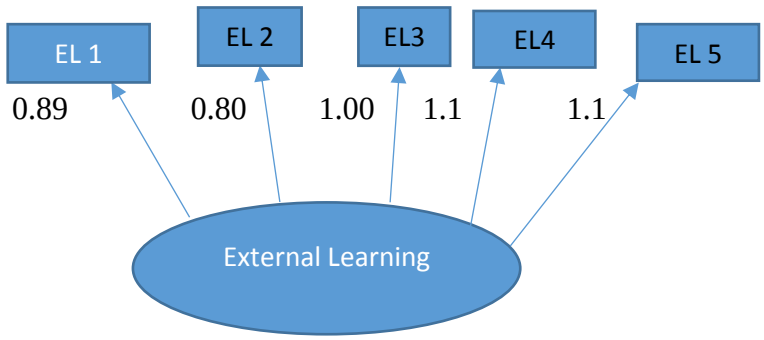
Table 4.6: External Learning Factor loadings

Factor Loadings	CFA	Std Err	P>z
EL 1	0.8987	0.238	0.001
EL 2	0.8028	0.236	0.02
EL 3	1.006	0.1792	0.06
EL 4	1.1084	0.206	0.05
EL 5	1.1833	0.228	0.077

Source: Field data (2018)

Table 4.5 presents the analysis showing the factor loadings of the questions asked and external learning latent variable. For the external learning latent variable EL 1(The firm works to make long-term collaborations with suppliers) has a factor loading value of 0.89; EL 2 (The firm communicates with suppliers about quality and design improvements) has a factor loading of 0.80 again indicating the stability of the coefficients and the robustness of the measurements link to external learning latent variable; EL 3 (Customers give us feedback on quality and delivery performance) has factor loading of 1.00; again showing the strength of the indicator in measuring the latent variable of external learning; EL 4 (Customers actively contribute in product design) has a factor loading of 1.1, this is an additional indicator contribution to the latent variable measure that gives a different aspect and its contribution to the external learning variable; EL 5 (The firm monitors the preferences and tastes of customers) this had a factor loading of 1.1 extending on the multiplicity of the different views of the external learning latent variable.

Figure 4.2 external learning factor loadings



Source: Researcher (2018)

Figure 4.2 presents analysis showing the factor loadings of the external learning latent variable and the questions asked to the respondents**.** For the external learning latent variable EL 1(The firm strives to establish long-term relationships with suppliers) has a factor loading value of 0.89 shows the importance of external learning by establishing the long term relationships with suppliers; EL 2 (The firm maintain close communication with suppliers about quality considerations and design changes) has a factor loading of 0.80,indicating the need of maintaining communication with suppliers to improve the quality processes; EL 3 (Customers give us feedback on quality and delivery performance) has factor loading of 1.00,indicating the importance customers in improvements of processes; EL 4 (Customers are actively involved in the product design process) has a factor loading of 1.1 indicating the significance of customers in contributing to the design of processes; EL 5 (The firm monitors the preferences and tastes of customers) this had a factor loading of 1.1 indicating the need of the firma getting information on the preferences of customers and therefore improving the performance of the firm.

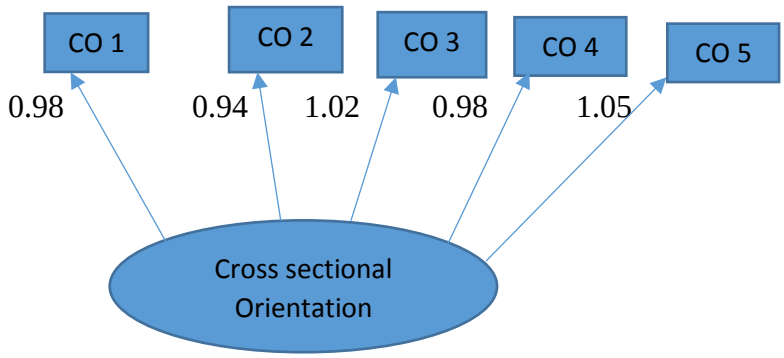
Table 4.7: Cross sectional Orientation Factor loadings

Factor Loadings	CFA	Std Err	P>z
CO 1	0.9890	0.1927	0
CO 2	0.9454	0.2222	0.004
CO 3	1.0215	0.1951	0.05
CO 4	0.9898	0.2232	0.03
CO 5	1.0532	0.1968	0.02

Source: Field data (2018)

Table 4.5 presents the analysis showing the relationship of the questions asked and cross sectional orientation latent variable. The factor loadings for the cross sectional orientation are CO 1 (Decisions are linked to manufacturing, marketing and R&D strategies) had a factor loading of 0.98 this showing the observable measure well represents the latent variable; additionally; CO 2(Cross functional strategy meetings) has a factor loading of 0.94; CO 3(Manufacturing has knowledge to find more integration with disparate functions in the firm to improve internal capabilities.) is an important aspect of the latent variable and has a value of 1.02, indicating the robustness of the relationship of the latent and the indicator; CO 4 (The firm uses Information systems to share information in various functional areas) has a value of 0.98 which reinforces the strong link of the indicator and the latent variable; CO 5 (The functional units objectives and mission contribute to the overall firm objectives and mission) has a factor loading value of 0.98 which shows a strong link of the measure to the latent variable.

Figure 4.2 cross sectional orientation factor loadings



Source: Researcher (2018)

Figure 4.3 presents analysis showing the factor loadings of cross sectional orientation latent variable and the questions asked CO 1 (Decisions are linked to manufacturing, marketing and R&D strategies) had a factor loading of 0.98 indicating the need and the importance of decisions that are meant to improve the manufacturing processes and lead to innovations; additionally CO 2(Cross functional strategy meetings) had a factor loading of 0.94,thus showing the need for collaborations within the business units that lead to idea generations and improved processes; CO 3 (Manufacturing has knowledge to find more integration with disparate functions in the firm to improve internal capabilities) is an important aspect of the latent variable and has a value of 1.02; CO4 (The firm uses Information systems to share information in various functional areas) has a value of 0.98 underpinning the need for distribution of information that is key to lead innovations in the firm;. CO 5 (The functional units objectives and mission contribute to the overall firm objectives and mission) has a factor loading value of 0.98 showing the importance of aligning the objectives of the business units to the overall goal of the firm.

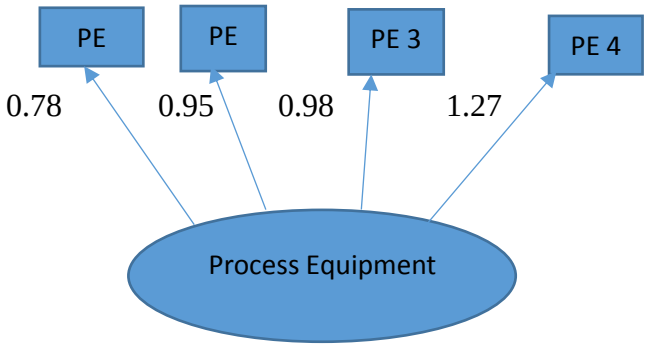
Table 4.8: Proprietary Equipment and process factor loadings

Factor Loadings	CFA	Std Err	P>z
PE 1	0.7874	0.1889	0.04
PE 2	0.9515	0.1954	0.03
PE 3	0.9822	0.170	0.04
PE 4	1.278	0.1507	0.077

Source: Field data (2018)

Table 4.5 presents the analysis showing the factor loadings of proprietary process and equipment variable. The questions asked are used to measure the proprietary equipment and process latent variable are within the range of which is acceptable and goes further to show the linkages of the measures and the latent variable as diverse and robust PE 1 (Firm has equipment which is patented.) has the value of 0.78; PE 2 (Distinct equipment leads to attainment of competitive advantage) has a value 0.95 of and PE 3 (Is the process technology at your plant superior to industry competition locally) has a value of 0.98; PE 4 (Absolutely state of the art equipment) has a value of 1.27.

Figure 4.4: Proprietary Equipment and process factor loadings



Source: Researcher (2018)

Figure 4.4 presents the parameters showing factor loadings of proprietary process and equipment. PE 1 (Firm has equipment which is patented..) has the value of 0.78 indicating that organizations which had equipment that were protected by patents were able to achieve

better performance; PE 2 (Distinct equipment leads to attainment of competitive advantage) has a value 0.95,indicating the that innovative equipment that are distinct leads to competitive advantage; and PE 3 (Is the process technology at your plant superior to industry competition locally) has a value of 0.98 indicating that firms that had better technology were better performers.

Table 4.9: Correlations for Theoretical Model

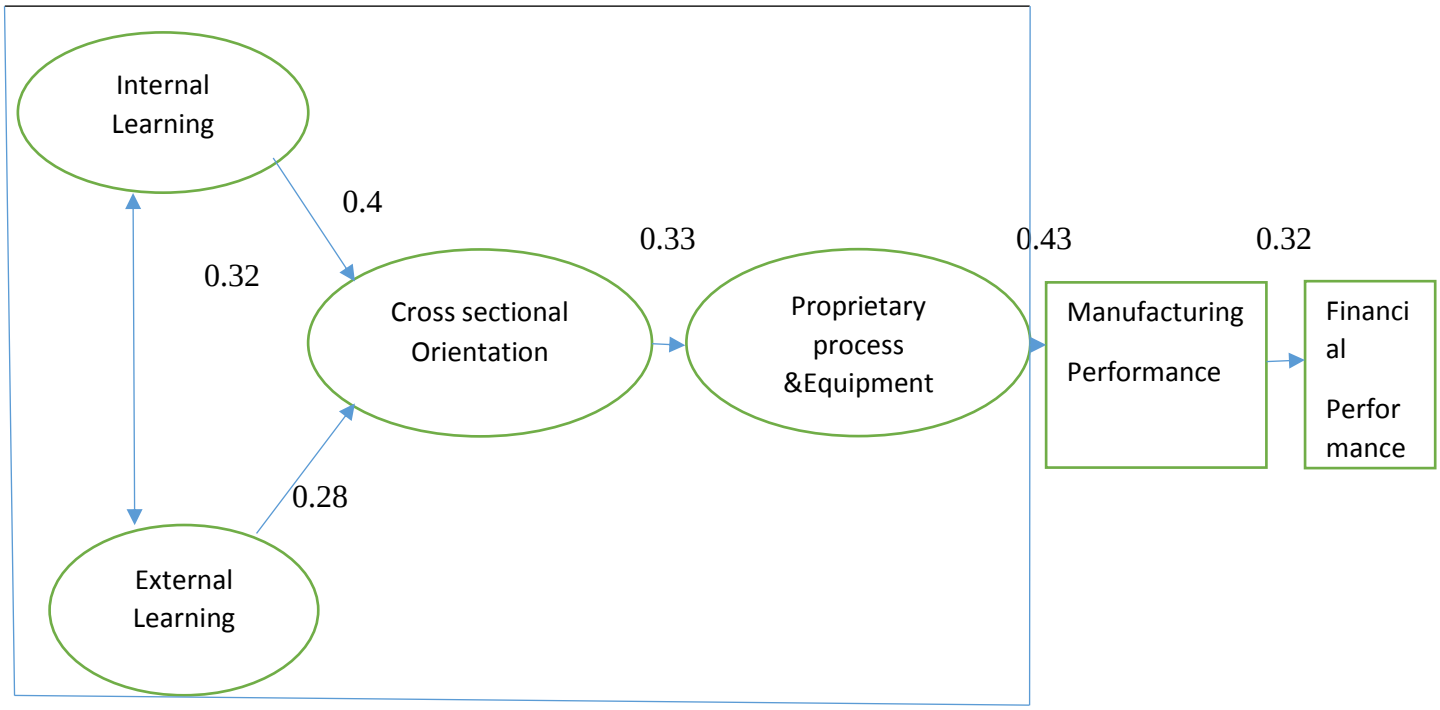
Correlations/Path Coefficients	CFA	Std Err	P>z
IL and EL	0.191	0.0812	0.005
IL and CO	0.4	0.1995	0.02
EL and CO	0.28	0.3999	0.045
CO and PE	0.33	0.192	0.05
PE and manufacturing performance	0.43	0.267	0.04
Manufacturing performance and Financial Performance	0.32	0.164	0.04

Source: Field data (2018)

Table 4.9 presents the correlations between internal learning (IL) and external learning (EL);internal learning (IL) and cross sectional orientation (CO);external learning (EL)and cross sectional orientation(CO); cross sectional orientation(CO) and proprietary process and equipment(PE); proprietary process and equipment(PE) and manufacturing performance; manufacturing performance and financial performance. The outcome of the relationships between the latent variables has shown that the link between internal learning and external learning is significant and has a value of r= 0.19 with p =0.005 hence affirming the importance of integrating internal learning and external learning. The link between internal learning and cross sectional orientation was also significant with an correlation of

r = 0.4and a p= 0.02 further giving credence to the importance of internal learning being incorporated cross sectional wise to the whole firm; The link between external learning and cross sectional orientation had a correlation of r =0.28 and a p value =0.045 showing that learning from external sources is key to supplying information to the cross section of the firm; the link of cross sectional orientation to process and equipment was robust with a correlation of r =0.33 and p value =0.05 this further underpins the need of learning in bring about innovation of the processes and equipment of the manufacturing firm; the link of proprietary process and equipment and manufacturing performance was substantially significant with the correlation of r =0.43 and p value =0.04 again emphasizing how process equipment innovation and efficiency goes a long way in not only reducing the costs of manufacturing but by producing high quality products that result higher manufacturing performance; subsequently the link of manufacturing performance and financial performance was observed to have a correlation of r =0.32 and a p value =0.04,indicating that manufacturing strategy does have an influence on the financial performance of manufacturing firms and the need of senior managers developing the manufacturing unit so that it can contribute to the attainment of competitive advantage.

Figure 4.5 Manufacturing Strategy and Performance



Source: Researcher (2018)

Figure 4.5 presents a model showing the correlations between internal leaning (IL) and external learning (EL);Internal learning (IL) and Cross sectional Orientation (CO);External learning (EL)and Cross sectional Orientation(CO); Cross sectional Orientation(CO) and Proprietary Process and Equipment(PE); Proprietary Process and Equipment(PE) and Manufacturing Performance; Manufacturing performance and Financial performance.

The aim of this SEM model estimated using SEM, is to account for covariances between variables, while the causal effect between indicators and latent variables is expressed through CFA factor loadings, the relationship between the latent variables in the model is expressed through covariances. The outcome of the relationships between the latent variables has shown that the link between internal learning and external learning is significant and has a value of r= 0.19 with p =0.005 hence affirming the importance of

integrating internal learning and external learning. The link between internal learning and cross sectional orientation was also significant with an correlation of r = 0.4and a p= 0.02 further giving credence to the importance of internal learning being incorporated cross sectional wise to the whole firm; The link between external learning and cross sectional orientation had a correlation of r =0.28 and a p value =0.045 showing that learning from external sources is key to supplying information to the cross section of the firm; the link of cross sectional orientation to process and equipment was robust with a correlation of r =0.33 and p value =0.05 this further underpins the need of learning in leading to innovation of the processes and equipment of the manufacturing firm; the link of proprietary process and equipment and manufacturing performance was substantially significant with the correlation of r =0.43 and p value =0.04 again emphasizing how process equipment innovation and efficiency reduces the costs of manufacturing and produces high quality products that result higher manufacturing performance; subsequently the link of manufacturing performance and financial performance was observed to have a correlation of r =0.32 and a p value =0.04.

The theoretical model and the hypothesis are tested using the maximum likelihood estimation. The research uses structural equation model(SEM) to analyze the links among the latent variables and observable variables, further confirmatory factor analysis is a type of SEM that specializes precisely with measurement models, that is links connecting observed measures with latent constructs (Hoyle,2012).

The aim of latent constructs measuring model is the confirmation of the number and characteristics of factors which explain variance and covariance in the indicators

groupings. A study by Hoyle (2012), posits that a latent variables are not observed and influence multiple observed measures and explains the correlations in variables. The research confirmatory factor analysis model specifies parameters in two ways: free and fixed. The free parameter is not known and this research liberates the evaluation to find the best measurement numeral that, together with other model probable values, lowers contrast in the present and futuristic variation-covariation matrices of the free parameter.

A study by Hoyle (2012), posits that model identification is based on knowledge of the variation and covariation in the sample input matrix, a special set of probable values for each parameter in the model can have an outcome (factor loadings, factor covariation). Further identification is seen as going from known information to unknown parameters, the amount of known information for estimation is the amount of elements in the observed variation-covariation matrix (Hoyle,2012). Latent constructs have no innate measurements; hence measurement units are determined by the research. It is important that factor loadings are not of a higher number compared to sample variances and covariances.

The aim of confirmatory factor analysis is to get values for each; factor loadings, factor variances and covariances, that produce the model-implied variation-covariation matrix with minimal differences to the sample variation-covariation matrix (Hoyle,2012).

4.10 Model Fit in the Structural Equation Modeling

Structural equation modeling is robust in testing the model. The model contains implied measurement components that relates the observed variables. After specification the next step is to establish level of fit between the implied model and the observed data model.

Table 4.10: Overall fit of model

Model	$\chi 2$ (p- value)	95% confidence interval for RMSEA	CFI	TLI
CFA	28.03 (0.0001)	(0.060, 0.103)	0.9	0.88

Source: Field Data (2018)

Table 4.10 presents values showing the fitness of manufacturing strategy and performance model. In assessing overall fit, the research reports the indices the Comparative fit index (CFI), for the study the CFI was 0.9 which indicated that there was fit of the model. Tucker-Lewis index (TLI) was 0.88 indicating fitness of the model and the root mean square error of approximation was 28.03 with a p value of 0.001, thus the fitness of the model was confirmed.

4.10.1 Chi-Square Test

For ML estimation the model implied covariant matrix equals the population matrix the test statistic follows T= (N-1) *f* follows a central $\chi 2$ distribution with degrees of freedom equal to p*-q. *f* is the minimum of F. q is the number of parameters to be estimated.

4.10.2 Root Mean Square Error of Approximation

RMSEA is based on the insight that although $(N-1)\lambda f$ asymptotically follows the familiar (central) c2 distribution under the null hypothesis, it asymptotically follows a *noncentral* c2 distribution under the alternate hypothesis (Hoyle, 2012). The non centrality parameter

(l) of this distribution depends on how badly the model fits, so it can be used to construct a fit index. Since the expected value of a noncentral c2 distribution is *df* + l, (Hoyle,2012). pointed out that the noncentrality parameter could be estimated as ˆλ=(χ2-*df*)/(N-1).

RMSEA is a badness-of-fit index, declining with improving fit. The RMSEA is bounded at a lower value of 0. It has no theoretical maximum. Hoyle (2012) suggested that a model with an RMSEA of .10 is unworthy of serious consideration the lower limit of the RMSEA's confidence interval falls at or below .05. Alternatively, an RMSEA whose upper limit exceeded .08 or .10 could be deemed unacceptable. RMSEA underestimates fit at small sample sizes (*N* < 200.

4.10.3 Tucker–Lewis Index

Scholars generalized the TLI to the covariance structure analysis context and labeled it the non-normed fit index (NNFI), although the TLI designation remains more common. They formulated the TLI in terms of c2/*df* ratios. Their formulation makes clear that the TLI is conceptually in a proportion metric. In terms of c2/ *df* ratios, it gives the distance between the baseline and target models as a proportion of the distance between the baseline model and a true model (Hoyle, 2012).

Higher values on goodness-of-fit indices and lower values on badness-of fit indices indicate better overall fit of the model to the data. But, what is an "adequate" fit? Researchers ideally desire a comparison standard that specifies a single criterion value that defines adequate fit.

A standard of .90 for the NFI and TLI (NNFI), fit indices in the proportion metric. Reserchers have suggested the RMSEA with a value of .05 represented what they termed a "close fitting model" and .08 represented an "adequate" fitting model. These recommendations were based on the researchers' practical experience with the fit indices

in the evaluation of many CFA models. A criterion of .95 for the TLI and CFI; a criterion of .06 for the RMSEA is used (Hoyle, 2012).

4.11 Discussion of the Results

The objective of the study was to determine the influence of manufacturing strategy on financial performance of food and beverage manufacturing firms in Kenya.

Manufacturing strategy has been found by researchers to entail the dimensions of learning and innovativeness of proprietary process and equipment. The interactions of this latent variables learning and proprietary process and equipment that make up the construct of manufacturing strategy which has been empirically shown to have a positive influence on Manufacturing performance and subsequently the manufacturing performance has strong positive link to financial performance of the manufacturing firms in the food and beverage subsector.

The results for the entire model show goodness of fit at acceptable levels It shows $\chi 2$ at 28.03 (p value of 0.001) and CFI of 0.9 and TLI of 0.88, RMSEA is equal to 0.060.Internal learning and Cross sectional orientation are positively related showing the contribution of internal learning to the firm wide knowledge. External learning is also positively related to cross sectional orientation but at a slightly lower level compared to internal learning and cross sectional orientation relationship thus signifying the level of contribution of external learning to cross sectional learning is under estimated.

The link of Cross sectional orientation to Proprietary Process and equipment is robust showing that learning is major contributor to innovativeness of process and equipment of manufacturing firms. The link of internal learning and external learning is significant

showing the importance of integrating knowledge with the aim of having a wider base of ideas to contribute to the innovation in the manufacturing functionality. The cumulative effect of the interactions of the constituent variables in the manufacturing strategy construct, contribute to manufacturing performance which research shows manufacturing strategy and manufacturing performance is strongly linked. Manufacturing performance can be seen to have considerable influence to the performance of the firms financially and therefore the need of emphasizing the importance of the manufacturing functionality in its contribution to the overall financial wellbeing of the firm.

When respondents were asked if employees are trained across the plant to stand in for colleagues if required the mean response was 4.03 signifying an agreement that employees in manufacturing firms which were performing well were actually being cross trained, the factor loading of the question and internal learning was 0.775. Organizational learning theory affirms this by noting that organizational learning is directed towards improving effectiveness (Huber, 1991), therefore cross training employees enables the firm to be more effective and leads to better firm performance.

Respondents were also asked if employees are trained to do manifold activities and the mean response was 4.00 which was an agreement that there was training in the manufacturing firms, the factor loading for the question and internal learning was 1.14.Organizational learning theory attest that knowledge acquisition occurs when uniform comprehensions in the units of the varied interpretations (Huber, 1991), therefore training employees in multiple tasks enables uniform comprehensions of the multiple tasks and accomplishment of activities that lead to better performance.

Respondents were also asked if management are serious on product improvement ideas and the mean response was 4.03 and factor loading of 1.04.Organizational learning theory affirms that feedback; organizational self-appraisal focuses on collecting information about problems, concerns and suggested solutions from firm staff; organizing this information and presenting it to employees and involving them in choice making, planning and effecting of corrective actions to identifiable problems(Huber, 1991).

Respondents were further asked if Useful ideas are effected at the plants mean response was 3.87 and factor loading of 1.306. Organizational learning affirms that concerns and suggested solutions and corrective actions are taken by the organizations leading to improvements and better performance (Huber, 1991).

When respondents were asked if plant has knowledge on utilization of internal capabilities leading to competitive advantage the mean response was 4.03 and a factor loading of 0.686,thus there was general agreement that firms exploited the internal resources to achieve better performance Resource based theory affirms that resources are, described as; 'total assets, capabilities, firm operations; organizational attributes; knowledge; in control of an organization that empowers it to generate, as well as, effect strategic plans to achieve competitive advantage (Barney,2001).

Respondents were asked if The firm works to make long-term collaborations with suppliers and the results indicated that the mean response was 4.00, thus most respondents agreed that relationships are established. The factor loading was 0.89. Resource based theory affirms that firms often take part in getting solutions for problems with different firms in methods that work as routine-changing routines (Teece *et al*., 1997).Thus resource based theory corroborates the results of the study.

Further respondents were asked if the firm communicates with suppliers about quality and design improvements and the mean response was 4.07, factor loading was 0.802. Resource based theory affirms that firms often take part in getting solutions for problems with different firms in methods that work as routine-changing routines (Teece *et al*., 1997).

The respondents were asked if customers have feedback on quality and delivery performance and the mean response was 4.00 and factor loading of 1.006.Organizational theory affirms that firms gather information and restructure the organization to match the environment; Performance monitoring occurs when organizations formally and often assess how well they are meeting their standards as well as the expectations of the stakeholders (Huber, 1991).

The respondents were further asked if Customers actively contribute in product design and the results indicated a mean response of 4.07 and factor loading of 1.108.Organizational theory affirms that Performance monitoring occurs when organizations formally and often assess how well they are meeting their standards as well as the expectations of the stakeholders (Huber, 1991).

Respondents were asked if the firm monitors the preferences and tastes of customers the mean response was 4.03 and the factor loading was 1.183 indicating an agreement that firms monitored the preferences and tastes of customers. Organizational theory affirms that organization knowledge acquisition through searching can be viewed to occur through: Scanning, where organizations scan the environment for changes to ensure that the fit between the environment and the organization is maintained, by gathering the information and restructuring the organization to match the environment (Huber, 1991).

Respondents were asked if Decisions are linked to manufacturing, marketing and R&D strategies the mean response was 4.00 and the factor loading was 0.989.Organizational theory affirms that information distribution is a function of both occurrence and breath of firm learning. Occurrence of firm learning is viewed in the sense that organizational functional units develop novel information in unison by coalescing parts of information that they source from other organizational units. Organizational information breath is the extent of how widely information is spread in a firm so that a several sources of information are available, increasing the dissemination of the information to the various functional units. Access to this information by the organizational units contribute immensely to the organizational learning as a whole (Huber, 1991).

Respondents were asked if Cross functional strategy meetings were conducted and the mean response was 4.03 and the factor loading to cross sectional latent variable was 0.945.Organizational learning theory affirms that occurrence of firm learning is viewed in the sense that organizational functional units develop novel information in unison by coalescing parts of information that they source from other organizational units.

Further respondents were asked if manufacturing has knowledge to find more integration with disparate functions in the firm to improve internal capabilities the mean response was 4.03 and the factor loading to cross sectional latent variable was 1.02. Organizational theory attests that organizational information breath is the extent of how widely information is spread in a firm so that a myriad of sources of information are available, increasing the dissemination of the information to the various functional units. Access to

this information by the organizational units contribute immensely to the organizational learning as a whole (Huber, 1991).

Respondents were also asked if the firm uses information systems to share information in various functional areas the mean response was 4.00 and factor loading was 0.989 which is affirmed by Organizational Theory organizational information breath is the extent of how widely information is spread in a firm so that several sources of information are available, increasing the dissemination of the information to the various functional units.

The respondents were also asked if functional units objectives and mission contribute to the overall firm objectives and mission and the mean response was 4.27, the factor loading was 1.053.Organizational learning theory attests that Organizational learning has deeper meaning by characterizing it in terms of attributes: existence, where an assumption is made that a firm acquires knowledge when its functional areas gets information that it deems of potent use to the firm as whole (Huber, 1991).

Respondents were further asked the firm has equipment which is patented and the mean response was 4.06 and a factor loading of 0.7874.Resource based theory affirms that These firms are not likely to attain superior performance if the resources they possess and deploy are commonly held, conversely firms derive superior performance from use of resources and capabilities that are rare or owned by few firms to preclude perfect competition (Barney, 1991).

Further respondents were asked if proprietary equipment helps gain a competitive advantage and the mean response was 4.033 and a factor loading of 0.9515.Resource based theory affirms that use resources to effect a 'value creating strategy' not concurrently being effected by any present or prospective competitive firm, can attain competitive advantage.

Superior performance anchored on the resources a firm makes or obtains to effect product market strategy (Barney, 2001).

Finally respondents were asked if the process technology at your plant were superior to industry competition locally and the mean response was 4.06 and a factor loading of 1.27 which was consistent with resource based theory resources which were of value and rare were viewed as sources of competitive advantage (Barney, 2001).Further when respondents were asked if the equipment and process were state of the art 66.66% agreed confirming the value of resources in attaining competitive advantage.

The linkage of manufacturing strategy and performance is indicated in the dimensions of internal learning and cross sectional orientation which was 0.4 with a p value of 0.005. The theory of organizational learning, the aspect of information distribution which is a function of both occurrence and breath of firm learning. Occurrence of firm learning was viewed in the sense that organizational functional units develop novel information in unison by coalescing parts of information that they source from other organizational units; The linkage of external learning and cross sectional orientation was 0.28 with a p value of 0.045 which was significant, further affirming the organizational theory that information from external sources and proper distribution contributes to the performance of the organization; the linkage of cross sectional orientation and proprietary process and equipment is robust 0.33 with a p value of 0.05 further affirming the resource based theory where contribution of information to generation of ideas that lead to innovation of proprietary process and equipment that are rare and of value and imperfectly imitable (Schroeder,2002).

The linkage of proprietary process and equipment and manufacturing performance was found to be strong at 0.43 and a p value of 0.04 which was in line with resource based theory where manufacturing organizations build on distinct capabilities that cannot be duplicated and do not have substitutes as contributors to manufacturing performance. Further the contribution of manufacturing performance and financial performance was found to be 0.32 and a p value of 0.04, affirming the resource based theory that resources in manufacturing firms contribute to the financial performance of the organizations (Schroeder,2002).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The section gives a brief summary of results of the study inferences and recommendations and ideas for further research.

5.2 Summary of the Study

The analysis indicates the important role for manufacturing strategy in influencing performance in manufacturing firms in the food and beverage subsector. The following variables which entail the construct of manufacturing strategy have a cumulative influence on performance; internal learning variable has been found to have a positive influence on the cross sectional orientation of the firm, the link of these variables which was substantially significant affirms that firms should be able to incorporate learning within the firm and that knowledge that is generated within the manufacturing firm should be transmitted to functionalities in the firm to which the it will have positive influence in terms of achieving the overall resultant influence on performance of the firm.

The analysis again shows that external learning is has positive influence on cross sectional orientation of the manufacturing firm, again affirming the wider and diverse sources f learning that contribute to the organization wide learning, it goes about to show the importance of knowledge from the environment of the firm and subsequent distribution of these knowledge in shaping the strategy of the firm with the intention of achieving competitive advantage. Key to manufacturing firms is listening to the input of suppliers to shape its internal systems and also listening to the requirements of customers in order to

shape all the functionalities strategies towards achieving sole end of competitive advantage attainment.

The analysis also indicates the need of incorporating internal learning and external learning. The link between this crucial variables is found to be significant thereby affirming the importance of using knowledge gained from external sources like suppliers and customers and combining it with knowledge gained within the firm functional units to have a holistic contribution to informational needs of the firm that will result to attainment of the eventual objective of competitive advantage.

The analysis also shows that cross sectional orientation of the firm has a significant link to proprietary process and equipment of the firm. This goes a long way reaffirming that innovation in the manufacturing unit of the firm is generated from ideas that originate from the whole organization which in turn depend on learning from the internal as well as learning from external sources or the environment of the firm, this ideas enable the organization to innovate with the needs of the suppliers and the customers having been full filled and also incorporating the ideas of functionalities thus bringing about efficient processes in the manufacturing unit and innovative equipment that manufacture high quality products that appeal to the market resulting in attainment of competitive advantage of the manufacturing firms. Moreover capabilities like cross sectional orientation of learning in firms are related to development of capabilities particularly proprietary processes and equipment.

The analysis further shows that there is a robust relation between proprietary process and equipment and manufacturing performance. Thus innovativeness in the manufacturing functional unit result in the state of the art equipment and processes result in high quality

products manufacture that are in line with current technological needs of the market and also are able to incorporate the tastes and preferences of the customers thereby increasing the sales revenue. Manufacturing is also to attain efficiencies in its processes by embracing innovative processes thus the design of the manufacturing processes is done in such a way that the resources are better utilized thus the output of products is done with minimal use of resources. This results in lower costs of manufacturing bring about higher manufacturing performance. Further innovative processes and equipment that were found to be distinctly held by the firms in that they had been developed within the firm and were not being commonly available to competitors were found to give an edge to the respective firms in terms of manufacturing performance therefore emphasizing the importance of in house development of processes and equipment.

The link of manufacturing performance and financial performance of the firm was also significant and indicates the critical role of the contribution of manufacturing functionality in the financial performance of manufacturing firms. Manufacturing functionality has previously been seen as only attaining performance by improving in the efficiencies and therefore cutting on the costs. This research indicates the aspect of innovation where the manufacturing functionality is endowed with expanding set of capabilities by pursuing a specific sequence of improvement initiatives. The ability of manufacturing strategy to incorporate successful innovations to impact performance points to an important role of learning and also development of proprietary processes and equipment. State of the art equipment which has been developed within the plant and therefore not available to other competing firms has been found to offer greater manufacturing performance.

5.3 Conclusion of the Study

The research has modelled manufacturing strategy influence on financial performance in food and beverage manufacturing firms in Kenya. Manufacturing strategy has various dimensions namely learning which was measured in latent variables of internal learning, external learning and cross sectional orientation of learning in the firm; the other dimension of manufacturing strategy was proprietary process and equipment which was measured as a latent variable on its own. The research establish that there is an influence of manufacturing strategy on financial performance of the firms through an intervening variable manufacturing performance.

The capability of the firm to incorporate manufacturing strategy in the firm strategy emerges as an important contributor to financial performance. The results suggest that RBV is an appropriate theoretical framework for explaining the gains of manufacturing strategy and its effectiveness in influencing financial performance in manufacturing firms. The RBV implies that innovations in the manufacturing functionality only contribute to competitive advantage when they cannot be easily duplicated by competitors who have access to factor markets.

By empirically showing that routine learning and distinct proprietary processes are related with higher performance the research has also demonstrated the need of this approach for comprehending the relationship between long term investments in manufacturing functionality and competitive advantage. Therefore framing the role of manufacturing strategy from the point of view of innovation is contribution to the manufacturing strategy literature.

5.4 Recommendations of the Study

The study is recommended to academicians by adding to the existing knowledge and providing understanding on the linkages of manufacturing strategy to firm financial performance, therefore offering a fine grained understandings on the aspects of organizational learning like internal and external learning contribution to financial performance, and also offering the significance of development of manufacturing function and further studies can be done on the effect of manufacturing strategy to corporate strategy.

The study benefits senior management by enabling them comprehend the linkages between learning and performance and therefore use the knowledge institute mechanisms to facilitate learning in the organization. Managers will further benefit by findings on the importance of learning which enables new ideas to be developed, building of new knowledge and bringing about firm technical innovativeness, also the propensity of the firm to create or adopt new products and manufacturing process is increased.

The findings of the study will also benefit policy makers by enabling them to learn the external business environment factors that are favorable to manufacturing firms and therefore craft regulations and policies that sets Kenya as an attractive investment destination. It will also enable policy makers to establish the conditions that are necessary for technology development in the manufacturing firms and therefore institute policies that favorable to firms.

5.5 Implications of the Study

This research empirically elucidates the adaptation of manufacturing strategy in its dimensions of learning and idea generation that feeds into the innovation machinery of the firm is key to the achievement of financial performance, Researchers have noted that for a long time senior management has viewed the manufacturing functionality as a static area and therefore have focused in ways of cost cutting and achieving of efficiency in the functionality. This research views manufacturing strategy as a way incorporating learning with a view to strengthen innovation in the process equipment and not only attaining higher manufacturing performance but influencing financial performance through quality products manufacture. Therefore the research shows that there needs to be concerted effort from senior management marketers as well as plant managers in ensuring that the needs of the market are met and also a culture of idea generation and innovation is maintain in the entire organization.

Investments in the manufacturing functionality is also critical in ensuring that innovative processes are developed in the firm and therefore business strategy should be tailored to include funds for continuous long term improvements. The study also shows the important value of collaboration of various functionalities and the need of management viewing manufacturing beyond silos thus the narrow view of manufacturing managers responsibility aimed only on production output, operating costs and plant control is not sufficient thus manufacturing functionality needs a knowledge on improvement of collaborating with multi functions and with suppliers and customers.

5.6 Limitations of the Study

Cross sectional design was the basis for this research, thus causal claims were hard as the research was not able to evaluate performance effects over timespan thus longitudinal database with robust measures of relevant constructs should be made to evaluate the issues of path dependency in resource building through learning routines.

The study was limited to food and beverage manufacturing firms in Kenya and therefore and therefore its generalizability to other firms is hampered. The study also recognizes that there are other factors that influence financial performance in manufacturing firms and therefore plant size and level of sales were factors which were considered in choosing the target firms for research although this were secondary variables and therefore not key to the study.

5.7 Suggestions for further study

Other areas of research that are suggested for future consideration include the Influence of manufacturing strategy on product development, particularly how manufacturing functionality can influence development of high quality products. Additionally research can be carried out on the Influence of manufacturing strategy on business strategy as a way of finding out if there is a positive impact on manufacturing strategy on business strategy and therefore finding the best ways of incorporating manufacturing strategy in the overall business strategy. Further a study on the influence distinct strategy formulation processes and information sources on business performance in the current dynamic manufacturing environment can provide more important business knowledge.

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APPENDICES

APPENDIX 1 RESEARCH QUESTIONNAIRE

I am an MBA finalist at the University of Nairobi in partial fulfillment for the award of MBA Degree. I am undertaking a study entitled: THE INFLUENCE OF MANUFACTURING STRATEGY ON FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS IN KENYA. Kindly complete the questionnaire by ticking the provided spaces. The information you provide will be treated with utmost confidentiality and will be used for academic purposes only.

Assessing Influence of Manufacturing strategy on Financial Performance.

MANUFACTURING STRATEGY

1. LEARNING

a. Internal learning

Please indicate the extent of the following aspects on internal learning for your firm.

On a Likert scale of 5 where 1-Strongly Disagree, 2-Disagree.3-Neutral, 4-Agree and 5-Strongly agree,

Statement	**Rating**				
	1	**2**	**3**	**4**	**5**
Employees are cross-trained at this plant so that they can fill in for others if necessary					
Employees receive training to perform multiple tasks.					

Management takes all product and process improvement suggestions seriously.					
Many useful suggestions are implemented at this plant.					
Manufacturing knows how to explore the company's internal resources, which lead to a competitive advantage.					

Please tick (√) inside the appropriate box.

b. External Learning

Please indicate the extent of the following aspects on external learning for your firm.

On a Likert scale of 5 where 1-Strongly Disagree, 2-Disagree.3-Neutral, 4-Agree and 5-Strongly agree,

Please tick (√) inside the appropriate box.

Statement	**Rating**				
	1	**2**	**3**	**4**	**5**
The firm strives to establish long-term relationships with suppliers.					
The firm maintain close communication with suppliers about quality considerations and design changes.					
Customers give us feedback on quality and delivery performance.					
Customers are actively involved in the product design process.					

The firm monitors the preferences and tastes of customers					

c**. Cross sectional orientation**

Please indicate to what extent the following activities are based on cross-functional activities.

On a Likert scale of 5 where 1-Strongly Disagree, 2-Disagree.3-Neutral, 4-Agree and 5-Strongly agree,

Please tick (√) inside the appropriate box.

Statement	**Rating**				
	1	**2**	**3**	**4**	**5**
Decisions related to manufacturing, marketing and R&D strategies.					
Cross functional strategy meetings					
Manufacturing knows how to seek more integration with other functional areas of the company in order to reinforce their internal resources.					
The firm uses Information systems to share information in various functional areas.					
The functional units objectives and mission contribute to the overall firm objectives and mission.					

PROCESS AND EQUIPMENT

Please indicate to what extent the following activities are based on process and equipment.

On a Likert scale of 5 where 1-Strongly Disagree, 2-Disagree.3-Neutral, 4-Agree and 5-Strongly agree,

Please tick (√) inside the appropriate box.

Statement	**Rating**				
	1	**2**	**3**	**4**	**5**
We have equipment which is protected by the firm's patents.					
Proprietary equipment helps us gain a competitive advantage					
How does the process technology at your plant compare to industry competition locally					
What term below describes your production equipment relative to your industry					

Statement	**Rating**				
	1	**2**	**3**	**4**	**5**
What term below describes your production equipment relative to your industry					
Absolutely state of the art					
Better than most of the companies in the industry					
About equal to industry average					

Below, the industry average					
Poor, near bottom of the industry					

If poor, near bottom of the industry =1

If about equal to industry average=2

If better than most of the companies in the industry=3

If Below, the industry average= 4

If absolutely state of the art=5

Manufacturing Performance

Please indicate the ratio of cost of manufacturing to sales	

APPENDIX 2: LIST OF SAMPLE MANUFACTURING FIRMS

1. Bidco Africa Ltd
2. British American Tobacco Kenya Plc FormalyBritish American Tobacco Ltd
3. Brookside Dairy Ltd
4. Cadbury Kenya Ltd
5. Coca-Cola East Central and West Africa Ltd
6. C. Dormans Ltd
7. Coca-Cola Juices (K) Ltd
8. East African Breweries Ltd
9. Del Monte Kenya Ltd
10. Kapa Oil Refineries Ltd
11. Mastermind Tobacco (K) Ltd
12. Manji Food Industries Ltd
13. NesFoods Industries Ltd
14. Nestle Kenya Ltd
15. Proctor & Allan (E.A.) Ltd
16. New Kenya Co-Operative Creameries Ltd
17. Uniliver
18. Proctar and Gamble
19. Trufoods Ltd
20. Wrigleys
21. Breakfast Cereal Company (K) Ltd (Formerly Weetabix)
22. Gold Crown Foods (EPZ)
23. DPL Festive Ltd
24. Edible Oil Poducts
25. Tropical Heat Ltd (Formerly Deepa Industries)
26. SBC Kenya Ltd
27. Insta Products (EPZ) Ltd
28. Premier Food Industries Ltd
29. Heritage Foods Kenya Ltd
30. Kenya Wine Agencies Ltd
31. Simply Foods Ltd
32. Nairobi Bottlers Ltd
33. Nairobi Flour Mills Ltd
34. Unga ltd
35. Twiga foods