



Sudan University of Science and Technology



College of Graduate Studies

Mediating Role of Competitive Strategies in the Relationship between the Value Chain Activities and Firm Performance:

الدور الوسيط للإستراتيجيات التنافسية في العلاقة بين أنشطة سلسلة القيمة وأداء الشركات

A Thesis Submitted to Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Costing & Management Accounting

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الإستهلال

بسم الله الرحمن الرحيم

قال الله تعالى:

﴿اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ ﴿١﴾ خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ ﴿٢﴾ اقْرَأْ
وَرَبُّكَ الْأَكْرَمُ ﴿٣﴾ الَّذِي عَلَّمَ بِالْقَلَمِ ﴿٤﴾ عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ ﴿٥﴾﴾

سورة العلق، الايات (1-5)

DEDICATION

I dedicate my thesis work to my family. A special feeling of gratitude to my loving parents, Mohammed and Aisha whose words of encouragement and taught me the value of hard work. Thank you so much, I will never forget you.

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Researcher

Abstract

This study studied the mediating role of the competitive strategies in the relationship between value chain activities and firm performance in a sample of Sudanese manufacturing firms. Firm's performance is a multifaceted phenomenon and therefore it's difficult to measure for its impact on multiple factors, particularly in the manufacturing sector. Therefore, the main objective of this study is to test the mediating role of the competitive strategies in the relationship between value chain activities and firm performance in a sample of Sudanese manufacturing firms. By using resource based view theory (RBV) and previous studies have been used to building the research framework and hypotheses development. The study hypothesized that the cost leadership strategy will mediate the relationship between value chain activities and firm performance in a sample of Sudanese manufacturing firms, the differentiation strategy will mediate the relationship between value chain activities and firm performance in a sample of Sudanese manufacturing firms. The study contributing to examine the mediating role of competitive strategies on the relationship between value chain activities and firm performance in light of resource based view and this is new adding for the knowledge. As well as reach to applying the study model in the Sudanese context. The study was based on the descriptive analytical method, where selected a sample of Sudanese manufacturing firms as population of the research and the sample was (200) firm with response rate of (53%), the unit of analysis was organization. regarding the data analysis and hypotheses testing of the research (SPSSv25) and AMOS (21) structural equation modeling (SEM) were used to verify the theoretical model. The findings of the hypotheses testing were explained that the value chain activities affect the

firm performance. The findings showed that value chain activities positively affect competitive strategies. Also, competitive strategies positively affect firm performance. Also, the findings showed that the competitive strategies mediate the relationship between value chain activities and firm performance. Accordingly, this study recommends that the future studies could replicate this study with a more complex model using moderating effect of costing systems.

المستخلص

تناولت الدراسة الدور الوسيط للإستراتيجيات التنافسية فى العلاقة بين أنشطة سلسلة القيمة وأداء الشركات بالتطبيق على عينة من الشركات الصناعية السودانية. يعتبر الأداء للشركات ظاهرة متعددة الأوجه ولذلك يصعب قياسها لتأثرها بعوامل متعددة خصوصاً فى الشركات الصناعية. لذا هدف الدراسة إلى إختبار أثر الإستراتيجيات التنافسية كمتغير وسيط فى العلاقة ما بين أنشطة سلسلة القيمة و أداء الشركات بالتطبيق على عينة من الشركات الصناعية السودانية وهذا ما أغفلته الدراسات السابقة. تم إستخدام نظرية الموارد (RBV) والدراسات السابقة فى بناء نموذج الدراسة وتطوير الفرضيات. إفترضت الدراسة بأن إستراتيجية القيادة بالتكلفة تتوسط العلاقة بين أنشطة سلسلة القيمة و أداء الشركات، أيضا إفترضت الدراسة بأن إستراتيجية التمايز تتوسط العلاقة بين أنشطة سلسلة القيمة و أداء الشركات. تساهم الدراسة فى إختبار الدور الوسيط للإستراتيجيات التنافسية فى العلاقة بين أنشطة سلسلة القيمة و أداء الشركات فى ضوء نظرية الموارد وهذا يعتبر إضافة جديدة للمعرفة، بالإضافة إلى تطبيق نموذج الدراسة على الشركات الصناعية السودانية. إعمدت الدراسة على المنهج الوصفى التحليلى، حيث يمثل مجتمع الدراسة عينة من الشركات الصناعية السودانية، حيث أخذت العينة بطريقة قصدية بلغ حجمها (200) شركة وبنسبة إسترداد بلغت (53%)، ولتحليل وإختبار فرضيات الدراسة تم إستخدام برنامج (SPSSv25) وبرنامج (AMOS21) ونمذجة المعادلة البنائية. و أوضحت نتائج إختبار الفرضيات أن أنشطة سلسلة القيمة تؤثر إيجاباً على أداء الشركات، كما أظهرت النتائج أن أنشطة سلسلة القيمة تؤثر إيجاباً على الإستراتيجيات التنافسية، أيضا بينت النتائج أن الإستراتيجيات التنافسية تؤثر إيجاباً على أداء الشركات، أيضا أوضحت النتائج أن الإستراتيجيات التنافسية تتوسط العلاقة بين أنشطة سلسلة القيمة و أداء الشركات. وبناء على ذلك تم صياغة الإسهامات النظرية والتطبيقية للبحث ومحددات الدراسة والتوصية بالدراسات المستقبلية. حيث تمثلت أهم التوصيات فى إعادة دراسة موضوع الدراسة بإضافة أثر أنظمة التكاليف كمتغير معدل لنموذج الدراسة.

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LIST OF ABBREVIATIONS

No.	Abbreviation	Meaning
1	AMOS	Analysis of Moment Structure
2	AGFI	Adjusted Goodness-of-Fit
3	AVE	Average Variance Extracted
4	CS	Competitive Strategies
5	CFA	Confirmatory Factor Analysis
6	CFI	Comparative Fit Index
7	CR	Composite Reliability
8	CR	Critical Ratio
9	DF	Degree of Freedom
10	EFA	Exploratory Factor Analysis
11	FP	Firm Performance
12	FP	Financial Performance
13	GFI	Goodness-of-Fit Index
14	ML	Maximum Likelihood
15	NFI	Normed Fit Index
16	RBV	Resource Based View

17	RMSEA	Root Mean Square Error of Approximation
18	SD	Standard Deviation
19	SE	Standard Error
20	SEM	Structural Equation Modeling
21	SPSS	Statistical Package for Social Science
22	TLI	Tucker-Lewis Index
23	VCA	Value Chain Activities

INTRODUCTION

1. Research Methodology Framework

1.1. Preface

Modern firms work in a rapidly changing complex environment and increasingly depend on complex networks of supply chain partners to deliver goods and services in the accurate quantity at the right time and place under persistent cost and quality pressures. Likewise, firms are increasingly applying sophisticated operations strategies such as value chain analysis, lean manufacturing and global sourcing to gain competitive advantage (Munir *et al.*, 2020).

More recently, the issue of sustainable performance has become a very important subject in the domain of manufacturing industries across the globe, consequently manufacturing firms that previously focused on only economic gains are steadily appreciating the need to protect the environment via the implementation of sustainable supply chain management initiatives (Afum, Osei-ahenkan and Owusu, 2020).

The increasing global demand to meet sustainable development goals is leading to the adoption of processes, production of goods and provision of services that create less waste, reduce energy consumption, and conserves resources (Agyabeng-mensah *et al.*, 2020).

Sudanese manufacturing firms facing many challenges including unavailability of manufacturing production inputs with required prices, quantities and specifications, higher tax and governmental fees, the advance collection for value added tax, lack of finance availability and higher cost, lack of infrastructure, higher cost of production inputs such as electricity and

fuels, inability of local and international competition, increasing of import products ...etc. (Mohammed, 2012, Jumaa, 2015).

Therefore, manufacturing firms need to develop and implement strategic tools in order to be more competitive in the business environment. Manufacturing firms therefore need to become more customer and competitor focused by pursuing competitive strategies in order to enhance product quality, build relationships with customers and suppliers, and enhance distribution and delivery of their products. These strategies should be pursued in order to reduce production cost, increase demand, and deal with the raised competition in the domestic market and increased imports from abroad (Researcher, 2020).

Organizational performance is defined as the extent to which firms use resources to achieve their objectives and vision, and is characterized as financial conceptualization and involves multidimensional constructs (Sadaghiani, Mohsen Hooshangi , Jamshid Salehi, Matin Rashidi Astaneh, 2017). Organizational performance can be assessed by an organization's efficiency and effectiveness of goal achievement (Kyengo, 2016). Some of the SCI including VCA researches categorizes firm performance into three types: operational, financial, and strategic performance (Chang *et al.*, 2015). To improve performance and survive in a competitive environment, firms strive to collaborate and build close relationships with their internal business functions as well as upstream and downstream partners, which are beneficial for every firm along the entire supply chain (Dehui Xu, Baofeng Huo, 2015).

The resource based view perspective demonstrates that the strategic resources enable firms to gain competitive advantage. The recent studies changed the focusing from tangible assets into intangible assets, which consider more important from strategic stand point and more linking with

business and their success (Subroto and Alhabsji, 2014; Atikiya, 2015; Ibrahim *et al.*, 2019). The strategic tools consider as one of the intangible assets forms which firm possessed, which can lead to superior performance for the firm (Abdullah, 2021).

Therefore, value chain activities analysis consider as one of the effective strategic tools and modern technics that represents a chain of activities that firm performs to deliver valuable product or service for the customer, and explain how the firm performs its activities to determines costs and profits (Simatupang and Williams, 2017). Value chain analysis determines the core competencies that demonstrate the cost behavior method based on the competitive strategy choice by the firm in order to determine the relationship between value creating activities based on the highest order desired by the customer (Hertati and Sumantri, 2016).

The ability of any firm to understand its own capabilities and customer requirements is crucial for competitive strategy to be successful (Kumar and Pradesh, 2016). Firms' strategic efforts to create positional advantages in marketplaces and achieve better performance by improving the efficiency and effectiveness of supply chain activities and processes are heavily dependent on supply chain integration which including value chain activities (Chang *et al.*, 2015). Through value chain firm can identifies what the activities that added value and then link them with the main functional parts of the firm (Aguko, 2014). Value Chain Analysis (VCA) is a strategic analysis tool that is used to better understand competitive advantage, to identify where customer value increases or decreases cost, and to better understand the firm relationships with suppliers, customers, and other firms in the industry (Simatupang and Williams, 2017).

Outstanding performance can be achieved through cost reduction, quality of product and delivery of products and services to customers at a lower cost than that of its competitors. By analyzing value chain, a firm will be able to reveal those distinct activities that add value and improve new ways to maximize it. Value chain analysis thus guides managers on the best strategies to apply in order to create superior value to the firm's products and services (Researcher, 2020).

Therefore, the firm's performance will be improved if the firm analyzes their activities, eliminates non-added value activities, reinforces the added value activities and manages their linkages, and this is corresponding with the resource-based view, (Researcher, 2020).

Competitive strategies are very critical for achieving outstanding performance, (Porter, 1985) concludes that firms that select and apply generic strategies will accomplish sustained competitive advantage. Competitive strategy is about being different. This means deliberately performing activities differently and in better ways than competitors, competitive strategies will be vital to a firm while developing its fundamental approach to attaining competitive advantage (Kyengo, 2016). The ability to respond quickly and effectively to satisfy customer needs has become a defining characteristic of competitiveness and manufacturing success. Firms operating in an increasingly dynamic and competitive marketplace should place greater emphasis on the appropriate competitive strategy and value chain activities analysis to satisfy their customers in order to gain competitive advantage. So, it is necessary for manufacturers to understand the important role of VCA and competitive strategies in manufacturing success (Porter, 1985).

Hopefully, this research presents new additions for the knowledge, particularly it will combine between different variables to diagnose its variables interaction

as contribute to deriving new relationship and concepts about its subject, and for the importance of Sudanese manufacturing firms and the necessity to know the value chain activities analysis and competitive strategies which reflected on the firm performance came this research.

1.2. Problem of the Research

The manufacturing sector in Sudan suffering from multiple problems and obstacles which have negative impact on its performance. These problems including unavailability of production inputs with required prices, quantities and specifications, higher cost of production inputs such as electricity and fuels, higher tax and governmental fees, increasing of import products, lack of finance availability and its higher cost, higher workers turnover, lack of infrastructure, and inability for local and international competition. Therefore, manufacturing firms needed to implement strategic tools such as value chain analysis and competitive strategies to enable them for improving their process and overall performance in order to compete in the domestic and international markets.

Moreover, throughout the previous studies reviewed which investigated the current research variables, the researcher found many research gaps, for instance most of the previous studies examined only one firm performance dimension. Although the crucial role of competitive strategies that play to enhancing the relationship between value chain activities and firm performance, the researcher didn't find any study examine this relationship. Finally, most of the previous studies reviewed indicate that relatively little number of empirical studies discussed the relationship between the current research variables at developing countries, most of them are conducted at western countries specifically U.S and Europe.

1.3. Questions of the Research

- Is there any relationship between value chain activities and firm performance in the Sudanese manufacturing firms?
- Is there any relationship between value chain activities and competitive strategies in the Sudanese manufacturing firms?
- Is there any relationship between competitive strategies and firm performance in the Sudanese manufacturing firms?
- What is the influence of competitive strategies as mediator in the relationship between value chain activities and firm performance in the Sudanese manufacturing firms?

1.4. Objectives of the Research

- To examine the relationship between value chain activities and firm performance in the Sudanese manufacturing firms.
- To identify the relationship between value chain activities and competitive strategies in the Sudanese manufacturing firms.
- To examine the relationship between competitive strategies and firm performance in the Sudanese manufacturing firms.
- To investigate the mediating effect of competitive strategies in the relationship between value chain activities and firm performance in the Sudanese manufacturing firms.

1.5. Hypotheses of the Research

H1: Value chain activities will be positively related to firm performance in the Sudanese manufacturing firms.

H2: Value chain activities will be positively related to firm competitive strategies in the Sudanese manufacturing firms.

H3: Competitive strategies will be positively related to firm performance in the Sudanese manufacturing firms.

H4: Competitive strategies will mediate the relationship between value chain activities and firm performance in the Sudanese manufacturing firms.

1.6. Importance of the Research

This research will contribute to the value chain literature and practices in several ways:

1.6.1 Theoretical importance

Firstly, contributing to know the impact of value chain analysis on the firm performance in the Sudanese manufacturing context, particularly most of the previous studies are conducted in foreign context.

Secondly, reveal the impact of competitive strategies on the firm performance in the Sudanese manufacturing context.

Thirdly, examining the research model in light of resource based view approach in the Sudanese manufacturing context and this consider as new adding for the knowledge.

Fourthly, contributing to examine the mediating role of competitive strategies on the relationship between value chain activities and firm performance in light of resource based view and this is new adding for the knowledge.

1.6.2 Practical importance

Firstly, reach to applying the research model in the Sudanese context.

Secondly, study the impact of value chain analysis on the Sudanese manufacturing firm's performance will help decision makers to which activity need more improvement.

Thirdly, this research can alarm the senior managers and decision makers to the importance of value chain analysis and competitive strategies for improving manufacturing firm's performance in order to reinforcement them. Fourthly, examining the value chain analysis on the firm performance will help firms to allocate their limited resources on their activities.

Fifthly, examining the competitive strategies on the firm performance will help firms to identify which appropriate strategy for them in order to gain competitive advantage.

1.7. Scope of the Research

This research addressed to know the mediating role of competitive strategies in the relationship between value chain activities analysis and firm performance in the Sudanese manufacturing context. The research focus on the senior managers including general managers, deputy general managers, production managers, marketing managers, finance managers, supply chain managers, R&D managers, and planning managers. While, the research limited to Sudanese manufacturing firms. The data regarding empirically study has been collected through the period (2019-2020).

1.7. The Procedural Definitions for Research Variables

1.7.1 The Independent Variable: Value Chain Activities:

Value chain represents a chain of activities that firm performs to deliver valuable product or service for the customer (Simatupang and Williams, 2017). it consist from the following dimensions for this research:

- a. Marketing activities: include of activities associated with discovering and satisfying customer wants and needs, such as advertising, promotion, sales force, quoting, channel selection, channel relations, and pricing (Porter, 1985).

- b. **Operations activities:** included activities associated with transforming inputs into the final product, such as machining, packaging, assembly, equipment maintenance, testing, printing, and facility operations (Porter, 1985).
- c. Procurement activities: encompass of activities that involve in purchasing inputs, though purchased inputs are commonly associated with primary activities (Porter, 1985).
- d. Research & Development activities: consists of a number of activities that associated with the improving product and process, such as telecommunications technology for the order entry system, or office automation for the accounting department (Porter, 1985).

1.7.2 The Dependent Variable: Firm Performance:

Firm performance is defined as the extent to which firms use resources to accomplish their goals and vision, and is characterized as financial conceptualization and involves multidimensional constructs, (Sadaghiani, Mohsen Hooshangi , Jamshid Salehi, Matin Rashidi Astaneh, 2017). It consists of the following dimensions:

- a. Financial Performance: is the improvement of economic goals based on revenue minus cost-based measures such as profitability, return-on-investment, and return-on-sales. Strategic performance is the improvement of market goals that is assessed with purely revenue-based measures such as sales, market share, and growth in sales and market share (Chang *et al.*, 2015).
- b. Operational performance has long been recognized as a complex, multidimensional, hierarchical construct that involves the improvement

of supply chain-related organizational measures including quality, innovation, logistics cost reduction, on-time delivery, inventory turnover, and cycle time reduction (Chang *et al.*, 2015).

1.7.3 The Mediating Variable: Competitive Strategies:

Is defined as the strategy which looking for a preferably competitive situation for the firm in which it works (Herzallah and Gutiérrez-gutiérrez, 2013). It consists from the following dimensions for this study:

- a. Cost leadership strategy is an integrated set of actions taken to produce products or services with unique features that are sold to customers at the lowest cost compared to rivals or at reduced cost to attain superior profitability (Teeratansirikool, 2013).
- b. Differentiation strategy is an interrelated set of actions taken to produce products or services at reasonable cost that customers perceive as being different in ways that are important to them (Teeratansirikool, 2013)

1.2 The Previous Studies

Throughout reviewing the previous studies which investigated the current research variables, the researcher reach's to the research gaps as presented below:

(Rhee and Mehra, 2006), examined the impact of operations, marketing, and competitive strategies on firm performance. The close linkage between competitive strategy and functional activities is asserted to be a precondition to the achievement of optimal business performance. The study hypothesize that the effect of the integration of operations and marketing activities in a service organization is moderated by the competitive strategy. The main objective of study is to explore how the relationship between operations,

marketing, and competitive strategies affects organizational performance in the banking industry. Banks were selected from the list of top 1000 US Banks, the sample consists of a total of 530 banks whose retail banking managers. The retail-banking manager of each bank was considered as the key informant in this survey. After constructing and pilot testing the questionnaires, a mail survey was implemented; five hundred and thirty research packages were prepared for the key informants, their response rate was 15.6%. The findings indicate that competitive strategy significantly affects the relationship of key activities of operations and marketing with business performance. The study recommends that future studies should extend findings from this study to other service and/or manufacturing businesses.

Therefore, the current research shall fill the gap between this research and previous study through examining these variables in the manufacturing sector. Additionally, the previous study utilized Miles and Snow's strategic theory to study the strategic fit of operations and marketing activities with competitive strategies, whereas this research shall utilize the resource based view and Porter generic strategies.

(Prajogo *et al.*, 2008), studied the relationship between value chain activities and operational performance. Although many of these contemporary researchers are focusing on integrating resources, abilities, and activities, the terminology remains inconsistent at best. Thus, in an effort to provide consistency throughout the scope of this research and in light of the confusion surrounding the conceptual similarities between the competence and capability constructs, this paper will utilize the term capability to refer to organizational routines and processes, and core competencies as the combination of resources and capabilities that serve as a source of

competitive advantage. The main objective of the research is to explore the extent to which four elements of the value chain marketing, research and development, procurement, and operations are associated with product quality and product innovation. The research hypothesizes that: H1. Better customer focus leads to better product quality performance. H2. Better customer focus leads to better product innovation performance. H3. Better R&D management leads to better product innovation performance. H4. Better process management leads to better product quality performance. H5. Better supplier relationship leads to better product quality performance. H6. Better supplier relationship leads to better product innovation performance. They used a survey of 194 managers of Australian firms, and multivariate analysis using structural equation modeling was used to test the hypotheses. They found that the elements of the value chain differ in their association with product outcomes. Marketing and production are related to product quality, but surprisingly while research and development is related to product innovation, marketing is not. Procurement is related to both product quality and product innovation.

They acknowledged several limitations inherent in their study, which warrant future research. First, the accuracy of the research data could be improved by involving more people in the firm. This means assigning areas of the study to the specific personnel with relevant position in the firm (marketing, procurement, R&D, and operations). Second, further research could replicate this study with a more complex structure (i.e. sequential) that reflects the flow of materials along the value-chain in a firm using mediating or moderating effects.

Therefore, the researcher shall fill the gap between this research and previous study by collecting data from senior managers of the

marketing, procurement, operation, research and developments as well as general managers and deputy general managers. Also, the current research shall fill the second research gap by entering mediation variable on the research model. Finally, the current research shall examine the research model in the Sudanese manufacturing firm's context.

(Aguko, 2014), studied the relationship between value chain analysis and organizational performance. Few studies examined the analysis of value chain and its relation on performance in Kenya, in order to bridge the inherent knowledge gap and understand the strategic direction in relation to value chain analysis and performance. The main objective of this study is to determine the value chain activities, establish Key factors influencing these activities and how they contribute to performance in the beer brewing industries in Kenya. The study adopted a cross sectional descriptive survey intended to establish the activities that constitute the value chain and extent in which these activities affect performance in the beer manufacturing industry in Kenya. The target population of this study was 50 value chain professionals; these were managers and heads of departments of five beer manufacturing firms in Kenya. Primary data was collected using semi structured questionnaire that was administered by drop and pick methods and through E-mail, the statistical package for social sciences (SPSS) version 21 was used, linear Regression Analysis was used to investigate on the relationship between the variables and the organizational performance. Findings showed the main factors that influence the value chain in the beer manufacturing industry in Kenya were timely delivery times of products and services, waste reduction, well managed procurement costs, use of modern information technology, effective human resources management, efficient firm infrastructure and continuous improvement. In this study the researcher

had some limitations in data collection. Most of the respondents who were interviewed did not have a clear sense about value chain professionals and it was a bit difficult to explain the target of this research to the respondents. Some of them viewed the requested data as confidential for them and somehow unreachable. Not all respondents answered the questionnaire hence the result could be more realistic if the researcher got responses from all respondents. This study focused on value chain analysis and organizational performance in alcoholic beverage industry only, further research on other industries should also be done.

Therefore, the researcher shall fill the gap between this research and previous study through testing the model in manufacturing sector as well as using quantitative method for data collection rather than qualitative method that used in the previous study.

(Zhao, 2014), studied the impact of supply chain integration on firm performance and the moderating role of competitive strategy. The majority of the previous studies have focused on investigating the effects of different types of SCI (e.g. internal and external integration) on firm performance. Such a classification of SCI is too abstract to reveal the essence of the effectiveness of various SCI practices. This classification may be one of the main reasons for contradictory findings in previous SCI and firm performance studies. Thus, it is necessary to explore the effect of SCI on firm performance at a more detailed level. In this study, they identify the content of SCI (i.e. internal, process and product integration) and explore its effectiveness in improving firm performance under different competitive strategies. The study aims to provide empirical evidence of the effectiveness of various supply chain integration (SCI) under different competitive strategies in terms of cost leadership and differentiation. The first set of

hypotheses: H1a. Internal integration is positively related to operational performance, H1b. Process integration is positively related to operational performance, H1c. Product integration is positively related to operational performance. The second set of hypotheses: H2a. Internal integration is positively related to financial performance, H2b. Process integration is positively related to financial performance, H2c. Product integration is positively related to financial performance, H3. Operational performance is positively related to financial performance, H4. The positive relationship between internal integration and financial performance is strengthened when firms pursue a cost leadership strategy, H5. The positive relationship between internal integration and operational performance is strengthened when firms pursue a cost leadership strategy. Survey methodology was used to collect data from 604 Chinese manufacturers. Hierarchical linear regression was used to analyze the moderating effects. The findings showed that competitive strategies significantly influenced the effectiveness of SCI, including internal, process and product integration. More specifically, internal integration significantly affected the financial performance of cost leaders, while process integration contributed more to the financial performance of differentiators. However, competitive strategies had no significant moderating effect on the relationship between SCI and operational performance. This study has several limitations that open up avenues for future studies. First, it conducted using Chinese samples and thus the findings are more meaningful in the Chinese context, particularly competitive strategies may differ across countries. Future studies can investigate this issue in other contexts. Second, this study only examined the moderating effect of competitive strategies on the relationship between SCI practices and performance. Future studies could

investigate the causal effects of competitive strategies on the qualitative facets of SCI.

Obviously, the previous studies reviewed indicate that relatively little number of empirical studies discussed the relationship between the value chain activities and competitive strategies particularly at the manufacturing context, and the measurement of this relationship require more conducting of the researches in this area. **Therefore, the research shall fill the gap between this research and previous study through examining the mediating role of competitive strategies in the relationship between value chain activities and firm performance in Sudanese manufacturing firm's context.**

(Hooshang M. Beheshti, Pejvak Oghazi, 2014), They studied the impact of supply chain integration on firm performance: an empirical study of Swedish manufacturing firm, the research problem is how to improve the firm's performance through supply chain management, organizations must plan to integrate cross-functional activities within the firm and effectively link them externally with the processes of their business partners, suppliers and customers in the supply chain, the main objective of this research is to investigate the relationship between supply chain integration and the financial performance of manufacturing firms in Sweden. Two sets of hypotheses were developed. The first set is formulated to explore whether there is a positive relationship between the degree of integration and the financial performance of the firm:

H1a. Total supply chain integration (supplier-firm-customer) is positively related to financial performance. H1b. Supply chain integration with the supplier is positively related to financial performance. H1c. Supply chain integration with the customer is positively related to financial performance.

H1d. Supply chain integration within the firm is positively related to financial performance. The second set examines if more integration provides better financial performance: H2a. Total supply chain integration (supplier-firm-customer) will display the highest the research findings show that supply chain integration at any level is positively related to financial performance. H2b. Supply chain integration with the supplier will display medium levels of financial performance. H2c. Supply chain integration with the customer will display medium levels of financial performance. Data were collected from a stratified random sample of internationally active manufacturing companies from across Sweden. The research design proportionally represented large and small firms. The study evaluated the impact of supply chain integration on all manufacturers without regard to the size of the manufacturer. Further research should consider these limitations and explore the impact of supply chain integration on other performance measures in organizations.

Therefore, the researcher shall fill the gap between this research and previous study by examining both of financial and operational measure in order to assess the overall performance of the firm.

(Dehui Xu, Baofeng Huo, 2015), studied the effects of intra-organizational resources and inter-organizational capabilities on business performance. To improve performance and survive in a competitive environment, companies strive to collaborate and build close relationships with upstream and downstream partners, which are beneficial for every company along the entire supply chain. Previous studies have mainly examined the relationship between SCI and performance in terms of competitive capabilities and operational and business performance. The study addressed two major research questions. First, how do intra-organizational resources influence SCI? Second, how does SCI influence business performance? The main

objective of this study is to explore the effects of intra-organizational resources, including top management support (TMS) and information technology (IT), on inter-organizational capabilities including supply chain integration (SCI, with a focus on supplier integration (SI) and customer integration (CI)) and on business performance via a resource-based view (RBV). Partial least squares are used to analyze a sample of 176 manufacturers in China. The findings indicated that TMS and IT are two vital enablers of SCI and have different roles in improving SCI. In addition, SI has a significant effect on business performance, and CI has a marginally significant effect. This study presents two main limitations that provide potential directions for future research. First, data collected only from the Chinese manufacturing industry. Future studies could collect data in additional countries and industries to enhance the generalizability of the findings. Finally, the study examined only TMS and IT as enablers of SCI, and future studies could investigate its other antecedents.

Therefore, since the previous study examined only one dimension of performance and does not considering the operational performance; the researcher shall fill the gap between this research and previous studies through examining financial and operational performance simultaneously. Also, the current research shall fill the second gap by testing the research variables in Sudanese manufacturing firm's context. Finally, since the previous study examined only two capabilities, the current research shall fill the third gap by examine the four capabilities.

(Huo, 2015), studied the impact of supply chain integration on company performance: an organizational capability perspective. There are no commonly accepted sub-dimensions of SCI, and the relationships between different SCI dimensions are inconsistently described in previous studies, in

addition, there is very little empirical evidence as how different SCI dimensions simultaneously influence different types of firm performance. However, most of studies only focus on one or two performance dimensions, and their findings are inconsistent. Furthermore, they pay little attention to the relationships between different types of performance and the mediating effects among different types of SCI and performance types, also most SCI research is conducted in the US. The main objective of the study is to simultaneously examine the impact of three types of supply chain integration (SCI) on three types of company performance from the perspective of organizational capability. The study hypothesized that: H1a. Internal integration is positively related to customer integration, H1b. Internal integration is positively related to supplier integration, H2a. Internal integration is positively related to customer oriented performance, H2b. Internal integration is positively related to supplier oriented performance, and H2c. Internal integration is positively related to firm performance. The study using data collected from 617 firms in China and the structural equation modeling method was used. The main finding is the internal integration improves external integration and that internal and external integration directly and indirectly enhances firm performance. Future research could aim at testing and validating the model with more factors in other countries to assess its transferability using cross-sectional or longitudinal data. Cross-cultural investigations of different mechanisms of SCI and how it influences company performance may reveal interesting differences in various SCI behaviors and their effects on performance in different cultures; this study does not consider all the performance dimensions, future studies could explore these issues.

Therefore, since the previous study examined only one dimension of performance and does not considering the operational performance; the researcher shall fill the gap between this research and previous studies through examining financial and operational performance simultaneously. In addition, the current research will fill the second gap by testing the research variables in Sudanese manufacturing firm's context.

(Zhao, Feng and Wang, 2015), studied the effect of entrepreneurial orientation (EO) on firm performance and the mediating role of innovation performance and differentiation strategy. The effect of entrepreneurial orientation (EO) on firm performance has been investigated in many studies; the latest researches investigate the relationship between them by considering the effects of third variables which can be internal and external factors within this framework. The study aims to investigate the mediating role of innovation performance and differentiation strategy on the relationship between entrepreneurial orientation and firm performance. The study hypothesized that H1: Differentiation strategy mediates the relationship between entrepreneurial orientation and firm performance, H2: Innovation performance mediates the relationship between entrepreneurial orientation and firm performance, H3: Differentiation strategy mediates the relationship between entrepreneurial orientation and innovation performance. The survey of this study is conducted on 991 middle and senior managers of 331 middle and large scale firms operating in manufacturing industry in Turkey, in 2014. The data gathered from questionnaires are analyzed with SPSS statistical package program at firm level. The findings showed that both differentiation strategy and innovation performance mediate the relationship between EO and firm performance. Also, analyses results revealed another mediating

effect in which differentiation strategy mediates the relationship between EO and innovation performance. The study has some limitations, its survey is conducted on middle and large scale manufacturing firms in Turkey, findings might not be transferable to all types of firms. Thus, it is recommended that further researches can be conducted on small scale firms in different countries or service companies in Turkey and other countries for the generalizability of findings. The other limitation of this survey is that questions related to EO, innovation performance, differentiation strategy and firm performance are answered by same respondents which are middle or senior managers of firms. In the future surveys questions can be filled out by different respondents to prevent same-source bias.

Therefore, the researcher shall fill the gap between this research and previous study through testing the model in manufacturing sector as well as extended the sample to include the top management because they have possess the firm performance information.

(Enida Pulaj, 2015), studied the relationship between competitive strategies and organizational performance. The objective of this study is to examine the relationship between competitive strategies and organizational performance. The study hypothesized that: H1. There will be a positive relationship between the implementation of generic competitive strategies and firm performance. H2 Firms that implement a combination strategy perform better than those which adopt only one pure strategy. Simple random sampling technique was used to select a sample of 110 companies. The data was collected using questionnaires and analysis used ANOVA statistical model. The findings showed significant positive effects of cost leadership, differentiation and focus strategies on performance.

Therefore, the researcher shall fill the gap between this research and previous study through testing the competitive strategies as mediator variable in Sudanese manufacturing sector context as well as using large sample than used in the above previous study.

(Mohsenzadeh and Ahmadian, 2016), examined the mediating role of competitive strategies in the effect of firm competencies and export performance. Export among countries has become a complex process these days and it requires long-term and accurate policies in order to constantly have the foreign market in hand. Therefore, export planning and foresight in this regard are necessary. The objective of this study is to examine the mediating role of competitive strategies in affecting the aspects of firm competencies such as production capability, marketing and sales capability and information competency, and export performance. A questionnaire was used for data collection which was randomly distributed among 200 of managers and export experts of top export companies in Iran. SMART PLS and SPSS software were used for the data analysis. The findings showed that competitive strategies mediate the effect of production capability and export performance. However competitive strategies do not mediate the effect of marketing competency and export performance.

The contradictory of these study findings may open the door for replicating this model in different business setting; particularly there are little studies examined this model. Therefore, the current research will investigate the model in the Sudanese manufacturing firms.

(Mulugeta D. Watabaji, Adrienn Molnar, Manoj K. Dora, 2016), examined the influence of value chain integration on performance. The findings of the previous studies were inconsistent and few studies addressed to this issue. The main objective of study is to examine the interplay between value chain

integration dimensions and value chain performance along the malt barley value chain in Ethiopia. The analyses were based on survey data sets obtained from 320 farmers and 100 traders and qualitative interview responses captured from sixty-two key informants selected from members of the chain. The structural equation modeling technique was employed to seek answer for the question of how value chain integration dimensions are related to performance. The findings of the analyses showed the existence of positive relationships between coordination of activities and performance; between joint decision-making and performance at farmers-cooperatives interface; and between commitment towards long-term relationships and performance at farmers-traders interface. Though the use of data sets collected from a single agribusiness value chain in a developing country is an important empirical contribution by itself, future research should be done for better generalizability of the key findings to other agribusiness value chains in Ethiopia and even beyond.

Therefore, the researcher shall fill the gap between this research and previous study through testing the model in manufacturing sector particularly the previous study has conducted in agro-business sector, as well as using quantitative method for data collection rather than qualitative method that used in the previous study.

(Fathali, 2016), studied the impact of competitive strategies on corporate innovation in the automobile industry of Iran. Although the literature has long pointed out the importance of competitive strategies as a determinant of innovation, strategists have not focused on the impact of each strategy on the dimensions of innovation. Thus, the study makes a contribution towards filling this gap. The study hypothesized that: H1. Competitive strategies (cost leadership, differentiation, and focus) will be positively related to

product innovation. H2. Competitive strategies (cost leadership, differentiation, and focus) will be positively related to process innovation. H3. Competitive strategies (cost leadership, differentiation, and focus) will be positively related to administrative innovation. The study used a questionnaire-based survey of managers from two major automobile manufacturers (SAIPA and Iran Khodro) in Iran. A total of 286 useable questionnaires were received from managers from the two manufacturers. The measures of the independent and dependent variables are based on literature. The findings revealed that competitive strategies of Porter had a positive and significant influence on corporate innovation. With strong statistical significance, three competitive strategies- cost leadership, differentiation, and focus- provide an explanation for variations in corporate innovation dimensions including innovation in product, innovation in process, and administrative innovation.

Therefore, the researcher shall fill the gap between this research and previous study through testing the competitive strategies as mediator variable in manufacturing sector including automobile firms.

(Sadaghiani, Mohsen Hooshangi , Jamshid Salehi, Matin Rashidi Astaneh, 2017), they studied the mediation role of supply chain integration in relationship between employee commitment with organizational performance. They observed from previous studies inconsistency between SCI relationship and firm performance. The main objective of the research is to investigating the impact of supply chain integration on organization's commitment and performance. They select 150 top manufacturing companies in Qazvin province, questionnaire via e-mail, fax was used, four questionnaires were not valid and therefore, 53 questionnaires were valid. According to the model, 53 questionnaires were collected are greater than

required sample size and the procurement managers of manufacturing companies were targeted. The findings indicate that the internal integration positively influences on supplier and customer integration, whereas affects organization's performance. The study hypothesized that H1 internal integration positively related to organizational performance. H2 internal integration positively impacts on the level of supplier integration. H3 internal integration positively impacts on the level of customer integration. There were two limitations on this research. They just examine this model on manufacturing firm. And they examine only operational performance. Accordingly, they have some suggestions of future research: using this model on service firms, and considering both operational and financial performance can achieve more comprehensive results.

Therefore, since the previous study examined only one dimension of performance and does not considering the financial performance; the researcher shall fill the gap between this research and previous studies through examining financial and operational performance simultaneously.

(MUIA, 2017), studied the effects of competitive strategies on the performance of insurance sector in Kenya. The main objective of the study is to investigate the effects of competitive strategies on the performance of insurance sector in Kenya. The study employed a descriptive research design , the target population consisted of all strategic planning department in the 47 insurance companies in Kenya listed under the membership of Association of Kenya insurance (AKI). A purposive sampling technique was used to select a sample of three employees from strategic planning department in each insurance company resulting in 141 respondents; regression analysis was used to show the nature of the relationship between dependent and

independent variables. The findings revealed that cost leadership strategy and differentiation strategy influence the insurance performance. The study recommended that further studies can propose to find out whether the generic strategies (combination of two strategies or use of single strategies) do have unique contribution on the firm performance. Generic strategies should also be compared with hybrid strategies to find which one has more impact on the firm performance. Future studies should also be done on the impact of the competitive strategies on other industry such as education, manufacturing firm, and banking.

According to the limitations of the above two studies and their recommendations, the current research shall investigate the two competitive strategies simultaneously as mediator variable in the interpretation the relationship between value chain activities and firm performance. Moreover, the current research model shall test in the manufacturing sector.

(Famiyeh *et al.*, 2018), examined the green supply chain management (GSCM) and operational competitive performance. Manufacturing firms have begun to implement green supply chain management (GSCM) practices in response to customer demand for products and services that are environmentally sustainable and that are created through environmentally sustainable practices and in response to governmental environmental regulations, despite rising concerns about green management, there seem to be few studies investigating GSCM and its impacts on the operational competitive capabilities from a developing economy. The main objective of study is to understand the extent of GSCM practices' implementation in Ghana and how such practices impact firms' operational competitive capabilities. The study hypothesized that green supply chain management

(GSCM) has positively related to operational competitive performance.. Structural equation modeling was used to study the relationship between GSCM practices and firm operational competitive performance in terms of cost, quality, flexibility, and delivery time using a survey of informants. The findings indicate that when firms invest in GSCM practices, they are likely to achieve cost reductions, improved quality, and flexibility. One limitation of this study is the use of data mostly from Ghana. It is recommended for future researches to also assess these relationships using data from a wider geographical area.

Therefore, since the previous study examined only one dimension of performance and does not considering the financial performance; the researcher shall fill the gap between this research and previous studies through examining financial and operational performance simultaneously. In addition, the current research shall fill the second gap by testing the research variables in Sudanese manufacturing firm's context.

(Farah, Munga and Mbebe, 2018), studied the influence of competitive strategies on performance of commercial airlines in Kenya. The profitability of the airlines in Kenya has been dismal over the years unlike their counterparts in the region such as Ethiopian airlines. Further, the Kenyan sky is dominated by the European and Middle East carriers. The study aimed to determining the influence of competitive strategies on performance of commercial airlines in Kenya with reference to Airline Industry in Kenya. A descriptive research design was used in this study, a sample population of 194 managers was arrived at by calculating the target population of 393 managers at Airline Industry, and the researcher used a semi structured questionnaire as the primary data collection tool, the questionnaire was

administered using email and a drop and pick later method to the sampled respondents. Data processing and analysis were included data preparation, editing, coding, classification and analysis, the quantitative data in this research was analyzed by descriptive statistics using statistical package for social sciences (SPSS) version 24. The findings revealed that cost leadership strategy, differentiation strategy and focus strategy influence the performance of commercial airlines in Kenya positively.

(Errassafi, Abbar and Benabbou, 2019), they studied the mediating effect of internal integration on the relationship between supply chain integration and operational performance: evidence from Moroccan manufacturing firms. They reviewed several empirical researches had shown that there is a significant and positive relationship between the level of integration of the supply chain and the firm performance. However, they found incomplete and evolving conceptualizations made by these authors have led to inconsistent findings about this relationship. The main objective of the study is to explain the direct effect of supply chain integration on operational performance of manufacturing companies and the mediating effect of internal integration on the relationship between external integration and operational performance. They used a sample of 75 Moroccan manufacturing firms; PLS was used with the Structural Equation Modeling to study the direct effect of customer integration, internal integration and supplier integration on operational performance of manufacturers and to analyze the mediating effect of internal integration. They find that customer integration, internal integration and supplier integration are all positively and significantly related to operational performance of the manufacturer and internal integration mediates relationship between customer integration and operational performance but not relationship between supplier integration and operational performance.

The study hypothesized that: H1a. Customer integration is positively and significantly related to operational performance of the manufacturer, H1b. Internal integration is positively and significantly related to operational performance of the manufacturer, H1c. Supplier integration is positively and significantly related to operational performance of the manufacturer, H2a. There is a positive and significant relationship between internal integration and customer integration, H2b. There is a positive and significant relationship between internal integration and supplier integration, H3a. Internal integration has a mediating effect on the relationship between customer integration and operational performance of the manufacturer, H3b. Internal integration has a mediating effect on the relationship between supplier integration and operational performance of the manufacturer. The study limitations and recommendations including the data were collected data from plant and senior level managers who were expected to be able to have correct information about the variables of the research (Rai, Patnayakuni & Seth, 2006). Despite that this method largely used in the literature of supply chain management and has widely been adopted by similar studies, there is some authors suggesting that senior managers may not always have all information on the practices used in their organizations (Leyer & Moormann, 2014). Furthermore, the sample size in their research is relatively small and the effect of its size is also a limitation of this study, their sample includes only firms of automotive, aerospace electronic and textile industries therefore the results may not be applicable to other manufacturing firms. Consequently, further researches may take into account the new theory building of supply chain in order to improve the theoretical framework of supply chain integration and its impact on firm performance. Moreover, since other factors which can mediate relationship between external integration and operational

performance exist as we suggested, new further researches are encouraged to integrate other variables as mediating effects. Finally, employing larger samples and relying on multiple-item measures from more than one participant per firm may enhance possibilities of results generalization.

Therefore, the researcher shall fill the gap between this research and previous studies through examining financial and operational performance simultaneously.

(Zhao, Wang and Pal, 2020), examined the effects of agro-food supply chain integration (ASCI) on product quality and financial performance. The linkages among ASC internal integration (II), supplier integration (SI), customer integration (CI), product quality (PQ) and financial performance (FP) have not been investigated closely in the extant literature, especially from agro-food processors' perspective. There is genuine need to investigate the influence of ASCI on firms' PQ and FP, as well as explore the influencing mechanism among II, SI, CI, PQ and FP in Chinese ASC context. This study could help agro-food processing business better understand the value creation mechanism of ASCI and provide valuable guidance for them to decide how to manage ASCI in order to improve PQ and FP. The main objective of the study is to investigate the impact of agro-food supply chain integration, composed of internal, supplier and customer integration, on agro-food product quality and financial performance. It explores the relationships among these factors using the data from 162 Chinese agro-food processing businesses. The findings reveal that internal integration and supplier integration are the critical factors to improve product quality within the context of agro-food supply chain. Moreover, the product quality fully mediates the relationship between internal integration and financial performance. The main limitation of this study is the performance measures

may not only include financial performance, future studies can inclusion other measures such as cost efficiency, delivery reliability, lead-time, service variety, flexibility, and customer satisfaction. **Therefore, the researcher shall fill the gap between this research and previous study through examining financial and operational performance simultaneously. Additionally, this previous study recommended to inclusion other variables as moderators or mediators, thus this research shall examine the competitive strategies as mediator variable.**

(Ganbold and Rotaru, 2020), studied Effect of information technology enabled supply chain integration on firm's operational performance. This study aims to propose and test a model that considers the relationships among various types of IT capabilities and SCI, as well as multiple dimensions of firm's operational performance by answering the following research questions: RQ1. Do IT capabilities of cross-functional application, supply chain application and data consistency contribute to SCI?

RQ2. Do internal integration, supplier integration, customer integration contribute to operational performance of a firm in terms of product-mix flexibility, delivery, production cost, quality, inventory level and customer service?

The structural equation modeling approach is used to test theoretical predictions underlying the relationship among dimensions of IT capability, SCI and operational performance based on data obtained from senior executives of 108 large manufacturing firms. The findings indicate that IT capability has positive impact on SCI, except for data consistency, which is found to have negative impact on internal integration. The findings further indicate that SCI, especially customer integration, has positive and significant impact on all operational performance indicators.

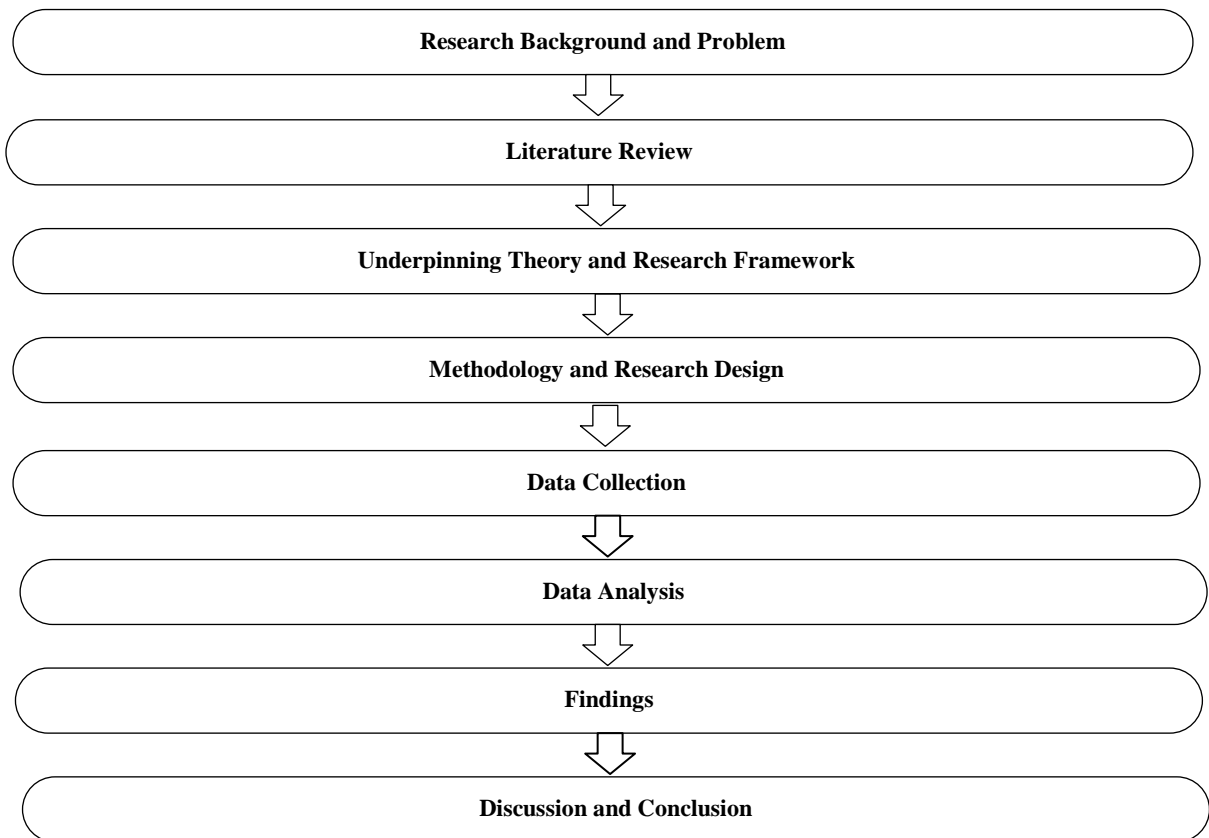
There are some limitations of this study, which at the same time open opportunities for future research. The explanatory power of the research model is characterized by relatively small R² values. The model could explain only 9.9% variance in internal integration construct. Hence, there might be other factors that have stronger influence on internal integration but were not included in the research model. Future research could examine other factors that might have a greater impact on internal integration. The results from this study may not be generalizable to the whole population in terms of other industries than manufacturing and/or small and medium organizations, even though the result could be generalized to large-sized manufacturing firms. The sample in this study included only the manufacturing companies listed in the First Section of the Tokyo Stock Exchange. Future research could extend this empirical investigation to the broader geographical contexts.

Therefore, the researcher shall fill the gap between this research and previous study through examining financial and operational performance simultaneously. Additionally, this previous study recommended to examine other factors that might have a greater impact on internal integration, thus this research shall examine the competitive strategies as mediator variable. Finally, this study shall conduct in the Sudanese manufacturing context.

1.3 Structure of the Research

This research is divided into five chapters. Chapter one provides an introduction to the research regarding value chain activities, and short overview of the research context, whereas, value chain activities necessary

for developing and achieving competitive strategies as well as firm performance. The relevant literature related to value chain activities and historical review about value chain activities, then, theories on value chain activities and followed by the theoretical framework and development or research hypotheses can be viewed in chapter two. Chapter three discusses the research methodology. Subsequently, chapter four analyses the research hypotheses and presents the findings of the research. Finally, the managerial implications and the conclusions of the research are discussed in chapter five. Finally, all these process of research structure can be presented in Figure 1.1.



Source: prepared by Researcher (2019)

Figure (1-1) Structure of the Research

CHAPTER ONE

LITERATURE REVIEW AND RESEARCH FRAMEWORK

1.1 Value Chain Activities Concept

The idea and concept of a value chain was first presented by Michael Porter (1985) for more than three decades in order to explore how customer value accumulates along a chain of value creating activities that lead to an end product or service. Porter describes the value chain as internal processes or activities a firm perform “to design, produce, market, deliver and support its product. He divided value chain activities into two major categories, primary activities and support activities (Porter, 1985).

On the other hand, internal integration focuses on activities within a manufacturing firm. It is the degree to which a manufacturer structures its own organizational strategies, practices and processes into collaborative, synchronized processes to meet its customers’ requirements and efficiently interact with its suppliers. Moreover, internal integration recognizes that the departments and functions within a manufacturing firm should function as part of an integrated process (Uwamahoro, 2018).

So, value chain represents a chain of activities that firm performs to deliver valuable product or service for the customer. Further, Porter value chain assumes that firm is a system consists of inputs, transformation process, and outputs. Each activity in the system encompasses the acquisition and consumption of resources. How the firm performs its value chain activities determines costs and profits. One enhances the competitiveness of a company by improving its value chain structure (Simatupang and Williams, 2017).

Value chain is one of the modern concepts in the management thought and its application rules have not been established enough in the business sector despite it was widely taken in the business administration literature. Further, the value chain model is one of the used models in the organization as it represents the general framework of industry and other sectors (Azeez, Alnidawi and Omran, 2016).

The value chain performance metrics can have tangible and intangible benefits. The tangible benefits include inventory reduction, personnel reduction, and cost reduction, improvements in cash management, productivity improvement, short lead time, and order management improvement. Whereas, the intangible benefits include efficient processes, globalization, effective communication, customer responsiveness, standardization of process and products, flexibility, and business performance (Bitange, Wang and Obara, 2015).

Furthermore, a firm should be able to identify its resources and capabilities, as well as specific competencies that can support strategic decision making pertaining to selection of competitive strategy in order to selection firm value chain (Prajogo *et al.*, 2008). Moreover, Porter (1985) suggested a value chain to determine core competencies that demonstrate the cost behavior method based on competitive strategy choice by firm in order to determine the relationship between value creating activities based on the highest order desired by the customer (Hertati and Sumantri, 2016).

The objective of the value chain analysis is to managing linkages and interrelationship between activities as well as identifying new ways in order to perform activities to create value for the customer. Furthermore, VCA help firms to eliminate all boundaries to facilitate a smooth flow of materials,

cash, resources and information which reduce cost of activities and products (Prajogo *et al.*, 2008).

Moreover, VCA enhance the relationship and interaction between firm and its customers and suppliers, which minimize the product development cost through early customer and supplier involvement (Handfield *et al.*, 1999). Value chain management metrics should not be focus only on partial areas rather it look across the whole chain. Value chains transfer inputs via organizational processes to create strategic outcomes (Barber, 2008b). The concept of value added chains was developed to clarify the business' use in constructing competitive advantages within an industry (Porter, 1980, 1985). Porter (1985) suggests that each organization's value chain "is embedded in a larger stream of activities" that he calls the "value system". Porter's value system is consistent with general theories of marketing (Nicovich, Dibrell and Davis, 2007).

John Shank and V. Govindarajan (1993) support porter with regard to value chain concept but they extended the concept of value chain in wide term than porter, they identified that "the value chain for any firm begin with value creating activities from raw material sources to final consumers." This description views the firm as part of an overall chain of value creating processes (Fearne *et al.*, 2012).

Furthermore, primary activities are described as those directly associated with transforming inputs into outputs, delivery and after-sales service. Primary activities consist of five activities: inbound logistic, operations, outbound logistic, marketing and services. Whereas, support activities associated with support primary activities as well as other support activities, they consist of four activities: firm infrastructure, human resource management, technology development and procurement (Porter, 1985). Each

element of primary activities groups is linked with support activities group, and the final result is firm margin (Peter Hines, 1993). Value chain analysis, consider as base for competitive strategies formation, understand the sources of competitive advantage and determine the linkages and interrelationship between value creating activities (Ensign, 2001).

Through value chain firm can identifies what the activities that added value and then link them with the main functional parts of the firm (Aguko, 2014). Value chain activities help firms to perceive how to obtain a competitive advantage over their rivals. Moreover, value chain consists of activities that generate costs and create customer value, Through value chain activities, it is possible to understand cost behaviors and to identify existing potential differentiation sources that can add value to the customer (Porter, 1985).

Value chain analysis can be used to formulate competitive strategies, understand the sources of competitive advantage and determine or develop the linkages and interrelationship between activities that create value to the customers. On the other hand, competitive strategies are based on integrating activities in the vale chain. So, integration can increase a firm capacity to implement strategies, e.g., respond quickly and effectively to market forces, improve its response to customer needs, and reduce cost. Therefore, competitive strategies should focus on activities required to increase value of a product or service (Ensign, 2001).

Furthermore, competitive strategy cannot be successful unless the firm possesses ability to perceive its own capabilities and customer needs. Moreover, the first step in applying value chain analysis is to break down the activities; the next step is to assess the potential for adding value through complete strategy both of cost advantage or differentiation, Finally, it is very important for the analyst to determine the strategies that focus on those

activities which lead to attain sustainable competitive advantages. Further, the profitability of a firm depends on how it effectively manages its activities in value chain and pricing its products or service (Porter, 1985).

Porter defined ten generic drivers in the value chain analysis, which including: scale, capacity utilization, linkages, interrelationships, vertical integration, location, timing, learning, policy decisions, and government regulations. Further, if firm does not manage properly its value chain may be result to misalignment of its activities. And eventually will impact negatively on its ability to allocate resources, opportunities for improvements, create value, and economic sustainability (Soosay *et al.*, 2012).

Value chain analysis requires the chosen of a particular value stream as the concentrate for initial analysis and improvement (Taylor, 2005). Value chain analysis can be defined as a tool to examine the current performance of the value chain and determine developed future performance. In addition to, value chain analysis focus on elimination of waste, efficient flow of materials and inter organizational relationship (Soosay *et al.*, 2012).

Value chain analysis is used to analyze, coordinate and optimize linkages between activities in the value chain, by focusing on the interdependence between them. It considered a mechanism to facilitates the optimization and coordination of interdependent activities in the value chain (Porter, 1985).

1.1.2 Value and Value Chain Concepts

The ability of any firm to understand its own capabilities and customer requirements is crucial for competitive strategy to be successful. The first steps in conducting the value chain analysis are to break down the primary activities which involve in the frame work. The next steps are to assess the potential for adding value through the means of cost advantage or

differentiation. Finally, it is very important for the analyst to determine the strategies that focus on those activities that would enable the firm to gain sustainable competitive advantages. The profitability of a firm depends on how effectively it manages the various activities in value chain; price that the customer is willing to pay for the firm products and services exceeds the relative cost of the value chain activities (Kumar and Pradesh, 2016).

Value is a performance characteristic, feature and attribute, or any other aspect of either the goods or services that customers are willing to provide a price for both the goods and the price received, which is usually in the form of money. The value provided to the customers through the transformation of raw materials and other resources to some of the products or services are required by the customers. The assessment of value chain offers a comprehensive and challenging approach to the organization focused on creating and maintaining the customers and therefore creates a real competitive advantage (Simatupang and Williams, 2017).

The value of any product or service is the result of its ability to meet a customer's priorities. Customer priorities are simply the things that are so important to customers that they will pay a premium for them or, when they can't get them, they will switch suppliers (Walters *et al.*, 2012).

A value chain is then broadened to describe a series of organizational activities that creates, delivers, and captures value at each step, starting from the processing of raw materials to ending with the finished product in the hands of the end users. While, value chain management can be defined as the process of managing all sequences of the integrated activities and information to transfer value along the entire supply chain (Simatupang and Williams, 2017).

Each firm is a series of activities that are performed to design, produce, and marketing, deliver, and support its product. All these activities can be represented using a value chain (Porter, 1985). Each firm has two groups of activities to create value for its customers. One group is the primary activities that are performed to create physical product. Another group is the supporting activities which provide inputs and infrastructure to support the primary activities of the firm (Bedeley *et al.*, 2016).

Value chain performance can have tangible and intangible benefits. The tangible benefits compose of inventory reduction, personnel reduction, and cost reduction, improvement in cash flow, productivity improvement, short lead time, and order management improvement. Whereas, intangible benefits compose of efficient process, globalization, effective communication, customers responsiveness, standardization of process and products, flexibility, and business performance (Bitange, Wang and Obara, 2015).

Value can be accomplished through both the tangible and operational aspects as well as the intangible and managerial aspects of the total chain. In developing this holistic supply chain scorecard further to incorporate both the tangible and intangible value adding concepts, the following diagrams emerge. The first diagram covers the tangible and somewhat easily measured components that support or impact the operational capabilities. These include the financial flows, the informational flows and the process and procedural flows. All these aspects will improve or constrain the flows and operational performance of the total chain (Barber, 2008a).

A value chain describes as a set of activities that a focal firm operating in a specific industry performs in order to deliver a valuable product or service for the market (Porter, 1985). A value chain is an analysis tool firm use to identify specific steps required to provide competitive product or services to

the customers. In particular, an analysis of the firm's value chain helps management discover which steps or activities are not competitive, where costs can be reduced, or which activity should be outsourced. Also, management can use the analysis to find ways to increase value for the customer at one or more steps of the value chain (Edward J. Blocher, David E. Stout, 2010).

Value is defined as the amount customers are willing to pay for what a firm provides them. Further, value is measured by total revenue, which is reflected by the selling price for each product unit sold by a firm. So, a firm will be more profitable if its product value exceeds the costs incurred in order to create that product (Porter, 1985). Customer value refers to the features of a product or service that a customer perceives as valuable. For example: quality, delivery and novelty (Huo *et al.*, 2005).

Therefore, the main goal from value chain is to create value for customers that exceeds the cost of doing so. Value chain consists of activities, value, cost, and margin. Value activities are the physically and technologically distinct activities a firm performs to produce a product or provide a service. While, margin is the difference between total value and the cost of performing the value-creating activities (Porter, 1985).

A value chain is the connected group of value-creating activities that produce and deliver a product or provide a service to the customer. It starts with basic raw materials from suppliers, moving to a series of value-added activities involved in producing and marketing a product or service, and ending with distributors delivering the final products or services to the final customers (Hoque, 2005).

The value chain can be thought of as three main phases, in sequence: (1) upstream, (2) operations, and (3) downstream. The upstream phase includes

product development and the firm's linkages with suppliers; operations refers to the manufacturing operations or, for a retailer or service firm, the operations involved in providing the product or service; while the downstream phase refers to linkages with customers, including delivery, service, and other related activities. Therefore, some of these phases have referred to the analysis of the upstream phase as supply chain management and to the analysis of the downstream phase as customer relationship management (Edward J. Blocher, David E. Stout, 2010).

In identifying the elements of the value chain that show where the value is being created typically led to the "core competency" approach. In the total chain each partner will have its core competency and this has to be integrated with its partner along the total chain. It is often within these integrated links where the most value is added along the chain. Moreover, when looking at value chains from another aspect of changing environments, Webb argued that changing customer requirements would also impact on the value adding aspects of supply chain partners. Focusing on the high value added activities associated with core competencies is not enough when doing business in a dynamic environment. So, core competencies that adapted or aligned with customer requirements will achieve and maintain the competitive edge (Barber, 2008b).

1.1.3 Value Chain and Competitive Advantage

In order to achieve firm competitive advantage, it is necessary firstly to define a firm's value chain for competing in a particular industry. Starting with the generic chain, next individual value activities are identified in the particular firm. Then each generic category can be divided into separated activities. Wide functions such as manufacturing should be separate into

activities. Finally, subdividing activities can proceed to the level of increasingly narrow activities that are to some degree discrete (Porter, 1985).

For example, every machine in a factory could be treated as a separate activity. Therefore, firm may consist of the huge number of potential activities. Further, there are many criteria's for appropriate level of activity segregation such as separation activity depends on the economics of the activities and the purposes for which the value chain is being analyzed. The basic criteria include the following questions:

Is that activity should be isolated and separated?

Is that activity has different economic values?

Is the activity has a high potential impact on differentiation?

Is that activity has a significant or growing proportion of cost?

Moreover, once activities segregated and value chain analysis have been done correctly, firm will found some activities have significance impact on competitive advantage; on the other hand some activities required to be eliminated or combine together because they prove to be unimportant to competitive advantage. Furthermore, selecting the appropriate category in which to put an activity for may require judgment of person who perform the analysis (Porter, 1985).

1.1.4 Value Chain Analysis Concept

Porter (1985) explains that Value Chain Analysis (VCA) is a strategic analysis tool that is used to better understand competitive advantage, to identify where customer value increases or decreases cost, and to better understand the firm relationships with suppliers, customers, and other firms in the industry. So, VCA helps managers to understand the firm position in the Value Chain of a product and to enhance the product's competitive

advantage. Furthermore, the purpose of VCA is to identify the stages of the value chain where the firm can increase value to the customer or lower costs (Simatupang and Williams, 2017).

Value chain analysis is a strategic analysis tool used to better understand the firm's competitive advantage, to identify where value to customers can be increased or costs reduced, and to better understand the firm's linkages with suppliers, customers, and other firms in the industry. The activities include all steps necessary to provide a competitive product or service to the customer (Edward J. Blocher, David E. Stout, 2010). Value chain is the sequence of business functions in which customer usefulness is added to products (Charles T. Horngren, Srikant M. Datar, 2012). Porter divided a firm into strategically activities in order to understand the behavior of costs and the potential sources of differentiation. So, a firm can gain competitive advantage through two ways: either by performing these activities at the lower cost or do them better than its competitors (Porter, 1985).

Moreover, value chain analysis plays vital role of understanding the total value added of all activities across the firm, as well as the industry. Further, value chain help firm to determine which area has higher cost to be reduced in order to achieve cost leadership strategy, and which area to be enhancing customer value in order to achieved differentiation strategy (Hoque, 2005).

In addition, value chain help firm to concentrates its efforts on the group of value-creating activities that starting from receiving raw materials from suppliers, research and development of products and operations, to sell product up to the customer and after-sales service (Hoque, 2005).

According to Porter (1985), a sustainable competitive advantage can be achieved either by reducing the costs of the value chain or by reconfiguring the value chain the company operates at. Shank and Govindarajan (1989),

who introduced value chain analysis, argue that the decisions should be analyzed in the broader context of the value chain, not solely from the perspective of one firm and its closest suppliers and customers. The performer of the analysis should look beyond the organizational boundaries of the value chain from upstream to downstream (Viskari *et al.*, 2012).

Value chain analysis considers as one of the tools that help firms to identify the bottleneck activities, in order to maximize the value creation and minimize cost. Furthermore, VCA can use as tool to examine, coordinate and optimize the linkages among activities in the value chain (Akenbor, Cletus O. & Okoye, 2011). According to the Institute of Management Accountants, IMA (1986) value chain analysis helps firms to assess their performance in three areas; firstly, through identification sources of profitability and understanding the cost of their internal processes; secondly, by identifying opportunities for creating and sustaining superior differentiated products. Thirdly, and finally understanding the relationships and associated costs among external suppliers and customers (Aguko, 2014).

1.1.5 Value chain analysis steps

Step one: Identify the Value-Chain Activities. The firm identifies the specific value activities that firms in the industry must perform in the processes of designing, manufacturing, and providing customer service.

Step two: Develop a Competitive Advantage by Reducing Cost or Adding Value. In this step, the firm determines the nature of its current and potential competitive advantage by studying the value activities and cost drivers identified earlier. In doing so, the firm must consider the following:

1. Identify competitive advantage (cost leadership or differentiation). The analysis of value activities can help management better understand the firm's

strategic competitive advantage and its proper positioning in the overall industry value chain.

2. Identify opportunities for added value. The analysis of value activities can help identify activities in which the firm can add significant value for the customer. For example, food-processing plants and packaging plants are now commonly located near their largest customers to provide faster and cheaper delivery. Similarly, large retailers such as Wal-Mart use computer-based technology to coordinate with suppliers to efficiently and quickly restock each of its stores. In banking, ATMs (automated teller machines) were introduced to provide improved customer service and to reduce processing costs. Banks have begun to develop online computer technologies to further enhance customer service and to provide an opportunity to reduce processing costs further.

3. Identify opportunities for reduced cost. A study of its value activities can help a firm determine those parts of the value chain for which it is *not* competitive. For example, firms in the electronics business, such as Flextronics International Ltd. and Sanmina-SCI, have become large suppliers of parts and subassemblies for computer manufacturers and other electronics manufacturers such as Hewlett-Packard, Sony, Apple and Microsoft, among other (Edward J. Blocher, David E. Stout, 2010).

1.1.6 Porter's value chain framework

Porter (1985) suggests that a firm's value chain is consists of nine categories of interrelated activities. These activities divided into two main groups, primary activities and support activities as shown in figure 1-1 below:

Figure 1: Porter's Generic Value Chain



Source: Michael E. Porter 1985

Figure: (1-1) Value Chain Model

Primary activities:

Primary activities consist of five activities, which required for each industry, as shown in Figure 2-1. Each category is divisible into a number of distinct activities as below, it depend on the specific industry and firm strategy.

Inbound logistic activities: included activities associated with receiving, storing, and distributing inputs to the product line, such as material handling, warehousing, inventory control, vehicle scheduling, and returns to suppliers (Porter, 1985).

Operations activities: included activities associated with transforming inputs into the final product, such as machining, packaging, assembly, equipment maintenance, testing, printing, and facility operations (Porter, 1985). Furthermore, firm competitive strategy places specific demands on the operation function, at the same time the firm operation strategy should be

specifically designed to achieve the goals of the firm competitive strategy. Moreover, a firm's competitive strategy drives its operation strategy leading to operations decisions that result in some desired performance (Ã and Acquaah, 2008).

Outbound logistics: include of activities associated with collecting, storing, and physically distributing the product to buyers, such as finished goods warehousing, product handling, delivery vehicle operation, order processing, and scheduling.

Marketing and sales: include of activities associated with discovering and satisfying customer wants and needs, such as advertising, promotion, sales force, quoting, channel selection, channel relations, and pricing (Porter, 1985). Moreover, marketing capabilities encompass knowledge of competition and customers, also skills in segmentation and target markets, advertising, pricing and integrating marketing activity (Song, Benedetto and Nason, 2007).

Service: include of activities associated with providing customers with service to enhance or maintain the value of the product, such as installation, repair, training and parts supply (Porter, 1985). Furthermore, each of the categories may be vital to competitive advantage it depend on the industry type. For example, a distributor, inbound and outbound logistics are the most critical. Whereas service firm that providing the service to its customers such as bank deliver loans, marketing and sales will be critical to achieving competitive advantage. For manufacturing firm, operation will be critical for competitive advantage. For a high speed copier manufacturer, service considers a major source of competitive advantage (Porter, 1985).

Support Activities:

Porter divided support activities into four categories as shown in figure 2-1. As with primary activities, each category of support activities is divisible into a number of distinct value activities.

Procurement activities: encompass activities that involve in purchasing inputs, though purchased inputs are commonly associated with primary activities, also each value activity including support activities may require purchasing inputs. For example, laboratory supplies and independent testing services are common purchased inputs in technology development, while an accounting firm is a common purchased input in firm infrastructure. In spite of, the cost of procurement activities themselves usually represents a small amount of total costs, but sometimes it has a large impact on the firm's overall cost and differentiation. So, improve purchasing practices can strongly affect the cost and quality of purchased inputs, as well as other activities associated with receiving and using the inputs, and interacting with suppliers (Porter, 1985).

Technology Development activities: consists of a number of activities that associated with the improving product and process, such as telecommunications technology for the order entry system, or office automation for the accounting department. Furthermore, technology development basically associated with the engineering department or the development group, technology development does not solely apply to technologies directly linked with the end product (Porter, 1985). In addition, the research, development, and engineering (RD&E) can be doing through three stages:

1. Market research, during which emerging customer needs are assessed and ideas are generated for new products.

2. Product design, during which scientists and engineers develop the technical specifications of products.

3. Product development, during which the company creates features critical to customer satisfaction and designs prototypes, production processes, and any special tooling required (Atkinson, Kaplan and Young, 2012). Moreover, technology development may take many forms, like basic research and product design to media research, process equipment design, and servicing procedures. In addition, Technology development that is associated with the product and its features supports the entire chain, whereas other technology development associated with particular primary or support activities. Therefore, technology development has vital role to competitive advantage, in all industries (Porter, 1985).

Human Resource Management activities: consists of activities involved in recruiting, hiring, training, development, and compensation of employees. Further, human resource management supports both individual primary and support activities (e.g., hiring of engineers) and the entire value chain (e.g., labor negotiations). Moreover, Human resource management affects firm competitive advantage regardless of type of industry (Porter, 1985).

Firm Infrastructure activities: they are break down into a number of activities including general management, planning, finance, accounting, legal, government affairs, and quality management. Infrastructure activities are different from other support activities, because they are usually supports the entire chain rather than individual activities, and that depending on the whether a firm is diversified or not. Furthermore, firm infrastructure may be independent or divided between a business unit and the parent firm. In diversified firms, infrastructure activities are typically split between the business units and corporate levels (e.g., financing is often done at the

corporate level while quality management is done at the business unit level). Many infrastructure activities occur at both the business unit and corporate levels. However, firm infrastructure sometimes viewed only as just “expense,” but can be a powerful source of competitive advantage. For example, appropriate management information systems can contribute significantly to cost position, while in some industries top management plays a vital role in dealing with the customers (Porter, 1985).

Sony Corporation’s Value Chain

Value chain is the sequence of business functions in which customer usefulness is added to products. Figure 2-2 shows six primary activities: research and development, design, production, marketing, distribution, and customer service. The researcher illustrates these business functions using Sony Corporation’s television division (Charles T. Horngren, Srikant M. Datar, 2012).

1. Research and development (R&D): Generating and experimenting with ideas related to new products, services, or processes. At Sony, this function includes research on alternative television signal transmission (analog, digital, and high-definition) and on the clarity of different shapes and thicknesses of television screens.

2. Design of products and processes: Detailed planning, engineering, and testing of products and processes. Design at Sony includes determining the number of component parts in a television set and the effect of alternative product designs on quality and manufacturing costs. Some representations of the value chain collectively refer to the first two steps as technology development.

3. Production: procuring, transporting and storing (also called inbound logistics), coordinating, and assembling (also called operations) resources to

produce a product or deliver a service. Production of a Sony television set includes the procurement and assembly of the electronic parts, the cabinet, and the packaging used for shipping.

4. **Marketing (including sales):** Promoting and selling products or services to customers or prospective customers. Sony markets its televisions at trade shows, via advertisements in newspapers and magazines, on the Internet, and through its sales force.

5. **Distribution:** Processing orders and shipping products or services to customers (also called outbound logistics). Distribution for Sony includes shipping to retail outlets, catalog vendors, direct sales via the Internet, and other channels through which customers purchase televisions.

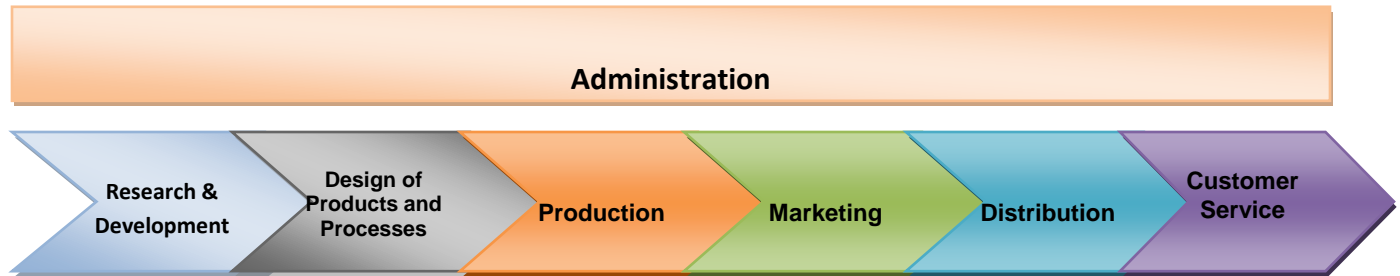
6. **Customer service:** Providing after-sales service to customers. Sony provides customer service on its televisions in the form of customer-help telephone lines, support on the Internet, and warranty repair work.

In addition to the six primary business functions, Figure 1-2 shows an administrative function, which consists of functions such as accounting and finance, human resource management, and information technology that support the six primary activities.

Furthermore, the administrative support activities may include within the primary activities. For example, included in the marketing function is the function of analyzing, reporting, and accounting for resources spent in different marketing channels, while the production function includes the human resource management function of training front-line workers.

On the other hand, managers track the costs incurred in each value-chain category. Their goal is to reduce costs and to improve efficiency. Management accounting information helps managers make cost-benefit tradeoffs. For example, is it cheaper to buy products from outside vendors or

to do manufacturing in-house? How does investing resources in design and manufacturing reduce costs of marketing and customer service? (Charles T. Horngren, Srikant M. Datar, 2012).



Source: Charles T. Horngren, Srikant M. Datar, Madhav V. Rajan, 2012

Figure (1–2) Value chain used by Sony Corporation’s television division

1.1.7 Activity Types

Within each category of primary and support activities, there are three activity types that play several roles in a competitive advantage:

Direct Activities: Those activities directly associated in creating value for the customer, such as assembly, parts machining, sales force operation, advertising, product design, recruiting, etc.

Indirect Activities: Those activities offer support to direct activities in order to make them possible to perform their activities on regular manner, such as maintenance, scheduling, operation of facilities, sales force administration, research administration, vendor record keeping, etc.

Quality Assurance: Those activities that ensure the quality of other activities, such as monitoring, inspecting, testing, reviewing, checking, adjusting, and reworking.

Furthermore, the role of indirect and quality assurance activities is often not well understood; however, it’s very important to make distinction among the three activity types in order to identifying competitive advantage. Moreover,

in many industries, indirect activities represent a large and rapidly growing proportion of cost and can play a significant role in differentiation through their effect on direct activities (Porter, 1985).

1.1.8 Corporate Value Chain

Usually on the developing corporate strategy stage, firm should analyze its internal environment in order to identify its strengths and weakness, to do so it's necessary to analyzing the individual value activities. Nevertheless, there are three steps proposed for a corporate value chain analysis:

Firstly, examine each product line's value chain to identifying its strengths and weaknesses. Secondly, examine the "linkage" within each product line's value chain, whereas linkages are connections between the way one value-added activity (e.g. marketing) is performed and its impact on the cost of performance of another activity (e.g. quality control). Thirdly and finally, examine the potential cooperation between the value chains of different product lines or business units. Each value element (e.g. procurement or operation) has an inherent economy of scale in which activities are conducted at the lowest possible cost per unit of output. That is, sharing resources by two separate products in the corporate value chain (Hoque, 2005).

1.1.9 Value Chain Linkages

Value chain analysis itself is inadequately to achieve competitive advantage. So, firm can enhance the benefit of value chain analysis by identify the linkages and interrelationship internally and externally with its customers and suppliers. Moreover, most of the internal activities of the firm are interdependent rather than independent. So, if these linkages are exploited properly a firm can be more likely to obtain a competitive advantage more than its rivals (Hoque, 2005).

Moreover, well managing linkages between activities will improve supply chain management performance through lowering cost, shortening delivery time, providing appropriate feedback, maintaining low inventory levels, and improving reliability (Lee and Dennis, 2007).

In addition, Value chain analysis can be used to evolve competitive strategies, understand the sources of competitive advantage, and identify or develop linkages and interrelationships between activities that create value to the product and customer. The organizations that work in high competition environment may need to coordinate the sharing activities between organizational sub units (Presscott C. Ensign, 2001). Therefore, Competitive advantage cannot be achieved solely with value chain analysis rather than how to manage properly the linkages and interrelationship between activities (Porter, 1985).

1.1.9.1 Optimization and Coordination in the Linkages

Linkages can influence competitive advantage in two ways: optimization and coordination. Optimization means how to do something as quite perfect, effectively, and efficiently as possible. In order to understand the optimization of linkages in the context of organization we can refer to Porter's definition of linkages (Porter, 1985). So, the options made in performing value activity can have an impact on the performance of an activity elsewhere. This means that organization must optimize the linkages in the value chain in order to achieve competitive advantage (Presscott C. Ensign, 2001).

Moreover, the benefits of coordination and optimization linkages between a firm and its suppliers are a function of suppliers' bargaining power and are reflected in suppliers' margins. Thus, both coordination with suppliers and

strong bargaining to capture the gaining are critical to competitive advantage. As with supplier linkages, coordination and jointly optimization with channels can lower cost or enhance differentiation (Porter, 1985).

Furthermore, the competitive advantage also can be accomplished by the coordination of linkages. In order to achieve competitive strategy, some degree of integration between value activities is required. Integration of activities is needed to manage interdependencies. So, the ability to management the linkage will reduce cost or increase differentiation. Moreover, coordination of linkages means that organization cost or differentiation can result from the way linkages are managed as well as the effort to reduce cost or improve performance in each value activity individually (Porter, 1985).

1.1.9.2 Internal Linkages

Value chain is not seemed as a combination of independent activities rather than a system of interdependent activities. So, Linkages is relationships between the way one value activity is performed and its impact on the cost or performance of another activity. Furthermore, competitive advantage considerably achieve from linkages between activities. Moreover, linkages may lead firm to achieve competitive advantage in two ways: optimization and coordination (Porter, 1985).

For example, a more costly product design, more rigorous materials specifications, or greater in-process inspection may reduce service costs. A firm must optimize such linkages reflecting its strategy in order to achieve its competitive advantage. On the other hand, linkages may also reflect the need to coordinate activities. On time delivery, for example, may require coordination of activities in operations, outbound logistics, and service.

Further, the possibility to coordinate linkages between activities often may reduce cost or enhances differentiation (Porter, 1985).

Moreover, there are many kinds of linkages; the most obvious of them are those among support activities and primary activities. For example, while procurement practices sometimes influence the quality of purchased inputs and therefore production costs, inspection costs, and product quality. More perfect linkages are those between primary activities. For example, enhanced inspection of incoming parts may reduce quality assurance costs later in the production process, while better maintenance often reduces the downtime of a machine. Moreover, linkages among value activities emerge according to the following causes:

- 1- The same activity can be performed in different ways. For example, conformance to specifications can be achieved through high quality purchased inputs, specifying close tolerances in the manufacturing process, or one hundred percent inspection of final product.
- 2- The cost or performance of direct activities is improved by greater efforts in indirect activities. For example, better scheduling (an indirect activity) reduces sales force travel time or delivery vehicle time (direct activities).
- 3- Activities achieved internally reduce the need to demonstrate, explain, or service a product in the field. For example, 100 percent inspection can substantially reduce service costs in the field. Exploiting linkages usually needs information flows that will allow optimization or coordination to take place. So, information systems are sometimes crucial to enhancing competitive advantages from linkages. Therefore, we can conclude that managing linkages is a more complicated than managing value chain activities themselves (Porter, 1985).

Furthermore, internal linkage entail to easy access to key operational data from the integrated database, highly integrated information system linking to various internal departments in firm, like accessing to inventory information, marketing information, purchasing information, production information and so forth (Lee and Dennis, 2007).

1.1.9.3 Vertical Linkages

Linkages also exist beyond internal value chain activities. It includes firm's value chain as well as suppliers and distributor channels value chains. This type of linkages called vertical linkages, they are similar to the linkages within the value chain the way supplier or channel activities are performed affects the cost or performance of a firm's activities (Porter, 1985).

Supply chain management is aim to enhance firm competitive advantage by properly integrating internal firm activities and effectively linking them with external activities of suppliers and customers. So, the benefits of supply chain integration can be acquire through efficient linkages between different supply chain activities both internal and external (Kim, 2006).

Moreover, to create value through value chain activities firms often requested to build effective alliances with their suppliers and customers in order to developing strong positive relationships with them. Therefore, the firms that have such strong positive relationships with their suppliers and customers, they are said to have social capital. In addition, the relationships themselves have value because they give firm ability to generate knowledge transfer and access to resources that a firm may not hold internally (Hitt and Ireland, 2009).

Moreover, the success of supply chain management as a system relies on firms that can develop specific capabilities and competitiveness, seek total

supply chain coordination, enhance communication to reduce uncertainty and inventory levels, ensure on-time delivery of high quality goods and services at a reasonable cost, and the involvement of appropriate business partners such as suppliers, customers and distribution channels (Liao, Kuo and Ding, 2017). All participants of the value chain need to perform to maximize the total value added by the total chain. They must do so in an ever changing and increasingly risky environment (Barber, 2008a).

1.1.9.4 Suppliers Linkages

Suppliers linkages is first type of the vertical linkages, supplier can be define as producer a product or provider service that a firm used it in its value chain. So, suppliers' value chains have significant impact on the firm activities. It seem obviously with the firm's procurement and inbound logistics activities which interact with a supplier's order entry system, for example, while a supplier's applications engineering staff works with a firm's technology development and manufacturing activities. A supplier's product characteristics as well as its other contact points with a firm's value chain can significantly affect a firm's cost and differentiation (Porter, 1985).

For example, frequent supplier shipments can reduce a firm's inventory needs, appropriate packaging of supplier products can lower handling cost, and supplier inspection can remove the need for incoming inspection by a firm. Therefore, the linkages between suppliers' value chains and a firm's value chain provide opportunities for the firm to enhance its competitive advantage as well as its overall performance (Porter, 1985).

To achieve organizational objectives i.e. total customer satisfaction, cost savings and product quality, these objectives can be achieved by successful implementation of supplier relationship management (SRM). It further

emphasizes on multiple strategic moves i.e. every supplier and customer is different and cannot be dealt with a single strategy. Actually, nowadays products and services being placed great influence on customer or supplier perception about and how the organization views them. To get an optimal yield, understanding and wisely responding to this triangulation is prerequisite (Hadrawi, 2019).

Furthermore, supplier linkage deals with strategic linkages with suppliers, involving suppliers in many stages, such as new products during the design stage, in production planning and inventory management, developing a rapid response order processing system with suppliers, placing a supplier network that assures reliable delivery, and exchanging information with suppliers (Lee and Dennis, 2007).

Moreover, the vital of supplier relationship management can be explained with the fact that, the poor coordination among suppliers has become one of the major issues in the industry i.e. US food industry and is accounted for the waste of almost \$30 billion annually outsourcing constituent 50-60 percent of total product Sambasivan et al., (2009). Actually with ever-changing customer demand and to manage and relieve the intense of competition from existing and potential competitors, it's necessary for firm to responsive and flexible supply chain which is only possible with the successful installation of SRM program (Hadrawi, 2019).

1.1.9.5 Channels and Customers linkages:

Channels and customers are the second kind of vertical linkages, also channels have value chains through which a firm's product distribute. The channel markup over a firm's selling price. Further, channels achieved such activities as sales, advertising, and display that may substitute for or

complement the firm's activities. There are many mutual points between a firm's and channels' value chains in activities such as the sales force, order entry, and outbound logistics (Porter, 1985). Moreover, vertical linkages are easier to achieve with coalition partners or sister business units than with independent firms, though even this is not assured (Porter, 1985).

Whereas, customer linkage is concerned with planning, implementing, and evaluating successful relationships between providers and recipients either upstream or downstream of supply chain. So, customer linkage deals with the ability to communicate and delivery the right products or services to customers locally and globally in the right time, right place, and right quantity with the correct invoice. Further, customer linkage is mainly sharing product information with customers, accepting customer orders, interacting with customers to manage demand, having an order placing system, sharing order status with customers during order scheduling, and product delivery phase (Lee and Dennis, 2007).

1.1.9.6 Linkages and interrelationship among activities

There are three ways to identify the linkages and interrelationship between value chain activities which include: by participant in the linkage, by purpose of linkage, and by kind of strategic linkage. These three ways to describe linkage are to the questions of where, why, and how linkages occur.

Firstly, interrelationship by participant in the linkage: according to this type of classification, interrelationship divided into two major types, internal and external linkages. In order to deliver product or service to the customer, every activity in the value chain can performed within the firm or by source outside the firm. So, the internal linkages may take three aspects of interrelationship which include: intra- unit interrelationship, intra- firm interrelationship, and

inter- unit interrelationship (for example, business unit or geographic unit). Whereas, external linkages, may take two aspects of interrelationship which include: inter- firm interrelationship and network interrelationship.

Secondly, interrelationship by purpose of linkages: this is second classification of interrelationship; it may take three aspects of interrelationship which include: 1) task performance linkages to carryout value activities included in one unit value chain. 2) Sharing linkage- to share an activity or resources between two units at the same firm. 3) Network linkage- to perform discrete activities in new shared value chain.

Thirdly, interrelationship by kind of strategic linkage: this classification directly related to the type of strategy being pursued. This, type of interrelationship classified into two main types: 1) business strategy linkages, 2) corporate strategy linkages. Business strategy linkages occur where the activity being performed is necessary part of the chain of activities in one value chain (Porter, 1985).

Therefore, all activities performed are designed to contribute to the strategy in that one unit. Thus, business strategy linkages include three types of interrelationship: intra- unit interrelationship (internal integration), intra- firm interrelationship (internal outsourcing), and inter- firm interrelationship (external outsourcing). Whereas, the corporate strategy linkages, occur when an activity or resources shared between two units at the same firm or a unit and another firm. These interrelationships develop to achieve competitive advantage at corporate level. Furthermore, these linkages can result in two types of interrelationships: inter- unit interrelationship and network interrelationship (Presscott C. Ensign, 2001)

1.1.10 Value Chain and Organizational Structure

The value chain plays a vital role in designing organizational structure. The basic concept of organizational structure is divide organization into activities and collects each certain activity together under organizational units such as purchasing or production (Porter, 1985).

So, the logic of those classifications is that activities have similarities and then should be manage properly by putting them together in a specific department or unit whatever it's; at the same time, departments should be separated from each other's. This separation of like activities is what organizational theorists call differentiation. Since, organizational units separated, firm needed to coordinate them. Furthermore, value chain provides methodological way to breakdown a firm into its separated activities; it can be used to examine how the firm activities could be collected (Porter, 1985).

1.2 Competitive Strategies

1.2.1 Preface

Porter's model is an influential tool for methodically diagnosing the main competitive pressures in a market and assessing how strong and significant each one is. Kitoto (2010) observed that a correct analysis of the five forces will assist a firm choose one of the generic strategies that will successfully enable the firm to compete profitably in an industry. Managers in the manufacturing industry therefore can only develop and choose winning strategies by first identifying the competitive pressures that exists, measuring the virtual strength of each and gaining a deep understanding of the sector's whole competitive structure (Farah, Munga and Mbebe, 2018).

1.2.2 The Concept of Strategy and Competitive Strategies

Strategy has been defined as the match an organization makes between its internal resources and skills and the opportunities and risks created by its external environment (Grant, 2001). On the other hand, competition defines as critical factor for each firm to be success or failure. Therefore competition determines what are appropriate firm activities that can contribute to achieve the desired performance, for example, marketing, operations, procurement and technology development activities and so forth. Thus, competitive strategy help firm to get a better competitive position in an industry. As well as, competitive strategy endeavor to achieve a profitable and sustainable performance more than the rivals in the same industry (Porter, 1985).

Competition has intensified since 1990 and markets became global, so did the challenges associated with getting a product and service to the right place at the right time at the lowest cost. Firms began to realize that it is insufficient to improve efficiencies within firm, but their whole supply chain has to be competitive (Li *et al.*, 2006). Furthermore, Starting in 1990, firms all over the world have been experiencing increasing national and international competition. Strategic alliances among firms have been growing. Organizational structures are starting to align with processes. Manufacturing systems have been enhanced with information technology tools such as Enterprise Resource Planning (ERP), distribution requirements planning, electronic commerce, product data management, collaborative engineering, etc. (Al-mudimigh *et al.*, 2004).

Competitive strategy is defined as the strategy which search for a preferably competitive situation for the firm in which it works. Competitive strategy help firm to accomplish specific levels of profits and sustain it (Herzallah and Gutiérrez-gutiérrez, 2013).

Porter, (1980) emphasis that cost leadership and differentiation strategies are indicate two fundamentally different approaches to achieve competitive advantage. Cost leadership strategy aims to achieve above-average returns over competitors through low pricing by driving all components of value the chain activities towards reducing costs. In order to achieve such a relative cost advantage, firms will put considerable effort in controlling production costs, increasing their capacity utilization, controlling materials supply or product distribution, and minimizing other costs, including R&D and advertising (Porter, 1985).

In contrast, differentiation strategy aims to build up competitive advantage by offering unique products which are characterized by valuable features, such as quality, innovation, and customer service. Further, the differentiation can be based on the product itself, the delivery system, and a broad range of other factors. With these differentiation features, firms provide additional values to customers which will reward them with a premium price (Porter, 1985).

Porter, (1985) identifies three generic strategies for achieving above average performance in an industry. These strategies consist of cost leadership strategy, differentiation strategy, and focus strategy. Each of them takes a various ways for competitive advantage as they shown in figure 1-3.

The cost leadership and differentiation strategies look a competitive advantage in a broad range of industry segments, while focus strategies has two types, cost focus and differentiation focus, it aim to cost advantage or differentiation in a narrow segment. The particular actions required to execute each generic strategy differ widely from industry to industry. Fulfilling competitive advantage entails a firm to make a choice about the

kind of competitive advantage it desire to gain it and the scope within which firm will gain it (Porter, 1985).

		Competitive Advantage	
		Lower cost	Differentiation
Competitive Scope	Broad Target	1. Cost Leadership	2. Differentiation
	Narrow Target	3A. Cost Focus	3B. Differentiation Focus

Source: Michael E. Porter 1985

Figure (1-3) Three Generic Strategies

Competitive strategies are basically based on integration activities in the value chain. For instance in most manufacturing firms there are distinguish interrelationship between procurement, R&D, production and marketing activities. Since there many linkages and interdependencies between these activities, the ability to coordinate the interrelationship is critical to accomplish the competitive advantage. So, integration between activities can help firm to increase its capacity to implement its competitive strategies (Presscott C. Ensign, 2001).

According to porter (1985), firms can adopt one or two of core competitive strategies; a differentiation strategy aim to accomplish competitive advantage

by creating a product or service that is perceived as unique in the eyes of customers. Consequently, the firm can charge a premium for its products or services above its competitors.

Furthermore, product differentiation can be achieved through different ways, which may encompass product innovation, technical superiority, product quality and reliability, comprehensive customer service, and unique competitive capabilities. Whereas, cost leadership strategy aim to achieve competitive advantage through creating product or service at lower cost than competitors. So, the sources of cost advantage are varied and depend on the structure of the industry. They may involve economies of scale, proprietary technology, preferential access to raw materials, and other factors (Prajogo *et al.*, 2008).

Moreover, there are two schools of thought have been emerged regarding whether the two core competitive strategies are mutually exclusive or can be adopted simultaneously. The first school of thought include Dess and Davis, (1982, 1984); Hambrick, (1983); Nayyar, (1993); Parker and Helms, (1992); Porter, (1980, 1985); Reitsperger et al., (1993). All of them agreed with Porter in his emphasis that firm has to choose one of the competitive strategies and allocate its resources to achieve it. Whereas, the second school of thought consist of several other authors like, Buzzell and Gale, (1987); Buzzell and Wiersema, (1981); Gupta, (1995); Hall, (1983); Hill, (1988); Jones and Butler, (1988); Miller and Friesen, (1986); Murray, (1988); Phillips et al., (1983); Slocum et al., (1994); White, (1986); Wright, (1987), they are suggested that for higher business performance, both the differentiation strategy and the cost leadership strategy can be adopted simultaneously according to their circumstances.

For example, better quality products may lead to higher market demand to the firm competing through differentiation. Then higher market demand lead firm to achieve higher market shares, which would lower production costs due to scale of economies (Helms, 2006).

Furthermore, the first school of thoughts ensures that applicable firms can seek either efficiency or differentiation. The more efficiency may lead into less differentiated products and services; however greater differentiation would be associated with a less efficient firm. This school of thought demonstrates that value chain required for a cost leadership strategy is qualitatively different from value chain required for a differentiation strategy (Porter, 1985).

The aim of a differentiation strategy is accomplish better quality at reasonable cost and image throughout the value chain, while the aim of cost leadership strategy is reducing cost wherever it possible. While the second school of thought ensures that both lowering cost and differentiation strategies may be simultaneously and profitably adopted by firm. According to this school, the adoption of a differentiation strategy would require reinforcing higher product innovation and consequently spend higher costs across a number of activities in order to achieve the differentiation strategy. However, higher innovative products would perhaps lead to greater market demand, which will enable the firm to achieve cost leadership strategy through higher volume of production (Yamin, Gunasekaran and Mavondo, 1999).

The final goal of any firm is to create customer value, which is defined by the ratio of quality to cost. So, firm can accomplish competitive advantage through cost reduction or product premium (Porter, 1985). In the industry analysis stage firm should asked itself most critical questions, how compete

between each other and which are the competitive strategies should be adopted (Enida Pulaj, 2015).

Porter (1980) identified that the purpose of competitive strategy is to find bargaining position for firm in order to protect itself from competitive pressure. Moreover, the competitive strategy has relationship with industrial position in the firm, relatively with its competitor. In addition, there are major business questions every firm strategy should be able to answer them: whether firm should focus on only business or build diversification with broad business group?; whether operating with the customer segment or moving in certain niche market?; whether building the advantage of competitiveness that is based on low cost or product differentiation?, how to respond to the consumer preference change?, how wide geographically the market area that will be included and how the company will grow in long term?. Every firm should formulate its strategy to accomplish its goal (Porter, 1985).

Furthermore, before determine and select the competitive strategy, business unit has to identify that which product should be produced, distribution used, type of customer that will be service, geographic area. If the cost strategy is low and differentiation is designed to wide target market, so its strategy is called cost leadership and differentiation. If the target market is narrow or limit, so the strategy is called „cost focus“ and „focused differentiation“. Furthermore, some firms make its competitive advantage through cost advantage and or differentiation advantage and subsequently they may gain profitability above average in their industry. Whereas, the other firms which have no cost advantage or differentiation advantage will have „stuck in the middle“ that is usually obtain profitability under average in their industry (Subroto and Alhabsji, 2014).

1.2.3 Cost leadership strategy

Cost leadership strategies involves reducing costs throughout the value chain activities to achieve the minimum cost structure possible where the products are made of high value, but with limited standard features with the intention of gaining competitive advantage thus increasing market share (MUIA, 2017) .

Cost Leadership is may be the most obvious of the three generic strategies. According to this strategy, a firm plan to become the lower cost producer in its industry. The firm has a wide scope and serves many industry segments, and may even operate in related industries the firm's expansion is often important to its cost advantage. Furthermore, there are many sources of cost advantage most of them depend on the industry structure. They may include the pursuit of economies of scale, proprietary technology, preferential access to raw materials, and so forth (Porter, 1985).

Therefore, cost leader must find and exploit all sources of cost advantage. If a firm accomplish and sustain overall cost leadership, then it will be an above-average performer in its industry, it pricing its product or service at or near the industry average. Moreover, if firm position at equivalent or lower prices than its rivals, it may achieve higher returns. However, a cost leader cannot ignore the bases of differentiation. If its product is not perceived as comparable or acceptable in the eye of its customer, a cost leader will be forced to pricing its products or services below rivals in order to realize sales (Porter, 1985).

Nevertheless, a cost leader must accomplish equivalence or nearness in the bases of differentiation relative to its rivals to be an above-average performer, even though it depends on cost leadership for its competitive advantage. Further, a cost leader should be up to date to observe and follow the

technological changes may occur in the its industry in order to quick response to them, otherwise it cannot maintain on its cost position (Porter, 1985).

Each organization strives to create value for its customer, which is measured by the ratio of quality to cost (Jacobs and Chase, 2011). So, organizations can accomplish competitive advantage through cost reduction or product differentiation. Cost leadership strategy focuses on providing customers with a competitively low cost without sacrificing quality and service (Seedee, 2012).

Cost leaders are inclined to execute both lean and agile supply chain strategies, but their emphasis on agile strategy is significantly greater in a volatile environment than in a stable environment (Qi, Zhao and Sheu, 2011).

Furthermore, organizations with a cost leadership strategy are given to structured workplaces are created, formal procedures for governing people's work are established, smooth-running organizations are maintained, organizational stability is pursued, the capacity of information flow is increased and the efficient management and control of the whole system is emphasized (Cameron and Quinn, 2011). The sources of cost advantage are varied and depend on the structure of the industry (Seedee, 2012).

Value chain analysis focuses on interrelationship and linkages between activities (Porter, 1985). The inter-functional information transparency helps firms to achieve accurate demand forecasts, level scheduling, efficient warehouse management, etc., which can significantly improve quality and customer service and reduce waste and production costs (Zhao, 2014). Thus, value chain activities are expected to be more effective in organizations with a cost leadership strategy.

Moreover, Porter (1980) identified common necessary critical skills for firm that intend to apply a successful cost leadership strategy which may

include, sustained availability of process engineering skills, ability to constantly supervise employee activities, ability to evaluate and control the employees, and process design ability. As well as the ability to managing and control cost, comprehensive control of reports, and the ability to establish incentive-based systems that are tied to the achievement of tight quantitative targets (Acquaah and Agyapong, 2015).

Cost leadership strategy is an integrated set of actions taken to produce products or services with unique features that are sold to customers at the lowest cost compared to rivals or at reduced cost to attain superior profitability (Teeratansirikool, 2013).

Cost leadership strategy is more likely to achieve outstanding financial performance particularly for firms operating in emerging economies, because firms earn a relative advantage from their lower wages and other production cost components (Li and Li, 2008).

Cost leadership strategy focus basically on organizational efficiency. It involves the firm ability to produce or distribute products or services at a lower cost than its rivals within the industry (Luliya Teeratansirikool, 2012).

Cost leadership strategy aims to achieve above average returns to firm over its rivals through low prices by perform activities at lower cost. Therefore, the firm intend to get such a relative cost advantage, it should spend great effort in controlling and managing its operation costs, increasing their capacity utilization, controlling materials supply or product distribution, and minimizing other activities costs (Prajogo, 2007).

Cost leadership require strong cost reductions initiatives, cost control, and cost reduction in areas like R&D, service, sales force, advertising activities, and so forth. Further, to accomplish a low cost position firm often may needs a high relative market share or other advantages, such as favorable access to

sources of raw materials. Therefore, it may well require designing products for ease in manufacturing, maintaining a broad line of related products to spread costs, and serving all major customer groups in order to build volume. Moreover, implementing cost leadership strategy may require huge capital investment like equipment's, lower pricing, and willing to bear losses in order to build market share (Michael E. Porter, 1998).

Cost leadership strategy aim to achieved the lower possible cost of a certain industry and avoid defects, reworks and wastes, through reducing operational and production costs, controlling indirect costs, and increasing their capacity utilization to enhance production efficiency (Herzallah and Gutiérrez-gutiérrez, 2013).

1.2.4 Differentiation Strategy

Differentiation strategy involves innovation that looks at how marketing techniques, sales, and advertising activities are applied and on the other hand where innovation is focused partly on product features performance or quality (MUIA, 2017). Differentiation strategy is opposite of cost leadership which pursues the product differentiation rather than cost reduction to provide high customer value (Porter, 1990). Thus, the characteristic of differentiator is unique in the market in terms of special product features, price premiums, high quality, multiple product features, product or service flexibility, etc. (Nayyar, 1993).

Firms that primarily focus on a differentiation strategy emphasize an agile supply chain strategy (Qi, Zhao and Sheu, 2011). Achieving differentiation can take many forms: design and brand image, technology, features, customer service, dealer network, or other categories (Seedee, 2012). The flexible and innovative cultures of organizations with a differentiation

strategy provide more appropriate contexts for implementing effective product integration for improving performance.

In a differentiation strategy, a firm focuses on one or more features that customers perceive as unique in order to meet their needs. The differentiation is different from industry to other industry. Differentiation can be achieved through product itself, the delivery system, the marketing approach, and so forth. A firm that can fulfill and sustain differentiation will be an above-average performer in its industry if its price premium exceeds the extra costs incurred in being unique. The logic of the differentiation strategy requires that a firm select attributes to differentiate itself from its rivals (Porter, 1985).

A differentiator, therefore, must always seek ways of differentiating that lead to a price premium greater than the cost of differentiating. A differentiator thus aims at cost nearness relative to its competitors, by reducing cost in all activities without affect differentiation. Furthermore, the logic of the differentiation strategy requires that a firm choose attributes in which to differentiate itself that are different from its rivals' (Porter, 1985).

Differentiation strategy is an interrelated set of actions taken to produce products or services at reasonable cost that customers perceive as being different in ways that are important to them (Teeratansirikool, 2013).

Differentiation strategy aims to achieve competitive advantage through delivering unique products which are characterized by valuable features, likes quality, innovation, and customer service. When firm offer their customers valuable features then will get premium price (Prajogo, 2007).

The firms that differentiate their products or services, customers will be willing to pay them higher prices. Therefore, this strategy has influence on five forces by reduces price sensitivity, decrease power of suppliers, creates a powerful entry barrier and reduces threat of substitute products. So, the

advantages gained by differentiation strategy are more likely to be sustainable because unique products and services cannot be easily imitated by rivals (Zehir, Can and Karaboga, 2015).

Porter (1980) proposed for firms intend to pursue differentiation strategy should possess some critical skills like, strong marketing capabilities, product design capability, corporate image and reputation, customer service, and a unique combination of skills drawn from other businesses, new product development, and the ability to attract highly skilled employees (Acquaah and Agyapong, 2015).

The firms that desired to differentiate themselves and their product from rivals have forms and dimensions of differentiation, which include: first, the firm's image and customer perceptions are important elements during differentiation strategy because the perceived difference or distinguishing features make the customer more sensitive toward the buying process. Second, the differentiation created by the relationship between the firm and customers through product personalization and adaptation to the customers' characteristics. Third, differentiation can be achieved by focusing on linkages between departments or other firm's relationships such as mix product, distribution channels and after-sales services (Luliya Teeratansirikool, 2012).

Furthermore, firm pursue differentiation strategy is more likely generate higher margins, it clearly mitigate buyer power, since buyers have lack comparable alternatives and are thereby fewer prices sensitive (Michael E. Porter, 1998).

The aim of differentiation strategy is to deliver better products or services in order to satisfy customers' needs, this strategy encompass produced unique products or services supplied by a firm that are distinct from products and services of rivals. These products and services must be consented by

customers as unique and different from any products or services which serve the same purpose in the market (Herzallah and Gutiérrez-gutiérrez, 2013).

1.2.5 Focus Strategy

This strategy is completely distinct from the others competitive strategies because it focus on the choice of a narrow competitive scope within an industry. The focuser selects a segment or group of segments in the industry and develop its strategy to serving them in order to exclusion its rivals. The focus strategy divided into two kinds, cost focus and differentiation focus. In cost focus a firm seeks for cost advantage in its target segment or group of segment (Porter, 1985).

Whereas, differentiation focus a firm seeks for differentiation in its target segment. Moreover, the target segments must either have buyers with unusual needs or else the production and delivery system that best serves the target segment must differ from that of other industry segments. In cost focus firm take advantage of differences from cost behavior in some segments, whereas in differentiation focus firm exploits the special needs of customers in specific segments. Therefore, the focuser can gain competitive advantage by devoting itself to the segments exclusively (Porter, 1985).

On the other hand, broadly targeted competitors may also be over performing in meeting the needs of a segment, which means that they are bearing higher than necessary cost in serving it. An opportunity for cost focus may be present in meeting the needs of such a segment. If a focuser's target segment is not different from other segments, then the focus strategy will not succeed. If a firm can achieve sustainable cost leadership or differentiation in its segment and the segment is structurally attractive which mean segment is

more profitable, then the focuser will be an above-average performer in its industry (Porter, 1985).

Focused strategy aimed to achieve a competitive advantage through low cost or differentiation; it becomes increasingly attractive as more to meet the target market niche. Moreover, it is costly or so difficult for multi segment competitors to put capabilities in place to meet the specialized needs of buyers encompassing the target market niche and at the same time satisfy the expectations of their main customers. Therefore, in order to apply focus strategy firm must integrate its all activities that associated with differentiation and lowering cost in a target market niche (Luliya Teeratansirikool, 2012).

1.3 Firm Performance

Organizational performance is defined as the extent to which firms use resources to accomplish their goals and vision, and is characterized as financial conceptualization and involves multidimensional constructs, (Sadaghiani, Mohsen Hooshangi , Jamshid Salehi, Matin Rashidi Astaneh, 2017). Organizational performance is an indicator which measures how well an enterprise achieves their objectives (Kyengo, 2016).

Some of the SCI including VCA researches categorizes firm performance into three types: operational, financial, and strategic performance (Chang *et al.*, 2015). Operational performance has long been recognized as a complex, multidimensional, hierarchical construct that involves the improvement of supply chain-related organizational measures including logistics cost reduction, on-time delivery, inventory turnover, and cycle time reduction. Financial performance is the improvement of economic goals based on revenue minus cost-based measures such as profitability, return-on-

investment, and return-on-sales. Strategic performance is the improvement of market goals that is assessed with purely revenue-based measures such as sales, market share, and growth in sales and market share (Chang *et al.*, 2015).

Organizational performance is an indicator which measures how well an organization accomplishes its objectives. Some researchers claim that financial indicators of a financial report enable managers to make an honest assessment of a firm performance Lin et al., (2014), but there is other evidence that measure firm performance by operational variables such as (lead time, inventory turnover, product rejection/return, sales level, cost reduction and meeting customers' requirements) Petrovic-Lazarevic et al., (2007). Organizational performance is an indicator to which extent firms fulfill their objectives Venkatraman and Ramanujam, (2006).

Some of the SCI including VCA researches categorizes firm performance into three types: operational, financial, and strategic performance. Operational performance has long been recognized as a complex, multidimensional, hierarchical construct that involves the improvement of supply chain-related organizational measures including logistics cost reduction, on-time delivery, inventory turnover, and cycle time reduction. Financial performance is the improvement of economic goals based on revenue minus cost-based measures such as profitability, return-on-investment, and return-on-sales. Strategic performance is the improvement of market goals that is assessed with purely revenue-based measures such as sales, market share, and growth in sales and market share (Chang *et al.*, 2015).

Organizational performance can be assessed by an organization's efficiency and effectiveness of goal achievement. In addition, a number of indicators

have been adopted to measure organizational performance, such as profit growth rate, net or total assets growth rate, return on sales, shareholder return, growth in market share, number of new products, return on net assets, etc (Kyengo, 2016).

Organizational performance refers to how well an firm accomplishes its market-objectives as well as its financial objectives (Li *et al.*, 2006). Some scholars suggested six performance metrics to measure the business process, which include customers satisfaction, assets utilization, operating cost, quality, cycle time, and productivity (Barber, 2008a).

Also, performance describe as level of achievement of a given task measured against standards of accuracy, completeness, cost, and speed. It describes as a contextual concept associated with the phenomenon being studied. For example, financial performance; is a measure by the change of the financial statements of firm (Aguko, 2014).

Performance can be measured with financial and operational (non-financial) indicators. Financial measures are associated with economic factors such as profitability and sales growth (e.g. return on investment, return on sales and return on equity). Whereas, operational measures associated with non-financial success factors such as quality, market share, satisfaction, new product development and market effectiveness (Zehir, Can and Karaboga, 2015).

Since the primary goal of an organization is to make profits for shareholders, therefore financial measures should be the core concept for firm performance. The concept of financial performance has been used widely as a key theory of firm performance. Yet, some researchers have reservation on the using financial indicators to assessing supply chain performance. For example, numerical performance concept may not describe

a system's performance adequately and will be ambiguous and difficult to use for simple qualitative evaluations (Huo, 2013).

The conception of business performance mainly pertaining with measuring business outcome based on financial indicators that assumed to reflect the fulfillment of the economic goals of the firm and is referred to as the financial performance. For example, sales growth, profitability, earnings per share and so forth. Furthermore, there are some schools of thought views that "market" or "value based" measurements are more appropriate than accounting based measures. Moreover, a wide conceptualization of business performance would involve emphasis on indicators of operational performance in addition to indicators of financial performance. Accordingly, operational measures may include, market share, new product introduction, product quality, marketing effectiveness, manufacturing value-added, and other measures of technological efficiency within the domain of business performance (Yamin, Gunasekaran and Mavondo, 1999).

Measuring performance is considered as one of the important steps in the strategic control process. There are many common measures for organizational performance which include of effectiveness, efficiency, growth and productivity. Organizational effectiveness may be measured in terms of financial measures, operational measures as well as behavioral measures. Financial measures such as profitability and growth can be used to assess financial performance of firm, the operational measures such as productivity, resource acquisition, efficiency and employee reaction can be adopted to assess the effectiveness of the work flow as well as work support in the firm. Whereas, the behavioral effectiveness measures such as adaptability, satisfaction, absence of strain, development and open

communication can be adopted to determine individual performance (Man, 2009).

The sustainability of the resources that form value creating activities will give firm sustainable financial performance. So, firms that have sustainable performance they would be able to overcome on the external threats that affect their ability to create value for their customers (Rajiv D. Banker, 2014).

Porter (1980, 1985) identified that outstanding performance can be achieved in a competitive industry through adopt one or both of competitive strategies. If a firm does not pursue one of these strategies types, it will be stuck in the middle and will achieve lower performance when compared with firms that pursue a competitive strategy (Powers and Hahn, 2004).

1.4 The relationship between research variables

1.4.1 Value chain activities and Firm Performance

Value chain is very crucial for firm in order to improve its overall performance, there are a lot of previous studies emphasized that such as (Zhao, Wang and Pal, 2020) find that positive relationship between internal integration and operational performance mainly quality performance when studied the effects of agro-food supply chain integration on product quality and financial performance. (Errassafi, Abbar and Benabbou, 2019), find that positive relationship between internal integration and operational performance when studied the mediating effect of internal integration on the relationship between supply chain integration and operational performance. (Prajogo *et al.*, 2008), when studied the impact of value chain activities on operational performance, they find that the elements of the value chain differ in their association with product outcomes. Marketing and production are

related to product quality, while research and development is related to product innovation, marketing is not. Procurement is related to both product quality and product innovation. (Ferreira and Coelho, 2017), find that positive relationship between marketing capabilities and competitive advantage, and between marketing capabilities and firm performance, when studied the dynamic capabilities, managerial and marketing capabilities and their impact on the competitive advantage and firm performance.

(L. Wang, 2015) find that there is significance interrelationship between support activities and primary activities, he identified that there are other similar studies that examined the statistically significant interrelationship between support activities and primary activities, including human resource, marketing, technology, operation and logistic activities. (Chang *et al.*, 2015) find that positive relationship between internal integration and financial firm performance when studied the relationship between supply chain integration and firm financial performance.

(Aguko, 2014) find that firm infrastructure, procurement costs, human resource; delivery times of products and services have significant influence on organizational performance when studied the relationship between value chain analysis and firm performance. (Hooshang M. Beheshti, Pejvak Oghazi, 2014) find that positive relationship between internal integration and financial performance when studied the relationship between supply chain integration and financial performance. (Liao, Kuo and Ding, 2017), find that significant relationship between supply chain collaboration value innovation, supply chain capability and competitive advantage when studied the influence of supply chain management on quality performance.

(Michael A. Hitt; R. Duane Ireland, 1985) studied the relationship between corporate distinctive competence, strategy, industry and performance; they

find that negative relationship between engineering, research and development activities and performance for internal growth firms. While for the firms using stability strategy, marketing and financial activities showed positive relationship with performance. Whereas the firms using an external acquisitive growth strategy, production/operations and public relations activities had positive relationship with performance.

(Vickery, Droge and Markland, 1993), studied the relationship between corporate competencies and firm performance, find that production competence may have more of an effect on business performance for certain strategies than for others. (Li *et al.*, 2006) find that higher levels of supply chain management practice can lead to enhanced competitive advantage and improved organizational performance. Also, competitive advantage can have a direct, positive impact on organizational performance.

(MICHAEL A. HITT and IRELA, 1986) studied the relationship between distinctive competencies activities and performance and find that relationship between distinctive competencies activities and performance varies with the type of diversification strategy being applied by the firm. Firms that follow a single business strategy, engineering, and research and development activities were correlated negatively and financial activities positively with performance.

(Zhao, 2014) studied the relationship between competitive strategies, supply chain integration and firm performance, find that competitive strategies significantly influenced the effectiveness of supply chain integration, including internal, process and product integration. More specifically, internal integration has significantly influenced the financial performance of cost leaders, while process integration contributed more to

the financial performance of differentiators. Furthermore, they used two dimensions for performance, financial and operational performance.

(Vivek, Savitskie and Cofrin, 2011), find that supply chain flexibility and supply chain integration play an important role in predicting organizational behavior. (Li *et al.*, 2006), find that higher levels of supply chain management practice can lead to enhanced competitive advantage and improved organizational performance. Also, competitive advantage can have a direct, positive impact on organizational performance. Furthermore, they were used both financial and market dimensions to measure firm performance, financial performance consist of return on investment, profit margin on sales, the growth in return on investment, the growth of sales. Whereas, market performance consists of market share, the growth of market share and overall competitive position.

(Thai, 2017), studied the relationship between supply chain integration and firm performance, find that the effects of internal integration and external integration on operational performance varied significantly between product and service supply chains. In addition, the relationship between internal integration and operational performance was found to be partially-mediated by external integration in product supply chains whereas a fully-mediated relationship was observed in service supply chains. Furthermore he was used four dimensions to measure operational performance included Flexibility, cost, quality and delivery.

(Boon-itt, 2009), studied the supply chain integration and firm performance, find that effective supply chain integration leads directly to a higher level of operational performance specifically product quality and product innovation. (Anabela Soares, Ebrahim Soltani, 2017), find that statistically significant impact on quality performance.

(Soosay *et al.*, 2012), proposed three dimensions for value chain analysis. The first dimension is boundary of analysis; this is significant because competition is increasingly between supply chains rather than between firms. The second dimension is reflects the breadth of sources and beneficiaries of value created by the chain. The third dimension considers governance, which defines as “authority and power relationships that determine how financial, material, and human resources are allocated and flow within a chain.

(Mulugeta D. Watabaji, Adrienn Molnar, Manoj K. Dora, 2016), studied the value chain activities integration and value chain performance, find that positive relationships between coordination of activities and performance; between joint decision-making and performance; and between commitment towards long-term relationships and performance.

1.4.2 Value chain activities and competitive strategy

Competitive advantage cannot be comprehended by looking at the firm as a whole. It consists of many separated activities a firm performs in designing, producing, marketing, delivering, and supporting its product. Each of these activities can contribute to a firm’s relative cost position and create a basis for differentiation (Porter, 1985).

There are many previous studies investigated the relationship between value chain activities and competitive strategy (Rhee and Mehra, 2006), find that competitive strategy moderates the relationship between operations and marketing strategic activities, and organizational performance. (Vickery, Droge and Markland, 1993), find that production competence may have more of an effect on business performance for certain strategies than for others. (Zhao, 2014), studied the relationship between competitive strategies, supply chain integration, and firm performance, find that competitive strategies

significantly influenced the effectiveness of supply chain integration, including internal, process and product integration.

According to strategic hierarchy, the firm competitive strategy should be identified first, and then followed by functional strategies. Selected competitive strategy itself doesn't have significant influence on performance; although its linkage with functional level strategies will have significant impact on performance (Porter, 1985).

1.4.3 Competitive Strategies and performance:

(Farah, Munga and Mbebe, 2018) studied the relationship between competitive strategies and performance, find that cost leadership strategy, differentiation strategy, and focus strategy were influences the performance of commercial airlines in Kenya positively. (MUIA, 2017) studied the relationship between competitive strategies and performance, find that competitive strategies both cost leadership strategy and differentiation strategy have significantly relate to firm performance in the insurance companies. (Kyengo, 2016) studied the relationship between competitive strategies and performance, find that competitive strategies had significantly relate to firm performance in the telecommunication companies in Kenya, where the most significant competitive strategy in performance is cost leadership strategies, followed by differentiation strategies, market focus strategies and corporate growth strategies respectively. (Fathali, 2016) studied the relationship between competitive strategies and performance, find that competitive strategies of Porter had a positive and significant influence on operational performance specifically corporate innovation.

Competitive strategies are very critical for achieving outstanding performance, (Porter, 1985) concludes that firms that select and apply generic

strategies will accomplish sustained competitive advantage. Strategy is a set of decisions and actions that managers make and take to accomplish outstanding firm performance in contrast with competitors Parthasarthy, (2007). Business level strategies are significant in explaining variations of firm profitability and long term performance Beard and Dess, (1981). many of the most profitable firms having either low cost or differentiated position which supports Porter's position Dess & Devis, (1984); Hall, (1980); Hambrick (1983); Kim & Lim, (1988). While others have found that Porter's generic strategies do not represent ways to achieve a higher performance Dawes & Sharp (1996): Parker & Helms, (1992) and that hybrid strategies are the ones entailing improved performance.

Moreover, Porters model of competitive strategy is considered in this research because of its popularity, well defined structure, clarity, simplicity, and generality, and the way it complements two others approaches for the analysis at aggregate level (Luliya Teeratansirikool, 2012).

Scholars have discussed different reasons for why firms need to choose an appropriate competitive strategy to enhance their performance. Porter (1985) concludes that firms that choose and implement generic strategies achieve sustained competitive advantage. However, there are many previous studies emphasized that such as Dess and Davis (1984) find that the overall low-cost cluster has the highest average return on assets. Power and Hahn (2004) find that cost leadership strategy provides a statistically significant performance advantage.

Allen and Helms (2006) studied the relationship between competitive strategies and performance, find that a cost leadership strategy relates to organizational performance. (Luliya Teeratansirikool, 2012), studied the relationship between competitive strategies and performance, finds that all

competitive strategies significantly enhance firm performance through performance measurement. (Hilman and Kaliappen, 2014), studied the relationship between competitive strategies, process innovation and performance find that cost leadership significantly affects the process innovation and process innovation also significantly affects the organizational performance. (Zhao, 2014), studied the relationship between competitive strategies, supply chain integration and performance, find that competitive strategies significantly influenced the effectiveness of supply chain integration, including internal, process and product integration. More specifically, internal integration significantly affected the financial performance of cost leaders, while process integration contributed more to the financial performance of differentiators.

(Prajogo, 2007), find that product quality was predicted by differentiation strategy, but not cost leadership strategy. However, the effect of differentiation on quality was moderated by cost leadership whereby the higher the cost leadership, the stronger the effect. (Zehir, Can and Karaboga, 2015), studied the differentiation strategy, innovation entrepreneurial orientation and firm performance, find that both differentiation strategy and innovation performance mediate the relationship between entrepreneurial orientation and firm performance.

(Rajiv D. Banker, 2014), studied the relationship between competitive strategies and performance, find that both differentiation and cost leadership were associated with firms gaining outstanding performance. Yet, the differentiation strategy was associated with firms sustaining their performance to a greater extent than cost leadership.

(Hashem Valipour, 2012), find that firms adopted cost leadership strategy, there were positive relationships between leverage; cost leadership strategy

and dividend payout with performance. Their findings also suggested that there were positive relationships between leverage and firm's size with performance in the firms with product differentiation strategy, but the relation between product differentiation strategy and dividend payout with performance was negative.

(Yamin, Gunasekaran and Mavondo, 1999), find that there are significant differences in the configuration of variables by organizations adopting different generic strategies. There are also significant performance differences across generic types. (Sohail and Sayeed, 2009), find that organization strategy does have a positive impact on the supply chain integration. (Man, 2009) find that significant relationship between differentiation strategy and the export performance of SMEs.

(Herzallah et al, 2013) find that TQM practices have an indirect, positive and significant relationship with financial performance through competitive strategies. In addition, a direct, positive and significant relationship between competitive strategies and financial performance was observed.

(Enida Pulaj, 2015), find that significant positive effects of cost leadership, differentiation and focus strategies on performance.

(Powers and Hahn, 2004), studied the relationship between competitive strategies and performance, find that cost leadership strategy provides a statistically significant performance advantage over banks that are stuck-in-the-middle. This study suggests that in the banking industry it may be difficult to generate superior performance using a differentiation or focus strategy.

(Enida Pulaj, 2015), studied the relationship between competitive strategies and performance, find that significant positive effects of cost leadership, differentiation and focus strategies on performance.(Li and Li, 2008), studied

the relationship between competitive strategies and performance, find that impacts of both cost leadership strategy and both competitive strategies on financial performance are stronger for foreign firms than for domestic firms. Although cost-leadership and dual strategies are less effective in less concentrated markets than in more concentrated ones, the effect of a differentiation strategy is stronger when the level of market concentration is low rather than high.

1.4.4 The Mediating Role of Competitive Strategies

Value chain activities have great impact on firm performance. However the competitive strategies may improve or destruct the value chain. In order to understand the relationship between value chain and firm performance it much consider an important aspect of the context in which situation value chain activities are implemented. Specifically, the impacts of value chain activities on performance depend on firm choices of competitive strategies (Porter, 1985).

Competitive strategies are vital in order to face the rapid and dynamic changes in the environment. The findings of strategy implementation can be seen from the performance achieved by the organization. The mediating effect of competitive strategies has been investigated in a number of previous studies.

(Mohsenzadeh and Ahmadian, 2016), studied the mediating role of competitive strategies in the effect of firm competencies and export performance, find that competitive strategies mediate the relationship between production capability and export performance. However competitive strategies do not mediate the relationship between marketing competency and export performance.

(Schilke and Thomas, 2010), studied the mediating role of competitive strategies in the effect of CRM and firm Performance, find that CRM does not affect firm performance directly. Rather, the CRM performance link is fully mediated by differentiation and cost leadership. (Ã and Acquaah, 2008), studied the mediating role of competitive strategies in the effect of quality and firm Performance, find that competitive strategy does not directly affect firm performance; it does so indirectly through quality.

(Hilman and Kaliappen, 2014), studied the mediating role of competitive strategies in the effect of process innovation and firm Performance, find that cost leadership significantly affects the process innovation and process innovation also significantly affects the organizational performance. Furthermore, the findings show that process innovation mediates the cost leadership strategy and organizational performance link. (Zehir, Can and Karaboga, 2015), studied the mediation role of differentiation strategy and innovation performance on the relationship between EO and firm performance, find that both differentiation strategy and innovation performance mediate the relationship between EO and firm performance.

1.4.5 What Characterized this Research from Previous Researches (Justifications of Topic Selection)

To reveal what characterized this study from previous studies, some comparisons have been done as below:

1.4.5.1 From Research Context Perspective

The most of previous studies have been conducted in U.S, European, and Asian firms at different sectors, while this study focuses on the Sudanese manufacturing sector. It concern with the capability of manufacturing firms

to enhance their performance through implementing value chain analysis and developing appropriate competitive strategy.

1.4.5.2 From Research Variables and Dimensions perspective

This research included on four dimensions for value chain activities analysis as independent variable, which consist of (marketing activities, operation activities, procurement activities, and R&D activities). While, the dependent variable is firm's performance, it included on (financial performance and operational performance). Finally the competitive strategies was entered into research model as mediating variable, it consist of cost leadership strategy and differentiation strategy as dimensions.

1.4.5.3 From Research Objectives perspective

The previous studies have multiple objectives according to their study variables, where the current research aimed to examine the relationship between value chain activities analysis and the firm's performance, identify the relationship between value chain activities analysis and competitive strategies, examine the relationship between competitive strategies and firm performance, and investigate the mediating role of competitive strategies in the relationship between value chain activities and firm performance.

1.4.5.4 from Research Methodology Perspective

The current research considered as descriptive analytical study by identified the dimensions of value chain activities analysis have more impact on the performance of Sudanese manufacturing firms by improve their performance, in addition to explore the role of competitive strategies in the relationship between research variables.

1.5 Sudanese Manufacturing Firms

1.5.1 Manufacturing Sector

The manufacturing sector is considered as corner stone for the economic development, whereas the manufacturing is base for economical evolution. Sudan is characterized by huge agriculture resources as well as natural wealth; to enhance the value adding from these resources as well as to increase their returns the manufacturing sector is very vital to do that. So, the manufacturing is only sector can achieve value adding and create sustainable work opportunities. The sector has the potential to generate foreign exchange earnings through export (Ismael Osman Mohammed, 2012).

Manufacturing sector is vulnerable to changes in its operating environment in many ways and these have great consequences on its operation. As a result of this vulnerability manufacturing firms are required to be proactive and able to formulate and adopt appropriate competitive strategies that will enable them to overcome the competitive challenges they experience in the environment they operate in. So, the competitive strategy may help a firm to gain a competitive advantage over its competitors and sustain its success in the market (Atikiya, 2015).

Manufacturing sector in Sudan is a sector with great participation in the Sudanese economy, However, it facing more challenges on the local, regional and international level which resulting from continuous progress in manufacturing industry area as well as the local obstacles, therefore, these firms find itself in necessity of continuous improvement in order to keep up with intense competition in this sector (Abdulwahab Alwaque, 2010).

1.5.2 Kinds of Sudanese manufacturing Firms:

Manufacturing firms in Sudan working in production of a variety of products and constitutes six key industrial subsectors as follow:

- Engineering industries sector such as steels, furniture's and vehicles.
- Foods industries sector such as sugar, food oil, beverages, water minerals and flour mills.
- Pharmaceutical and cosmetics industries sector.
- Cement industries.
- Chemical and petrochemical industries sector such as paints and plastic (Abdulwahab Alwaque, 2010).

Table (1-1) Manufacturing Firms Working in Khartoum State

Firm`	Number	Percentage
Sudanese Private Sector	1,477	89%
Sudanese Public Sector	89	5%
Sudanese private Sector with Foreign Private Sector	39	2%
Foreign Private Sector	25	2%
Sudanese Private with Public Sector	17	1%
Sudanese Public Sector with Foreign Sector	7	0.4%
Total	1,654	100%

Source: (Mohammed Abdullah Juma, 2015)

1.5.3 The problems and Challenges Facing Sudanese Manufacturing Sector

Sudanese manufacturing sector suffer from multiple problems as follow:

- Unavailability of manufacturing production inputs with required prices, quantities and specifications.
- Higher tax and governmental fees.
- The advance collection for value added tax.
- Lack of finance availability and higher cost.
- Lack of infrastructure.
- Higher cost of production inputs such as electricity and fuels.
- Inability on local and international competition.
- Increasing of import products.
- Signing on regional agreements like Commesa.
- Privileges termination which have been given to some manufacturing sectors.
- Export policies regarding some raw materials which needed for local manufacturing.
- The negative effect for work and employment regulations.
- Instability of policies that have direct impact on manufacturing development.
- No commitment with applying specifications on products.
- No applying custom privilege according to investment encouragement law.
- Lack of relationship among research centers and manufacturing sector.
- Higher workers turnover (Mohammed, 2012).
- Governmental purchases from outside.
- Export policies.
- Manufacturing technologies (Juma, 2015).

Therefore, the researcher concludes from above problems and obstacles that facing the Sudanese manufacturing sector two main kinds:

- 1- External problems which uncontrollable by the firm mainly pertaining with government policies.
- 2- Internal problems which controllable by the firm mainly pertaining with the internal environment and they impact negative on its market share, cost structure which limited its competitive capability.

CHAPTER TWO

RESEARCH MODEL & METHODOLOGY

2.1 Research Theory, Model and Hypotheses Development

2.1.1 Preface

This section provides an explanation about theories adopted in this research, the role of resource based view in research model building, also research hypotheses development based on the previous studies, research methodology and design of this research. This section articulates research paradigm, data collection method and analysis, research design, questionnaire design, sampling design, and populations.

2.1.2 Research Theory

2.1.2.1 Resource- Based View (RBV)

Resources are defined as the tangible and intangible entities available to the firm to enable it to produce an effective or efficient market offering Hunt & Morgan, (1995). The firm combines its financial, physical, legal, organizational, informational and relational resources to produce products or services, organize distribution channels and develop communication (Ibrahim *et al.*, 2019).

So, firm can attain competitive advantage by efficient utilizing its asset and specific capability. Profitability of the firm is influence by kind and quantity of resource, and capability that have existed. Nevertheless, managing strategically is based on resource based that involves how to develop and use the resource and the specific capability to develop core competencies that becomes basis of competitive advantage in order to enable firm to obtain above average returns. Furthermore, the firm that able to identify its

resources and capabilities and then transfer them into core competencies, it will be more efficient and effective in doing its business (Subroto and Alhabsji, 2014).

Proponents of the resource-based view of the firm (Penrose, 1959; Wernerfelt, 1984; Amit and Shoemaker, 1993) argue that it is the range and manipulation of firm's resources, including firm value chain activities, which give firm its uniqueness and source of sustainable advantage. To sustain a competitive advantage, firm uses its own resources, skills, and capabilities, incapable of being rapidly developed elsewhere and firmly attached to the organization that deploys or uses them. In today's competitive environment, to sustain a competitive advantage, firms need to provide value to customers. This value can either be cost advantage, or differentiated product. Resource based value theory focuses on the relationship between a firm's internal resource stability and the ability to stay competitive through its strategy formulation (WAIGANJO, 2013).

Firms can attain competitive advantage in competitive environment, by deliver value to their customers. This value can be derived from either cost advantage, or differentiated products. Resource-based theory therefore, focuses on the relationship between a firm's internal resource stability and the ability to stay competitive through its strategy formulation. Resource-based view theory (RBV) has also been extended by Grant (1991) to encompass competitive strategy (Atikiya, 2015).

The RBV attempts to describe, explain and predict how firms can gain a sustainable competitive advantage by acquiring and controlling valuable, rare, inimitable and non-substitutable resources. Moreover, resources can be tangible (e.g. equipment) or intangible (e.g. process knowledge) assets that

are key inputs of the production and delivery of products and services (Dehui Xu, Baofeng Huo, 2015).

According to Grant, Resource-based View Theory links competitive strategies and capabilities to value creation. He set that not only do capabilities need to be considered as the base to develop competitive strategy but they also need to be renewed and maintained by strategist. Hence RBV is critical to understand value may stem from strategic alignment of resources and competitive strategies. In developing their competitive strategies the manufacturing firms in Sudan may pay attention to the resources existing within the firm so as to be able to create value for its customers (Atikiya, 2015).

Performance is a result of firm specific resources Barney *et al.*, (2011). It is based on two fundamental assumptions: (a) those resources are heterogeneously distributed among firms and (b) they are imperfectly mobile. These assumptions conjointly allow for differences in firm resource endowments to exist and persist over time, thereby allowing for a resource-based competitive advantage (Prodromos D. Chatzoglou, Dimitrios Chatzoudes, Lazaros Sarigiannidis, 2016). Barney (1991) argued that organizations that possess resources that are valuable and rare attain a competitive advantage and enjoy improved performance in the short term.

Wernerfelt (1984) defined firm's resources as anything which could be notional as strengths or weaknesses of a firm. Whereas, capability is define as a part from firm's resources. Thus, capability is firms' joint resources to perform any work or activity. Based on the resource-based theory, competitive strategies are considered as capabilities of the firms that are used as the basis for competitive advantage which can lead firms to outstanding performance. Further, the resource-based view suggests that a firm's unique

resources and capabilities provide the basis for a strategy. The strategy chosen should allow the firms to best exploit its core competencies relative to opportunities in the external environment (Seedee, 2012).

The RBV is a theoretical perspective that attempts to describe, explain, and predict how firms can attain a sustainable competitive advantage through acquisition of and control its resources. According to the RBV, resources include both tangible and intangible assets that facilitate value chain primary activities to be performed. Further, firms should strive to make control over its resources in order to achieve competitive advantage over competitors.

Moreover, firm that exerts vigorous control over its resources will make differentiate product and or service attributes that ultimately lead to competitive advantage. Thus, there are four characteristics of a resource that would enable firms to achieve a sustainable competitive advantage. First, the resource must be valuable to improves firm efficiency and/or effectiveness. Second, the resource must be rare, so the firm require making proper control over it by efficient utilization. Third, the resource must be imperfectly imitable to prevent competitors from being able to easily develop the resource in house. Fourth and finally, the resource must not be substitutable; otherwise, competitors would be able to identify different, but strategically equivalent, resources to be used for the same purpose (Rungtusanatham et al., 2003).

Moreover, in order to understand the components of the value chain, it is necessary firstly understand the resources and abilities that make these components of the chain (Prajogo *et al.*, 2008). the resource based view (RBV) of the firm has been used to demonstrate how firms allocate their rare resources to acquire and exploit competitive capabilities and competencies (Song, Benedetto and Nason, 2007).

Furthermore, the RBV emphasize that just possession of capabilities is important but not adequately condition to obtain outstanding performance. Rather, the firm that placed its resources and capabilities in the best usage, and invests in capabilities that complement the existing capability base, it will be able to exploit its distinctive competencies and consequently get sustainable competitive advantage. Accordingly, firms should allocate their rare resources to establishing and developing capabilities that are consistent with their strategic type (Song, Benedetto and Nason, 2007).

According to the resource-based view (RBV), firms are viewed as a bundle of resources and capabilities Penrose, (1959). Barney (1991) identified the attributes with which resources could contribute to firm superior performance. The RBV demonstrate that when firms have resources valuable, rare, inimitable, and non-substitutable, they can achieve sustainable competitive advantage by implementing value-creating strategies that cannot be duplicated by competitors (Prajojo *et al.*, 2008).

Moreover, in order to perceive the elements of value chain activities, it is necessary firstly to understand the resources and abilities that create these elements of the chain. However, not all firms' resources and capabilities have the potential to be the basis for competitive advantage (Seedee, 2012).

Furthermore, the traditional concept of strategy is expressed in terms of the resource position (strengths and weaknesses) of the firm. Based on the resource based theory, value chain activities and competitive strategies are considered as capabilities of the firms that are used as basis for competitive advantage which can achieve superior performance.

Moreover, the resource-based view focus on the need for alignment between the external market context in which a firm operates and its internal capabilities. Further, the resource-based view suggests that a firm's have

unique resources and capabilities will provide the basis for their strategy. The strategy selected should allow for the firms to best exploit its core competencies relative to opportunities in the external environment (Seedee, 2012).

Theorists argue that firm practices should be aligned with its strategies in order to gain competitive performance (Huo, 2013). Therefore, the resource based view theory was found to be the appropriate theory to explain the research framework in the relationship between value chain activities, competitive strategies and firm performance.

2.1.2.2 Porter's Generic Competitive Strategies

A firm relative position within its industry determines whether a firm's profitability is above or below the industry average. The fundamental basis of above average profitability in the long run is sustainable competitive advantage. There are two basic sources of competitive advantage a firm can possess: low cost or differentiation. The two basic types of competitive advantage combined with the scope of activities for which a firm seeks to achieve them, lead to three generic strategies for achieving above average performance in an industry: cost leadership, differentiation, and focus (Michael E. Porter, 1998).

Cost Leadership Strategy-In cost leadership, a firm plan to become the low cost producer in its industry. The sources of cost advantage are varied and rely on the structure of the industry. They may include the pursuit of economies of scale, proprietary technology, preferential access to raw materials and other factors. A low cost producer must find and exploit all sources of cost advantage. If a firm can achieve and sustain overall cost leadership, then it will be an above average performer in its industry,

provided it can command prices at or near the industry average. Simply being the lowest-cost producers is not good enough, as company leave itself wide open to attack by other low-cost producers who may undercut its prices and therefore block its attempts to increase market share. Therefore, firms need to be confident that they can achieve and maintain the number one position before choosing the cost leadership route. Firms that are successful in achieving cost leadership usually have (Fathali, 2016):

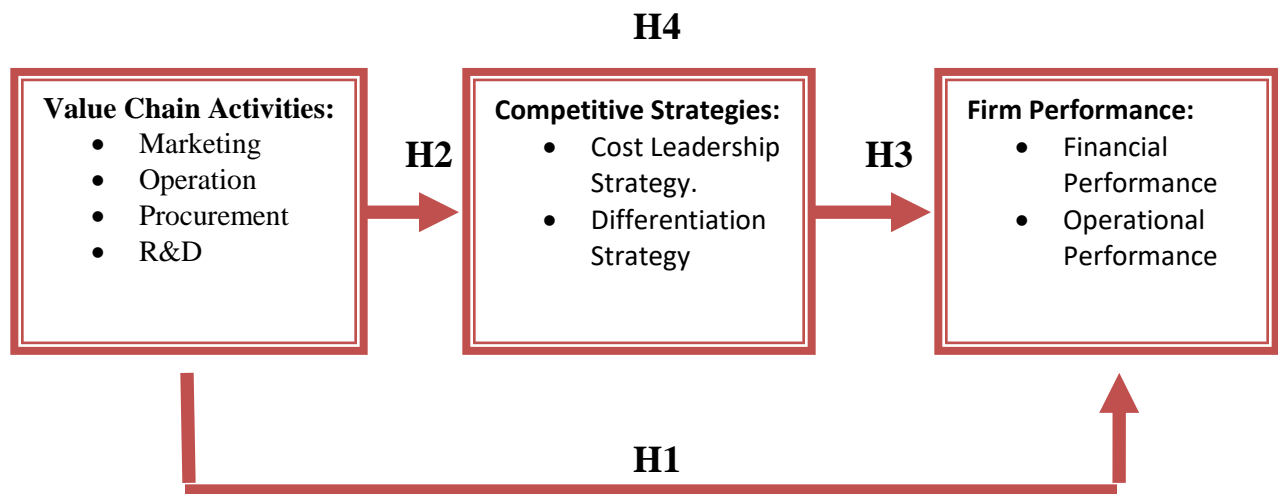
- Access to the capital needed to invest in technology that will bring costs down;
- Very efficient logistics;
- A low-cost base (labor, materials, facilities), and a way of sustainably cutting costs below those of other competitors.

Differentiation Strategy- Differentiation involves making unique products or services different from competitors. How firm does this rely on the exact nature of industry and of the products and services themselves, but will typically involve features, functionality, durability, support and also brand image that customer's value. To make a success of a differentiation strategy, organizations need (Fathali, 2016):

- Good research, development and innovation;
- The ability to deliver high-quality products or services.
- Effective sales and marketing, so that the market understands the benefits offered by the differentiated offerings. Large organizations pursuing a differentiation strategy need to stay agile with their new product development processes.

2.1.3 Research Model

The research model based on the above research theory, and through previous studies and their gaps, it reached to the below research model as at figure (2-1): the research model based on the previous studies and consistent with research objectives, research questions, and research population.



Source: prepared by researcher, (2020)

Figure (2-1): Research model

2.1.4 Research Hypotheses Development

Depend on the research variables and dimensions in research model as well as research problem and previous studies, the hypotheses was formulated and developed in order to measure the relationship between independent and dependent variables and the effect of mediating variable in the relationship between them, below are the hypotheses.

2.1.4.1 The Relationship between Value Chain Activities and Firm Performance (H1)

Referred to the previous studies that indicated to existence of relationship between value chain activities and firm performance, (Thai, 2017), find that the relationship between internal integration and operational performance was found to be partially-mediated by external integration in product supply chains whereas a fully-mediated relationship was observed in service supply chains. Furthermore he was used four dimensions to measure operational performance included Flexibility, cost, quality and delivery. (Mulugeta D. Watabaji, Adrienn Molnar, Manoj K. Dora, 2016), find that positive relationships between coordination of activities and performance; between joint decision-making and performance; and between commitment towards long-term relationships and performance.

(Prajogo *et al.*, 2008), find that the elements of the value chain differ in their association with product outcomes. Marketing and production are related to product quality, while research and development is related to product innovation, marketing is not. Procurement is related to both product quality and product innovation. (Ferreira and Coelho, 2017), find that positive relationship between marketing capabilities and competitive advantage, and between marketing capabilities and firm performance.

(L. Wang, 2015) find that there is significance interrelationship between support activities and primary activities, he identified that there are other similar studies that examined the statistically significant interrelationship between support activities and primary activities, including human resource, marketing, technology, operation and logistic activities.

(Aguko, 2014) find that firm infrastructure, procurement costs, human resource; delivery times of products and services have significant influence

on organizational performance. (Liao, Kuo and Ding, 2017), find that significant relationship between supply chain collaboration value innovation, supply chain capability and competitive advantage.

(Michael A. Hitt; R. Duane Ireland, 1985) find that negative relationship between engineering, research and development activities and performance for internal growth firms. While for the firms using stability strategy, marketing and financial activities showed positive relationship with performance. Whereas the firms using an external acquisitive growth strategy, production/operations and public relations activities had positive relationship with performance.

(Vickery, Droge and Markland, 1993), find that production competence may have more of an effect on business performance for certain strategies than for others. (Li *et al.*, 2006) find that higher levels of supply chain management practice can lead to enhanced competitive advantage and improved organizational performance. Also, competitive advantage can have a direct, positive impact on organizational performance.

(MICHAEL A. HITT and IRELA, 1986) find that relationship between distinctive competencies activities and performance varies with the type of diversification strategy being applied by the firm. Firms that follow a single business strategy, engineering, and research and development activities were correlated negatively and financial activities positively with performance.

(Zhao, 2014) find that competitive strategies significantly influenced the effectiveness of supply chain integration, including internal, process and product integration. More specifically, internal integration has significantly influenced the financial performance of cost leaders, while process integration contributed more to the financial performance of differentiators.

Furthermore, they used two dimensions for performance, financial and operational performance.

(Vivek, Savitskie and Cofrin, 2011), find that supply chain flexibility and supply chain integration play an important role in predicting organizational behavior. (Li *et al.*, 2006), find that higher levels of supply chain management practice can lead to enhanced competitive advantage and improved organizational performance. Also, competitive advantage can have a direct, positive impact on organizational performance. Furthermore, they were used both financial and market dimensions to measure firm performance, financial performance consist of return on investment, profit margin on sales, the growth in return on investment, the growth of sales. Whereas, market performance consists of market share, the growth of market share and overall competitive position.

(Boon-itt, 2009), find that effective supply chain integration leads directly to a higher level of operational performance specifically product quality and product innovation. (Anabela Soares, Ebrahim Soltani, 2017), find that statistically significant impact on quality performance.

(Soosay *et al.*, 2012), proposed three dimensions for value chain analysis. The first dimension is boundary of analysis; this is significant because competition is increasingly between supply chains rather than between firms. The second dimension is reflects the breadth of sources and beneficiaries of value created by the chain. The third dimension considers governance, which defines as “authority and power relationships that determine how financial, material, and human resources are allocated and flow within a chain.

Moreover, the literatures describe firm performance from different perspectives with common goal of ultimately to measuring firm performance. Therefore the dimensions of performance will be used in this research consist

of financial performance and operational performance. Thus, this research hypothesize that:

H1: value chain activities will be positively related to firm performance.

2.1.4.2 The Relationship between Value Chain Activities and Competitive Strategies (H2)

According to strategic hierarchy, the firm competitive strategy should identified first, and then followed by functional strategies. Selected competitive strategy itself doesn't have significant influence on performance; although its linkage with functional level strategies will be significant impact on performance (Porter, 1985).

There are many previous studies investigated the relationship between value chain activities and competitive strategy (Zhao, 2014), find that competitive strategies significantly influenced the effectiveness of supply chain integration, including internal, process and product integration. (Rhee and Mehra, 2006), find that competitive strategy moderates the relationship between operations and marketing strategic activities, and organizational performance. (Vickery, Droge and Markland, 1993), find that production competence may have more of an effect on business performance for certain strategies than for others.

Thus, in this research I hypothesize that:

H2: There positive relationship between value chain activities and competitive strategies.

2.1.4.3 The Relationship between Competitive Strategies and Firm Performance (H3)

(Zehir, Can and Karaboga, 2015), find that both differentiation strategy and innovation performance mediate the relationship between entrepreneurial orientation and firm performance. (Enida Pulaj, 2015), find that significant

positive effects of cost leadership, differentiation and focus strategies on performance. (Rajiv D. Banker, 2014), find that both differentiation and cost leadership were associated with firms gaining outstanding performance. Yet, the differentiation strategy was associated with firms sustaining their performance to a greater extent than cost leadership.

(Hashem Valipour, 2012), find that firms adopted cost leadership strategy, there were positive relationships between leverage; cost leadership strategy and dividend payout with performance. Their findings also suggested that there were positive relationships between leverage and firm's size with performance in the firms with product differentiation strategy, but the relation between product differentiation strategy and dividend payout with performance was negative.

Competitive strategies are very critical for achieving outstanding performance, (Porter, 1985) concludes that firms that select and apply generic strategies will accomplish sustained competitive advantage. Strategy is a set of decisions and actions that managers make and take to accomplish outstanding firm performance in contrast with competitors Parthasarthy, (2007). Business level strategies are significant in explaining variations of firm profitability and long term performance Beard and Dess, (1981).

(Luliya Teeratansirikool, 2012), finds that all competitive strategies significantly enhance firm performance through performance measurement. (Hilman and Kaliappen, 2014), find that cost leadership significantly affects the process innovation and process innovation also significantly affects the organizational performance. (Zhao, 2014), find that competitive strategies significantly influenced the effectiveness of supply chain integration, including internal, process and product integration. More specifically, internal integration significantly affected the financial performance of cost

leaders, while process integration contributed more to the financial performance of differentiators. Moreover, Porter's model of competitive strategy is considered in this research because of its popularity, well defined structure, clarity, simplicity, and generality, and the way it complements two other approaches for the analysis at aggregate level (Luliya Teeratansirikool, 2012).

Scholars have discussed different reasons for why firms need to choose an appropriate competitive strategy to enhance their performance. Porter (1985) concludes that firms that choose and implement generic strategies achieve sustained competitive advantage. However, there are many previous studies emphasized that such as Dess and Davis (1984) find that the overall low-cost cluster has the highest average return on assets. Power and Hahn (2004) find that cost leadership strategy provides a statistically significant performance advantage.

Allen and Helms (2006) find that a cost leadership strategy relates to organizational performance. (Prajogo, 2007), find that product quality was predicted by differentiation strategy, but not cost leadership strategy. However, the effect of differentiation on quality was moderated by cost leadership whereby the higher the cost leadership, the stronger the effect.

(Yamin, Gunasekaran and Mavondo, 1999), find that there are significant differences in the configuration of variables by organizations adopting different generic strategies. There are also significant performance differences across generic types. (Sohail and Sayeed, 2009), find that organization strategy does have a positive impact on the supply chain integration. (Man, 2009) find that significant relationship between differentiation strategy and the export performance of SMEs.

(Herzallah et al, 2013) find that TQM practices have an indirect, positive and significant relationship with financial performance through competitive strategies. In addition, a direct, positive and significant relationship between competitive strategies and financial performance was observed.

(Enida Pulaj, 2015), find that significant positive effects of cost leadership, differentiation and focus strategies on performance.

(Powers and Hahn, 2004), find that cost leadership strategy provides a statistically significant performance advantage over banks that are stuck-in-the-middle. This study suggests that in the banking industry it may be difficult to generate superior performance using a differentiation or focus strategy. (Li and Li, 2008), find that impacts of both cost leadership strategy and both competitive strategies on financial performance are stronger for foreign firms than for domestic firms. Although cost-leadership and dual strategies are less effective in less concentrated markets than in more concentrated ones, the effect of a differentiation strategy is stronger when the level of market concentration is low rather than high.

Thus, in this research hypothesize that:

H3: There are positive relationship between competitive strategies and firm performance.

2.1.4.4 The Mediating Role of Competitive Strategies in the Relationship between VCA and FP (H4)

Value chain activities have great impact on firm performance. However the competitive strategies may improve or destruct the value chain. In order to understand the relationship between value chain and firm performance it much consider an important aspect of the context in which situation value chain activities are implemented. Specifically, the impacts of value chain

activities on performance depend on firm choices of competitive strategies (Porter, 1985).

Competitive strategies are vital in order to face the rapid and dynamic changes in the environment. The findings of strategy implementation can be seen from the performance achieved by the organization. The mediating effect of competitive strategies has been investigated in a number of previous studies.

(Mohsenzadeh and Ahmadian, 2016), find that competitive strategies mediate the relationship between production capability and export performance. However competitive strategies do not mediate the relationship between marketing competency and export performance. (Hilman and Kaliappen, 2014), find that cost leadership significantly affects the process innovation and process innovation also significantly affects the organizational performance. Furthermore, the findings show that process innovation mediates the cost leadership strategy and organizational performance link. (Zehir, Can and Karaboga, 2015), find that both differentiation strategy and innovation performance mediate the relationship between EO and firm performance.

(Schilke and Thomas, 2010), find that CRM does not affect firm performance directly. Rather, the CRM performance link is fully mediated by differentiation and cost leadership. (Ã and Acquah, 2008), find that competitive strategy does not directly affect firm performance; it does so indirectly through quality.

So that, this research hypothesized that:

H4: competitive strategies will mediate the relationship between value chain activities and firm performance.

2.2 Research Methodology

2.2.1 Preface

This section provides an explanation about research methodology and design of this research. This section articulates research paradigm, data collection method and analysis, research design, questionnaire design, sampling design, and populations.

2.2.2 Research Paradigm

Usually, research paradigm is guiding researchers through one of three approaches. These research paradigms approaches are positivism, constructivism and critical theory. A positivist research paradigm usually is associated with a quantitative research that assumes there is one true reality that can be discovered by means of rigorous empirical study, whereas the other two approaches concern with qualitative and mixed-methods research respectively (Creswell, 2009). According to characteristic of the positivist research paradigm that knowledge is based on verified hypotheses; an objective and true reality exists; the reality can be generalized; the researcher and reality are separated. Furthermore, this research involves theory testing by developing and testing hypotheses.

2.2.3 Methodological Overview

This section provides an overview of the methods undertaken in this thesis to answer the research questions in Chapter One, and to test the hypotheses proposed in Chapter Two. These steps are also summarized in Figure 3.1, identifying the sections of this chapter relating to each step. A quantitative survey methodology using self-administered questionnaires has been adopted to collect data about the underlying constructs proposed in the theoretical model. These constructs are value chain activities, competitive strategies, and

firm performance. These constructs were operationalized by multi-item measures using 5-point Likert scales, and the items used to measure them were adopted from previously tested scales.

The instrument used to collect the data of this research was divided into two parts, including questions measuring the intended constructs and demographic questions. Because this questionnaire was administered in a non-English-speaking area, a dual strategy of back translation was conducted as recommended by cross-cultural methodological researchers (Brislin, 1970; Malhotra *et al.*, 2014).

To ensure that the wording of this questionnaire was clear and understandable and the equivalence of the instrument was achieved, a pre-test was conducted prior to conducting the final survey. A pre-test is necessary to discover any problems in the instrument, and to determine the face validity of the measures. Following pre-testing procedures, the final survey was conducted.

All the informants from one hundred and six big manufacturing firms working in Sudan were surveyed between April and December 2020. In total, 200 questionnaires were distributed to informants (1 questionnaire at each firm). From the 110 questionnaires that were returned, only 106 were valid and then included in the data analysis. The criteria for choosing informants was those 'who had senior position in the firm'. Therefore, senior managers formed the sample examined in this research.

To analyze the data, two statistical techniques were adopted. The Statistical Package for the Social Sciences (SPSS) version 25 was used to analyze the preliminary data and provide descriptive analyses about research sample such as means, standard deviations, and frequencies. Structural Equation Modeling (SEM using AMOS 21.0) using Confirmatory Factor Analysis (CFA) was

used to test the measurement model. SEM was conducted using the two-stage approach recommended by (Anderson and Gerbing, 1988). The first stage includes the assessment of the measurement model, while the second stage includes assessment of the structural model. In investigating reliability, the internal consistency of measures was assessed using Cronbach's alpha and CFA.

2.2.4 Quantitative Approach

This section provides a justification for the quantitative approach used in this research. It further justifies the use of a survey methodology using self-administered questionnaires as being appropriate for collecting data from the sample of senior managers at Sudanese's manufacturing firms. Drawing on the existing literature of value chain activities and competitive strategies, this research developed a theoretical model to test the research questions identified in Chapter One, and the hypotheses in Chapter Two.

(Punch, 1998) maintains that the methods used to conduct the research should be in line with the research questions. Therefore, a quantitative approach was carried out in this research to test the hypotheses and then to answer the research questions. Amaratunga et al. (2002) maintain that applying quantitative research helps the researcher to establish statistical evidence on the strengths of relationships between both exogenous and endogenous constructs.

The researchers also emphasize that the statistical findings provide directions of relationships when combined with theory and literature. Hence, this research aims to measure underlying variables, as "measurement of the variables in the theoretical framework is an integral part of research and an important aspect of quantitative research design" (Cavana et al., 2001).

2.2.4.1 Survey-Based Research

As discussed in Chapter One, the proposed theoretical model was evaluated using a sample of Sudanese manufacturing firms. For this purpose a self-administered survey methodology was found to be the most appropriate tool to collect the data for the following five reasons. First, it is designed to deal more directly with the nature of respondents' thoughts, opinions and feelings and collect information on belief, attitudes and motives. Second, it is an effective tool, especially when the investigator does not require, or has little control over behavioral events (Yin, 1994).

Third, it provides accurate means of assessing information about the sample and enables the researcher to draw conclusions about generalizing the findings from a sample of responses to a population (Creswell, 2014). Fourth, it is more concerned about causal research situations (Joseph F. Hair Jr, William C. Black, Barry J. Babin, 2010; Hair et al., 2003).

Five and Finally, it is considered useful because it is quick, inexpensive, efficient, and can be administered to a large sample (Sekaran, 2003). Moreover, Hair et al. (2003) conclude that the large samples (i.e., 200 or more respondents) as one of the main reasons for using a survey research method.

Although the survey method has its advantages, criticisms have arisen in regards to its reliance on self-report data (SPECTOR, 1994). This becomes a problem when both the independent and dependent variables are assessed within the same instrument, raising questions about the conclusions drawn from systematic response distortion, and the reliability and validity of the measures used in the instrument. Further, lack of control that researchers have over timeliness, difficulty in determining whether the selected

respondents are being truthful, and lack of detail and depth of information, are seen as other problems associated with survey methods (Joe F. Hair, Mary Celsi, Arthur Money, Phillip Samouel, 2016). For these reasons, the guidelines recommended by Hair et al. (2003) were taken into account to ensure accuracy, and to avoid those problems associated with the survey methods.

In order to address these issues, the following steps were taken. First, when possible previously tested reliable and valid scales to measure the underlying constructs were used. Systematic response distortion was addressed by ensuring that the questionnaire was designed in a way that was easy for the respondents to understand and was free of response bias. As for the issue of research control, any research method has its own limitations. However, the above mentioned five reasons for choosing the survey method are strong factors for use in this research. The next section addresses the type of survey method used.

2.2.4.2 Self-Administered Questionnaire

Data collection can be gathered in many ways and from a range of sources such as personal interviews, telephone interview, and self-administered questionnaires. Self-administered questionnaires, is the methodology used in this research, is described as “a data collection technique in which the respondent reads the survey questions and records his or her own responses without the presence of a trained interviewer” (Hair et al., 2003). Self-administered questionnaires present a challenge in which they rely on the clarity of the written word more than on the skill of interviewers (Zikmund, 2003). However, this method also has a number of advantages as follows:

1) The questionnaire can be completed whenever respondents have time; and
2) it reaches a geographically widespread sample with lower cost because the researcher is not required (Zikmund, 2003). Furthermore, researches relevant to this research have utilized self-administered questionnaires.

2.2.5 Scale Development

This section of the chapter explains the selection of scale items that are used to measure the constructs in this research. These are: value chain activities, competitive strategies, and firm performance. To choose the correct items that measure these constructs, the following considerations have been made. First, the purpose of this research was to include items that measure the content of each construct in this research, and determine the extent to which they represent definitions and dimensions.

This is consistent with (Churchill and Dedic, 1979) recommendation that “the researcher probably would want to include items with slightly different shades of meaning because the original list will be refined to produce the final measure”. Second, all scales used have been adopted from previous studies with valid and reliable measures of corresponding constructs. In this research, as new scales were developed using items from various scales in these previous studies, validity and reliability were examined to ensure the new scales were acceptable.

Moreover, the scales used in this research have been developed from a review of the relevant literature. In sum, a total of 44 scale items were used to measure the constructs in the model. Table 2.1 shows a summary of the number and source of the items used to test each construct. These items are further discussed later in this section.

Table 2.1 Research instrumentation and measurement

Variables	Dimensions	Items	Sources	Scale
Value chain activities 18 items	Marketing activities	We actively and regularly seek customer inputs to identify their needs and expectations.	(Prajogo et al. 2008)	5 point likert scale (Strongly disagree to Strongly agree)
		Customer needs and expectations are effectively disseminated and understood throughout the employees.		
		We involve our customers in product design processes.		
		We always maintaining a close relationship with our customers and provide them an easy channel for communicating with us.		
		We have an effective process for resolving customers' complaints.		
		We systematically and regularly measure our customer satisfaction.		
	Operation activities	The concept of the internal customer is well understood in our company.		
		We design processes in our factory to be "fool-proof" (preventive-oriented).		

	<p>We have clear, standardized and documented process instructions which are well understood by our employees.</p>
	<p>We make an extensive use of statistical techniques to improve our processes and to reduce variation.</p>
Research & Development activities	<p>We have excellent communication processes between R&D and other departments.</p>
	<p>Our R&D pursues truly innovative and leading edge research.</p>
	<p>Our R&D strategy is mainly characterized by high risk projects with chance of high return.</p>
	<p>R&D plays a major part in our business strategy.</p>
Procurement activities	<p>We strive to establish long-term relationships with our suppliers.</p>
	<p>We use a supplier rating system to select our suppliers and monitor their performance.</p>
	<p>We depend on a reasonably small number of highly dependable suppliers.</p>
	<p>Our suppliers are actively involved in our new product development process.</p>

performance 15 items	Financial Performance	Return on investment	(Huo et al. 2014)	5 point likert scale (much worst in industry to much better in industry)
		Return on sales		
		Market share		
		Growth in return on investment		
		Growth in return on sales		
		Growth in market share		
	Operational Performance	Performance	(Prajogo et al. 2008)	5 point likert scale (much worst in industry to much better in industry)
		Conformance to Specifications		
		Reliability		
		Durability		
		The level of newness (novelty) of our firm's new products		
		The use of latest technological innovations in our new products.		
		The speed of our new product development.		
		The number of new products our firm has introduced to the market.		
		The number of our new products that is first-to-market (early market entrants).		
Competitive strategies 11 items	Cost leadership Strategy	Operating efficiency	(Huo et al. 2014, and Daniel I. Prajogo,	5 point likert scale (Most unimportant to Most Important)
		Pursuing cost advantage of raw material purchasing		
		Pricing below competitors		
		Pursuing economy of scale		

		Finding ways to reduce cost of production	2007)
		Pursuing Cost centers and fixing standard costs	
	Differentiation strategy	Providing product with unique features	(Huo et al. 2014)
		Providing product with many features	
		Targeting high-priced product segments	
		Advertising	
		Control of distribution channels	

Source: prepared by researcher from previous studies (2020)

Furthermore, the constructs have been operationalized using 5-point Likert scales, for the value chain activities construct used ranging from (1= strongly disagree) to (5 = strongly agree), for competitive strategies construct assessed on a scales ranging from (1= most unimportant) to (5= most important), whereas firm performance was assessed on scale ranging from (1= worst in industry) to (5= best in industry). The Likert-scales were selected because they take less time, and are easy to answer.

2.2.5.1 Value Chain Activities

consistent with the previous researches, this variable of value chain activities have been conceptualize in this research as having four dimensions, marketing activities, operation activities, R&D activities and procurement activities. To measure value chain activities, this research uses, the eighteen items from (Prajogo et al. 2008) scale have been used (see Table 3.1), (Prajogo et al. 2008) developed their scale items based on a well-established range of previous studies, for marketing activities dimension was derived by

Samson and Terziovski (1999), for procurement activities was derived by Dow et al. (1999) and Forza and Filippini (1998).

The R&D activities dimension was derived mainly from Gupta et al. (2000) and Chiesa et al. (1996). Finally, the operation activities dimension was derived from Samson and Terziovski (1999), complemented by the work of Flynn et al. This scale is considered appropriate to be selected, it consistent with the definition of financial and operational performance used in this research. Furthermore, the researcher use 5- point likert scales from (1= strongly disagree to 5= strongly agree). Moreover, reporting a Cronbach's alpha reliability of marketing activities (.83), operation activities (.83), R&D activities (.86) and procurement activities (.86), with an overall reliability of .85.

2.2.5.2 Competitive Strategies

Consistent with the previous studies, this variable of competitive strategies have been conceptualize in this research as having two dimensions, cost leadership strategy and differentiation strategy. To measure competitive strategies, this research uses (Huo et al. 2014, and Daniel I. Prajogo, 2007) scale, using six items for cost leadership and five items for differentiation strategy (see table 3.1).

In reviewing the relevant literature, it has also been found that these items are the best to capture the cost leadership and differentiation strategies. This scale is considered appropriate to be selected it consistent with the definition of cost leadership and differentiation strategies used in this research. Furthermore, I use 5- point Likert scales from (Most Unimportant to Most

Important). Moreover, reporting a Cronbach's alpha reliability of .83 and .83 for cost leadership and differentiation strategy, respectively.

2.2.5.3 Firm Performance

Consistent with the previous studies, this variable of firm performance has been conceptualized in this research as having two dimensions, financial performance and operational performance. The first dimension was adopted from (Huo et al. 2014), who developed their scale from Gunasekaran *et al.* (2001), Flynn *et al.* (2010) and Vickery *et al.* (2003). While, the second dimension was adopted from (Daniel I. Prajogo, 2008), who developed his scale from Boyer (1998), Boyer and Lewis (2002), Flynn *et al.* (2010), Kathuria (2000) and Ward *et al.* (1998). Using six items for financial performance and nine items for operational performance (see table 3.1).

Moreover, in reviewing the relevant literature, it has also been found that these items are the best to capture the firm performance. This scale is considered appropriate to be selected, it is consistent with the definition of financial and operational performance used in this research. Furthermore, the researcher uses 5-point Likert scales from (1= much worst in industry to 5= much better in industry). Further, reporting a Cronbach's alpha reliability of .83 and .83 for financial and operational performance, respectively.

2.2.6 Questionnaire

Questionnaires are the most frequently used method of data collection. The questionnaire is "a reformulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives" (Sekaran, 2000). It is widely used in the context of value chain and

competitive strategies. These considerations make using a questionnaire the most effective data collection tool for this research.

In this research, the questionnaire used was divided into two parts (see Appendix B). The first two parts covered the items comprising the constructs (discussed in section 3.9) in the proposed theoretical model, while the final part covers aspects of demographic data. These are presented in the questionnaire as follows:

Part 1

The first part includes forty four questions which asking respondents to evaluate value chain activities, competitive strategies, and firm performance, in their firms.

Part 2

The second part of the questionnaire contained six questions, which asking respondents about their gender, age, educational level, experience, position, and industry type.

The first part of the questionnaire reflected the underlying constructs. These constructs were presented in this instrument utilizing a 5-point Likert type scale ranging from (1= strongly disagree) to (5 = strongly agree) for value chain activity construct, with the exception of the competitive strategies and firm performance, which were presented on scales ranging from (1 = most unimportant) to (5= most important) and (1 = much worse) to (5= much better), respectively.

In order to obtain a higher response rate, it was necessary to have the respondents start with the most important questions and finish with

demographic questions Robertson and Sundstrom, (1990). That is, if demographic questions appear early in the questionnaire, potential respondents may become too disaffected to continue, resulting in no response Bourque and Fielder, (2003).

There are different views regarding the length of questionnaire. For instance, Frazer and Lawley (2000) outline that an instrument up to twelve pages in length is generally considered as appropriate. (Zikmund, 2003), recommended that, “a general rule of thumb is that questionnaires should not exceed six pages”. All the questions in this research including the covering letter were presented on six pages, within the recommended length. The questionnaire was printed on both sides of the paper to further reduce the impression of the survey being long. In addition, questions were also carefully organized and conveniently spaced to minimize eyestrain.

Moreover, this questionnaire was designed to represent the goal of the research, moving from one topic to another in a logical manner, with questions focusing on the completed topic before moving to the next Tull and Hawkins, (1990).

Furthermore, the wording and language used in this questionnaire was kept as simple as possible to communicate with all respondents. Questions are clear, answerable, unbiased, and suitable to the manufacturing context. As recommended by Janes (1999), Fowler (1992), and Frazer and Lawley (2000), the respondents should be able to read and understand the words used in the instrument, as this will encourage them to complete the questionnaires.

On the other hand, the draft of instrument was presented to a number of experts in the field to identify any potential problems (see next section of pre-

test). As a result, any ambiguity or unclear words should have been eliminated from the questionnaire. This procedure also serves to establish validity and reliability (Churchill, 1995; Frazer and Lawley, 2000).

In addition to this, great care has been taken by the researcher to design the instrument attractively with easy to follow instructions, which has been found to increase response rate (Janes, 2001; Sanchez, 1992; Babbie, 1990), and minimize measurement errors Sanchez, (1992). Moreover, respondents were invited to participate in this survey through a cover letter enclosed on the first page of the instrument (see Appendix A.1).

Further, the covering letter is important because it encourages respondents to complete and return the questionnaire (Lukas et al., 2004; Churchill, 1995). This letter introduced the study and its aims and assured confidentiality of the respondents.

2.2.7 Questionnaire Translation and Back Translation

Since that the sample of this research consists of Arabic speakers, translation and back-translation of the instrument is necessary and it was studied place. Methodological authors such as (Brislin, 1970), Malhotra et al. (1996), Temple (1997) , Frazer and Lawley (2000), Mallinckrodt and Wang (2004), and Salciuviene et al. (2005) maintain that this procedure is important because cultural differences could result in non-equivalence, which may confound findings.

Moreover, two steps were conducted in translating the current questionnaire. First, after the original questionnaire (English version) was developed, it was translated into Arabic by an accredited translator who is a native Sudanese and fluent in both languages. Second, another accredited

bilingual translator whose native language is Arabic, back-translated the Arabic version to ensure equivalence of the questionnaire translations, and adjust inconsistencies. Translation equivalence of the questionnaire was evaluated through pre-testing prior to conducting the final survey.

2.2.8 Pre-Test

The researcher needs to ask: “Will the instrument provide data of sufficient quality and quantity to satisfy the objectives of the research? . Pre-test is defined as “a trial run with a group of respondents used to screen out problems in the instructions or design of a questionnaire” (Zikmund, 2003).

Blair and Presser (1992) found real differences between pre-test methods. This was confirmed by Reynolds and Diamantopoulos (1998), who noted several disagreements among scholars about the best method for pre-test administration. Overall, the methodological literature has been found to distinguish between three types of pre-test methods (Hunt *et al.*, 1982) and (Zikmund, 2003), including planned field survey, personal interviews (face-to-face), and expert panel.

The first of these, planned field survey, employs a small sample referred to as ‘pre-testing’ (Zikmund, 2003). The second, personal interview is where the interviewer is required to identify any obstacles, difficulties, or incomprehensible questions blocking respondents’ ability to provide accurate answers. The third is when an expert panel is asked to judge the instrument and determine any problems it presents.

The above three methods are critically analyzed by (Reynolds and Diamantopoulos, 1998), who found that a planned survey is useful because it covers all aspects of the field survey, and is less likely to be affected by

interaction between the respondents and interviewer. However, a problem with this method is that respondents who are not the targeted sample might complete the questionnaire.

Therefore, they suggest that personal interview is the most effective means of conducting a pre-test, due to the accuracy and completeness of the information generated. This method is subject to errors resulting from interaction between the interviewer and participants. (i.e., bias introduced by interviewers), expert panels (the last method) could be used to determine if there are problematic questionnaire items. In order to minimize any error or bias, all of these methods have been used (see pre-test procedures).

2.2.8.1 Pre-Test Sampling Frame

There are two main questions in discussing the sampling frame for a pre-test. These questions were “who should be the subjects in the pre-test?” and “how large a sample is needed for the pre-test? (Hunt *et al.*, 1982). For the first question, it was necessary to include subjects who were similar to those approached in the actual survey (Churchill, 1995). Hence, a small number of respondents with certain characteristics were deemed to be more efficient in exploring errors in the survey instrument than respondents chosen randomly from the population of interest (Reynolds and Diamantopoulos, 1998).

Moreover, the sampling frame for a pre-test consists of senior managers of Sudanese manufacturing firms that correspond with the population to be studied. These subjects have formed the population of interest in the purposive sample generated from three selected firms in Sudan (Alshajara Industrial Complex, Giad For Steel Co., and Green Food Processing Industries Co.).

In the case of pre-test sampling size (the second question), there is little agreement in the literature (Hunt et al., 1982). For example, Zatalman and Burger (1975) did not specify size, simply recommending a ‘small’ sample. Others such as Boyed et al. (1977) indicated that a sample of 20 is adequate. Luckas et al. (2004) point out a size of 50 respondents allows the running of proper statistical testing procedures. Accordingly, the interview was conducted with nine senior managers at these firms.

2.8.2.2 Pre-Test Procedures

Because there are limitations to each of the pre-test methods, many researchers have recommended using different combinations of approaches for instance (Presser and Blair, 1994) and (Churchill, 1995). As a result, expert panel and interviews methods have all been used to pre-test the questionnaire of this research in order to overcome the shortcoming of using one method (see Table 2.2).

The first procedure involved distributing the draft to a panel of three experts. Two of them were assistant professors in the area of strategic management at Sudan University of Science & Technology in Sudan, and one was associate professor in accounting in the same university. These three experts were asked to evaluate the questionnaire to: 1) assess the relevance of its conceptualization of value chain and competitive strategies researches; 2) evaluate the appropriateness of the terminology to the manufacturing context; and 3) make further suggestions, criticism and comments on the questionnaire.

The second procedure was to ensure that this instrument could be used within the Sudanese culture. The Arabic translated version was then

presented into two Arabic experts; one is assistant professor in business administration, another one is senior HR group director in greater company in Sudan, all of them speaks both languages fluently. They were asked to evaluate the questionnaire. They identified two items related to value chain activities, one related to competitive strategies, and one related to firm performance, that needed to be reworded. Further changes were also done for demographic questions relating to the position and type of industry. The necessary revisions were made to the questionnaire to ensure its relevance to the domain of this research and to achieve validity.

In the third and final procedures, five senior managers were interviewed. The purpose of these interviews was to ask the respondents to identify any problems with regard to the questionnaire format, wording or design, and to address any comments or suggestions they had. As a result of this procedure, it was suggested that increasing the font size of questions would make the questionnaire easier to read. It was also identified that three out of five respondents did not understand the question related to operation activities and cost leadership strategy. The questionnaire was modified and refined before conducting the final survey.

Table 2.2: Procedures Used in Pre-test

Procedures	Target	Reasons this Procedure Used
1. Panel of experts	One professors in the area of Accounting + two professors in the area of strategic management	To: 1) Assess the relevance of its conceptualization of value chain research; 2) Evaluate the appropriateness

		of the terminology to the manufacturing context; 3) Make further suggestions, criticism and comments on the questionnaire and its facets; 4) Validate the questionnaire
2. Panel of experts after translation process	One assistant professor in business administration + One HR group director	Same as procedure one
3. Personal interviews	Five personal interviews with senior managers at three manufacturing firms	To: 1) Ask senior managers to give their comments and identify any problems regarding the questionnaire; and 2) Interviews findings used in pre-testing

Source: prepared by the researcher 2020

2.2.9 Final Survey Sampling Frame

As was discussed in chapter one, the aim of this research was to evaluate the proposed theoretical model. The type of sample used in this research was a ‘purposive sample’, in which the full range of manufacturing firms was surveyed. Those who met the criteria of being senior manager were included in the data to be analyzed. (Sekaran, 2003) defines purposive sample as “a form of convenience sampling in which the population elements are

purposely selected based on judgment of the researcher”. Similarly, (Dillon et al., 1993) view purposive sampling as involving “selecting certain respondents for participation in the study presumably because they are representative of the population of interest and/or meet the specific needs of the research study”. This type of sample was chosen for use in this research.

2.2.9.1 Final Survey Procedures

Once the researcher finalized the questionnaire and confirmed its appropriateness after conducting the pre-test, a number of procedures were adopted to conduct the final survey and collect research data. As followed in the pre-test, letters of formal invitation enclosed with the questionnaire were delivered to all of the two hundred manufacturing firms (see Appendix A). The information given to the respondents briefly included the aims of the research, its significance to them, intended use of data, time, and issues related to confidentiality.

Consequently, the respondents were so passionate to participate in the survey. The fieldwork studied place during the period of August 2019 up to April 2020. The researcher extended the survey time for an additional two months.

The questionnaires were delivered to the respondents through researcher or facilitators in the target firms, and picked them up after they had finished.

The questionnaires were provided only in Arabic version. In order to check whether the number of responses was as desired, the researcher had frequent and direct connections with the facilitator and respondent at each firm.

After one month from the starting of the distribution process, it became apparent that the method of giving the questionnaires to the respondent

through the facilitator only was not sufficient responses. The researcher started to discuss with facilitators the possibility of using different ways to approach the respondents in order to improve the response rate. The researcher also increases his visiting and calls numbers in order to encourage the respondents to complete questionnaire.

Consequently, it was found that adopting the above follow-up procedures increased the number of responses. In total, the researcher distributed one questionnaire to each of the 200 firms, 200 questionnaires overall. The objective was to obtain a minimum sample size of approximately 100 respondents, which is appropriate for running structural equation modeling (Hair et al., 1995). The distribution procedures utilized resulted in 106 being returned.

2.2.10 Data Analysis Methods

This research uses Statistical Package for Social Sciences (SPSS) version 25 to analyze the preliminary data, and Structural Equation Modeling (SEM) using confirmatory factor analysis to test the hypothesized model discussed in Chapter Two. This section describes and justifies the use of these statistical techniques.

2.2.11 Preliminary Data Analysis

In order to analyze quantitative data gathered from the questionnaires, Statistical Package for Social Sciences (SPSS) version 25 was used. This software has largely been used and accepted by researchers as a data analysis technique.

Therefore, this technique has been used to screen the data of this research in terms of coding, missing data, outliers, and normality (i.e., using skewness

and kurtosis). Each one of these methods has been further defined and described in chapter four. SPSS was also employed to conduct preliminary data analysis including frequencies, mean, and standard deviation. These analyses were conducted for each of the variables to gain preliminary information about the sample. This information gives the reader a ‘snapshot’ of the data collected and used in the research.

2.2.12 Structure Equation Modeling (SEM)

Structural Equation Modeling (SEM) is “a collection of statistical techniques that allow a set of relationships between one or more independent variables, or more dependent variables. SEM has become an important tool for analysis that is widely used in academic research (Hair et al., 1995).

The primary purpose of SEM is to explain the pattern of a series of inter-related dependence relationships simultaneously between a set of latent or unobserved constructs, each measured by one or more observed variables (Hair et al., 1995). SEM is based on the assumption of causal relationships where a change in one variable (x_1) is supposed to result in a change in another variable (y_1), in which y_1 affects x_1 . Not only does SEM aim to analyze latent constructs, in particularly the analysis of causal links between latent constructs, but also it is efficient for other types of analyses including estimating variance and covariance, test hypotheses, conventional linear regression, and confirmatory factor analysis.

According to (Anderson and Gerbing, 1988), SEM is a confirmatory method providing “a comprehensive means for assessing and modifying theoretical models”. SEM also has the ability to assess the reliability and validity of each individual construct. Moreover, it provides an overall test of

model fit and individual parameter estimate tests simultaneously, thus, providing the best model fits to the data adequately. In this research, SEM using confirmatory factor analysis, therefore, has been conducted.

Structural equation modeling software AMOS 21.0 (Analysis of Moment Structures) was used to explore statistical relationships among the items of each variable and between the variables of independent (i.e., value chain activities and competitive strategies) and dependent variables (i.e., firm performance).

Further, the researcher can specify, estimate, assess, and present the model in a causal path diagram to show hypothesized relationships among variables. The empirical model can be tested against the hypothesized model for goodness of fit. Any causal paths that do not fit with the original model can be modified or removed.

2.2.12.1 Two-Stage Structural Equation Modeling

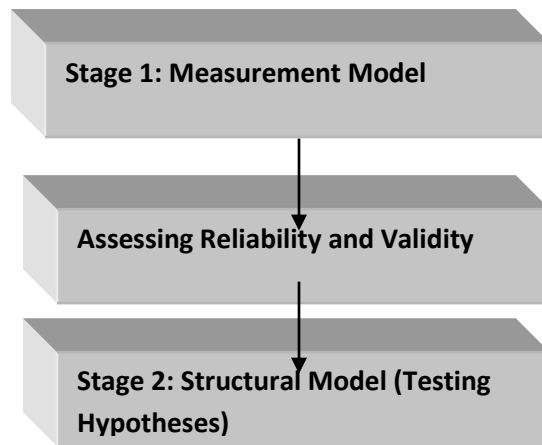
In order to perform SEM, there are two approaches, one-stage and two-stage. The first of these, the one-stage approach, aims to process the analysis with simultaneous estimations of both structural and measurement models (called single-stage approach).

The second, two-stage approach, aims to process the measurement model first and then fix this measurement model in the second stage when the structural model is estimated (called two-stage approach). In this research, the two-stage approach recommended by (Anderson and Gerbing, 1988) was adopted to conduct the analysis because it accurate representation of the reliability of the items of each construct is best conducted in two stages to

avoid any interaction between the measurement and structural models (Hair et al., 1995).

As shown in Figure 2.2, the first (measurement model) stage of the analysis was conducted by specifying the causal relationships between the observed variables (items) and the underlying theoretical constructs (composite and latent variables).

Confirmatory factor analysis (CFA) is a better method for use in research where hypotheses about the grounded theoretical models exist (Bollen, 1989), as is the case in this research. Thus, CFA is considered a more powerful and more flexible technique than exploratory factor analysis for such assessment. Further, (Kline, 2016) maintains that there is evidence that the factor structure identified in EFA may turn out to have poor fit to the same data when evaluated with CFA.



Source: prepared by researcher (2020)

Figure 2.2: Two-Stage Structural Model Used in this Research

Therefore, CFA was used to determine whether the number of factors and the loadings of measured indicators (items) had conformed to what was expected, based on re-established research and theory. Items that loaded weakly on the hypothesized factors were removed from the scale. In using CFA, a factor loading of .50 and above on a specified factor has been considered acceptable (Hair et al., 1995), and thus this level is used as the cut off value within this research.

Confirmatory factor analysis using maximum likelihood estimate was performed (Kline, 2016). Following this, the paths or causal relationships between the underlying theoretical latent constructs were specified in the structural model (second stage). Further details about these two stages are discussed in the next chapter.

2.2.12.2 SEM Assumptions

Like any statistical method, a number of assumptions need to be met before conducting SEM. For example, SEM requires the sample size to be adequate, as covariance and correlations are less stable when estimated from small sample sizes Tabachnick and Fidell, (2001). Whereas some authors believe that SEM could be used for sample sizes as small as 50 (i.e., (Anderson and Gerbing, 1988), it has been generally accepted that 100 is the minimum sample size to ensure the appropriate use of maximum likelihood estimation (Hair et al., 1995).

(Bentler, 2007), suggested that instead of thinking about number of participants per measured variable, it is worthwhile to thinking about how many subjects there are per estimated parameter. Accordingly, Tabachnick and Fidell (2001) suggest that fewer than ten subjects per estimated

parameter may be adequate if the estimated size of effect is large and the measured variables normally distributed. A sample of 400 and over is also considered as undesirable (Carmines and McIver, 1981; Tanaka, 1987; Hair et al., 1995), because the methods become too sensitive and goodness-of-fit measures will indicate a poor fit. While there is no agreement among the scholars about sample size, Hair et al. (1995) considered a number of 100 to be ideal. The sample size of this research is 106, which is considered appropriate for using SEM.

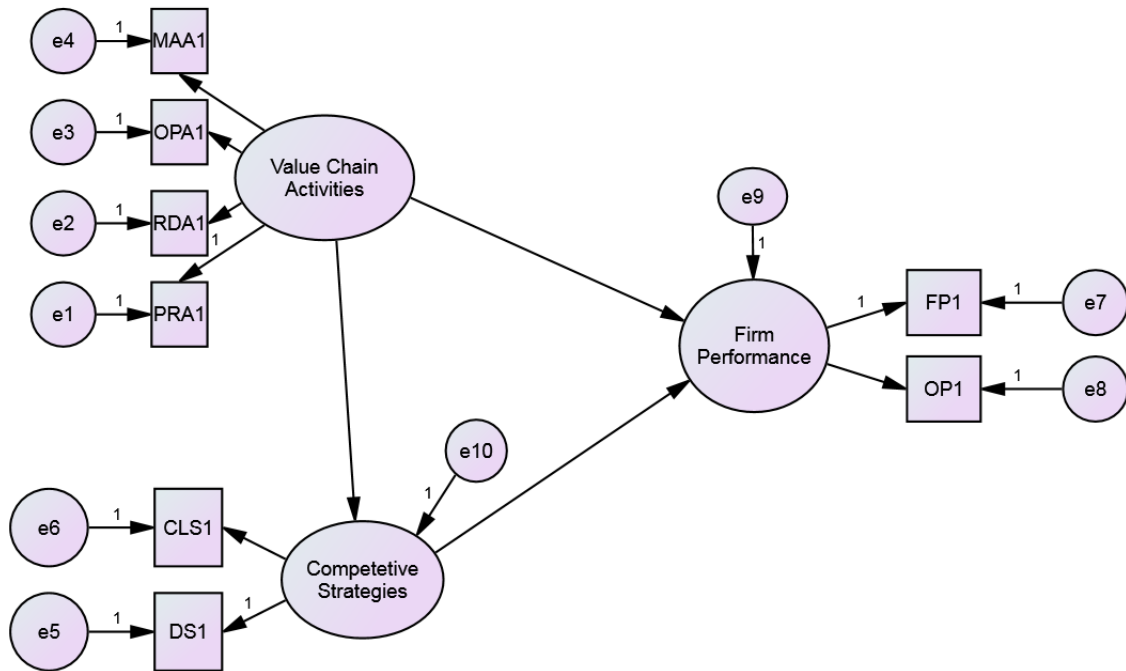
In addition to sample size, the important assumptions for using SEM include the normal distribution of the data as well as the effect of missing data and outliers. These issues have been discussed in the next chapter under Data Screening (see Section 4.3).

2.2.12.3 Path Diagram

In SEM, the hypothesized or causal relationships can be presented in the form of a path diagram. As shown in Figure 2.3, the SEM diagram in this research consists of the constructs as unobserved variables, measured variables (composite variables), measurement errors, and arrows representing relationships between the variables.

The single-headed arrows in the diagram represent linear dependencies indicating the extent to which one variable (construct) is dependent on another (causal paths or relationships). For instance, the arrow connecting value chain activities with firm performance represents a direct relationship that is hypothesized between these two variables. The absence of arrows linking variables implies that no direct relationship has been hypothesized.

Also included in the model is measurement error associated with the composite variables and residual error associated with the latent variables. Measurement error have been represented as (e) and enclosed in small circles.



Source: Prepared by Researcher (2020)

Figure 2.3: The Path Diagram of This Research

2.2.13 Evaluating the Fit of the Model

In SEM, there are a series of goodness-of-fit indices, which identify whether the model fits the data or not. There are many indices provided by SEM, although there is no agreement among scholars as to which fit indices

should be reported. For example, (Anderson and Gerbing, 1988) suggest that researcher might assess how well the specified model accounts for data with one or more overall goodness-of-fit indices.

Kline (1998) recommends at least four such as GFI, NFI, or CFI, NNFI and SRMR. In order to reflect diverse criteria and provide the best overall picture of the model fit, Hair et al. (1995), and Holmes- Smith (2006) recommend the use of at least three fit indices by including one in each of the categories of model fit: absolute; incremental; and parsimonious (these are discussed below).

This research adopts those measures which most commonly used. As outlined in Table 2.3, the first category of absolute values includes chi-square (χ^2), GFI, and RMSEA; the second category (incremental) includes AGFI, NFI, CFI, TLI; and the third category (parsimonious) includes χ^2 / df . These are described in more detail below:

Table 2.3: Summary of Goodness-of-Fit Indices

Name of the Index	Level of Acceptance	Comments
Absolute fit indices:		
Chi-square (χ^2)	$P > 0.05$	This measure is sensitive to large sample sizes.
Goodness-of-Fit (GFI)	.90 or greater	Value close to 0 indicates a poor fit, while value close to 1 indicates a perfect fit.

Root Mean Square Error of Approximation (RMSEA)	Between .050 and .080	Value up to 1.0 and less than .05 is considered acceptable.
Incremental fit indices:		
Adjusted Goodness-of-Fit (AGFI)	90 or greater	Value close to 0 indicates a poor fit, while value close to 1 indicates a perfect fit
Tuker-Lewis Index (TLI)		
Normed Fit Index (NFI)		
Comparative Fit Index (CFI)		
Parsimonious fit indices:		
Normed Chi-square (χ^2 / df)	$1.0 \leq \chi^2 / df \leq 5$	Lower limit is 1.0, upper limit is 3.0 or as high as 5

Source: Prepared by Researcher from previous studies (2020)

2.2.13.1 Absolute fit indices

The chi-square (χ^2) is considered the most fundamental measure of overall fit (Bollen, 1989). Although this type of statistical index is the most important one to evaluate fit of the model, it has been criticized for being too sensitive to sample size Jöreskog and Sörbom, (1996), especially in cases where sample size is over 200 (Hair et al., 1995).

The second measure of absolute fit index used within this research is the Goodness-of- Fit Index (GFI) proposed by (Joreskog and Sorbom, 1982). The GFI measure indicates the relative amount of variance and covariance together explained by the model Byrne, (1989). The GFI value is calculated

by comparing the discrepancy value for the model under test to the discrepancy value for a saturated version of the model which is counted as representing a 100% fit (or 1.0). However, this measure is not adjusted for degrees of freedom (Hair et al., 1995), ranging from 0 (indicating a poor fit) to 1 (indicating a perfect fit), where a recommended level of acceptance is .90 (Hair et al., 1995).

The third measure of absolute fit index used is Root Mean Square Error of Approximation (RMSEA). This measure assists in correcting the tendency of chi-square to reject specified models. It takes into account errors of approximation in the population, and relaxes the stringent requirement that the model holds exactly in the population. While Holmes-Smith et al. (2006) recommend that RMSEA should be less than 0.05; McCallum and Browne (1993) suggest a value of up to 1.0 as reasonable. However, it has been found that a value ranging from .05 to .08 is commonly acceptable (Hair et al., 1995).

2.2.13.2 Incremental Fit Indices

The second category of indices includes incremental fit measures. These measures provide a comparison between the proposed model and the null model. Adjusted Goodness-of-Fit Index (AGFI), for instance, is one of the incremental indices, which has been found important, and is adopted in this research. This is because it takes into account adjustment for degrees of freedom, which GFI from the absolute fit indices category cannot do (Hair et al., 1995; Holmes-Smith, 2006). The quantity $1 - \text{GFI}$ is multiplied by the ratio of the model's df divided by df for the base line model, the AGFI is 1 minus this result. Similar to GFI, this measure range from 0 (indicating a poor fit) to

1 (indicating to perfect fit), whereas recommended level of acceptance is .90 (Hair et al., 1995).

In addition to AGFI, Normed Fit Index (NFI) is one of the most popular incremental measures (Hair et al., 1995; Byrne, 2001). NFI reflects the proportion to which the researchers' model fit compared to the null model. For example, NFI = .50 means the researcher's model improve fit by 50%. However, this index does not control for degrees of freedom (Bollen, 1989). In order to overcome this shortcoming, (Bentler, 2006) has used it with the Comparative Fit Index (CFI). CFI compares the covariance matrix predicted by the model to the observed covariance matrix.

Therefore, both of NFI and CFI are reported in this research. They range from 0 (poor fit) to 1 (perfect fit) having a commonly recommended level of .90 or greater (Hair et al., 1995). Another important incremental measure also used in this thesis is the Tucker-Lewis Index (TLI). TLI is known as a non-normed fit index (NNFI) (Hair et al., 1995). TLI combines a measure of parsimonious into a comparative index between the proposed or hypothesized and null models, resulting in values ranging from 0 (not fit at all) to 1 (perfect fit).

Similar to NFI and CFI, the commonly recommended level is .90 or greater (Hair et al., 1995). It has been adopted in this research due to its ability to provide a nonbiased indication of model fit at all sample sizes Finch and West, (1997).

2.2.13.3 Parsimonious Fit Indices

The third category of parsimonious fit indices tests the parsimony of the proposed model by evaluating the fit of the model to the number of estimated

coefficient required to achieve the level of fit. In this category, the normed chi-square (χ^2 / df) is the most popular parsimonious fit index used to evaluate the appropriateness of the model (Hair et al., 1995). In this measure, a range of acceptable values for the χ^2 / df ratio have been suggested, ranging from less than 2.0 (Bollen, 1989; Hair et al., 1995), through less than 3.0 (Carmines, 1983) , to more liberal limits of less than 5.0 (Wheaton et al., 1977). Since χ^2 is the main component of this measure, χ^2 / df is also sensitive to the sample size.

Therefore, this research has used this measure as an indicator of overall fit (in conjunction with other measures), not as a basis for rejecting or accepting the model.

2.2.14 Reliability and Validity

Reliability and validity are separate but closely related concepts (Bollen, 1989) . Here, a measure may be consistent (reliable) but not accurate (valid), and alternatively, a measure may be accurate but not consistent Holmes-Smith et al., (2006). That is, an instrument is valid if it measures what it supposed to measure and reliable if it is consistent and stable (Sekaran, 2000). Therefore, in order to ensure the quality of the findings and conclusions of this research, both validity and reliability are assessed.

Cronbach's (1951) coefficient alpha, Construct reliability (CR), and Average Variance Extracted (AVE) are computed to assess reliability, while content, construct, criterion and external validity are examined for validity. Both reliability and validity assessments are discussed below.

2.2.14.1 Reliability

Reliability is the degree to which measures are free from random error and therefore yield consistent findings. That means reliability refers to the extent to which a scale produces consistent findings if repeated measurements are made on the variables of concern Malhotra, (2003). Reliability and error are related, and thus the larger the reliability, the smaller the error (Punch, 1998). Therefore, the main objective of reliability is to minimize the errors and biases in a research (Yin, 1994).

Reliability can be assessed through two main dimensions: 1) repeatability and 2) internal consistency (Zikmund, 2003). The first dimension, repeatability, can be explored using two methods, including test-retest, and alternatives. Test-retest method entails the administration of the same instrument on two different occasions to the same sample of respondents, taking into account the equivalent conditions. In this case, a correlation coefficient is computed to confirm the degree of similarity between the two tests.

However, two main problems proposed by (Zikmund, 2003) are associated with this method, making it not suitable for use in this research. First, the initial test influences respondents' responses in the following tests. That is, respondents may have learned from the first test to change their attitude when the other is conducted. Second, respondents may change their attitude due to the time factor

To avoid this problem, Cronbach's (1951) coefficient alpha, one of the most common methods in gauging reliability (Peter, 1979; Sekaran, 2000), is considered appropriate. This technique estimates the degree to which the items in the scale are representative of the domain of the construct being

measured. It is a measure of the internal consistency of a set of items, and is considered 'absolutely the first measure' one should use to assess the reliability of a measurement scale (Nunnally, 1978; Churchill, 1979). Added to this, Cronbach's coefficient is important in measuring multi-point scale items (i.e., 5-point Likert scale used in this research) (Sekaran, 2000). Accordingly, this method of internal consistency has been adopted to assess the reliability of the measures in this thesis.

Authors suggest multiple levels of acceptance when assessing reliability with Cronbach's alpha. For instance, Nunnally (1967) recommend that an acceptable alpha is between .50 and .60. However, in the second edition of his book *Psychometric Theory*, Nunnally (1978) increased the level of acceptance and considered that alpha should exceed the minimum of .70 for internal consistency.

Similarly, Nunnally and Bernstein (1994) suggest a rule of thumb level of higher than .70, with level as low as .60 being acceptable for new scales. Other authors such as Carmines and Zeller (1979) indicate that at least .80 is required to establish internal consistency. While different views have been recommended about levels of acceptance, it is generally agreed that an alpha of .70 and over is acceptable.

Therefore, this cut-off point (.70) has been used as the minimum for determining internal consistency of scales for this research. Furthermore, assessing reliability by using CFA is also necessary to ensure that all measures used in this research are reliable, thus providing the researcher with greater confidence that the individual items are consistent in their

measurements (Hair et al., 1995). Accordingly, internal consistency in this research has also been assessed using confirmatory factor analysis (CFA).

Reliability (CR) and Average Variance Extracted (AVE). CR measures the internal consistency of a set of measures rather than the reliability of a single variable to capture the degree to which a set of measures indicates the common latent construct Holmes-Smith et al., (2006). Here, a main advantage is that CR is based on estimates of model parameters and has wide applicability.

On the other hand, the AVE estimate is a more conservative indicator of the shared variance in a set of measures than construct reliability. Hence, the variance-extracted estimate reflects the overall amount of variance in the items accounted for by the latent construct. In this thesis, CR and AVE have been calculated separately for each multiple item construct because AMOS does not compute these two measures directly (Hair et al., 1995).

(Bagozzi, 1988) recommended that CR should be equal to or greater than .60, and AVE should be equal to or greater than .50. As this threshold is widely accepted, it has been used in this research.

This research determined Cronbach's alpha, CR, and AVE to ensure that the specified items are sufficient in their representation of the underlying constructs, including value chain activities, competitive strategies, and firm performance. The findings related to these assessments are reported in chapter four.

2.2.14.2 Validity

Reliability alone is not sufficient to consider that an instrument is adequate (Churchill, 1979; Anderson and Gerbing, 1988; Dunn et al., 1994; Hair et al.,

1995). Therefore, validity is required to validate the constructs of this research. Validity means “the ability of a scale to measure what intended to be measured”. Added to this, validity represents the relationship between the construct and its indicators (Punch, 1998).

Nunnally and Bernstein (1994) suggest there are three important aspects of a valid construct. First, the construct should be seen to be a good representation of the domain of observable related to the construct. Second, the construct should well represent the alternative measures. Finally, the construct should be well related to other constructs of interest. Taking into account these considerations, three types of validity, including, content, construct (convergent and discriminant validity) and criterion have been examined in this research. These are related to the internal validity of the scales and their respective items. As for the purpose of the generalizability of the research findings, external validity has also been investigated.

2.2.14.2.1 Content Validity

Content or face validity is the first type used within this research. Content validity is a subjective but systematic assessment of the extent content of a scale measures a construct Malhotra, (1996). When it appears evident to experts that the measure shows adequate coverage of the concept, the measure has face validity (Zikmund, 2003).

In order to obtain content validity, this research follows the recommended procedures of Cooper and Schindler (1998) through identifying the existing scales from the literature and conducting interviews with panel of experts (including academics and practitioners from the industry), asking them to give their comments on the instrument.

In addition to, the interviews were conducted as part of the pre-test methods discussed earlier in this chapter. Given that content validity has a subjective nature, it is not sufficient to provide a more rigorous empirical test (Zikmund, 2003). Therefore it was assured a priori to conducting the final survey as a precursor to other measures of validity.

2.2.14.2.2 Construct Validity

Construct validity is the second type used within this research. It is directly concerned with what the instrument is actually measuring Churchill, (1995). In other words, it refers to how well the findings are achieved from employing the measure fitting the theories around which the test is designed (Sekaran, 2000). In this context, Malhotra (1996) also found it necessary to consider the theoretical questions about why the scales work and what deductions can be made based on the theory. In summary, this measure of validity refers to developing correct and adequate operational measures for the concept being tested (Yin, 1994).

Construct validity was therefore examined in this research by analyzing both convergent validity and discriminant validity. Convergent validity examines whether the measures of the same construct are correlated highly, and discriminant validity determines that the measures of a construct have not correlated too highly with other constructs (Sekaran, 2000).

A number of methods have been suggested for assessing convergent and discriminant validity: factor analysis, correlation, and even more advanced procedures including CFA existing in SEM. For the purpose of this research, convergent and discriminant validity have been assessed by performing CFA.

To demonstrate convergent validity, magnitude of the direct structural relationship between the item and latent construct (or factor) should be statistically different from zero Holmes-Smith et al., (2006). In other words, the final items (not including deleted items) should be loaded highly on one factor (Anderson and Gerbing, 1988), with a factor loading of .50 or greater (Hair et al., 1995). Furthermore, AVE was used as an indicator for supporting convergent validity (Larcker, 1981).

As for discriminant validity, two methods have been employed in this research. The first method checks the estimated correlations between the factors, which should not be greater than .85 (Kline, 2016). This is consistent with the above discriminant validity definition of Sekaran (2000).

That is, if the two factors are highly correlated (greater than .85), redundant items that show a lack of discriminant validity should be deleted (Kline, 2016). The second method of assessing discriminant validity examines pattern structure coefficient to determine whether factors in measurement models are empirically distinguishable Thompson, (1997). Pattern coefficient is the standardized factor loading derived from AMOS analysis.

Moreover, construct validity in this research was enhanced by assuring that the model (through goodness-of-fit findings obtained from CFA) fits to the data adequately (Hsieh and Hiang, 2004). Findings related to construct validity have been reported in chapter four.

2.2.14.2.3 Criterion Validity

Criterion validity is the third measure of validity demonstrated within this research. It refers to the ability of measures to correlate with other standard measures of the same construct (Zikmund, 2003). It can be classified as

concurrent validity or predictive validity (Sekaran, 2000), depending on the time sequence in which the new measurement scale and the criterion measure are correlated (Zikmund, 2003). The former, for example, is established when a new measure is taken at the same time as criterion and is shown to be valid, while the latter is established when a new measure predicts a future event.

According to Peter (1981), criterion validity was commonly used in earlier research. However, its popularity has vanished with the increased use of construct validity. This is because criterion validity is synonymous with convergent validity, and thus assessment of the latter would mean that the former was satisfied Zikmund, (1994). Since convergent validity has been used as a measure within this research, it is therefore assumed that criterion validity is also accounted for.

2.2.14.2.4 External Validity

The final measure used to validate the measures of this research is external validity. While above discussed validity relates to the internal validity of the scales and their respective items, external validity is concerned with establishing the extent to which the study findings can be generalized to other subjects or groups (i.e., other manufacturing firms classification) (Zikmund, 2003).

In more specific terms, external validity is related to the generalizability of the cause-effect relationships of the research findings (Yin, 1994). Hence, evidence on external validity for this research has been obtained by employing a representative sample (i.e., 106 manufacturing firms in Sudan).

In summary, the validity of the constructs was established prior to testing the underlying hypotheses. This is important because having valid constructs

provides conclusions that help generalize the findings of this research. For this purpose, four types of validity, including content, construct, criterion and external, were adopted.

2.2.15 Summary

This chapter justifies the need for quantitative analysis to answer the research questions, and testing the hypotheses. The intended measurement scales for each of the constructs in the proposed model have been developed based on previously tested scales; the instrument and the methods used to collect the data in the pre-test and final survey have been described; the population, sampling and procedures used have been identified; the statistical techniques used to empirically test the research hypotheses of the proposed model in the following chapter have been discussed; the issues related to the reliability and validity have been addressed.

In the following chapter four, data screening and preliminary data analysis, including descriptive statistics and sample characteristics are discussed. The hypothesized model is then tested. This includes two stages: 1) testing the measurement model and 2) testing the structural model.

CHAPTER THREE

FIELD STUDY

3.1 Preface

The previous chapter detailed the research methodology pursued to test the theoretical model as well as to answer the research questions. Therefore, the purpose of this chapter is to present the findings of the data analysis and to test the hypothesis. Following the introduction the second section (4.2) presents the preparation of the data including editing and coding prior to conducting analysis. This is followed by a section (4.3) discussing the procedures used for screening the data. The fourth section (4.4) discusses the response rate, and the fifth section (4.5) describes sample characteristics. Following this, section six (4.6) reports the findings of Structural Equation Modeling (SEM) used to test the hypotheses arising from the model. This is followed by two sections (4.7 and 4.8) that discuss the two-stage structural model used in analyzing the data. The first stage of the measurement model is presented in section seven (4.7), whilst section 4.8 presents the structural model. Section nine (4.9) presents the final findings related to the testing of the hypotheses, and a conclusion is presented in section 4.10.

3.2 Data Editing and Coding

Following the collecting data from Sudanese manufacturing firms, editing of data was undertaken in order to ensure the omission, completeness, and consistency of the data. Editing is considered as part of the data processing and analysis phase. These research all respondents in the analysis, who completed at least 75% of questionnaire answers, where as those with more than 25% unanswered questions are excluded (i.e. 4 questionnaires were

excluded). any missing data has been considered as missing values (Sekaran, 2003).

Coding was used to assign numbers to each answer and allows the transference of data from the questionnaire to SPSS. Such procedures can be undertaken either before the questionnaire is answered (pre-coding), or after (post coding) DeVaus, (1995). In this research, the coding procedure was performed by establishing a data file in SPSS, and all question items were all post-coded with numerical values (see questionnaire in Appendix B). Data editing procedures were undertaken after data were entered into the data file in order to detect any errors in data entry. Out-of-range values in the data file were corrected by referring to the original questionnaire.

3.3 Data Screening

As the first stage in the data analysis, screening for missing data, outliers, and normality was conducted. Data screening is useful in making sure that data have been correctly entered and that the distributions of variables, that are to be used in the analysis, are normal (Sekaran, 2003). These preliminary analyses are discussed next.

3.3.1 Treatment of missing Data

It is uncommon to obtain data sets without some missing data (Hair et al., 1995). Missing data usually occurs when a respondent fails to answer one or more survey questions. Two ways have been recommended by Tabachnick and Fidell (2001) to evaluate the degree to which there are missing data. The first is to evaluate the amount of missing data, and the second is to evaluate what data are missing (the pattern). However, Tabachnick and Fidell, (2001) argue that assessing the pattern of missing data may be more important than the amount of missing data, even though the latter is still necessary. This is

because checking the pattern of missing data has an advantage in determining whether or not missing data occur randomly or relate to specific items.

That means the pattern of missing data should be randomly distributed among the questionnaires. If it is not, then the missing data will lead to biased estimates of findings Tabachnick and Fidell, (2001). The screening of the data in SPSS indicated that there was no variable that had missed (see Appendix C, Table 1).

3.3.2 Assessment of the Normality

The scale data was assessed to determine normality of distribution. Because of the assumption that factor analysis and structural equation modeling both require variables to be normality distributed, it was necessary to check the distribution of variables to be used in the analysis (Hair et al., 1995).

As the first step in diagnosing the distribution of the variables, Box and Whisker and stem and leaf plots were used in order to check for outliers. Outliers refer to “observations with a unique combination of characteristics identifiable as distinctly different from the other observations” (Hair et al., 1995,). These outliers might be very high or very low scores (extreme values), and could result in non-normality data and distorted statistics (Hair et al., 1995). Given that extreme values represented less than 5% of the data, the method of scores changing was used as recommended by Tabachnick and Fidell (2001). Extreme values, in this case, were recoded (changed) to their closest values (up or down).

In order to check any actual deviation from normality, a number of methods can be used. One method is to use skewness and kurtosis. By using this method, values for skewness and kurtosis should not be significant if the observed distribution is exactly normal. For large sample sizes, 200 and over

(Hair et al., 1995), even small deviations from normality can be significant but not substantive. Tabachnick and Fidell (2001) maintain that, “in a large sample, a variable with statistically significant skewness and kurtosis often does not deviate enough from normality to make a substantive difference in the analysis”. Although this method is more applicable to small sample sizes, it was necessary to check the absolute values of skewness and kurtosis. That is a variable with an absolute value of kurtosis index greater than 10.0 may suggest a problem and values greater than 20.0 may indicate a more serious one (Kline, 2016).

Therefore, it was recommended that absolute value of skewness and kurtosis should not be greater than three and ten. Using SPSS, an inspection of both skewness and kurtosis indicated that the absolute values were within the recommended levels (see Table 3.1), suggesting univariate normality. Table 5.1 also presents the final descriptive statistics for the items used in this thesis.

While the inspection of skewness and kurtosis values was important, it is recommended that visually assessing normal probability plots² is more appropriate for larger sample sizes (Hair et al., 1995). Looking for values clustered around the straight line, the assessment of these probability plots indicated that there was no severe deviation from normality. Since these variables did not deviate from normality, it was not necessary to make any adjustments such as transformation of the data Tabachnick and Fidell, (2001).

Table 3.1: Measures of the Constructs and Descriptive Statistics

Construct	Items	N	Mean	Std. Deviation	Skewness		Kurtosis	
		Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Marketing Activities	Q1M AA	106	4.28	0.778	-1.534	0.235	4.325	0.465
	Q2M AA	106	3.93	0.918	-0.695	0.235	0.147	0.465
	Q3M AA	106	3.53	0.988	-0.201	0.235	-0.730	0.465
	Q4M AA	106	4.30	0.733	-0.986	0.235	1.064	0.465
	Q5M AA	106	3.99	0.822	-0.401	0.235	-0.482	0.465
	Q6M AA	106	3.96	0.894	-0.497	0.235	-0.530	0.465
Operation Activities	Q1OP A	106	3.80	0.888	-0.761	0.235	0.797	0.465
	Q2OP A	106	3.90	0.861	-0.983	0.235	1.518	0.465

	Q3OP A	106	4.13	0.947	-1.298	0.235	1.905	0.465
	Q4OP A	106	3.73	1.109	-0.719	0.235	-0.258	0.465
R&D Activities	Q1R DA	106	3.68	1.126	-0.724	0.235	-0.099	0.465
	Q2R DA	106	3.77	1.089	-0.572	0.235	-0.434	0.465
	Q3R DA	106	3.36	1.189	-0.453	0.235	-0.591	0.465
	Q4R DA	106	3.76	1.159	-0.871	0.235	-0.052	0.465
Procurement Activities	Q1PR A	106	4.42	0.754	-1.402	0.235	2.022	0.465
	Q2PR A	106	4.09	0.911	-1.038	0.235	0.870	0.465
	Q3PR A	106	3.72	1.093	-0.750	0.235	0.008	0.465
	Q4PR A	106	3.43	1.104	-0.457	0.235	-0.148	0.465
Cost Leadership	Q1CL S	106	4.28	0.790	-1.261	0.235	2.361	0.465

Strategy	Q2CLS	106	4.06	0.974	-1.060	0.235	0.818	0.465
	Q3CLS	106	3.33	1.067	-0.265	0.235	-0.381	0.465
	Q4CLS	106	3.56	0.927	-0.535	0.235	0.288	0.465
	Q5CLS	106	4.34	0.689	-0.740	0.235	0.140	0.465
	Q6CLS	106	3.71	1.051	-0.742	0.235	0.263	0.465
Differentiation Strategy	Q1DS	106	4.33	0.848	-1.363	0.235	1.940	0.465
	Q2DS	106	4.16	0.830	-1.227	0.235	2.576	0.465
	Q3DS	106	3.04	1.154	-0.226	0.235	-0.631	0.465
	Q4DS	106	3.58	1.112	-0.490	0.235	-0.273	0.465
	Q5DS	106	3.90	0.883	-0.640	0.235	0.278	0.465
Financial Performance	Q1FP	106	3.85	0.837	-0.601	0.235	0.525	0.465
	Q2FP	106	4.04	0.827	-0.585	0.235	0.370	0.465
	Q3FP	106	3.77	0.929	-0.476	0.235	-0.210	0.465
	Q4FP	106	3.74	0.843	-0.339	0.235	0.111	0.465
	Q5FP	106	3.93	0.887	-0.705	0.235	0.363	0.465

	Q6FP	106	3.78	0.956	-0.482	0.235	-0.338	0.465
Operational Performance	Q1OP	106	4.21	0.789	-0.862	0.235	1.097	0.465
	Q2OP	106	4.36	0.783	-1.337	0.235	2.423	0.465
	Q3OP	106	4.31	0.785	-1.096	0.235	1.594	0.465
	Q4OP	106	4.27	0.787	-1.006	0.235	1.391	0.465
	Q5OP	106	3.92	0.906	-0.769	0.235	0.728	0.465
	Q6OP	106	3.92	0.953	-0.789	0.235	0.425	0.465
	Q7OP	106	3.70	0.978	-0.355	0.235	-0.560	0.465
	Q8OP	106	3.58	0.985	-0.336	0.235	-0.399	0.465
	Q9OP	106	3.73	1.065	-0.781	0.235	0.227	0.465

Source: Prepared by Researcher (2020)

3.4 Response Rate

The data used in this research was collected from manufacturing firms in Sudan. Data collection started in August 2019 and finished in February 2020. A total of one hundred and six firms participated in this survey. The survey conducted was distributed to two hundred (200) firms (one questionnaire in each firm). Of the 200, 106 questionnaires were returned. This represented an effective response rate of 53%.

3.5 Sample Characteristics

A number of variables have been used in order to describe the sample characteristics. The findings shown in Table 4.2 indicate differences in the demographics of the respondents including gender, age, educational,

experience, position and type of industry. As can be seen, the analysis of the final sample profile showed a higher number of male (98) respondents than female (8), representing a ratio of 92.5% and 7.5%, respectively. The lowest percentage was for respondent's age less than 30 years representing 4.7%.

Regarding education level, Table 4.2 shows that respondents were mostly completed university education, as 50.94% completed postgraduate degree, 48.11% completed undergraduate degree, and only 0.94% completed secondary school. With regard to the respondent's experience, Table 4.2 indicates that most of them the over 10 years. Regarding the respondents positions the Table 3.2 indicates that the highest percentages were for the top management specifically general managers and deputy general managers representing 21.7%. Finally, in terms of the industry type Table 4.2 indicates that the highest percentage were for the respondents working in food and beverage, chemicals and engineering representing (27.4%, 18.9%, 14.2% respectively). Whereas, the lowest percentages were for respondents were working in machinery and computer equipment's and leather and rubber representing (0.9% 0.9% respectively).

Table 3.2: Profile of Respondents

Demographic Profile	Number of Respondents (N= 106)	Valid Percentage %
Gender		
Male	98	92.5
Female	8	7.5
Age		
Less than 30 year	5	4.7
30-40 years	34	32.1

41-50 years	34	32.1
Over 50 year	33	31.1
Education		
Secondary School	1	0.94
Undergraduate	51	48.11
Postgraduate	54	50.94
Experience		
Less than 2 years	13	12.3
2-5 years	12	11.3
6-10 years	32	30.2
Over 10 years	49	46.2
Position		
General Manager	19	17.9
Deputy General Manager	4	3.8
Production Manager	21	19.8
Finance Manager	18	17
Supply Chain Manager	7	6.6
Marketing Manger	7	6.6
Planning and Projects Manager	9	8.5
R&D Manager	1	0.9
Other	20	18.9
Industry		
Food & beverage	29	27.4
Chemical	20	18.9
Engineering	15	14.2
Machinery & Computer Equipment	1	0.9

Electronic & Electrical Equipment	11	10.4
Steels & Minerals	9	8.5
Paint	3	2.8
Pharmaceutical	9	8.5
Oil & Gas	2	1.9
Paper & Rubber	1	0.9
Textile	2	1.9
Other	4	3.8

Source: Prepared by Researcher from field study (2020)

3.6 Analysis and Findings of Structural Equation Modeling

As discussed in chapter three, structural equation modeling (SEM) is used to test the hypotheses arising from the theoretical model. In order to perform the SEM analysis, the two-stage approach was adopted.

In the first stage (measurement model), the analysis was conducted by specifying the causal relationships between the observed variables (items) and the underlying theoretical constructs. For this purpose, confirmatory factor analysis using AMOS 21.0 was performed. Following this, the paths or causal relationships between the underlying exogenous and endogenous constructs were specified in the structural model (second stage). Exogenous constructs included value chain activities and competitive strategies, whereas endogenous constructs included financial performance and operational performance. Analysis and findings related to these two stages are further discussed next.

3.7 Stage One: Measurement Model

The measurement model is “the portion of the model that specifies how the observed variables depend on the unobserved, composite, or latent variables”

(Arbuckle, (2005). In this sense, the measurement model aims to specify which items correspond to each latent variable. Accordingly, the measurement model in this research specifies the pattern by which each measure is loaded onto a particular variable (composite or latent variables) (Byrne, 2010). The measurement model in this stage has been evaluated with reliability and validity of each construct. These two steps are discussed below.

3.7.1 Preface

First, this section covers the specification of the measurement model for each underlying construct with a discussion of the path diagram. This is followed with a description of the procedures that were conducted to modify the measurement model.

The constructs in the proposed model including; value chain activities (marketing activities, operation activities, R&D activities, and procurement activities), competitive strategies (cost leadership strategy and differentiation strategy), and firm performance (financial performance and operational performance). Each one of these constructs was examined in a separate measurement model.

As shown in Figures 4.1 to 4.3, previously developed items are observed variables and appear as rectangles. There are single-headed arrows linking the factors (also called latent variables) to their items (indicators), and single-headed arrows linking the error terms to their respective indicators. There are no single-headed arrows linking the factors because there are no theoretical relationships that one of these factors causes the other. Instead, double-headed arrows show correlations between these factors.

These figures also provide the standardized parameter estimates (also called factor loadings) on the arrows connecting factors with their items. The values appearing next to the edge of the items is squared multiple correlations, and values next to the curved double-headed arrows show correlations between the latent variables (factors).

In this context, (Kline, 2016) maintains that, “if a standard CFA model with a single factor has at least three indicators, the model is identified. If a standard model with two or more factors has at least two indicators per factor, the model is identified.” Consistent with this, (Crosby, Evans and Cowles, 1990) note that in measuring long-term relationships, it is unlikely that one item perfectly measures a construct. Other researchers such as (Bentler and Chou, 1987) also suggest the necessary number of items per construct.

Furthermore, some researchers suggest that a measurement model should contain at most 20 variables measuring no more than five to six constructs (three to four indicators measure each construct). This is because the interpretation of findings and their statistical significance become difficult when the number of concepts becomes too large (Reisinger and Turner, 2000). As the starting point in the measurement model, each factor of the underlying constructs have the appropriate number of items or indicators (see Table 3.1).

In confirming each measurement model, it may be the case that some items in the scales become redundant, and as such the measurement model needs to be re-specified by removing these redundant items (Jöreskog and Sörbom, 1982; Hair, 1995).

The rationale for the above process includes two main considerations as recommended by (Kline, 2016). First, indicators specified to measure a

proposed underlying factor should have relatively high-standardized loadings on that factor. This is typically .50 or greater (Hair et al., 1995). Second, the estimated correlations between the factors should not be greater than .85 (Kline, 2016).

That is, if the estimated correlation between marketing activities and operation activities, for example, in the measurement model of Figure 4.1 is .95, then the items may not be measuring two different factors. In other words, there is overlap between these two factors and thus they are empirically not distinguishable.

A more detailed evaluation of model fit can also be obtained by an inspection of the normalized residual and modification indices (Joreskog and Sorbom, 1982).

3.7.1.1 Value Chain Activities

Value chain activities were measured using four separate factors: marketing activities, operation activities, R&D activities and procurement activities. Each of these factors has been measured by a number of questionnaire items (i.e., indicators). In total, 18-items were used to measure the value chain activities construct. For example, marketing activities were measured by six questionnaire items labeled MA1, MA2, MA3, MA4, MA5 and MA6; operation activities were measured by four items labeled OP1, OP2, OP3, and OP4; research and development activities were measured by four items labeled RD, RD2, RD3, and RD4; and procurement activities measured by four items labeled as PR1, PR2, PR3, Str15, and PR4. (See Table 3.3 for items labels). Given that these constructs were considered as exogenous variables, the statistical SEM model specifies that they are inter-correlated.

Table 3.3: Value Chain Activities Items and their Description

Items	Item Label	Item Deleted
We actively and regularly seek customer inputs to identify their needs and expectations.	MAA1	Deleted
Customer needs and expectations are effectively disseminated and understood throughout the employees.	MAA2	
We involve our customers in product design processes.	MAA3	Deleted
We always maintaining a close relationship with our customers and provide them an easy channel for communicating with us.	MAA4	
We have an effective process for resolving customers' complaints.	MAA5	
We systematically and regularly measure our customer satisfaction.	MAA6	
The concept of the internal customer is well understood in our company.	OPA1	
We design processes in our factory to be "fool-proof" (preventive-oriented).	OPA2	
We have clear, standardized and documented process instructions which are well understood by our employees.	OPA3	
We make an extensive use of statistical techniques to improve our processes and to reduce variation.	OPA4	
We have excellent communication processes between	RDA1	

R&D and other departments.		
Our R&D pursues truly innovative and leading edge research.	RDA2	
Our R&D strategy is mainly characterized by high risk projects with chance of high return.	RDA3	
R&D plays a major part in our business strategy.	RDA4	
We strive to establish long-term relationships with our suppliers.	PRA1	
We use a supplier rating system to select our suppliers and monitor their performance.	PRA2	
We depend on a reasonably small number of highly dependable suppliers.	PRA3	Deleted
Our suppliers are actively involved in our new product development process.	PRA4	

Source: Prepared by Researcher from field study, (2020)

Although standardized parameter estimates were all significant ($P < 0.001$), findings of the CFA indicated that the initial measurement model needed to be re-specified. The chi-square was significant ($\chi^2 = 229.834$, $DF = 129$, $P = .000$, $N = 106$). The GFI was .810, AGFI = .748, RMSEA = .086, NFI = .782, CFI = .888, TLI = .867, and $\chi^2 / DF = 1.782$. Most of the above indices (i.e., RMSEA, NFI, GFI and AGFI) were not within the acceptable level; further detailed assessment (re-specification) was conducted.

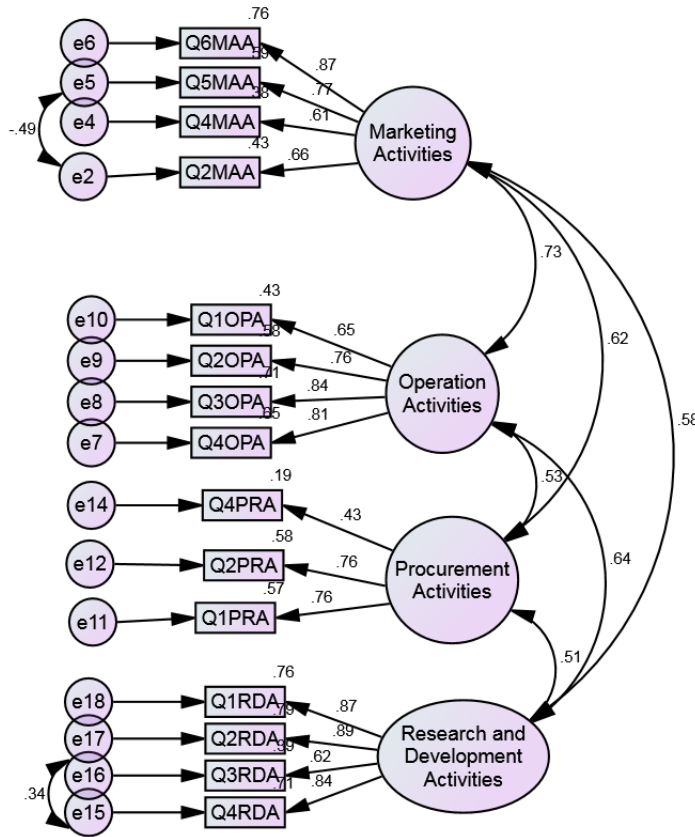
Modification indices indicated that the items MAA1 and MAA3 (Marketing activities), PRA3 (Procurement Activities), had unacceptably low values (23, 42, and 34, respectively).

The purpose of repeating the filtering process was to remove as few items as possible, taking into account the need for deriving a more parsimonious model. In total, three value chain activities items were removed priori to further analysis (i.e., two from marketing activities, and one from procurement).

Following the process described above, CFA was performed again with the three redundant items were removed. As goodness of fit indices were improved, the modified model showed a better fit to the data ($\chi^2 = 136.849$, $df = 82$, $P = .000$, $N = 106$). The GFI was .866, AGFI = .804, NFI = .853, CFI = .933, TLI = .915, IFI = 935, RMSEA = .080, and $\chi^2 / df = 1.669$.

Even though the chi-square is still significant, these values suggest that this model fits adequately to the data. Given that the model fits the data adequately and the correlations between the underlying factors are less than .85 (see the values on the double-headed arrows in Figure 3.1), no further adjustments were required.

As shown in Figure 3.1, the modified model was tested with four indicators measuring marketing activities (MAA2, MAA4, MAA5, and MAA6), four indicators measuring operation activities (OPA1, OPA2, OPA3, and OPA4), three indicators measuring procurement activities (PRA1, PRA3, and PRA4), and four indicators measuring research and development activities (RDA1, RDA2, RDA3, and RDA4). The standardized factor loadings for these measures were all higher than the recommended level of .50 (see Table 3.6).



Source: Prepared by Researcher from field study (2020)

Figure 3.1: A CFA Measurement Model of Value Chain Activities

3.7.1.2 Competitive Strategies

Competitive strategies were measured using two dimensions: cost leadership strategy and differentiation strategy. Each of those dimensions has been measured by a number of questionnaire items. In total, 11 items were used to measure the competitive strategies construct. For example, cost leadership strategy was measured by six questionnaire items labeled CLS1, CLS2, CLS3, CLS4, CLS5 and CLS6. Whereas, the differentiation strategy were measured by five items labeled DS1, DS2, DS3, DS4, and DS5. (See Table 3.4 for items labels). Given that these constructs were considered as

exogenous variables, the statistical SEM model specifies that they are inter-correlated.

Table 3.4: Competitive Strategies Items and their Description

Items	Item Label	Item Deleted
Operating efficiency	CLS1	
Pursuing cost advantage of raw material purchasing	CLS2	
Pricing below competitors	CLS3	Deleted
Pursuing economy of scale	CLS4	
Finding ways to reduce cost of production	CLS5	
Pursuing Cost centers and fixing standard costs	CLS6	Deleted
Providing product with unique features	DS1	
Providing product with many features	DS2	
Targeting high-priced product segments	DS3	Deleted
Advertising	DS4	
Control of distribution channels	DS5	

Source: Prepared by Researcher from field study (2020)

Although standardized parameter estimates were all significant ($P < 0.001$), findings of the CFA indicated that the initial measurement model needed to be re-specified. The chi-square was significant ($\chi^2 = 98.586$, $DF = 43$, $P = .000$, $N = 106$). The GFI was .858, AGFI = .782, RMSEA = .111, NFI = .651, CFI = .755, TLI = .687, and $\chi^2 / DF = 2.293$. Some of above indices (i.e., RMSEA, AGFI) were not within the acceptable level; further detailed assessment (re-specification) was conducted.

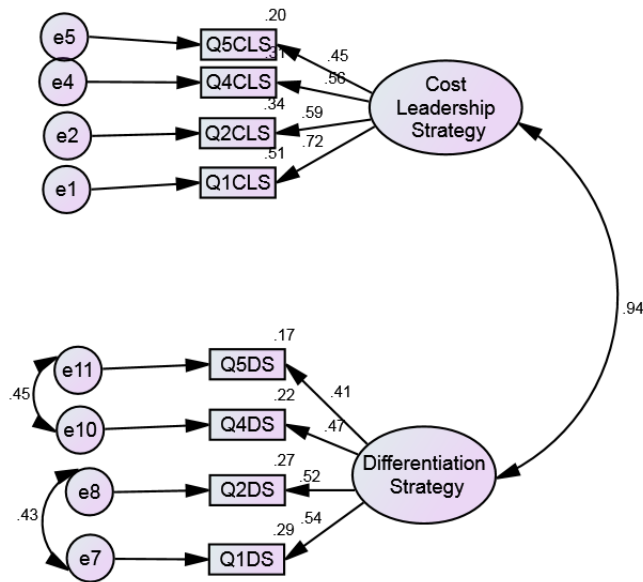
Modification indices indicated that the items CLS3 and CLS6 (Cost Leadership Strategy), DS3 (Differentiation Strategy), had unacceptably low values (.38, 42, and 34, respectively).

The purpose of repeating the filtering process was to remove as few items as possible. In total, three competitive strategies items were removed in order to further analysis (i.e., two from cost leadership strategy, and one from differentiation strategy).

Following the process described above, CFA was performed again with the three redundant items were removed. As goodness of fit indices were improved, the modified model showed a better fit to the data ($\chi^2 = 26.469$, $df = 17$, $P = .066$, $N = 106$). The GFI was .949, AGFI = .891, NFI = .875, CFI = .949, TLI = .915, IFI = .952, RMSEA = .073, and $\chi^2 / df = 1.557$.

Even though the chi-square is still significant, these values suggest that this model fits adequately to the data. Given that the model fits the data adequately and the correlations between the underlying factors are less than .85 (see the values on the double-headed arrows in Figure 4.2), no further adjustments were required.

As shown in Figure 3.2, the modified model was tested with four items measuring cost leadership strategy (CLS1, CLS2, CLS4, and CLS5), four items measuring differentiation strategy (DS1, DS2, and DS44). The standardized factor loadings for these measures were all higher than or close to the recommended level of .50 (see Table 3.6).



Source: Prepared by Researcher from field study (2020)

Figure 3.2: A CFA Measurement Model of Competitive Strategies

3.7.1.3 Firm Performance

Firm performance was measured using two separate factors: financial performance and operational performance. Each of those factors has been measured by a number of questionnaire items. In total, 15 items were used to measure the competitive strategies construct. For example, financial performance was measured by six questionnaire items labeled FP1, FP2, FP, FP4, FP5 and FP6. Whereas, the operational performance was measured by nine items labeled OP1, OP2, OP3, OP4, OP5, OP6, OP7, OP8 and OP9. (See Table 3.5 for items labels).

Table 3.5: Firm Performance Items and their Description

Items	Item Label	Item Deleted
Return on investment	FP1	
Return on sales	FP2	
Market share	FP3	
Growth in return on investment	FP4	
Growth in return on sales	FP5	
Growth in market share	FP6	
Performance	OP1	
Conformance to Specifications	OP2	
Reliability	OP3	
Durability	OP4	
The level of newness (novelty) of our firm's new products	OP5	
The use of latest technological innovations in our new products.	OP6	
The speed of our new product development.	OP7	
The number of new products our firm has introduced to the market.	OP8	
The number of our new products that is first-to-market (early market entrants).	OP9	

Source: Prepared by Researcher from field study, (2020)

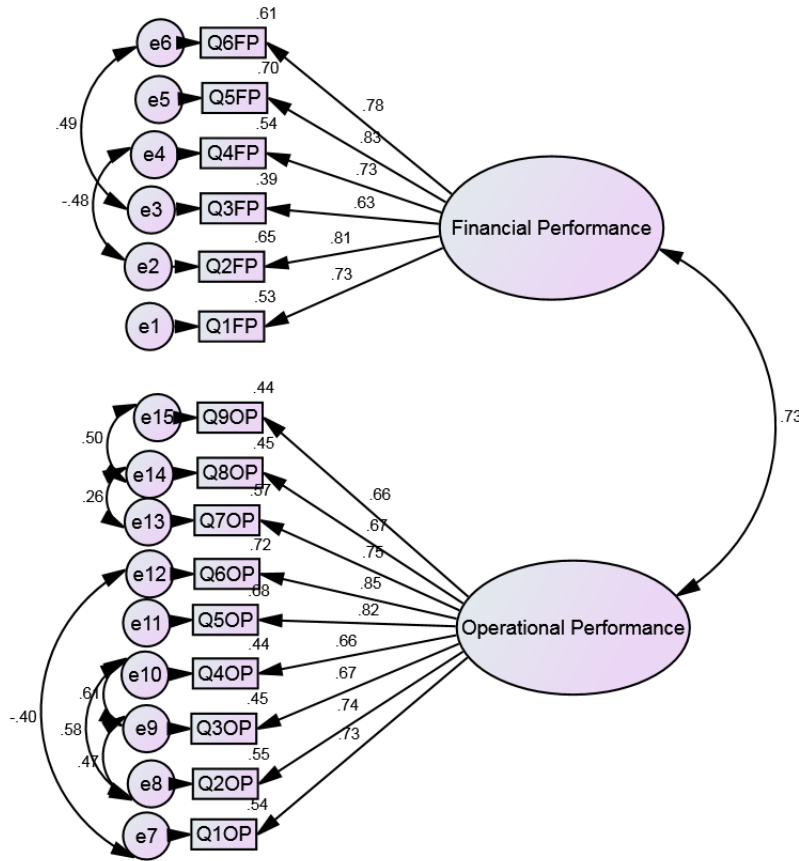
Although standardized parameter estimates were all significant ($P < 0.001$), findings of the CFA indicated that the initial measurement model needed to

be re-specified. The chi-square was significant ($\chi^2 = 298.963$, $DF = 89$, $P = .000$, $N = 106$). The GFI was .701, AGFI = .596, RMSEA = .150, NFI = .747, CFI = .805, TLI = .770, and $\chi^2 / DF = 3.359$. Some of above indices (i.e., RMSEA, AGFI and χ^2 / DF) were not within the acceptable level; further detailed assessment (re-specification) was conducted.

Following the process described above, CFA was performed again. As goodness of fit indices were improved, the modified model showed a better fit to the data ($\chi^2 = 138.544$, $df = 81$, $P = .000$, $N = 106$). The GFI was .853, NFI = .883, IFI = .948, CFI = .947, TLI = .931, RMSEA = .082, and $\chi^2 / df = 1.71$.

Even though the chi-square is still significant, these values suggest that this model fits adequately to the data. Given that the model fits the data adequately and the correlations between the underlying factors are less than .85 (see the values on the double-headed arrows in Figure 3.3), no further adjustments were required.

As shown in Figure 3.3, the modified model was tested with six items measuring financial performance (FP1, FP2, FP3, FP4, FP5, and FP6), nine items measuring operational performance (OP1, OP2, OP3, OP4, OP5, OP6, OP7, OP8 and OP9). The standardized factor loadings for these measures were all higher than the recommended level of .50 (see Table 4.6).



Source: Prepared by Researcher from field (2020)

Figure 3.3: A CFA Measurement Model of Firm Performance

3.7.2 Reliability and Validity of the Constructs (Step 2)

The reliability and validity of the underlying constructs were assessed. For this purpose, the constructs discussed in step one were assessed for reliability using Cronbach's alpha, and for validity using construct, convergent and discriminant (see Section 3.9 for further discussion about these issues).

3.7.2.1 Reliability Test

Reliability of the measures in this thesis was first assessed using (Cronbach, 1951) coefficient alpha and then using confirmatory factor analysis (CFA) (see Section 3.9.1). As for Cronbach's coefficient alpha, Table 3.6 shows that all the constructs exceed the suggested level of .70 (Nunnally, 1978).

Table (3.6): Reliability Test

Construct	Items	Cronbach's alpha (α)	Factor Loading
Marketing Activities		0.838	
	Q1MAA	0.941	0.630
	Q2MAA	0.941	0.630
	Q3MAA	0.944	0.230
	Q4MAA	0.942	0.620
	Q5MAA	0.941	0.700
	Q6MAA	0.941	0.880
Operation Activities		0.834	
	Q1OPA	0.942	0.810
	Q2OPA	0.941	0.840
	Q3OPA	0.940	0.760
	Q4OPA	0.940	0.650
R&D Activities		0.835	
	Q1RDA	0.940	0.760
	Q2RDA	0.940	0.760
	Q3RDA	0.942	0.340

	Q4RDA	0.941	0.460
Procurement Activities		0.857	
	Q1PRA	0.941	0.870
	Q2PRA	0.942	0.680
	Q3PRA	0.944	0.880
	Q4PRA	0.943	0.850
Cost Leadership Strategy		0.857	
	Q1CLS	0.941	0.580
	Q2CLS	0.943	0.580
	Q3CLS	0.945	0.380
	Q4CLS	0.942	0.650
	Q5CLS	0.942	0.540
	Q6CLS	0.942	0.500
Differentiation Strategy		0.836	
	Q1DS	0.941	0.730
	Q2DS	0.941	0.720
	Q3DS	0.945	0.060
	Q4DS	0.942	0.440

	Q5DS	0.941	0.420
Financial Performance		0.831	
	Q1FP	0.941	0.670
	Q2FP	0.941	0.740
	Q3FP	0.941	0.710
	Q4FP	0.941	0.700
	Q5FP	0.940	0.850
	Q6FP	0.940	0.840
Operational Performance		0.835	
	Q1OP	0.941	0.720
	Q2OP	0.941	0.800
	Q3OP	0.941	0.750
	Q4OP	0.941	0.760
	Q5OP	0.940	0.790
	Q6OP	0.940	0.790
	Q7OP	0.940	0.760
	Q8OP	0.941	0.690
	Q9OP	0.941	0.680

Source: Prepared by Researcher from field study 2020

3.7.2.2 Validity Test

The next step in the analysis was to test the validity, which is reported in detail in the following section. Construct validity, including convergent and discriminant validity. They were assessed by using average variance extracted (AVE) and Composite Reliability (CR).

Table (3.7): Convergent Validity (CV)

Construct	Dimension	Items	Factor Loading	Cronbach alpha (α)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Value Chain Activities	Marketing activities	Q2MAA	0.66	0.838	0.821	0.539
		Q4MAA	0.61			
		Q5MAA	0.77			
		Q6MAA	0.87			
	Operation activities	Q1OPA	0.81	0.834	0.851	0.59
		Q2OPA	0.84			
		Q3OPA	0.76			
		Q4OPA	0.65			
	R&D activities	Q1RDA	0.76	0.835	0.696	0.447

Competitive Strategies		Q2RDA	0.76			
		Q4RDA	0.43			
	Procurement activities	Q1PRA	0.87	0.857	0.893	0.679
		Q2PRA	0.68			
		Q3PRA	0.88			
		Q4PRA	0.85			
	Cost Leadership Strategy	Q1CLS	0.72	0.857	0.697	0.368
		Q2CLS	0.59			
		Q4CLS	0.56			
		Q5CLS	0.54			
	Differentiation Strategy	Q1DS	0.54	0.836	0.636	0.262
		Q2DS	0.52			
	Q3DS	0.6				
	Q4DS	0.47				
	Q5DS	0.41				

Firm Performance	Financial Performance	Q1FP	0.73	0.831	0.887	0.569
		Q2FP	0.81			
		Q3FP	0.63			
		Q4FP	0.73			
		Q5FP	0.83			
		Q6FP	0.78			
	Operational Performance	Q1OP	0.73	0.835	0.911	0.534
		Q2OP	0.74			
		Q3OP	0.67			
		Q4OP	0.66			
		Q5OP	0.82			
		Q6OP	0.85			
		Q7OP	0.75			
		Q8OP	0.67			
		Q9OP	0.66			

Source: Prepared by Researcher from field study, (2020)

3.8 Stage Two: Structural Model (Hypotheses Testing)

Once all constructs in the measurement model (stage one) were validated and satisfactory fit achieved (Anderson and Gerbing, 1988; Hair et al., 1995; Kline, 2005; Homles-Smith et al., 2006), a structural model can then be tested and presented as a second and main stage of the analysis. The structural model has been defined as “the portion of the model that specifies how the latent variables are related to each other” (Arbuckle, 2005, p.90). The structural model aims to specify which latent constructs directly or indirectly influence the values of other latent constructs in the model (Byrne, 1989).

Hence, the purpose of the structural model in this research is to test the underlying hypotheses in order to answer the research questions outlined in Chapter One. As presented in Table 3.7, these hypotheses were represented in four causal paths (H1, H2, H3, and H4) to determine the relationships between the constructs under consideration. In the proposed theoretical model discussed in Chapter Three, the underlying constructs were classified into two classes, including exogenous constructs (Value chain activities, competitive strategies) and endogenous constructs (firm performance both financial and operational).

Table (3.8): Underlying Hypotheses

Hypotheses No.	Hypotheses
H1	Value chain activities will be positively related to firm’s performance.
H2	value chain activities will be positively related to competitive

	strategies
H3	Competitive strategies will be positively related to firm performance.
H4	Competitive strategies will mediate the relationship between value chain activities and firm performance.

Source: Prepared by Researcher from field study (2020)

To evaluate the structural model, goodness-of-fit indices are examined to assess if the hypothesized structural model fits the data. If it did not fit, the requirement was to re-specify the model until one was achieved that exhibited both acceptable statistical fit and indicated a theoretically meaningful representation of the observed data (Anderson and Gerbing, 1988; Hair et al., 1995, Tabachnick and Fidell, 2001; Kline, 2005).

Because the assumptions underlying structural equation modeling were met (see Section 3.14.2.2), the coefficient parameter estimates were examined along with the overall model fit indices to test hypotheses H1 to H4.

In the path diagram shown in Figures 3.4 the values for the paths connecting constructs with a single-headed arrow represent standardized regression beta weights. As in the measurement model, the values appearing on the edge of the boxes are variance estimates in which the amount of variance in the observed variables is explained by latent variables or factors, and values next to the double headed arrows show correlations. The evaluation of the structural model of this research is discussed below.

3.8.1 Structural Model (The Hypothesized Model)

The analyses of the hypothesized structural model were conducted by testing the hypothesized model, which specified the four casual relationships

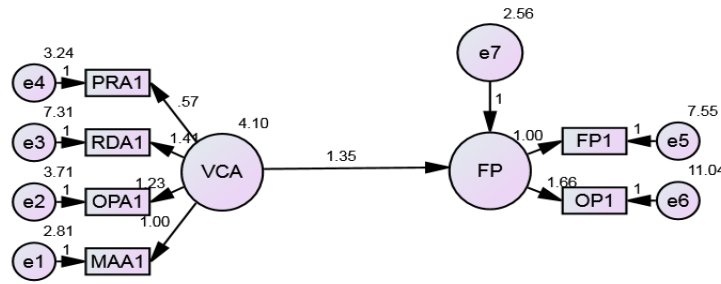
in Table 3.7. In the path diagram presented in Figure 3.4, exogenous constructs, value chain activities and competitive strategies. A necessary assumption of SEM is that the exogenous constructs are assumed to be correlated. This is because correlations between each pair of exogenous constructs must be estimated, even though no correlations are hypothesized (Hair et al., 1995, Kline, 2005).

Endogenous constructs in this research represented by (firm performance). Straight arrows (or single-headed arrow) indicate causal relationships or paths, whilst the absence of arrows linking constructs implies that no causal relationship has been hypothesized. Firm performance, which is measured using two dimensions (financial performance, and operational performance).

Table 3.9: Testing Hypotheses Using Standardized Estimates (Hypothesized Model)

Hypothesized path		Beta value	S.E.	Z. value	P. value	Supported
FP	<--- VCA	1.353	0.213	6.348	***	Yes

Source: Prepared by Researcher from field study, (2020)



Source: Prepared by Researcher from field study, (2020)

Figure 3.4: The Hypothesized Structural Model (Direct Relationship)

Table (3.10): Testing Hypotheses Using Standardized Estimates (Hypothesized Model)

Hypothesized path		Beta value	S.E.	Z. value	P. value	Supported
CS	<--- VCA	0.528	0.114	4.642	***	Yes
P	<--- CS	1.327	0.558	2.378	0.017	Yes

Source: Prepared by Researcher from field study, (2020)

3.9 Findings of Hypotheses Testing

In total, four hypothesized relationship are examined (see Table 3.7). The implications of these findings are further discussed in Chapter Four.

3.9.1 Value Chain Activities (VCA) and Firm Performance (FP)

As in Table 3.8 the hypothesized model findings indicate that the hypotheses (H1) direct relationship was statistically significant and in the hypothesized direction. It's obviously that the P. value for the independent variable (value chain activities) to dependent variable (firm performance) is (0.000) and this is less than (0.05), while the (C.R) is (6.348) and this higher than (1.96). Thus, this hypothesis was supported.

3.9.2 Value Chain Activities (VCA) and Competitive Strategies (CS)

As in Table 3.9 the hypothesized model findings indicate that the hypotheses (H2) was statistically significant and in the hypothesized direction. It's obviously that the P. value for the independent variable (value chain activities) to mediation variable (competitive strategies) is (0.000) and this is less than (0.05) while the (C.R) is (4.642) and this is higher than (1.96). Thus, this hypothesis was supported.

3.9.3 Competitive Strategies (CS) and Firm Performance (FP)

As shown in Table 3.9 the hypothesized model findings indicate that the hypotheses (H3) was statistically significant and in the hypothesized direction. It's revealed that the P. value for the mediation variable (competitive strategies) to dependent variable (firm performance) is (0.017) and this is less than (0.05) while the (C.R) is (2.378) and this is higher than (1.96). Thus, this hypothesis was supported.

3.9.4 The Mediating Effect (Indirect Relationship)

As shown in figure 3.5, this model assume three variable system including two casual paths feeding into outcome variable, firstly the direct impact of the independent variable (VCA) on the dependent variable (P), secondly the impact of mediator (CS), finally the impact of independent variable (VCA) to mediator (CS).

in order to establish that an independent variable X affect dependent variable Y through a mediating variable M , as shown in figure 3.5, (Baron and Kenny, 1986), recommend three conditions: a) variations in levels of the independent variable significantly account for variations in the presumed mediator. b) Variations in the mediator significantly account for variations in the dependent variable. c) when Paths a and b are controlled, a previously significant relation between the independent and dependent variables is no longer significant, with the strongest demonstration of mediation occurring when Path c is zero.

In addition, (Baron and Kenny, 1986) emphasized that the evidence for mediation is strongest when there is an indirect effect but no direct effect, which they call “full mediation.” When there are both indirect and direct effects, they call it “partial mediation.” (Xinshu Zhao, John G. Lynch Jr., 2010).

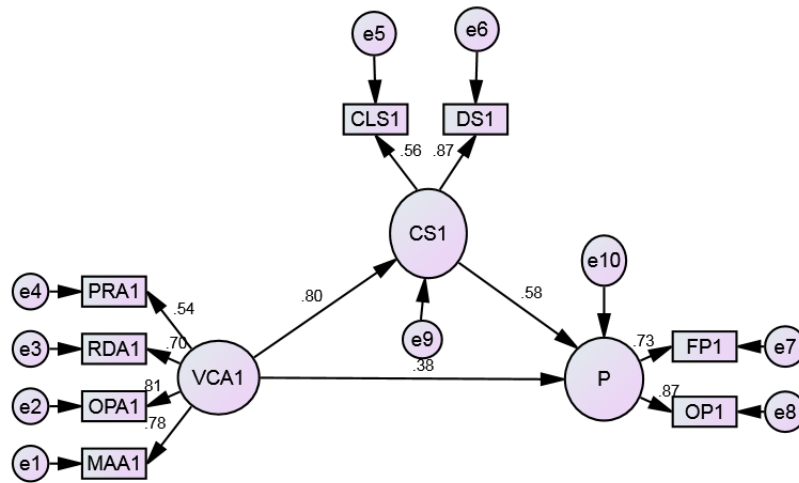
So, Hypothesis four (H4) explain the mediating effect of competitive strategies between the exogenous variables (Value Chain Activities) and endogenous variable firm performance. As shown in Table 3.10, this hypothesis was found to be significant and mediated the relationship between value chain activities and firm performance.

The next chapter discusses the above findings in detail in order to answer the four research questions outlined in Chapter One. Furthermore, it draws the implications for both practice and theory; discusses the limitations of this research; describes the directions for further research; and identifies the final conclusions.

**Table (3.11): Testing Indirect Effect
Standardized Estimates (Hypothesized Model)**

	VCA1	CS1	P
CS1	0.000	0.000	0.000
P	0.701	0.000	0.000

Source: Prepared by Researcher from field study (2020)



Source: Prepared by Researcher from field study, (2020)

Figure 3.5: The Hypothesized Structural Model (Indirect Relationship)

3.9.5 Hypotheses Findings Testing Summary

Table 3.12: Hypotheses Findings Testing Summary

H1	Value chain activities will be positively related to firm performance	Supported
H2	Value chain activities will be positively related to firm competitive strategies	Supported
H3	Competitive strategies will be positively related to firm performance	Supported
H4	Competitive strategies will mediate the relationship between value chain activities and firm performance	Supported

Source: Prepared by Researcher from field study (2020)

3.9.6 Findings of Research Objective Fulfillment

Table 3.13: Findings of Research Objective Fulfillment

No.	The Objective	How Fulfilled	The Findings	Fulfillment
1	To examine the relationship between value chain activities and firm performance	Findings of statistical analysis for the hypothesis.	There are positive relationship between value chain activities and the performance of Sudanese manufacturing firms.	Fulfilled
2	To identify the relationship between value chain activities and competitive strategies	Findings of statistical analysis for the hypothesis.	There are positive relationship between value chain activities and competitive strategies in the Sudanese	Fulfilled

			manufacturing firms.	
3	To examine the relationship between competitive strategies and firm performance	Findings of statistical analysis for the hypothesis.	There are positive relationship between competitive strategies and performance of Sudanese manufacturing firms.	Fulfilled
4	To investigate the mediating effect of competitive strategies in the relationship between value chain activities and firm performance	Findings of statistical analysis for the hypothesis.		Fulfilled

Source: prepared by researcher, (2020)

CHAPTER FOUR

DISCUSSION AND CONCLUSIONS

4.1 Discussion

Chapter Four presented the findings that examined the hypotheses determined in Chapter Two. This final chapter aims to interpret the findings reported in Chapter Four and achieve the objectives of this research (see Section 1.4) through answering the four research questions formulated in Chapter One.

These are: Is there any relationship between value chain activities and different types of firm performance; is there any relationship between value chain activities and different types of competitive strategies; is there any relationship between competitive strategies and firm performance? And what is the influence of competitive strategies as moderator in the relationship between value chain activities and firm performance?

This chapter is divided into ten sections. Following this section, the findings obtained from testing the hypotheses are summarized in section 5.2. The next three sections discuss the related findings to answer each of the above research questions as follows: section 5.3 discusses the relationship between value chain activities and firm performance, section 5.4 discusses the relationship between value chain activities and competitive strategies, section 5.5 discussed the relationship between competitive strategies and firm performance, and section 5.6 discussed the moderating effect of the competitive strategies on the relationship between value chain activities and firm performance . Implications, including theoretical and managerial are drawn in section 5.7. Limitations of this research are detailed in section 5.8,

and directions for further research are described in section 5.9. Section 5.10 identifies the final conclusions drawn based on discussion of the research findings.

4.1.1 Summary of the Findings

This research developed and empirically tested a model that leads to better understanding of the relationship between value chain activities, competitive strategies and firm performance in Sudanese manufacturing firms. In order to answer the research questions, this model investigating the relationship between value chain activities and firm performance. Further, it examines the relationship between value chain activities and competitive strategies. Also, it examines the relationship between competitive strategies and firm performance, and finally, the mediating role of competitive strategies on the relationship between value chain activities and firm performance.

The research findings reveal that positive relationship between value chain activities and performance in Sudanese manufacturing firms, also positive relationship between value chain activities and competitive strategies in Sudanese manufacturing firms, also positive relationship between competitive strategies and performance in Sudanese manufacturing firms, also the findings show that the competitive strategies fully mediate the relationship between value chain activities and firm performance. Therefore, the findings of this research largely support the hypothesized relationships proposed in the theoretical model. The findings are discussed in more details in the following sections.

Table (4.1): Findings Summary

Objective	Question	Hypothesis	Decision
1- To examine the relationship between value chain activities and different types of firm performance.	1- Is there any relationship between value chain activities and different types of firm performance?	H1: Value chain activities will be positively related to firm performance.	Supported
2- To identify the relationship between value chain activities and different types of competitive strategies.	2- Is there any relationship between value chain activities and different types of competitive strategies?	H2: Value chain activities will be positively related to firm competitive strategies.	Supported
3- To examine the relationship between competitive strategies and firm performance.	3- Is there any relationship between competitive strategies and firm performance?	H3: Competitive strategies will be positively related to firm performance.	Supported
4- To investigate the mediating effect of competitive strategies in the relationship between value chain activities and firm	4- What is the influence of competitive strategies as mediator in the relationship between	H4: Competitive strategies will mediate the relationship between value chain activities	Supported

performance.	value chain activities and firm performance?	and firm performance.	
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Source: Prepared by Researcher from field study (2020)

4.1.2 The Relationship between Value Chain Activities and Firm Performance:

This section explains the findings of testing hypothesis related to the relationships between value chain activities and firm performance. It aimed to answer the first research question.

Q1: Is there any relationship between value chain activities and firm performance?

One of the objectives of this research is to determine whether value chain activities will be positively affect firm performance or not, this research hypothesized that the value chain activities positively influences firm performance. The findings of the proposed structural equation model analysis which presented in Table 4.8 indicating support for H1, which mean that the firms well manage their value chain activities, have better firm performance.

This finding is consistent with the resource based view approach which stating that the well managing of internal resources is an enabler for outstanding performance, it suggests that firms need to manage their internal process and activities in order to gain competitive advantage. On the other hand, this result regarding the VCA and firm performance are largely corresponding with the previous studies such as (Mulugeta D. Watabaji, Adrienn Molnar, Manoj K. Dora, 2016) find that positive relationships between coordination of activities and performance as well as between joint

decision making and performance. (Prajogo *et al.*, 2008), find a positive significant relationship between value chain activities and operational performance. (Aguko, 2014), also conclude that value chain analysis has significance relationship on firm performance. (Rhee and Mehra, 2006), find that significance relationship between operation and marketing activities and firm performance. However, (MICHAEL A. HITT and IRELA, 1986) find that positive relationship between operation activities, financial activities and firm performance. Whereas, found lack of a relationship between marketing activities, R&D activities and firm performance. This contradicting may attributable to the culture differences at these firms and countries and their view to the marketing and R&D role in the enhancing firm performance. Moreover, the confirmatory factor analysis revealed that the marketing dimension was removed two items from it, this may indicate to top management at the Sudanese manufacturing firms do not exerted sufficient effort to identify their customer needs and expectations, and involving them in the products design process.

This positive relationship can be interpret by the top management awareness to adopting methods based on their prior experience to ensure that their customer needs and expectations are effectively disseminated and understood throughout the employees, build strategic relationship with them, identified an effective process for resolving their complaints, and finally seeking to find systematically and regularly measure their customer satisfaction. Also, the Sudanese manufacturing firm's managers utilized their knowledge and experience to make an extensive use of statistical techniques to improve their processes and to reduce variation which reflected positively on the operational and financial performance. Further, the top management worked on promotes and supports the research and development to create

innovative and novel products which reflected on the overall performance. Finally, the top management strives to establish long-term relationships with their suppliers they using a supplier rating system to select suppliers and monitor their performance and involved them in the new product development process. All of these top management initiatives contributed to the positive relationship between value chain activities and firm performance.

This research emphasized the importance of manufacturing firms to cooperate and coordinate closely with their internal departments by empirically linking coordination with superior performance. The building of collaborative and coordination relationship among internal departments helps manufacturer to reduce cost of activities across departments through information sharing and joint planning so that performance can be improve. Moreover, the practical significance of these findings suggests that managers and decision makers within firms aiming to increase performance should dedicate their resources and attention to building competencies in value chain activities specifically (marketing, procurement, R&D, and operation activities).

4.1.3 The Relationship between Value Chain Activities and competitive Strategies

This section explains the findings of testing hypothesis related to the relationships between value chain activities and competitive strategies, which aimed to answer the second research question.

Q2: Is there any relationship between value chain activities and competitive strategies?

One of the objectives of this research is to determine whether value chain activities has positive influence on competitive strategies, this research hypothesized that the value chain activities positively influences competitive

strategies. The findings of the proposed structural equation model analysis are also presented in Table 4.8 indicating support for H2, which state that firms that well manage their value chain activities will be able to achieve their competitive strategies.

This finding is consistent with the porter model which stating that competitive advantage cannot be comprehended by looking at a firm as a whole, rather than it contains of many separated activities a firm performs in designing, producing, marketing, delivering, and supporting its product. Each of these activities can contribute to a firm's relative cost position and create a basis for differentiation (Porter, 1985). So, the value chain analysis is considered as best tool for developing and implementing competitive strategies in order to gain competitive advantage.

On the other hand, this result regarding the VCA and competitive strategies are largely corresponding with the previous studies such as (Akenbor, Cletus O. & Okoye, 2011) find that the Value Chain Analysis has a positive significant impact on Competitive Advantage of a manufacturing firm in Nigeria. (Zhao, 2014), find that internal integration significantly affected financial performance of firm pursuing cost leadership strategy. although some previous studies contradict with current study like (Mohsenzadeh and Ahmadian, 2016), find that operation activities are insignificantly related to competitive strategies, however they find that marketing activities are significantly related to competitive strategies. The researcher concludes that this contradicted may refer to the culture and polices differences and the industry sector which applied for the research. As well as this study examine the elements of the value chain simultaneously, whereas the previous studies examined them separately. This positive relationship between value chain activities and competitive strategies refer to the top management experience

to benefit from value chain activities analysis findings to establish their appropriate competitive strategy e.g. the top management strive to build long term relationship with customers by identified their needs and expectations, response to their complaints, regularly measure their satisfactions, build long term partnership with suppliers, using modern manufacturing technological, and invest in research and development, all of these initiatives contribute to make differentiate product or lower cost product.

4.1.4 The Relationship between Competitive Strategies and Firm Performance

This section explains the findings of testing hypothesis related to the relationships between competitive strategies and firm performance. This has aimed to answer the third research question.

Q3: Is there any relationship between competitive strategies and firm performance?

One of the objectives of this research is to determine whether the competitive strategies will positively influence firm performance or not, this research hypothesized that the competitive strategies positively influences firm performance. As pointed out earlier, the empirical evidence from the competitive strategy literature indicates that the implementation of coherent competitive strategy leads to superior performance. The literature also provides empirical evidence to support RBV of the firm, which state that the resources and capabilities that are rare, valuable, inimitable will enable a firm to enhance and sustain its performance. The findings of the proposed structural equation model analysis are also presented in Table 4.9 indicating support for H3.

This finding suggests those firms that utilize both cost leadership and differentiation strategies effectively are more likely to enhance their financial

and operational performance. This result support Porter (1985), suggest that those combination strategies under certain circumstance are more successful than those firms dedicated to single competitive strategy. furthermore, this result regarding the competitive strategies and firm performance are consistent with the previous studies which indicate that competitive strategies are significantly related to firm performance, (Yamin, Gunasekaran and Mavondo, 1999; Luliya Teeratansirikool, 2012; Hilman and Kaliappen, 2014; Kumlu, 2014; Acquaah and Agyapong, 2015; Enida Pulaj, 2015). Contrary to the findings of Power and Hahn (2004), Allen and Helms (2006), and Dess and Davis (1984), they found negative relationship between differentiation and firm performance, however they found a positive relationship between cost leadership and firm performance.

This contradicting may refer to the culture and polices difference in the U.S and Europe countries regarding their view to the concepts which presented may differ from Sudanese community, also the industry sectors which applied on the prior studies may be service sector or large firms also may regard with employees understanding and acceptance to the research variables may quite different from developing countries. Moreover, the confirmatory factor analysis revealed that the cost leadership strategy dimension was removed two items from it, this may indicate the top management at the Sudanese manufacturing firms did not concern about competitor analysis in order to pricing their products. Further, most of the Sudanese manufacturing firms did not establishing costing systems in order control their product cost. On the other hand, the confirmatory factor analysis also shown that the differentiation strategy dimension removed one item from it, which indicates the top management of Sudanese manufacturing firms, did not pay attention to targeting high-priced product segments.

The positive relationship between competitive strategies and firm performance can be interpreted by the skills and experience of Sudanese manufacturing firms top management to operate their firms efficiently, pursuing cost advantage of raw material purchasing, pursuing economy of scale, and finding better ways to reduce cost of production, all of these initiatives contribute to enhance financial performance. Also, they are providing product with unique and many features, using advertising to promote their products beside control of distribution channels, all of these practices contribute to achieve outstanding performance.

4.1.5 The Mediating Effect of Competitive Strategies on the Relationship between VCA and Firm Performance

This section explains the findings of testing hypothesis related to the mediating effect of competitive strategies. This has aimed to answer the fourth research question.

Q4: Does the competitive strategies mediate the relationship between value chain activities and firm performance?

The final objective of this research is to determine whether the competitive strategies will mediate the relationship between value chain activities and firm performance, this research hypothesized that the competitive strategies will mediate the relationship between value chain activities and firm performance. The findings of the proposed structural equation model analysis are also presented in Table 4.10 indicating support for H4.

In order to test the mediation, the researcher verify that all three variables are significant correlated with each other (Baron and Kenny, 1986). The finding provided strong indication on how the model is linked together. This research revealed that competitive strategies have a full mediation in the connection between value chain activities and firm performance. This is

precise since value chain activities is one of the effective tools that assist the firms to be manage its resources efficiently and effectively in order to gain competitive advantage. Therefore, with competitive strategies, manufacturing firms those pursuing value chain activities could achieve better financial and operational performance.

This finding supports Porter (1985), who suggests that each firm competitive strategy should be identified first, and then followed by functional strategies. So, selected competitive strategy itself doesn't have significant influence on performance; although its linkage with functional level strategies will be have significant impact on the performance (Porter, 1985).

On the other hand, this result is consistent with previous studies such as (Mohsenzadeh and Ahmadian, 2016) find that competitive strategies act as mediating role on the relationship between operation activities and firm performance. In spite of, competitive strategies do not mediate the effect of marketing activities and performance. As mentioned earlier this contradicted may refer to the culture and polices differences between firms and employees as well as differences in the industry sector. Moreover, this research provides useful insights of significant role of competitive strategies as a tool for managers to implementing value chain activities that can lead to improve firm performance.

It is possible that enhanced VCA and increased firm performance could have improved the levels of competitive strategies. On the other hand, enhanced organizational performance provides a firm increased capital to implement competitive strategies. Likewise, enhanced firm performance could have increased the competitive advantage of a firm. For example, a

firm with better financial capability can afford to offer low price, which provides a cost advantage over its competitors.

4.2 Theoretical and managerial implications

4.2.1 Theoretical Implications

The research findings contributed to found positive relationship between value chain activities analysis through its dimensions (marketing, operation, R&D, and procurement activities) on the firm performance through (financial and operational performance) and this is consider as new adding.

The research findings revealed that the competitive strategies through (cost leadership strategy and differentiation strategy) fully mediate the relationship between value chain activities and firm performance.

This research proved that the resource based view (RBV) interpret the research variables in the relationship between them in the Sudanese manufacturing firms and this is consider as contribution and new adding.

The research findings revealed that the Sudanese manufacturing firms did not focus on their customers by regularly identify their needs and expectations as well as involve them in the product design processes and these revealed removed two main items from marketing dimension. Also, the research findings revealed that the manufacturing firms did not depend on a reasonably small number of highly dependable suppliers and this is revealed through removed one items from procurement dimension.

4.2.2 Practical Implications

On a practical front, the findings of this research have a number of managerial implications that could provide valuable insights for manufacturing firms.

The research model can be applied on the Sudanese manufacturing firms at the top management level as strategic issue for the firms, in order to formulate strategies, policies, initiatives and strategic decision making. Also, the research can be applied on different management levels by encourage all internal departments to cooperation, coordination and managing the linkages between activities in the firm.

The research clarify to the decision makers in the Sudanese manufacturing firm's the adopting and applying value chain methodology will assist firm to improve their operations which will reflected positively on the performance and competitive advantage.

The research findings clarify to the Sudanese manufacturing firm's mangers the significance of competitive strategies in the business success and gaining competitive advantage.

This research constitute a major distribution to new knowledge in its finding that VCA and competitive strategies can be the most important factor in improving Sudanese manufacturing firms performance, the managers can apply this research to identify the best way to implement the competitive strategies connected with their value chain activities in their firms.

The findings provide managerial guidelines for focusing limited resources to achieve better performance. Specifically, VCA may be improved by coordination and managing the linkages between activities or internal departments in the firm. Since the researcher finds that well managing of value chain activities led to outstanding firm performance.

These findings suggest that managers and decision makers within firms aiming to improve their performance should dedicate their resources and attention to building competencies in marketing, procurement, operation and R&D value chain activities.

Firms should intentionally develop different VCA elements to achieve different types of firm performance. This theory simplify that the manufacturers should extensively utilize their resources by managing linkages between activities. From perspectives of the value chain, firms should try to create situations whereby all internal departments work together toward recognizing business synergy to compete effectively with other firms.

4.3 Limitations and Future Research:

Although this research makes significant contributions to academic research and practices, it has several limitations that open up avenues for future studies.

First, this research using Sudanese samples and thus the findings are more meaningful in the Sudanese context. Hofstede (1980) argued that the leveraging of organizational practices for competitive strategies may differ across countries. Hence, it is not clear how VCA are used with competitive strategies to improve performance in different contexts, such as in different countries. Future researches can investigate this issue in other contexts or conduct cross-cultural studies.

Second, the data analyzed is based on manager's self- perspective answer. Although most respondents were senior executives and the questions were well designed and clear, bias arising from respondent's subjectivity and misunderstanding is a possibility. In addition to, not all respondents were at the same level, or held the same role within the firm. While this potentiality introduces extraneous variance in the data, it may also strengthen the data by incorporating multiple perspectives. In the future researches, more objective measures base on secondary evidence may include for triangulation.

Third, this research used a cross-sectional design and cannot reflect the lag time or long-term effects of VCA on performance. Therefore, future researches could conduct longitudinal researches. Fourth, this research only selected certain elements of Porter's value chain, namely marketing, operation, procurement, and R&D activities. The researcher does acknowledge that there are other elements which can be considered. So, the future researches can extend their scope to include all the value chain activities.

Fifth, the survey data was only collected from manufacturing sector, future researches can broaden their scope by collecting data from services sector. Sixth, the current research used mediating effect of competitive strategies; future research could replicate this study with a more complex using moderating effect of costing system.

Seventh and finally, by focusing on various industries, company sizes and regions, the researcher developed a broad picture of the relationship among competitive strategies, VCA and firm performance. However, these relationships may not be the same for all firm sizes and industry type. Future research can investigate the effects of these contextual factors on competitive strategies, VCA and firm performance, along with the relationships among them.

4.4 Conclusion

This research investigate the mediating role of competitive strategies on the relationship between value chain activities and firm performance from perspective of resource based view in the context of Sudanese manufacturing firms.

Chapter one consist of the introduction which include on the research background, research problems, research questions, research objectives, research hypotheses, and research significance. Chapter two consists of literature review and theoretical framework. Chapter three consist of research model and methodology which include on research theory, research model, research hypotheses development, research methodology including population, sample, and data collection sources. Chapter four consist of data analysis and findings including confirmatory factor analysis, hypothesis testing. The research revealed that the value chain activities analysis have positive effect on firm performance, the value chain activities analysis have positive effect on competitive strategies, the competitive strategies have positive effect on firm performance, and competitive strategies mediate the relationship between value chain activities and firm performance. The findings have been discussed and clarifying theoretical and practical contributions followed by identifying limitations and future researches.

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APPENDICES TABLE

1. Cover letter to respondents in survey (English Version)

Dear Sir / Madam,

I am currently PhD researcher at Sudan University of Science & Technology, Specifically in Costing & Management Accounting Program. The purpose of my research is to: **Investigate the impact of mediating role of competitive strategies on the relationship between value chain activities and firm performance, Empirical research on Sudanese manufacturing firms.** Your answers on this questionnaire will be critical to the success of my research. I recognize the value of your time, and sincerely appreciate your efforts. Individual responses are anonymous and all company level data will be held in confidence. The findings of this study can be provided you upon request.

Thank you for your time.

Sincerely,

Mohyeldin Mohammed Abdulmajeed

2. Cover letter to respondents in survey (Arabic Version)

السادة الأفاضل/

أفيدكم بأننى باحث دكتوراة بجامعة السودان للعلوم والتكنولوجيا، تخصص التكاليف والمحاسبة والإدارية، الغرض من هذا الدراسة هو : (دراسة أثر الدور الوسيط للإستراتيجيات التنافسية على العلاقة بين أنشطة سلسلة القيمة وأداء الشركات، من خلال الدراسة الميدانية على الشركات الصناعية السودانية).

إجابتم على هذا الاستبيان مهمة لنجاح هذا الدراسة، أقدر مجهوداتكم والوقت الذي ستمضونه في الإجابة على هذا الاستبيان، علما بأن بيانات الشركة والبيانات الشخصية ستعامل بسرية تامة وتستخدم فقط لأغراض الدراسة العلمى، كما يمكن مدكم بنتائج هذه الدراسة عند الطلب.

وتفضلوا بقبول وافر الشكر والتقدير،،،

محي الدين محمد عبد المجيد

دارس دكتوراة بجامعة السودان للعلوم والتكنولوجيا

3. Pre- test of Questionnaire (Arabic Version)

الرجاء إبداء رأيك وملاحظاتك حول أسئلة الإستبيان أعلاه وذلك بوضع علامة (√) أمام الإجابة التي تناسبك.

م	الملاحظة	غير مناسب	مناسب	يحتاج إلى مراجعة
1	تناسق الأسئلة			
2	فهمك للأسئلة			
3	لغة صياغة الأسئلة			
4	عدد أسئلة الإستبيان			

أي ملاحظات أخرى:

.....

.....

.....

مع وافر شكري وتقديري

الباحث: محي الدين محمد عبدالمجيد

4. Questionnaire (English Version)

Section One: Research Variables

No	Item	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
Marketing Activities:						
1	We actively and regularly seek customer inputs to identify their needs and expectations.					
2	Customer needs and expectations are effectively disseminated and understood throughout the employees.					
3	We involve our customers in product design processes.					
4	We always maintaining a close relationship with our customers and provide them an easy channel for communicating with us.					
5	We have an effective process for resolving customers' complaints.					
6	We systematically and regularly					

	measure our customer satisfaction.					
Operation Activities:						
7	The concept of the internal customer is well understood in our company.					
8	We design processes in our factory to be “fool-proof” (preventive-oriented).					
9	We have clear, standardized and documented process instructions which are well understood by our employees.					
10	We make an extensive use of statistical techniques to improve our processes and to reduce variation.					
Research and Development Activities:						
11	We have excellent communication processes between R&D and other departments.					
12	Our R&D pursues truly innovative and leading edge research.					
13	Our R&D strategy is mainly characterized by high risk projects with chance of high return.					
14	R&D plays a major part in our business					

	strategy.					
Procurement Activities:						
15	We strive to establish long-term relationships with our suppliers.					
16	We use a supplier rating system to select our suppliers and monitor their performance.					
17	We depend on a reasonably small number of highly dependable suppliers.					
18	Our suppliers are actively involved in our new product development process.					

Firstly: Value chain activities (Operation, Marketing, R&D, and Procurement)

Please tick the number that best reflects what this company has been practicing so far. (1 – Strongly disagree), (2 – Disagree), (3 – Neutral), (4 – Agree), (5 – strongly agree).

Secondly: Competitive Strategies (Cost leadership strategy and Differentiation strategy)

Please indicate the importance of the following competitive methods to your company overall strategy, (1 = Most unimportant, 5 = Most Important).

No	Item	Most unimportant (1)	Unimportant (2)	About the same (3)	Important (4)	most important(5)
Cost leadership strategy:						
1	Operating efficiency					
2	Pursuing cost advantage of raw material purchasing					
3	Pricing below competitors					
4	Pursuing economy of scale					
5	Finding ways to reduce cost of production					
6	Pursuing Cost centers and fixing standard costs					
Differentiation strategy:						
7	Providing product with unique features					
8	Providing product with many features					
9	Targeting high-priced product segments					

10	Advertising					
11	Control of distribution channels					

Thirdly: Performance (Financial and Operational)

How does your company perform compared with your key competitors?

(1= much worse; 5= much better).

No	Item	much worse (1)	Worse (2)	About the same (3)	Better (4)	much better (5)
Financial Performance:						
1	Return on investment					
2	Return on sales					
3	Market share					
4	Growth in return on investment					
5	Growth in return on sales					
6	Growth in market share					
Operational Performance:						
product quality:						
7	Performance					
8	Conformance to Specifications					
9	Reliability					
10	Durability					
Product Innovation:						
11	The level of newness (novelty) of our firm's new products					

12	The use of latest technological innovations in our new products.					
13	The speed of our new product development.					
14	The number of new products our firm has introduced to the market.					
15	The number of our new products that is first-to-market (early market entrants).					

Section Tow Demographic Data:

Please tick (√) in the following general information about your company and yourself:

First: Background information about respondent

1- Gender:

- a. Male (), b. Female ()

2- Age range in years:

- a. Less than 30 years () b. 30-40 years () c. 41-50 years () d. over 51 years ()

3- Level of education:

- a. Secondary School (), b. Undergraduate (), d. Postgraduate ()

4- Period you have worked in this company:

- a. Less than 2 years (), b. 2-5 years (), c. 6-10 years (), d. Over 10 years ()

5- Your position in this company:

- a) General Manager b) Production Manager c) Finance Manager

- d) Procurement Manager
- e) Marketing Manager
- f) Planning and Projects Manager
- g) HR Manager
- h) R&D Manager
- i) Transport & Logistics manager
- j) Distribution & Warehouse manager
- k) Other (specify).....

Second: Background information about company

1. Which of the manufacturing classification below best describe your company?

- a) Food & beverage
- b) Chemical
- c) Engineering
- d) Machinery & Computer Equipment
- e) Electronic & Electrical Equipment
- f) Furniture
- g) Automobiles
- h) Steels & Minerals
- i) Paint
- j) Pharmaceutical
- k) Leather manufacturer
- l) Oil & Gas
- m) Paper & Rubber
- n) Crafts
- o) Textile
- p) Cement
- q) Other, specify

5. Questionnaire (Arabic Version)

القسم الأول: محاور الدراسة

أولاً: أنشطة سلسلة القيمة (العمليات، التسويق، الدراسة والتطوير، والإمداد)
يرجى وضع علامة (√) على الرقم الذي يعكس أفضل ما تمارسه شركتك حتى الآن.
حيث (1 - لا أوافق بشدة) ، (5 - أوافق بشدة).

الرقم	البيان	لا أوافق بشدة	لا أوافق	محايد	أوافق	أوافق بشدة
أنشطة التسويق						
1	نحن نسعى بنشاط وبشكل منتظم للحصول على مدخلات العملاء لتحديد احتياجاتهم وتوقعاتهم.					
2	يتم نشر احتياجات العملاء وتوقعاتهم بشكل فعال والحرص على فهمها من جميع الموظفين.					
3	نحن نشرك عملائنا في عمليات تصميم المنتجات.					
4	نحافظ دائماً على علاقة وثيقة مع عملائنا ونوفر لهم قنوات سهلة للتواصل معنا.					
5	لدينا عملية فعالة لحل شكاوى العملاء.					
6	نحن نحرص على قياس رضا عملائنا بشكل ممنهج ومنتظم.					
أنشطة العمليات (الإنتاج)						
7	مفهوم العمل الداخلي واضح في شركتنا.					
8	نقوم بتصميم العمليات في شركتنا لتكون ذات توجهات وقائية.					
9	لدينا تعليمات عمل واضحة وموحدة وموثقة ومفهومة جيداً من قبل موظفينا.					
10	نحن نستخدم التقنيات الإحصائية بشكل					

					شامل لتحسين عملياتنا وتقليل الاختلافات.
أنشطة الدراسة والتطوير					
					11 لدينا عمليات اتصال ممتازة بين إدارة الدراسة والتطوير والإدارات الأخرى بالشركة.
					12 الدراسة والتطوير لدينا يسعى بالفعل لابتكارات وبحوث رائدة.
					13 تتميز إستراتيجية الدراسة والتطوير الخاصة بنا بشكل أساسي بالمشاريع ذات المخاطر العالية مع فرصة الحصول على عائد مرتفع.
					14 يلعب الدراسة والتطوير دورًا رئيسيًا في إستراتيجية أعمالنا.
أنشطة الإمداد (المشتريات)					
					15 نحن نسعى إلى إقامة علاقات طويلة الأمد مع موردينا.
					16 نحن نستخدم نظام تصنيف الموردين لاختيار موردينا وترتيبهم حسب الأداء.
					17 نحن نعتمد على عدد صغير معقول من الموردين الموثوقين للغاية.
					18 يشترك الموردون لدينا بشكل فعال في عملية تطوير المنتجات الجديدة.

ثانياً: الإستراتيجيات التنافسية (إستراتيجية القيادة بالتكلفة وإستراتيجية المفاضلة)

فضلا ضع علامة (√) على الإجابة التي توضح أهمية الطرق التنافسية التالية بالنسبة للإستراتيجية

الكلية لشركتك. حيث: (1 = غير مهم جداً، 5 = الأكثر أهمية):

الرقم	البيان	غير مهم جداً	غير مهم	إلى حد ما	مهم	الأكثر أهمية
إستراتيجية القيادة بالتكلفة :						
1	الكفاءة التشغيلية.					
2	السعي لتحقيق أقل تكلفة لشراء المواد الخام.					
3	التسعير بأقل من المنافسين.					
4	السعي لتحقيق إقتصاديات الحجم.					
5	العمل على إيجاد طرق لخفض تكلفة الإنتاج.					
6	إستخدام نظام التكاليف المعيارية.					
إستراتيجية التميز:						
7	توفير منتجات بميزات فريدة.					
8	توفير منتجات بميزات متعددة.					
9	إستهداف شرائح المنتجات مرتفعة الثمن.					
10	الإعلانات.					
11	التحكم بقنوات التوزيع.					

ثالثاً: الأداء (المالي والتشغيلي)

فضلاً ضع علامة (√) على الإجابة التي تناسبك.

كيف تؤدي شركتك المؤشرات التالية بالمقارنة مع المنافسين الرئيسيين؟

حيث: (1 = الأسوأ أداءً : 5 = الأفضل أداءً).

الرقم	البيان	الأسوأ أداءً	أداء سيئ	بنفس القدر	أفضل أداءً	الأفضل أداءً
الأداء المالي:						
1	العائد على الإستثمار.					

					العائد على المبيعات.	2
					الحصة السوقية.	3
					النمو في العائد على الإستثمار.	4
					النمو في العائد على المبيعات.	5
					النمو في الحصة السوقية.	6
الأداء التشغيلي :						
جودة المنتج:						
					الأداء.	7
					مطابقة المنتج للمواصفات.	8
					موثوقية المنتج.	9
					متانة المنتج.	10
الإبداع والإبتكار في المنتج:						
					مستوى حداثة منتجاتنا الجديدة.	11
					مستوى إستخدام التقنية المبتكرة حديثا في منتجاتنا الجديدة.	12
					السرعة في تطوير منتجاتنا الجديدة.	13
					عدد منتجاتنا الجديدة التي طرحت في السوق.	14
					عدد منتجاتنا الجديدة التي تعتبر الأولى في السوق.	15

القسم الثانى البيانات الديموغرافية:

يُرجى وضع علامة (√) في المعلومات العامة الآتية عن شركتك ونفسك:

أولاً: معلومات أساسية عن المستجيب

1- النوع:

أ. ذكر () ب. أنثى ()

2- الفئة العمرية:

أ. أقل من 30 سنة () ب. 30-40 سنة () ج. 41-50 سنة () د. أكثر من 50 سنة ()

3- المستوى التعليمي :

أ. ثانوي () ب. جامعي () ج. فوق الجامعي ()

4- عدد سنوات خدمتك في الشركة:

أ. أقل من سنتين () ب. 2-5 سنوات () ج. 6-10 سنوات ()

د. أكثر من 10 سنوات ()

5- وظيفتك في الشركة:

أ. مدير عام () ب. مساعد مدير عام () ت. مدير إنتاج () ث. مدير مالي () ج. مدير سلسلة

الإمداد () ح. مدير تسويق () خ. مدير التخطيط والمشروعات () د. مدير الدراسة والتطوير ()

ز. أخرى (أذكرها)

ثانياً: معلومات أساسية عن الشركة

ما هو نوع الصناعة الذي يناسب القطاع الذي تعمل به شركتك من الخيارات أدناه:

أ. الأغذية والمشروبات () ب. الصناعات الكيماوية () ت. الهندسة () ث. الآلات ومعدات

الكمبيوتر () ج. المعدات الإلكترونية والكهربائية () ح. الفولاذ والمعادن () خ. الطلاء ()

د. الأدوية () ذ. المصنوعات الجلدية () ر. النفط، الغاز والتعدين () ز. الورق والمطاط ()

س. النسيج () ش. الأسمت () ص. أخرى (أذكرها)

6. Assessors of Questionnaire:

Name	Position	University
Dr. Bushara Musa	Assistant Professor	Sudan University
Dr. Mohammed Mustafa	Assistant Professor	Sudan University
Dr. Faris Eltaib	Assistant Professor	Sudan University
Dr. Karar Mohammed	Assistant Professor	Aldien University
Dr. Altahir Ahmed	Associate Professor	Sudan University

7. Missing Data

	N	
	Valid	Missing
Q1MAA	106	0
Q2MAA	106	0
Q3MAA	106	0
Q4MAA	106	0
Q5MAA	106	0
Q6MAA	106	0
Q1OPA	106	0
Q2OPA	106	0
Q3OPA	106	0
Q4OPA	106	0
Q1RDA	106	0
Q2RDA	106	0
Q3RDA	106	0
Q4RDA	106	0
Q1PRA	106	0
Q2PRA	106	0
Q3PRA	106	0
Q4PRA	106	0
Q1CLS	106	0
Q2CLS	106	0
Q3CLS	106	0
Q4CLS	106	0
Q5CLS	106	0

Q6CLS	106	0
Q1DS	106	0
Q2DS	106	0
Q3DS	106	0
Q4DS	106	0
Q5DS	106	0
Q1FP	106	0
Q2FP	106	0
Q3FP	106	0
Q4FP	106	0
Q5FP	106	0
Q6FP	106	0
Q1OP	106	0
Q2OP	106	0
Q3OP	106	0
Q4OP	106	0
Q5OP	106	0
Q6OP	106	0
Q7OP	106	0
Q8OP	106	0
Q9OP	106	0