



St. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACULTY OF BUSINESS

**ORGANIZATIONAL PERFORMANCE AND CHALLENGES OF
TYRE MANUFACTURING IN ETHIOPIA: THE CASE OF
HORIZON ADDIS TYRE FACTORY**

BY

TESFAYE GEBREHANNA ANFWATTE (SGS/0224/2009A)

JUNE 2018

ADDIS ABABA, ETHIOPIA

**ORGANIZATIONAL PERFORMANCE AND CHALLENGES OF
TYRE MANUFACTURING IN ETHIOPIA: THE CASE OF
HORIZON ADDIS TYRE FACTORY**

BY

TESFAYE GEBREHANNA ANFWATTE

ID SGS/0224/2009A

**A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF
St MARY'S UNIVERSITY IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS
ADMINISTRATION (MBA)**

JUNE 2018

SMU

ADDIS ABABA, ETHIOPIA

St. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF BUSINESS

**ORGANIZATIONAL PERFORMANCE AND CHALLENGES OF TYRE
MANUFACTURING IN ETHIOPIA: THE CASE OF HORIZON ADDIS
TYRE FACTORY**

BY

TESFAYE GEBREHANNA ANFWATTE

APPROVED BY BOARD OF EXAMINERS

_____	_____	_____
Dean graduate Studies	Signature	Date
_____	_____	_____
Advisor	Signature	Date
_____	_____	_____
External Examiner	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date

Declaration about the Research

I the undersigned affirm that this research paper is my original work; prepared under the guidance of Dereje Tklemariam (Ph.D) and all references are acknowledged.

Finally, I also assure that this thesis has not been employed and submitted in any way to any educational institutions for a requirement of getting a degree award.

Tesfaye Gebrehanna

Signature

ENDORSEMENT

**This paper shall be submitted to St. Mary's University School OF Graduate Studies for
examination with my approval as a university advisor,**

**Dereje Teklemariam, PhD
St. Mary's University**

Signature

**June 2018
SMU**

Acknowledgements

In the first place this is what I can and should say, Praises and Glory be to GOD, my Heavenly Father, for His indescribable and immeasurable gift, unfailing love, guidance and protection throughout my life.

Then, I am indebted to give my heartily gratitude and praise to my advisor Dereje Teklemariam (PhD) for his follow up, guidance and unreserved and weariless support from the start and finish of the research.

I hereby again, want to express my appreciation to the management and staff of the Horizon Addis Tyre S.C, as a whole because naming could create embarrassment, for their willingness and support in getting all data and information and their precious time in responding to my interview.

I further would like express my genuine respect and appreciation to my Sebategna branch staff of Addis International Bank for their unreserved support and encouragement to reach to this end. Here, I want to say thank you to my dearest friend Alemayehu Tsegaye who facilitated and introduced me with the management group of the company. I have special thanks to Ato Andargachew Worku and Ato Mosissa Kejela for their guidance and advice to begin at the University.

Finally, let my gratitude and appreciation reach to my friends and relatives for their financial support for without their support it would hardly be easy to achieve the goal.

Contents

1	INTRODUCTION	1
1.1	Background of the Study	1
1.2	Statement of Problem.....	4
1.3	The research Questions	6
1.4	Objective of the study (Research)	6
1.4.1	General Objective	6
1.4.2	Specific Objective	6
1.5	Significance of the Study	6
1.6	Scope of the Study.....	7
1.8	Organization of the Study.....	7
	CHAPTER TWO	8
2	LITERATURE REVIEW	8
2.1	Theoretical Review	8
2.1.1	The Evolution of Tyre Production	8
2.1.2	Definition of Performance	11
2.1.3	Performance Measurement	11
2.1.4	The Evolution of Performance Measurement	12
2.1.5	Overview of Performance Measurement Systems	13
2.1.5.1	Financial Performance Measures	13
2.1.5.2	Balanced Scorecard.....	13
2.1.5.3	The strategic Measurement Analysis and Reporting Technique.....	15
2.1.5.4	Performance Measurement Questionnaire (PMQ).....	15
2.1.5.5	DuPont Model	16
2.1.5.6	The Results and determinants framework.....	16
2.2	Value chain analysis: Integrating marketing and production performance	19
2.3	Empirical Literature	20
2.3.1	List of tyre manufacturers those have nearly the same age or younger with Addis Tyre	20
2.3.2	Tyre Industry in Sub Sahara Countries	24
2.3.3	Challenges of Tyre Manufacturing	27
2.4	Conceptual Framework for the Study	27

CHAPTER THREE.....	32
3 METHODOLOGY.....	32
3.1 Research Design & Approach.....	32
3.2 Data Type.....	33
3.3.1 Primary data source.....	33
3.3.2 Secondary data source.....	33
3.4 Target Population and Sample	34
3.4.1 The target Population	34
3.4.2 Sample Size and Determination.....	34
3.5 Data Collection Tools	35
3.5.1 Structured Questionnaire.....	35
3.5.2 3.5.2. Interviews.....	35
3.5.3 Document Review.....	36
3.6 Data Analysis and Presentation	36
3.6.1 Descriptive data analysis.....	36
3.6.2 Production performance analysis (P1)	36
3.6.3 Market performance and determinants:customer decision to buy Addis Tires (P2)	37
3.7 Ethical Considerations	40
CHAPTER FOUR.....	42
4 RESULTS AND DISCUSSION	42
4.1 Results	42
4.1.1 Introduction.....	Error! Bookmark not defined.
4.1.2 Tyre Manufacturing Inbound Logistics	42
4.1.3 The Tyre Production value chain in Horizon Addis Tyre SC.....	43
4.1.4 Performance of the Tyre Manufacturing Processes and Productivity.....	44
4.1.5 Outbound Logistics.....	50
4.1.6 Marketing Performance.....	52
4.1.7 The Support Activity.....	54
4.2 Customers’ Satisfaction Survey	57
4.2.1 Places of Survey of Customers and Users.....	58
4.2.2 Users and Customers Survey	58

4.2.3	Durability of the Tyre	59
4.2.4	Criterion for choosing the Horizon Addis Tyre	59
4.2.5	Users and Customers Satisfaction with the Tyre	60
4.2.6	Intention of Shifting	60
4.2.7	Users but not Customers- Codes of the Vehicles.....	61
4.2.8	Durability of the Tyre	61
4.2.9	Criterion for choosing the Horizon Addis Tyre	62
4.2.10	Intention for Shifting.....	62
4.2.11	Reasons for Shifting.....	63
4.2.12	Mixed Brand Usage and Inner Tube Problem.....	63
4.2.13	Distributors of the Tyre -Durability	64
4.2.14	Customer Service of the Company	64
4.2.15	Cooperativeness for Compensation of Defective Tyre	65
4.2.16	The Extent of Making Customers Happy.....	65
4.2.17	Distributors' Faced Problems.....	66
4.2.18	Attention Given to Distributors.....	66
4.2.19	Evaluation of the Quality of the Tyre	66
4.3	Customers' Satisfaction.....	67
4.4	Problems restraining the tyre manufacturing process.....	68
4.5	Measures taken to tackle tyre manufacturing problems	68
4.6	Discussion of the Results	69
4.6.1	A discussion on production performance analysis:-	73
4.7	The Challenges of Horizon Addis Tyre S.C	77
CHAPTER FIVE.....		78
5	SUMMARY, CONCLUSION AND RECOMMENDATION.....	79
5.1	Summary of the findings.....	79
5.2	Conclusion	80
5.3	Limitation of the study	83
5.4	Recommendation	83
REFERENCE		i-iv
Customer Survey Questionnaire		v-x
Appendix 2: Key informant interview		xi

List of Tables

Table: 2.1 China	20
Table: 2.2 India	21
Table: 2.3 Indonesia	21
Table: 2.4 Vietnam	22
Table: 2.5 Taiwan	22
Table: 2.6 Japan	22
Table: 2.7 Czech Republic and Germany- EX-Friends.....	22
Table: 2.8 Countries that Exported the Highest Dollar Value.....	23
Table: 4.1.1 Raw Materials Purchase Expenditure	43
Table 4.1.2 Cycle Time of Curing	45
Table 4.1.3 Production Capacity and Actual Performance.....	46
Table 4.1.4 Productivity Measured in Value Added and Total Productivity Methods.....	47
Table 4.1.5 Financial Performance Measures	48
Table4.1.6 Customer Types of Horizon Addis Tyre S.C.....	50
Table 4.1.7 Total Sales Trend by Customer Group	51
Table 4.1.8 Defect Percentage.....	51
Table 4.1.9 Market Share.....	52
Table 4.1.10 Volume and Value Tyres Imported.....	53
Table 4.1.11 Major Suppliers of Tyres.....	53
Table 4.1.12 Compensation and Fringe Benefits Trend Ttaring from 2013 to December 2017....	54
Table 4.13 Training Given for Employees from 2013-2017).....	54
Table 4.1.14 Rewarded Employees in 2017.....	55
Table 4.1.15 Turn Over of Employee	55
Table 4.1.16 Investment	56
Table 4.1.17 Planning Accuracy.....	56
Table 4.1.18 New Development Sales Trend.....	57
Table 4.2.1 Cities of Survey.....	58
Table 4.2.2 Codes of the Vehicles.....	58

Table 4.2.3 Durability of the Tyre.....	59
Table 4.2.4 Criterion for Choosing the Tyre Brand.....	59
Table 4.2.5 Satisfaction with the Tyre Employed.....	60
Table 4.2.6 Intention to Shift to other Types of Tyre.....	60
Table 4.2.7 Codes of the Vehicles.....	61
Table 4.2.8 Durability of the Tyre.....	61
Table 4.2.9 Criterion for Choosing the Horizon Addis Tyre.....	62
Table 4.2.10 Intention for Shifting.....	62
Table 4.2.11 Reasons for Shifting.....	63
Table 4.2.12 Mixed Brand Usage and Inner Tube Problem.....	63
Table 4.2.13 Durability of the Tyre.....	64
Table 4.2.14 Customer Service of the Company.....	64
Table 4.2.15 Cooperation in Replacing New Tyre for Defected Products.....	65
Table 4.2.16 The Extent Customers' Happiness and Satisfaction on Horizon Addis Tyre.....	65
Table 4.2.17 Problems Distributors Facing Regarding the Tyre.....	66
Table 4.2.18 Given Attention for Customers.....	66
Table 4.2.19 Evaluation of the Quality of the Tyre.....	66
Table 4.2.20 Determinants of Customer Satisfaction.....	67

List of Figures

Figure 2.1 The Balanced –Scorecard	14
Fig. 2.2 The SMART Performance Pyramid	15
Fig 2.3 The Performance Measurement Questionnaire	16
Fig. 2.3 The DuPont model: A flow Chart Representation of the DuPont Model.....	17
Fig. 2.4 The Results and Determinants Framework Fitzgerald	18
Fig. 2.5 Primary and Secondary Activities in Firm’s Value Chain. Adapted from Lanen et al...	20
Figure 2.8 Challenges of Tyre Manufacturing.....	28
Figure 2.9: Conceptual Framework of the Study, Tire Production Performance and Challenges	30
Figure 4.1: Tyre Value-Chain Map as Observed in the Horizon Addis Pyre Plc.....	46

Abstract

The evolution of manufacturing such as tyre went back to early 19th century and matured technologically and automated in the 1980s. Ethiopia joined the tyre industry in 1970s in the name of Addis Tyre SC (currently Horizon Addis Tyre SC); however, the tyre manufacturing stayed stagnant since then owing to various internal and external factors. The case is more serious and lures scientific inquiry when it is seen from the context of Ethiopia which is with a single tyre manufacturing company that operates below 40% capacity; on the other hand the hard-currency scarce developing country is importing 85% of the tyre from abroad. The general objective of the study is to investigate its performance and challenges through mapping its value chain for better understanding of the process and evaluate the performance as well as bottlenecks. Data is collected using a multiple of approaches. Desktop data was mined, survey was conducted on 385 respondents, observation was made to understand and map out the tyre production process, seven detailed key informant interviews were carried out. Data were analyzed both in descriptive and econometric applications, i.e., descriptive analyses were made about performance and performance measurements while econometric analysis (i.e., ordinal logistic regression) is used to identify the determinants of customers' satisfaction. In terms of results, the production value-chain map was developed where three grand stages and ten-specific sub processes were indentified. The company is extremely dependent on the imported raw materials where about 98% raw materials and technology were imported with a value of 317 million - 716 million Birr annually. In terms of capacity utilization, in all three production process sections, the company is performing below 40% which is much below the target due to foreign currency scarcity. In terms of financial performance indicators, it is performing with 12.1-33.4% (ROI), 11.4-23.3% (ROS), and 14.1-29.8 (GPM). In terms of market share, it covers 14.97% and of customer satisfaction, the result depicted that 35.4% and 58.7% were very satisfied and satisfied respectively. With regard to the determinants of customer satisfaction, the product related attributes (i.e., 'important'), such as design, raw material, price, sales and after sales services and most importantly price significantly contribute to the satisfaction of customers at 5% level of significance. Moreover, customers' level of education has a significantly positive relationship with level of customer satisfaction at 5% level of significance. Finally, durability of the product has a strong positive effect upon the satisfaction level of customers with 5% level of significance. To conclude, although Horizon Addis is producing strategically vital product, its operational performance is far much below both from its target and from the demand of the product at domestic market. The company is under a number of operational and managerial intricacies which require serious attention both from the owners and government so that the company plays its role both in fulfilling the domestic tyre demand and in saving the country's economy which is already struck by the most serious hard currency deficit in the economic history of Ethiopia.

Keywords: Performance measurements, tyre value-chain, tyre customer survey, tyre import, productivity, and return on investment (ROI)

ACCRONYM

ATC= ADDIS TYRE COMPANY

BSC= BALANCED SCORE CARD

EFQM = EUROPEAN FOUNDATION FOR QUALITY MANAGEMENT

GPM= GROSS PROFIT MARGIN

HAT S.C = HORIZON ADDIS TYRE SHARE COMPANY

IDPMS= INTEGRATED DYNAMIC PERFORMANCE MEASUREMENT SYSTEM

IPMS= INTEGRATED PERFORMANCE MEASUREMENT SYSTEM

PMQ= PERFORMANCE MEASUREMENT QUESTIONNAIRE

PMS= PERFORMANCE MEASUREMENT SYSTEM

ROE= RETURN ON EQUITY

ROI= RETURN ON INVESTMENT

RONA= RETURN ON NET ASSETS

ROS= RETUEN ON ASSETS

SMART= STRATEGIC MEASUREMENT ANALYSIS AND REPORTING TECHNIQUE

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The rapid global changes that companies face today affect not only the production system, equipment and technology usage but also organizational performance and management philosophies. Hence, this has brought in the introduction and employment of performance measurement for it is a strategic and integrated approach to increasing the effectiveness of organizations by improving the performance of people who work with them and by developing the capabilities of teams and individual contributors (Armstrong & Baron, 1998). It, moreover, is both necessary and vital. On the other hand, an organization operating without performance measurement is likened to a chief executive officer operating without a strategic plan. In recent times, companies may have performed poorly due to the fact that they lack effective and efficient performance management frameworks and strategies to adequately and judiciously allocate resources to meet organizational goals.

It should be noted that performance is not only measured to know how a business is performing but mostly to enable it perform better. So the ultimate aim of conducting the measure of performance of an organization and or its workers is to improve performance to provide better customer satisfaction, create conducive working environment for employees and growth for the owners and other stakeholders. Performance measurement enables an organization to plan, measure, and control its performance according to a pre-defined strategy. In general, performance measurement management helps a business to achieve its desired goals and to create shareholder value.

It is identified that good performance measurement systems must consist of two basic components; that is, performance management feedback for individuals as well as teams and the second is reward packages. Organizational factors such as job definitions, adequate job evaluation, designs and feedbacks are theoretical instead of being practical. This is due to mainly the absence of clear definition, monitoring, measurement and feedback on performance. Formal performance measurement sometimes yields disappointing results owing to there is no commonly accepted method or efficient approach to evaluating the effectiveness or success of the measurement of the performance of an organization based on a well set of variables in the

manufacturing industry. Identifying and organizing the most important variables in performance measurement has proved to be a challenging task to both researchers and practitioners. As a whole, the challenge for organizations today is how to match and align performance measures with business strategy, structures and corporate culture, the type and number of measures to use the balance between the merits and costs of introducing these measures and how to deploy these measures so that the results are used and acted upon.

The history of tyre industry is closely interwoven with those of rubber and automobiles. Although metal tyres existed before the discovery of rubber, the true meaning of the word is intimately related with use of elastomers. Rubber got its name from its capacity to rub out pencil marks. According to Ernst (2013), the evolution of tyre is vindicated in the following manner. The first rubber tires appeared in the mid-1800s. They were solid or cushion tyres in which the rubber itself carried the load, absorbed shocks, and resisted cutting and abrasions. The pneumatic or air-filled tyre, which carried the load and absorbed shocks by the compressed air in the tyre casing, was patented as early as 1845. Solid rubber tyres were preferred over pneumatic tires because of their durability, and then pneumatic tyres fell into disuse. The popularity of bicycles in the late 1800s revived the idea of the pneumatic tyre, and in 1888 a Belfast veterinary surgeon named John Boyd Dunlop obtained a patent for a pneumatic bicycle tyre.

According to the company official report of 2013, The production of tyres in Ethiopia goes back to 1972 GC, when Addis Tyre S.C. (ATC) the first of its kind in the country, was established with a yearly production capacity of 60,000 tyres and 45,000 tubes and a total labor force of 260 people. Addis Tyre S.C. (ATC) was established in 1972 G.C as state owned company with the help of the then Czechoslovakia government. It started production in 1972 G.C by producing 200 diagonal tires per day with the help of 7 Czechoslovakia experts. In the meantime, the company sold its 30% share to Japanese Yokohama Rubber Company in 1973 G.C and replaced 7 Czechoslovakia experts with 13 Japanese experts. The company, however, incurred continuous losses in the following years and the government of Ethiopia suggested that the debt of the company had to be covered by Yokohama Rubber Company and the Ethiopian government. But Yokohama Rubber Company refused to cover the debt; therefore the Ethiopian government covered all the debt so that the share of Yokohama Rubber Company decreased to 6%. Lately, subsequent joint venture formation between Addis Tyre S.C. (Government Owned) and the

Slovakian renowned tyre manufacturer, MATADOR A.S. was established in June 2004GC and the operation commenced in July 2004GC with the hybrid trade name MATADOR-Addis Tyre S.C.

However, due to shift in business focus, MATADOR-Addis Tyre S.C. transferred its share to Continental AG on October 23, 2007GC. Then, Continental AG, the world known German tyre manufacturer company, had bought all Matador holding companies in Slovakia, Russia and Ethiopia. Even so, due to lack of concentration of continental AG, there was no significant progress on the commitment of MATADOR-Addis Tyre S.C. in terms of upgrading the existing bias tyre technology and commencement of Truck Radial tyre production. Thus, Continental AG rather preferred to sale its share to a potential strong national investor to Mohammed H. Al-Amoudi. The captioned investor decided to buy the share of Continental AG through one of his group company's name, Horizon Plantation P.L.C. in January 2011GC. Thus, since then the name of the company changed to Horizon Addis Tyre S. C. and according to the key informant currently the Horizon Plantation P.L.C has owned 100% share of the company.

Major inputs and raw materials (98%) for tyre manufacturing are imported from Malaysia, India, China, Indonesia, Egypt and Europe. Natural Rubber is one of the major inputs. The future perspective of Horizon Addis Tyre S.C includes, among others, of improving quality and performance of existing products, introducing new product categories. Innovation in manufacturing practices for higher productivity and consistent with quality products and developing technical know- how are in the immediate programs of the company. In the long run, its goal is to compete internationally by enhancing its core competency per the strategic plan of 2017-2021 of the company.

As a result technical Assistance Agreement has been signed with continental AG that enabled Horizon Addis Tyre S.C. to acquire technology know- how and capacity building of making 15" & 16" light truck radial tyres that are already successfully commercialized. In line with the company's product diversification projects, the company also launched the manufacturing of Bajaj tyre, Farm tyre, OTR tyre and Industry tyre and stated delivering them to the local market. Moreover, Flotation Tyres which are used by sugar factories are at the development stage. The project study for the manufacturing of truck and bus radial tyres is also finalized. Currently, the company has created job opportunity, for 777workers while the number will increase to 850 with

the full implementation of the ongoing projects and will be much more when the Truck and Bus Radial tyre production project will be implemented.

Having the aforementioned facts and contributions of Addis Tyre S.C. (ATC) can be enhanced through the improvement in the performance of the company. On the other hand, there is a sporadic preliminary evidence of ERCAs five year tyre imported and the production of the company ratios which indicate that the performance of the company is stagnated, i.e., no growth 12%-14.9% is its market share. The cause of performance stagnation as well as accompanied performance challenges have not yet explored which require a rigorous analysis which is the concern of this study.

1.2 Statement of Problem

In this dynamic and volatile business environment, business firms are exposed to various kinds of uncertainties and risks. Hence a company to survive and stay competent it should operate effectively and efficiently and should have a well-established marketing strategies and optimal operations. Moreover, the rapid global changes that companies face today affect not only the production system, equipment and technology usage but also organizational performance and management philosophies. Thus, performance measurement is a strategic and integrated approach to increasing the effectiveness of organizations by improving the performance of people who work in them and by developing the capabilities of teams and individual contributors (Armstrong & Baron, 1998). It, moreover, is both necessary and vital. On the other hand, an organization operating without performance measurement is likened to a chief executive officer operating without a strategic plan. In addition, Performance is not only measured to know how a business is performing but mostly to enable it perform better. So, the ultimate aim of conducting the measure of performance of an organization and or its workers is to improve performance to provide better customer satisfaction, to create conducive working environment for employees and growth for the owners and other stakeholders. And hence, performance measurement enables an organization to plan, measure, and controls its performance according to a pre-defined strategy and enables a business to achieve its desired goals and to create shareholder value (Johnson, 2007).

Horizon Addis Tyre S.C. has been in the market since its inception in 1972/73 producing the same product, of course it has passed under different kinds of constraints owing to being under

four ownerships and/or joint ventures and as a sole manufacturer of the product. Regardless favorable situations such as better market opportunities, availability of improved technology, and state support programs its market share is restricted. For instance, according to the six years audit report which covered the period 2011- 2016, the market share of the company is limited to 15%. In relation with this Asian countries such as China, India, Taiwan, S.Korea Indonesia, Vietnam who entered in the industry in the same period and later on have grown, developed and almost automated in the manufacturing process and flooding the global market. Nevertheless, Horizon Addis is infant and stagnant. Moreover, according to preliminary sources, there is no demand problem since almost all public and government organizations and individuals are consumers of the product. There is an excellent replaced tire market opportunity for the imported vehicles is growing tremendously; couples of vehicles' assembly have started already and others are on process to begin the assembly. The neighboring country can be considered as a market opportunity it had started to export to South Sudan but failed due to foreign currency problem to buy raw materials.

Furthermore, there is no capital constraint for it is owned by the better off the owner allotted all proceeds to for the enhancement of same beginning from 2013. Above all, there seems also a monopoly advantage as the only producer and distributor of its product being the only manufacturer. It also utmost cannot withstand its competitors who import different kinds of tyres(1.2 million tyres were imported in 2012 and reached 2.45 million in 2017) from around the globe that kept its market share stand still in six years period 2012-2017 it was between 12% and 14.9% and hasn't shown a progress as it should have been. The purpose of this research is therefore, to look into the company's performance and identify the underlying performance constraints that have kept from proper growth so that the stakeholders could appropriately deliberate on the findings to enhance its core competency.

1.3 The Research Questions

The research is guided by the following key research questions:

1. How does the value chain map of Horizon Addis Tyre manufacturing SC look like?
2. How much is the performance of Horizon Addis Tyre manufacturing SC in terms of finance, customers' expectation and internal business perspectives?
3. Which factors of production attributed most for operational stagnation in Horizon Addis Tyre manufacturing SC?
4. What are the efforts and strategies employed by the owner and managers to enhance the operation and solve the market share problem?

1.4 Objective of the Study

1.4.1 General Objective

The general objective of the study has been to investigate the performance and challenges of Tyre manufacturing in the context of Horizon Addis Tyre SC through mapping its value chain for better understanding of the process and evaluate the performance as well as bottlenecks.

1.4.2 Specific Objectives

The specific objectives of the study are:

- To understand the value-chain map of tyre manufacturing in the context of Horizon Addis Tyre S.C
- To measure the performance of Horizon Addis Tyre manufacturing S.C in terms of finance, production cycle time, market share, customers' satisfaction and internal business perspectives.
- To identify the operational and managerial problems that hinder its efficient and effective operation.
- To explore the strategies utilized by the owners and managers to tackle the prevailing operational problems.

1.5 Significance of the Study

This research explored the value chain map, the factors that determine operational efficiency and performance, in the context of a tyre manufacturing enterprise in Ethiopia. Moreover, it laid down the foundation for further investigation of the challenges of the company and other related

companies. Furthermore, as tyre market of Ethiopia is dominated by imported tyres (85%) which costs and erodes the country's huge amount of foreign currency this research would help the stakeholders to deliberate on the issues so as to enhance the core competency of the company. Finally, the research would create awareness about the usefulness of the employment of non-financial performance measurement systems to enhance the competitive advantage by alleviating the constraints.

1.6 Scope of the Study

The research is limited to review the performance and challenges of tire manufacturing in the context of a single tire manufacturing company in a single country. In terms of time dimension, the study employed a five year operational data coupled with cross-sectional survey data that was run both for primary customers (individuals), organizations, and distributing agencies. Furthermore, the impact of the marketing mix on the performance of the company was not explored in the research owing to its relevance in line with the specific objectives of the study. Moreover, perceptions of relevant respondents are included for analysis yet perception may not exactly represent the reality on the ground.

1.7 Organization of the Study

The research is organized into five chapters. Chapter one covers the introductory chapter that comprises the background of the study, problem statement and objectives of the study, scope and limitation of the study. It will introduce and focus upon delivering the reader an overview of the study's development.

The second chapter presents the related literature review that covers concepts, theoretical framework and empirical literature of performance and conceptual framework of the research.

Chapter three presents in detail a discussion and explanation of the research methodology. It begins with a discussion of the research design, population of the study, sampling techniques, sample size, data collection instruments, the data collection procedures and ends with data analysis approach. Chapter four discussed the data presentation and data analysis of the study.

Finally, chapter five presented the findings, conclusions, and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 The Evolution of Tyre Production

According Radder.F (2017) on his 'Tire Recappers News', the first use of pneumatic tyres for automobiles was pioneered by the Michelin brothers, André and Édouard. They equipped a car with pneumatic tyres and drove it in the 1895 Paris-Bordeaux road race. Though André and Édouard didn't win the race, they generated popular interest in pneumatic tyres, and Michelin & CST became a leading producer of tyres in Europe. At the same time, solid rubber tyres disappeared from the highways, mostly because of legislation that discouraged their use because they were hard on the roads.

In 1898 Goodyear Tyre and Rubber Company—named after George Goodyear, the discoverer of vulcanized rubber—was formed in America by Frank Seiberling. Then Firestone Tyre & Rubber Company was started by Harvey Firestone in 1900. Thereafter, other tyre makers followed.

For the next fifty years automobile tyres were made up of an inner tube that contained compressed air and an outer casing that protected the inner tube and provided traction. The rubber that made up the casing was reinforced by layers or "plys" of rubberized fabric cords embedded in the rubber. The tyres made during this period were known as bias-ply tyres because the plys ran across the tyre in alternating diagonal layers at about a 55 degree angle to the wheel rim. Bias-ply tyres continue to be made and are sold as authentic equipment for antique and collector cars that were made during this period. Michelin first introduced steel-belted radial tyres in Europe in 1948. Radial tires are so named because the ply cords radiate at a 90 degree angle from the wheel rim, and the casing is strengthened by a belt of steel fabric that runs around the circumference of the tyre. In radial tyres the ply cords are made of nylon, rayon, or polyester. The advantages of radial tyres include longer tread life, better steering characteristics, and less rolling resistance, which increases gas mileage. Again, radials have a harder riding quality, and since they are technologically more complex than bias-ply tires, they are about 45 percent more

expensive to make. Because of their construction, radial tyres require a different suspension system from that used by cars designed for bias-ply tyres. It is however, recommended that radial tyres not be used on cars designed for bias-ply tyres (Radder 2017).

These days' radial tyres became standard on new cars outside of America. Michelin in France, Bridgestone in Japan, Pirelli in Italy, and Continental in Germany became powerful radial tyre manufacturers. Automobile tyres everywhere became tubeless as tyre technology improved. Both the American automobile manufacturers and the tyre companies sought the radial tyre. Detroit, home of the American automobile, was afraid of how much it would cost to redesign automobile suspensions to accept radial tyres. The tyre industry was afraid of how much it would cost to retool the entire American tyre industry to make the more costly radial tyres. Not happy with the threat of having to make tremendous investments, most American automobile makers and tyre manufacturers wrote off the radial tyre as a freak product that isn't going anywhere (Ernst 2013).

With the notable exception of B.F. Goodrich, the American tyre companies decided that the American public wasn't ready to pay a lot more for the harder ride that radials produced, and they stuck to making bias ply tyres. Goodrich bucked this trend by investing heavily in radial tyre technology, only to have their tyre—the Silvertown Radial 900, introduced in 1965—snubbed by the American automobile industry. Eventually Goodrich sold its tyre operations and got out of the tyre business (Ernst 2013).

In 1967, Goodyear, the world's largest tyre company, introduced their response to the radial, a bias-belt product called the Custom Super wide Polyglass. The bias-belted tyre simply added a fiberglass belt to the bias-ply tyre. The bias-belted tyre would last 30,000 miles compared to 40,000 for radial and 23,000 for bias-ply tyres. It could be used on cars designed for bias-ply tyres. Best of all, it could be made on existing bias-ply tyre-making machines, which made its cost not much more than a bias-ply tyre (Ernst 2013).

Fueled by a Goodyear advertising blitz, bias-belted tyre sales rose from 2 percent of the original-equipment market in 1968 to 87 percent by the early 1970s. In advertisements touting their bias-belted tyres, Goodyear ridiculed radials for their hard ride and their high cost. The American tyre and automobile industry was confident that the bias-belted tire would keep the radial tyre wolf

from the door for a while and expected to have plenty of time to develop their own radial tyre expertise at their own pace. Then in 1973 came the gasoline crisis. Gas went from 30 cents to a dollar a gallon. Americans demanded more economical cars. That year, imported cars represented 15% of American auto sales, but by the early 1980s imports were 28 percent. Of course, each foreign car came equipped with radial tyres. Americans clamored for radial tyres when they found that they improved gas mileage. Companies like Michelin and Bridgestone were only too happy to supply the American market.

Alas, in the mid-seventies Firestone Tyre decided to get into radials on the cheap, fabricating radial tyres on machines made for building bias tyres. The tyres came apart in a spectacular manner. Firestone recalled close to 9 million of its Firestone 500 steel-belted radial tyres. From 1977 to 1980, Firestone's tyre business dropped 25 percent, resulting in the layoff of 25,000 workers. The company went from a \$110 million profit to \$106 million loss, and its stock dropped from \$15 down to \$10 a share. Firestone was rescued when Bridgestone Tyre bought them in 1988.

Goodyear finally produced a radial tyre in 1977 by investing billions of dollars in radial technology. Other American Brand Finance tire companies either merged or were bought out. All American new cars came with radial tyres by 1983. Currently Goodyear holds about 20 percent of the global market share in radial tires, both original equipment and replacement; Michelin, 19 percent; Bridgestone, 17 percent; Continental, 9 percent; Pirelli, 5 percent; and the others, 30 percent (Ernst 2013).

According to Workman (2016), there are 102 countries that export various types of tyres across the globe. A report shows that a ranking of the 10 most valuable Tyre Brands in the World are Bridgestone, Michelin, Continental, Goodyear, Pirelli, Sumitomo, Hankook, Dunlop, Yokohama, and CST in descending order. Each brand has been assigned a brand rating based on a benchmark study of the strength, risk and future potential of a brand relative to its competitor set, as well as a Brand Value- a summary measure of the financial strength of the brand.

Today the global industry encompasses around 400 factories worldwide producing more than one billion units per annum. The peak of the industry's dynamics in the modern era was reached in the late 1980s when a series of dramatic restructuring occurred. Currently, the world tire

industry is led with nine ultimate parent companies that have annual sales in excess of \$1 billion each. These nine companies account for 80 percent of world tire sales (Ita and Gross, 1995). Four of the nine companies have their headquarters in Japan (Bridgestone Corporation, Sumitomo Rubber Industries Ltd., Yokohama Rubber Co. Ltd., and Toyo Tire and Rubber Co. Ltd.), three are based in Europe (Groupe Michelin, Continental A.G., and Pirelli), and two are headquartered in the United States (Goodyear and Cooper) (Bradley, 2000).

2.1.2 Definition of Performance

Performance is a widely used concept in many areas. Mostly, it is a measurement of how well a mechanism or process achieves its purpose. Moullin (2003) defines an organization's performance as how well the organization is managed and the value the organization delivers for customers and other stakeholders. This implies that it is the measurement of the effectiveness and efficiency of both the organization and the workers, where effectiveness refers to the extent to which stakeholder requirements are met, while efficiency is a measure of how economically the organizations resources are utilized when providing a given level of stakeholder and customer satisfaction. Hence, performance can be defined as the use of resources both efficiently and effectively in the achievement of its expected objectives.

2.1.3 Performance Measurement

Although much research has been conducted on performance measurement, its definition is still widely questioned. "Performance measurement is a set of systems of metrics used to quantify both the efficiency and effectiveness of actions" (Neely et al., 2000). Moulin (2005) defined performance measurement as "the evaluation of how well organizations are managed and the value they deliver for customers and stakeholders". He argued that his definition clearly shows the purpose of performance measurement and emphasizes both the value the organization gives to its stakeholders and the way the organization is managed.

Amaratunga and Baldry (2002) provided a more specific definition of performance measurement which says that measurement provides the basis for an organization to assess how well it is progressing towards its predetermined objectives, helps to identify areas of strengths and weaknesses, and decides on future initiatives, with the goal of improving organizational performance. This definition entails both the role and process of performance measurement clearly from different aspects. Performance measurements are said to be appropriate when the

measures are those which enables the organization to direct their actions towards achieving their strategic objectives (Dixon et al., 1990).

Moreover, performance measurement is the cohesive and well analyzed systematic approach that improves organizational performance, with aims of achieving strategic objectives and organization's vision, missions and values (Salem 2003). The practices performance measurement started in the late 1970s due to inaccuracies of using traditional backward looking accounting systems. In relation with this manufacturing firms started the use of financial measures to evaluate performance. Such measures typically assess current performance against previous periods. They then realized that focusing entirely on financial related measures was not effective enough to maintain performance and competitiveness in the global market. This led to the establishment of emphasis on non-financial aspects of the organization which led to development of integrated performance measurement systems

There are several considerations in the implementation of performance management models strategic planning, operationalization and review (Robinson et al., 2005). The critical part is choosing an appropriate strategic framework to integrate the business objectives. And hence, operationalization of the strategic plan by developing a set of performance measures to monitor corporate strategy and objectives necessary to assess continuous performance improvement is the next stage (Basu, 2001). The final phase requires a review of results, the implications for learning and knowledge management and performance improvement initiatives to reach key business goals. By the term key performance indicators (KPI) we mean the set of performance measures that lead to the achievement of current and future business success (see Parmanter, 2007).

2.1.4 The Evolution of Performance Measurement

Performance measurement has its roots in early accounting systems of how a pre-industrial organization could maintain a good account of external transactions and stock. Thus, before the 1980's, performance measurement was largely evolved within the large industrial firms focusing on the achievement of a limited number of key financial measures (Johnson & Kaplan, 1987). But by the early 1980's, as the increasing complexity of organizations and the markets in which companies compete, it was no longer appropriate to use financial measures as the sole criteria for

assessing success (Kennerley& Neely 2002). Yenyurt (2003) and Gomes, Yasin and Lisboa (2004) summarize the major inadequacies of traditional metrics in their literature review.

2.1.5 Overview of Performance Measurement Systems

Performance measurement system (PMS) supports a performance management philosophy and is situated at the heart of performance management process (Lebas, 1995, Bitici et al., 1997). Wagner et al., (2009) defines a PMS as a system which consists of components that are individual performance measures through which we describe the elements, their characteristics and relationships within examined model for performance measuring.

In terms of strategy and performance measurement, the various frameworks have been introduced by many researchers such as the Balance Score Card (BSC) (Kaplan & Norton, 1996), Strategic Measurement and Reporting Technique (SMART) (Cross & Lynch, 1989), Performance Measurement Questionnaire (PMQ) (Dixon, 1990), Performance Prism (Kennerley& Neely 2002, Dixon et al. 1991), Integrated Performance Measurement System (IPMS) (Bititci, 1997), Integrated Dynamic Performance Measurement System (IDPMS) (Ghalayini, 1997) and European Foundation for Quality Management (EFQM) Model (The EFQM Excellence Model 1999, EFQM, 2003)-which are overviewed as follow.

2.1.5.1 Financial Performance Measures

Financial performance measures are used to monitor the inflows (revenue) and outflows (costs) and the overall management of money in the business. These measures focus on information available from the Statement of profit or loss and Statement of financial position of a business. Financial measures can be used to record the performance of cost centers, profit centers and investment centers within a responsibility accounting system but they can also be used to assess the overall performance of the organization.

2.1.5.2 Balanced Scorecard

The balanced scorecard was developed by Norton and Kaplan (1992) and is perhaps the most well-known performance measurement framework. It is formulated to include financial measures that report results on customer satisfaction, internal processes, and the improvement activities – operational activities or measures that are drivers for the future financial performance (Kaplan and Norton, 1992). The Balance Scorecard suggests that managers should view organization's

performance from four perspectives, namely; customer, financial, internal and innovation and learning perspectives.

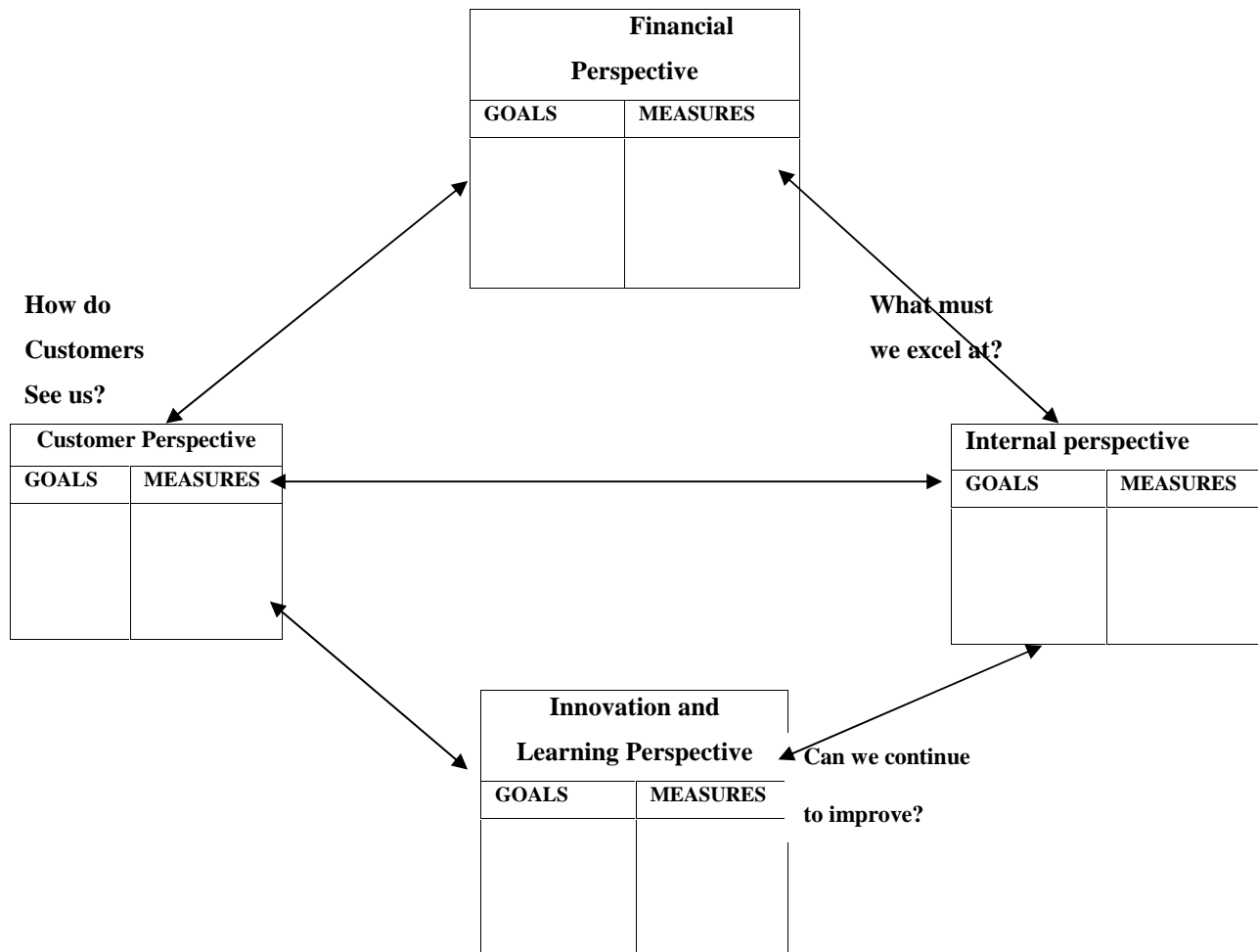


Figure 2.1 The Balanced –Scorecard; Source: Kaplan and Norton (1992)

The four perspectives in the Balance Scorecard model are regarded as a chain of cause-and-effect. For example, financial performance depends on a customer’s loyalty, which is influenced by an enterprise’s internal/business processes. Similarly, internal business processes are dependent on employee’s skills (learning and growth). A good Balanced Scorecard should have an appropriate mix of outcomes (lagging indicators) and performance drivers (leading indicators) of the business unit’s strategy (Kaplan & Norton 1996).

However, the BSC cannot view the performance at manufacturing level. Also, the BSC has a weakness to measure long term vision and fails to identify the performance measurement specific level such as employees, suppliers and stakeholder. Again, this research will attempt to

use this measurement system to vindicate the performance of this case study to bring out reliable output.

2.1.5.3 The Strategic Measurement Analysis and Reporting Technique (SMART) System

The Strategic Measurement Analysis and Reporting Technique (SMART) system was developed by Wang Laboratories to overcome the limitation of traditional performance measurement, with objectives to integrate both financial and non-financial performance indicators (Cross & Lynch, 1989). The SMART system is designed as a four step performance pyramid as it depicted on Fig. 2.2. The SMART system can integrate organization objectives with operational performance indicators but that excludes continuous improvement (Ghalayini, 1997).

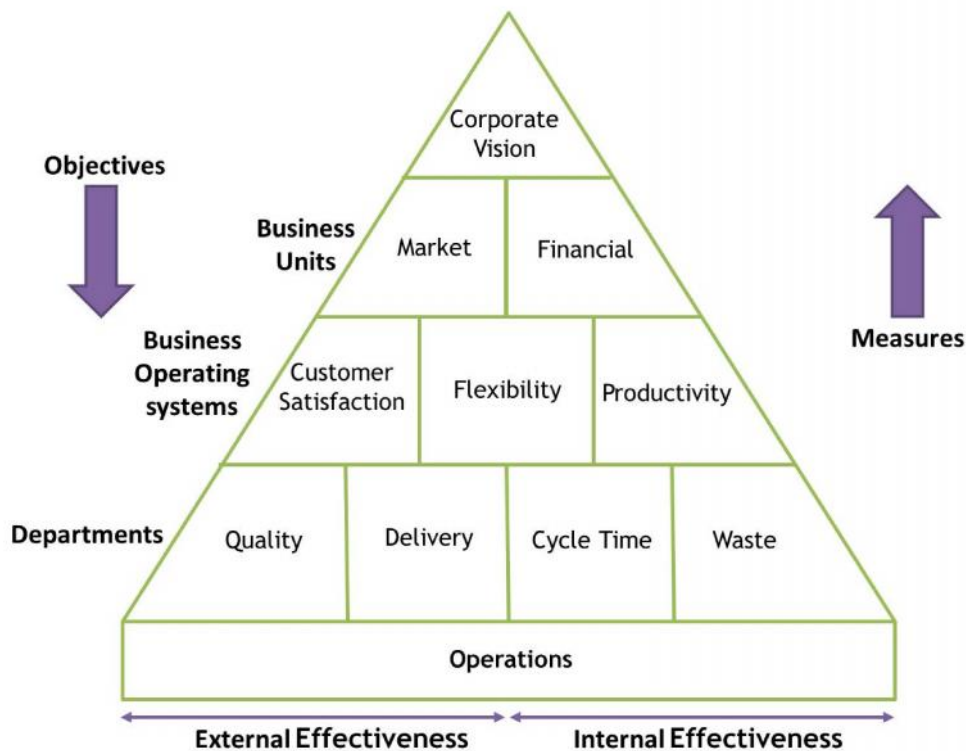


Fig. 2.2 The SMART Performance Pyramid (Cross & Lynch, 1989)

2.1.5.4 Performance Measurement Questionnaire (PMQ)

The Performance Measurement Questionnaire was developed by Dixon et al. (1990, 1991), with the purpose of assessing the existing performance measurement used in an

organization/company. The PMQ frame work consist of two main parts (Dixon, 1991): (1) to evaluate the particular improvement areas and the current performance improvement that is already used in the company, (2) to evaluate the particular long term importance of improvement that will be achieved by the company. In terms of the improvement areas, Dixon et al. (1990) identified three categories i.e. quality, labor efficiency and machine efficiency; it can be seen on Fig. 3. The PMQ has the weakness of being relative light on management time during the audit phase and lack of the management involve in the audit processes (Bourne & Neely, 2003). In addition, the PMQ does not pay attention to the continuous improvement concept (Ghalayini & Noble, 1996). This is also another option to go through the performance of the company.

Long-run importance of improvement	Improvement areas	Effect of current Performance measures on improvement
None >>>> Great		Inhibit >>>> Support
1 2 3 4 5 6 7	Quality	1 2 3 4 5 6 7
1 2 3 4 5 6 7	Labor efficiency	1 2 3 4 5 6 7
1 2 3 4 5 6 7	Machine efficiency	1 2 3 4 5 6 7

Fig 2.3 The Performance Measurement Questionnaire (Dixon.1990)

Source: *International Journal of Lean Thinking* (June 2013)

2.1.5.5 DuPont Model

This is one of the original performance measurement systems that was developed by Du Pont, the American chemicals giant, and is based on cost accounting theories and practices. Du Pont developed a structure by linking accounting measures and financial ratios – such as Return On Net Assets (RONA), Return On Investment (ROI) and Return On Equity (ROE) – to more operational indicators and measures. RONA is commonly used to evaluate the effective use of assets by measuring the ratio of profit margins (net income) to asset turnover (average total assets). ROI is used to evaluate the efficiency of an investment by comparing the ratio of profit and investment cost. ROE is the ratio of net income to shareholders’ equity, which shows the amount of profit generated from the money invested by shareholders. One of the advantages of Du Pont’s model is its structure, which integrates financial measures with operational indicators.

In contrast, the main drawback is that it is mainly focused on financial measures and has been criticized for being myopic and short-term oriented.

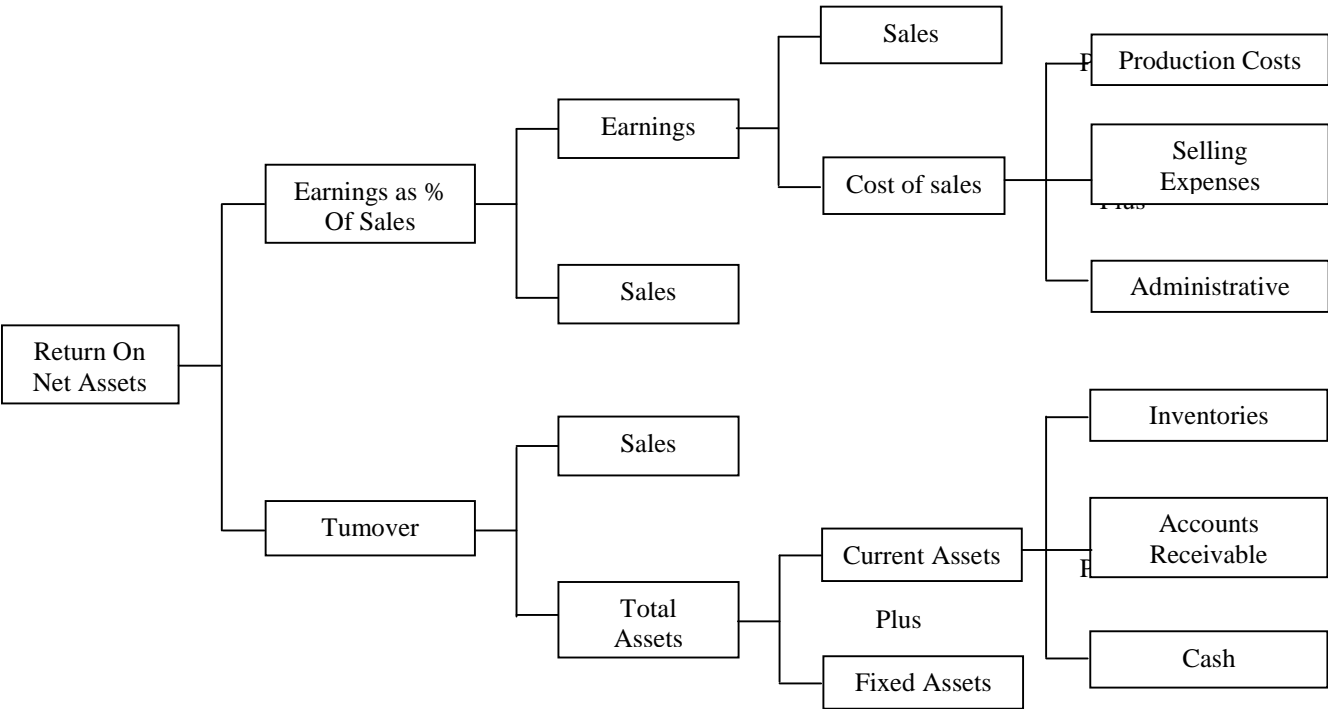


Fig. 2.3 The DuPont model: A flow chart representation of the DuPont Model

2.1.5.6 The Results and Determinants Framework

The Results and Determinants Framework (Fitzgerald *et al.*, 1991) has a structure composed of six performance dimensions classified under two categories: results and determinants (Figure A.3)

	Dimension of performance	Types of measure
RESULTS Lagging Indicators	Competitiveness	Relative market share and position Sales growth Measures of the customer base Profitability
	Financial performance	Liquidity Capital structure Market ratios Reliability responsiveness Aesthetics /appearance Cleanliness/tidiness Comfort Friendliness
	Quality of service	Communication Courtesy Competence Access Availability Security
	Flexibility	Volume flexibility Delivery speed flexibility Specification flexibility Productivity
DETERMINANTS Leading Indicators	Resource utilisation	Efficiency Performance of the innovation process
	Innovation	Performance of the individual innovations

Fig. 2.4 The Results and Determinants Framework Fitzgerald (1991)

The results category covers financial- and competitiveness-related performance measures. The framework conceptualizes these measures as lagging indicators that reflect the ultimate objectives of an organization. The determinants category includes performance measures for service quality, flexibility, resource utilization and innovation, which are conceptualized as leading indicators.

2.2 Value Cchain Aanalysis: Integrating Mmarketing and Pproduction performance

The term “value chain” was originally introduced in Michael Porter’s book “Competitive Advantage - Creating and Sustaining Superior Performance” (Porter1985). The value chain analysis is based on Michael Porter’s generic value chain model (Porter 2001), developed in 1985 and used to explore Porter's model of competitive advantages through differentiation or cost leadership strategy.

Porter breaks companies’ value chains down into single activities. The method allows the firm to understand which parts of its operations create value and which do not (Ketchen and Hult 2007). The aim is to cut the entire complicated supply chain of a company into smaller units. Hergert and Morris (1989) state that the fundamental thinking in the value chain analysis is that a product gains value as it passes through the vertical stream of production within the firm. When created value exceeds costs a profit is generated. The model was originally introduced for companies in the manufacturing industry (Armistead and Clark 1993, Ketchen and Hult 2007), as the Fig. 2.5 shows, the value chain is segmented into primary and support activities.

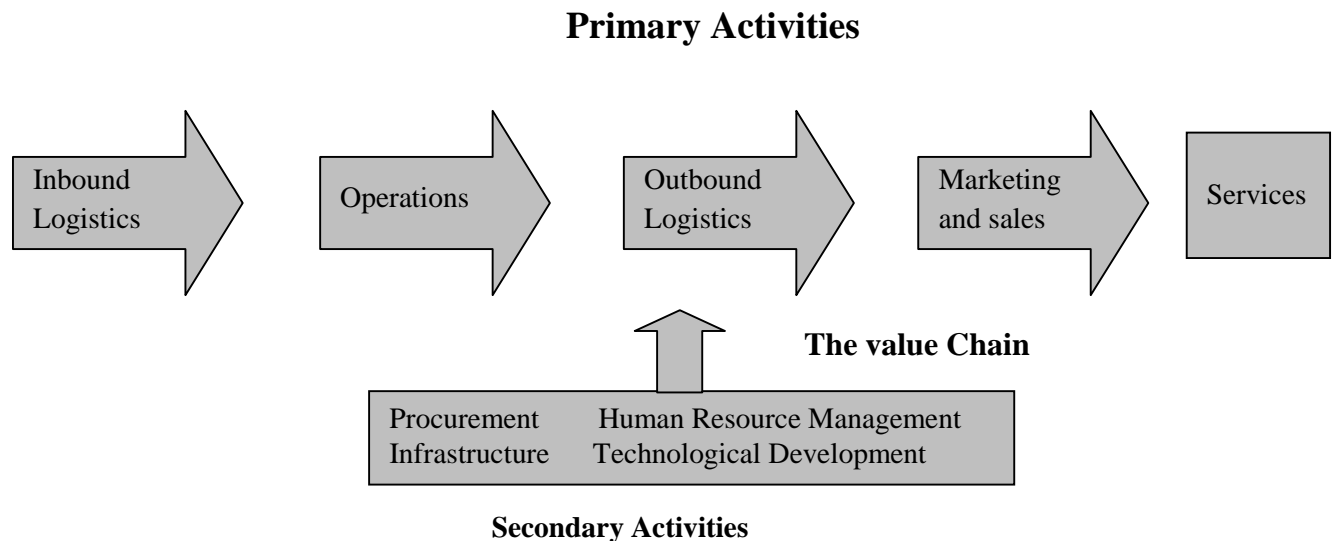


Fig. 2.5 Primary and secondary activities in firm’s value chain. Adapted from Lanen et al (2008)
 Source: <http://www.ifm.eng.cam.ac.uk/research/dstools/value-chain/> drawing on Porter, Michael E., "Competitive Advantage". 1985, pp 11-15. The Free Press, New York. (Accessed 19/01/15)

Based on the tyre manufacturing process observation, this study will explore how the value adding processes are undertaken and then will be compared to the standards set by the company to see into the performance of same.

2.3 Empirical Literature

2.3.1 List of Tyre Manufacturers those have nearly the Same Age or Younger with Addis Tyre

As a whole, the reason why these countries were mentioned here was to depict their performance progress in the tyre industry of the world whereas ours remaining stagnant for about five decades. When Addis Tyre founded in 1972, it had a relationship with pioneers of tyre producer such as Czech Republic, Yokohama and Matador (Continental AG).

The reviews of following tyre producing countries were considered to have relatively same year of foundation (a little bit older or younger) to start manufacturing tyre. Most of the tyre manufacturers of China were younger than Horizon Addis Tyre S.C and yet they became popular and dominant low priced tyre producers and exporters of the world. As it was obtained from a website China produced 950 million tyres in 2016. In relation with this for example, in 2017 we imported over 660 thousand tyres from same (table 4.1.10)

A, China's Number of Factories (1965-2003)

	Country of origin	Year founded	Brands
Aeolus tyre Co Ltd	China	1965	Aeolus
Fullrun tyre	China	2003	Fullrun, fullway
Hangzhou	China	1958	CYT, Chaoyang
Shandong Hengfeng Rubber	china	1995	Cachland tires, Hengfeng
Shanghai Huavi Group Company	China	-	Double coin
Triangle Group	China	1976	triangle
Wanli	china		Wanli

Source: Wikipedia-List of Tyre Manufacturing Companies 2017

Secondly, India is among the major competitors in the tyre industry of the globe and our country was flooded by tyres of same. In general, the India tyre industry had created 1 million job opportunities for its citizens until 2015. We annually import over 300 thousands of tyre from there. TATA bus BAJAJs, light trucks and truck tyres were dominantly used by our country as was observed during customer survey.

B India’s Number of Factories (1954-2016)

Company	Country of origin	Year founded	Brands
Apollo Tyre Ltd		1972	Apollo
Asian Tyre Factory		1993	ATF
MetroTyres		1968	Metro Tyres
Birla Tyres		1991	BirlaTyres
Balkrishna Industry		1987	BKT Tyres
TVS Tyre		1981	TVS Tyres
CEAT Ltd		1958	CEAT
J.K Organization		1991	Affinity
MRF Tyres		1946	MRF
MRL Tyres		1954	MRL
Tychee Juno Speciality Tyre Ltd		2016	TJ Tyres, BPPC Tyres

Source: Wikipedia-List of Tyre Manufacturing Companies 2017

C. Indonesia’s Number of Factories (1951-1988)

Company	Country of origin	Year founded	Brands
Bateng Pratama Rubber PT		1981	Mizzle lucking stone
Gajah Tungai PT,TBK		1951	GT radial,Gajah Tunggal
Multistrada Arah Sarana PT TBK		1988	Achilles, corsa
United Kingland		1977	kingland

Source: Wikipedia-List of Tyre Manufacturing Companies 2017

D, Vietnam's Number of Factories (1960-1993)

Company	Country of origin	Year founded	Brands
NGUYEN DINH Rubber Co Ltd		1982	Tires
Saovang Rubber Company		1960	Saovang
Danang Rubber Company		1993	DRC
Casumina		1976	Casumina ,Euromina

Source: Wikipedia-List of Tyre Manufacturing Companies 2017

E. Taiwan's Number of Factories (1954-1967)

Company	Country of origin	Year founded	Brands
Cheng Shin Rubber Ltd		1967	CST, Ching Shin
Federal Corporatin		1954	Federal Hero
Kend Rubber Industrial Company		1962	Kenda Kend radial
Nankang Rubber		1959	Nankang, Sonar

Source: Wikipedia-List of Tyre Manufacturing Companies 2017

F. Japan's Number of Factories (1910-1953)

Company	Country of origin	Year founded	Brands
Bridgestone		1931	Bridgestone
Panaracer		1953	Panaracer
Sumitomo Rubber Industries		1909	Dunlop, Goodyear,Sumitomo
Toyo Tyre and Rubber Company		1943	Nitto, Silverstone, Toyo
Yokohama Rubber Company		1910	Mohawk, Yokohama

Source: Wikipedia-List of Tyre Manufacturing Companies 2017

G. Czech Republic and Germany- EX-friends

Company	Country of origin	Year founded	Brands
Mitas a.s.	Czech Republic	1933	Mitas
Continental AG	Germany	1871	Continental. Matador

Source: Wikipedia-List of Tyre Manufacturing Companies 2017

Below are the 15 Countries that Exported the Highest Dollar Value Worth of New Rubber Tires during 2016:

China	US\$12.9 billion	18.6% of total rubber tires exports
Germany	\$5.5 billion	7.9%
Japan	\$4.5 billion	6.9%
United States	4.5 billion	6.4
Thailand	3.6 billion	5.1
South Korea	3.4 billion	4.9
France	2.5 billion	3.6
Netherlands	2.2 billion	3.2
Spain	2 billion	2.9
Czech Republic	2 billion	2.9
Poland	2 billion	2.8
Slovakia	1.8 billion	2.5
Canada	1.7 billion	2.5
Indonesia	1.6 billion	2.3
Hungary	1.5 billion	2.2

Source: Wikipedia-List of Tyre Manufacturing Companies 2017

The listed 15 countries shipped three-quarters (74.7%) of global rubber tires exports in 2016 by value. Global sales from rubber tires exports by country amounted to US\$69.6billion in 2016. Overall, the value of rubber tires exports were down by an average 21% for all exporting countries since 2012 when rubber tires shipments were valued at \$88 billion. Year over year, the value of global rubber tires exports dropped by -4.4% from 2015 to 2016.

Among continents, Asian countries accounted for the highest dollar worth of rubber tires exports during 2016 with shipments amounting to \$31.1billion or 44.7% of exported tire sales. European exporters shipped 41.6% of the global total, while 10.2% of the value of new rubber tire shipments came from North America.

Latin America (excluding Mexico) and the Caribbean were responsible for 2.9%, with African suppliers coming in at 0.5%. Oceania countries Australia plus New Zealand accounted for an even smaller percentage at 0.1%.

Bridgestone Corp. retained the No. 1 spot for the ninth straight year, with tire-related sales of \$22.1 billion, comfortably ahead of Group Michelin's \$21.1 billion and Goodyear's \$13.5 billion, according to *Tire Business* research.

2.3.2 Tyre Industry in Sub Sahara Countries

Competition heats up as tyre manufacturers engage in uphill battle to gain market supremacy in Africa. As a matter of fact, when it comes to tyres, the African continent is one of the fastest growing markets for the global tyre industry. This has been attributed to the rapid growth of the middle class in many African countries that has pushed demand for automobiles to an all-time high – in turn creating a growing market for all kinds of tyres.

The rising demand for tyres in Africa has led to stiff rivalry among tyre producers from all over the world looking to acquire a major share of the market for tyres in the new and emerging African markets. Traditionally, European tyre producers had had a monopoly over the African markets and many European brands were top selling tyres in many African markets.

However, in recent times, European tyre firms have started to lose ground to Chinese and other Asian brands in many emerging markets not only in Africa, but around the world. Chinese tyres have got popularity in several African markets. Many underdeveloped countries, especially in Africa, are price-sensitive markets and seek to import low-priced Chinese tyres rather than the expensive European and American brands. Hence, China has emerged as a leading exporter of tyres to many African countries in recent times including Ethiopia.

Players in the tyre industry worldwide are not famous for fair trade practices and Ethiopia is no exception. In our country, for instance, significant bulks of unaccustomed and inferior quality products have entered the local market. There is import duty tax on the tyres imported, however our tyre company complained that said retail and wholesale prices of some foreign products in the market are well below the expected minimum if costs of production, transport, insurance and duty were taken, an implication of illegal dumping and smuggling.

Besides new inferior poor qualities tyres, there are also low-quality second-hand ones which soon wear out on the country's rough roads. As the key informant management group said, most used tyres are dumped into the African market after exceeding the legal use limit in European and other

developed countries. The tread of the tyres is so shallow that it makes nonsense of the cheap prices, and they also have a poor surface grip.

In relation with this an increase in tyre import duties had been requested for Africa owing to the large quantity of substandard tyres that are being brought into the country from China. The cheaper tyres provide unfair competition for local tyre manufacturers, who are concerned with the risk the thinner tyres pose to the safety of heavy vehicles such as taxis, minibuses and light trucks.

So despite the best efforts of the most developed country in the African continent, the onslaught of the Chinese manufacturers continued. Chinese tyre manufacturers have, in a way, broken the myth about European technological superiority by producing high quality tyres at fraction of the cost. The European brands, used to charging high prices for their products have finally been challenged and are now being forced to roll back their profit margins and compete with Chinese manufacturers. In surface area, Africa is one of the biggest world regions but in terms of the market size for tires it is one of the smallest. However, the last decade has seen rapid growth in most economies and it is forecast to be the most rapidly growing region in the next decade. In the fifteen years between 1995 and 2010, the 45 countries in sub-Saharan Africa averaged a growth in GDP of 5% a year; a performance almost equaling that of China. The only country in sub-Saharan Africa with both a sophisticated market for tires and a substantial manufacturing capability is South Africa.

However, there are some very large and potentially wealthy markets elsewhere in Africa. Nigeria has an estimated population of 170 million, more than three times that of South Africa, and Ethiopia too is almost twice the size. In addition a number of countries are approaching middle-income status at which point the tire market will grow rapidly.

The South African Tyre Manufacturing Industry comprises the continental AG, Bridgestone, Goodyear, Dunlop and Sumitomo Rubber and are subsidiaries of the parent companies in Asia and Europe. According Haffejee.R 2015, the aggregate contribution of the industry to the nation's economy in employment and job opportunity came to 7000 people directly and 4000 people indirectly through value chain. Moreover, it serves as original equipment manufacturers for the automotive industry of the country and replacement tyres for the existing vehicles. Furthermore, 11 million (63%) tyres were sold locally; 2millions (11%) were exported and

5millions (28%) imported. At present all countries in this region, including South Africa, are importing increasing quantities of tires, particularly from Asia. At the same time many of these countries have had relatively sophisticated tire manufacturing plants which have either closed down completely or are operating at a fraction of their potential. As a result there is a lot of interest in ways to revive tire manufacturing in Nigeria, Kenya, Mozambique and Ethiopia amongst others.

Major technological breakthroughs such as the vulcanization process (Charles Goodyear 1839) and the pneumatic tyre (Robert William Thomson in 1846; the Michelin brothers for automobiles in 1895) led to the establishment of the first tyre companies at the beginning of the twentieth century (Krammer, 2009).

Currently, the global tyre industry encompasses over 400 factories worldwide making more than one billion units of tyre per annum. In relation with this, there have been continuous improvements in the tyre industry since the inception of pneumatic tyre invention. The most important of which are invention of tyre treads and maintainable rims in 1904; the use of carbon black as reinforcement materials in 1920s; the introduction of synthetic rubber in 1930s; and the radial tyre design in 1940s.

Furthermore, the most active current areas of research focus pay attention on reducing rolling resistance, improving handling, increasing endurance, prolonging the service life and advancing safety feature. Tyre is an engineering and technology product. Research and Development is a constant activity in tyre industry to improve the performance of tyres. Innovations are taking place to make permanent tyre and eco-friendly tyres for future. Tyre manufacturing process has also undergone major changes time to time. One of the major changes was the automatic tyre building machine development. Traditionally, tyre building was a laborious activity and the productivity is dependent on the tyre builders' ability to build tyres. Also, the quality is dependent on the efficiency of the employee to build the tyre which required immense physical effort. Finally; automated tyre building machine has helped the tyre manufacturers to constantly maintain the quality of tyre and increasing the productivity. In relation with this, tyre manufacturers in United States and European countries have almost fully automated the tyre manufacturing process. That is to say that the process is automated through robotics and conveyor system is deployed and the tyre is carried automatically to different sections of

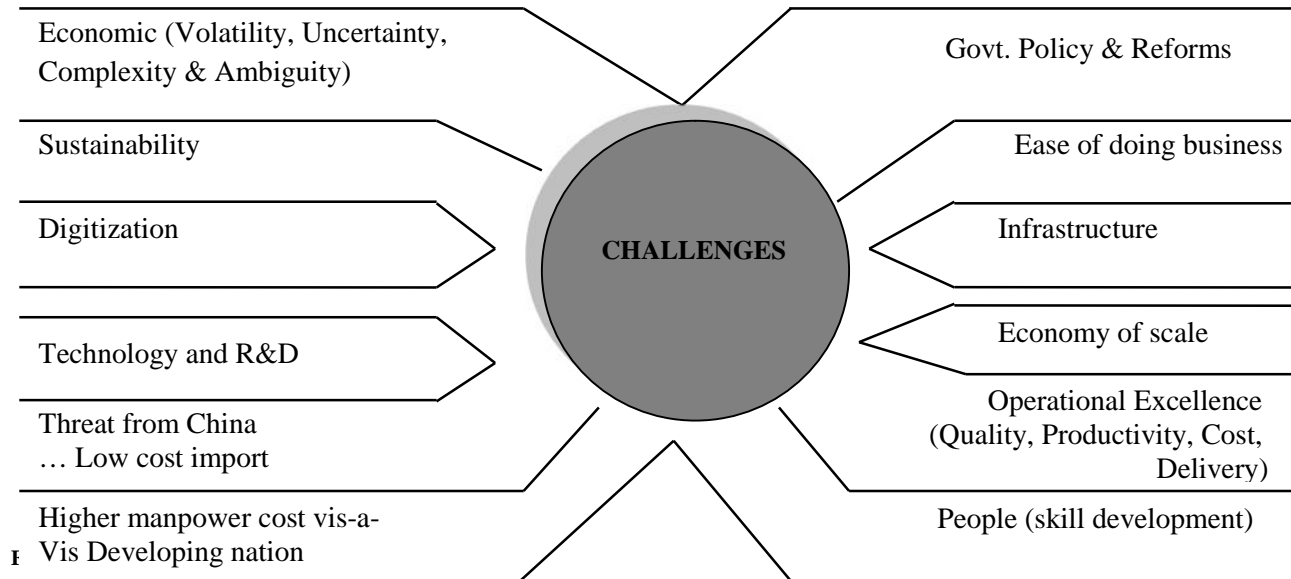
processing (extrusion, building, curing and inspection) and hence the efficiency and productivity have increased significantly (Krammer, 2009).

In summary, advances in general purpose technologies have helped tremendously the major design issues. In addition with this, tyre technology has made enormous progress in recent years such as its being becoming lighter, capable of higher speed, and shorter braking, less rolling resistance and longer durable.

2.3.3 Challenges of Tyre Manufacturing

Challenges of tyre manufacturing depend on growth of tyre producing countries. For instance, the challenges of the highly developed tyre manufacturing countries such as Japan, France, Italy, USA and the like worry about the durability, comfortableness, capability of high speediness.

On the other hand, the challenges of the world tyre manufacturing countries imply technology, skill gap, capital constraint, raw material scarcity, efficiency and effectiveness (low productivity), unable to compete with highly developed global rivals and management capacity gap. To put in a more vivid manner the following description of challenges of tyre manufacturing depict



Source: United Nations, Department of Economic and Social Affairs adapted from V.K. Misra JK Tyre(2016)

2.4 Conceptual Framework for the Study

In order to arrive at a refined conceptual framework for the study (Figure 2.9), in accordance with the stated research objectives, an objectively adequate assessment of valuable frameworks

and concepts was reviewed. Therefore, as performance is the combined result of many activities which can be categorized as primary and secondary.

Primary activities are those involved with a product's physical creation, sales and distribution, and after-sales service. In detail, this involves the product interrelations inbound logistic and operations and the market interrelations outbound logistic, marketing, sales and after-sales service (Ireland et al. 2009, Mowen and Hansen 2011). Primary activities are always defined as value-added activities which are "those that customers perceive as adding utility to the goods or services they purchase" (Lanen et al. 2008, p. 4).

The value chain is, according to the handbook for value chain research by Kaplinsky and Morris (2002) the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use.

Support activities provide the assistance necessary for primary activities. In detail, this involves the infrastructure interrelations firm's infrastructure and human resource management, technological interrelations (technology development) and procurement interrelations (procurement) (Ireland et al. 2009, Mowen and Hansen 2011). Those activities are not part of the closer value chain they are included in every function of the value chain (Lanen et al. 2008).

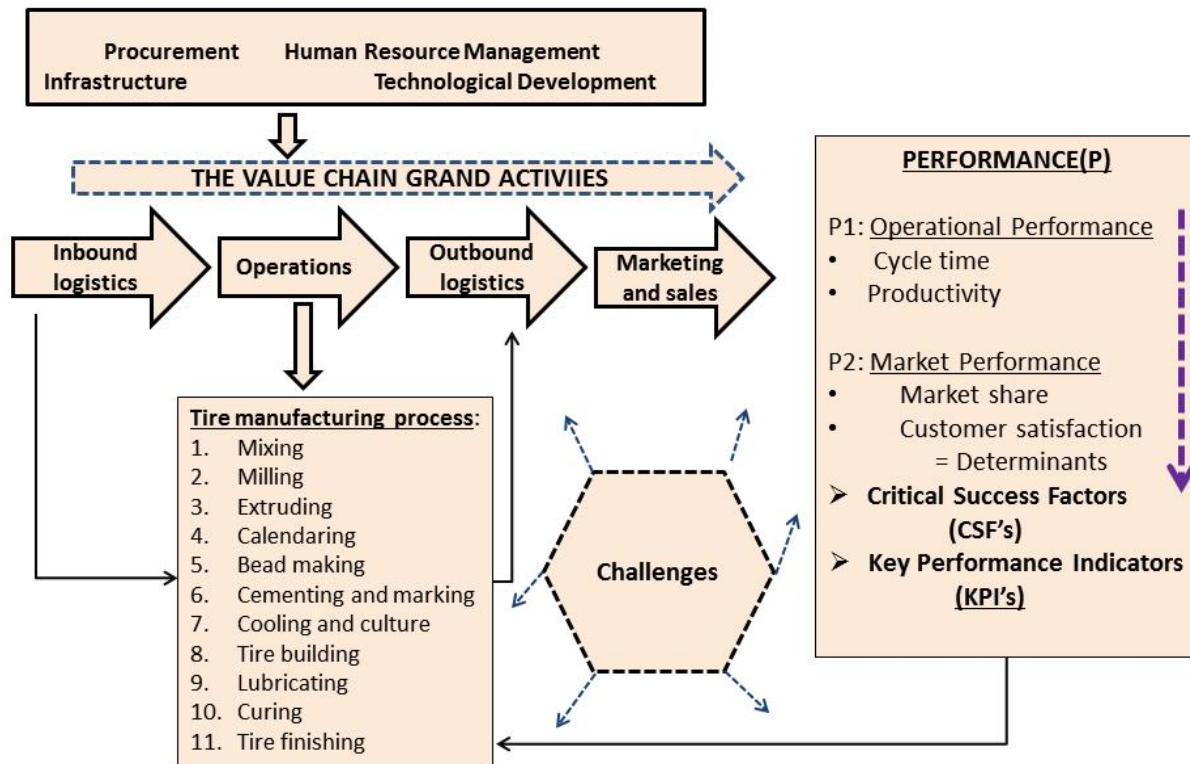


Figure 2.9: Conceptual framework of the study, tire production performance and challenges
 Source: Own construction with inputs from Porter (1985), Lanen et al (2008), Chavda and Patil (2011) and Kaplan (2015)

As indicated in Figure 2.9, in the tire manufacturing operation, there are 11 key sub-processes. According to Chavda and Patil (2011) and Grover (2002) and the tire manufacturing process involves the following steps where each step has its own effects on overall productivity.

- Mixing:** involves weighing and combining various ingredients (natural and synthetic rubbers, oil, carbon black, zinc oxide, sulfur, and other chemicals) to create a homogenous rubber compound that is discharged to a drop mill.
- Milling:** creates warm malleable sheets that are cooled and coated with an “antitack solution.” These sheets are then fed into an extruder.
- Extruding:** It forces the rubber compound through a shaped slot called a die that forms the compound into various shapes.
- Calendering:** involves coating fibers of cloth or steel with a rubber compound, and then curing it in an irradiation oven that bevel cuts it to a desired length, width, and angle.

5. **Bead making:** involves the creation of beads that provide a proper seal between the tire and the wheel rim when a tire is mounted on the rim and inflated. In the bead building process, bundles of wire are passed through an extrusion die where a coat of rubber is added, and the wires are then wound into a hoop.
6. **Cementing and marking:** processes are used at various stages throughout the tire building process. Cements (adhesives or solvents) are added to improve the adhesion of different components to each other throughout the process. Cement usage can vary significantly among facilities depending on the type of tire being manufactured and the process being used. Marking inks are used to aid in identifying the components being managed. Typically they are applied to extruded tread stocks to aid in identifying and handling cured tires. Marking practices can also vary significantly among facilities.
7. **Cooling and culture:** The various tire components go through cooling and culture prior to tire building. From the milling and extruding operations, the rubber sheets are placed onto long conveyor belts that, through the application of cool air or cool water, lower their temperature.
8. **Tire building:** The two main components of the tire-building process are the tire carcass buildup drum and the tread application drum. These drum machines assemble the cut carcass plies and belts plus the extruded tread, sidewall, and beads into tires. The process begins with the application of a thin layer of rubber compound, the inner liner, to the innermost carcass ply. The carcass plies are placed on the drum one at a time, after which the beads are set in place and the plies (reinforcing layers of cord and rubber) are turned up around them. At this stage the belts and tread rubber are added.
9. **Lubricating:** involves preparing the uncured (green) tire for curing. The green tire may be coated with a lubricant (green tire spray). The function of the green tire spray is to ensure the cured tire does not stick to the curing mold during extraction of the tire after curing.
10. **Curing:** involves collapsing the drum and loading the green tire into an automatic tire press to be cured (vulcanized) at high temperature and pressure. The vulcanization process converts the rubber and also bonds the various parts of the tire into a singular unit.
11. **Tire finishing:** may involve some of the following processes: trimming, white sidewall grinding, buffing, balancing, blemish painting, whitewall/raised letter protectant painting, and quality control inspections. Some facilities also apply a puncture sealant during production.

With regard to performance, it is framed from and seen from two dimensions, i.e., Operational performance (P1) and Market performance (P2) (Figure 2.9). In both cases there are Critical success factors (CSFs) and Key Performance Indicators (KPIs) are the essential areas of the business that must be performed well if the mission, objectives and goals of the business are to be achieved. CSFs act as a common point of reference to measure the success of the business. They constitute important elements such as competitiveness, resource utilization, quality of service, customer satisfaction etc (Kaplan, 2015) where each of which has their own KPI.

CHAPTER THREE

METHODOLOGY

3.1 Research Design & Approach

Mixed research design with both descriptive and explanatory research components are used to investigate the manufacturing performance and challenges of the tire manufacturing firm. As such the research method makes it possible for the presentation of facts that concern the nature and status of the situation, as it exists at the time of the study as well as describing the present conditions, events or systems based on the impression or reaction of the respondents of the research (Durrheim, 1999). To achieve the objective of a mixed-research approach which constituted both qualitative and quantitative research approach were employed. This type of design helps to explore facts, triangulate facts, and examine the determinants of the dependent variable, in this research case the level of employee turnover and organizational citizenship/or attachment(Creswell, 2009). Accordingly, determinants of productivity as expressed in terms of market performance (refer conceptual framework, figure 2.9) is determined which require *quantitative analysis*.

According to Leedy & Ormrod (2013), the *qualitative analysis or approach* was employed to answer questions about the complex nature of an existing phenomenon, having the purpose of describing and understanding it from the view of points of the participants or target groups. This was particularly indispensable to interpret results about the challenges of tire manufacturing in the company under consideration. Qualitative research methods produce social explanations to intellectual puzzles in the society. It is expected that those social explanations can be helpful to produce generalizations (Mason, 1996). According to Berg (2004), qualitative researchers are effective in terms of producing deep reports and intensive understanding of the chosen research topic. As explained by Durrheim (1999), qualitative research is both holistic and naturalistic, and is therefore usually applied to inductively explore a situation or phenomena and provide ‘thick’ descriptions. On the other hand, quantitative research is primarily focused on the numeric analysis and statistical interpretation of data (Creswell, 2009).

3.2 Data Type

Both primary and secondary data were used for the study. Primarily data were those which were collected a fresh and for the first time and they are believed to be original in character (Kothari, 2004). Primary data are collected to provide information regarding a specific topic and secondary data are data previously collected and analyzed. This study used both primary and secondary data sources to address the research aims, purposes and questions. To vindicate the fundamental challenge and observe performance of the captioned company and to investigate its contribution to the country economic development, employing the models in the literature review, primary data collection from operational data of the company and imported finished good of same from Ministry of Customs and Revenue and from other concerned organs. Moreover, the value adding process of manufacturing of the product through observation, survey, structured and unstructured interview were conducted and secondary data from various sources were seen through. Furthermore, secondary data of performance measurement standards to measure and compare the productivity and effectiveness and deviation from the standard was employed to indicate its gap and challenges (threats) in general.

3.2.1 Primary Data Source

In general the primary data sources are categorized as observation, survey method, experimentation, and unpublished written and recorded document. To this specific research purpose the Addis Tire PLC production system and its market were sources of primary data. To this end, both survey and relevant data bases were used. In addition to this, data acquisition guidelines, semi-structured, unstructured and face-to face interview were conducted so as to dig out the overall performance and constraints of the company. Finally, unpublished document were employed to look into the performance and input utilization trend.

3.2.2 Secondary Data Source

Published and official reports and audited financial statements were used as data sources. More prominently, official strategic and performance reports from the case study company, national and internal reports and performance guidelines are used as supplementary data sources. Here, the employment of secondary data attributed particularly in providing standards for tire production process, bench marking to improve the overall performance and in acquiring technology know-how.

3.4 Target Population and Sample

3.4.1 The Target Population

In line with the objective of the study, the target population of the research was divided into two. (i) To investigate the Production performance component (P1), as indicated in the conceptual framework (Figure 2.9) and (ii) To investigate market performance (P2). For the first part, the target population of the study was executives, top management, line and operational management, supervisors and professional experts and experienced staff. For the second part, the target populations of the study are customers in the tire market.

3.4.2 Sample Size and Determination

There is no universally accepted single formula to determine sample size for different studies; Different researchers used the different formula to determine sample size based on their situation and population characteristics. Sample size depends on nature of the universe (population), number of classes proposed, nature of the study, type of sampling and level of accuracy expected from the investigation (Kothari, 2004). The selection of sample size is depending on nature of the research design, availability of finance and the level of confidence and the nature of target population the researcher needs to study (Kothari, 2004).

For selecting respondents from the study organization, all the executives and production managers are selected and a total of 7 respondents are selected. For selecting respondents from the market (i.e., buyers or potential customers), considering a maximum likelihood of the sample proportion (P) is considered where $p = 0.50$ and hence $q = 1 - p$. $p = 0.5$ in which case sample size 'n' was the maximum and the sample yielded at least the desired precision. This was the most conservative sample size (Kothari, 2004). Accordingly, the following sample size is used:

$$n = \frac{z^2 \cdot p \cdot q}{e^2}$$

Where;

n= Sample size

p = Sample proportion, $q = 1 - p$; where $p = q = 0.50$

z = The value of the standard variate at a 95% confidence level which is 1.96

e = acceptable error (the precision) which is 0.05

Accordingly, $n = [(1.96)^2 \times 0.5 \times 0.5] / (0.05)^2 = [3.8416 (0.25)] / 0.0025 = 385$

Therefore, a sample of 385 respondents were selected.

Based on the historical customer information of Addis Tire SC, its customers are both individuals and organizations (government and non-government). Accordingly, 45 % of the tire is sold directly for individuals and the rest (55%) for individual car owners. Therefore, the total sample size ($n = 385$) is proportionally allocated as $0.45 (385) = 173$ organizations and $0.55 (385) = 212$ individual car owners.

3.5 Data Collection Tools

Both structured questionnaire and key informant interview guide were used to collect data.

3.5.1 Structured Questionnaire

According to Johnson & Christensen (2008), questionnaires encourage the respondents to be honest since they are answered anonymously, and they are more economical than interviews. Moreover, it has the ability to solicit information from several respondents within short period of time. The scaled items, according to McMillan and Schumacher (2010), allow the respondents to choose. The details of each standardized instruments presented here under. The questionnaire consists of information regarding respondents personal back ground and their views regarding the questions related to performance and challenges of tire manufacturing in Addis Tire PLC. The questionnaires will be distributed for 385 respondents in the tire market.

3.5.2. Interviews

Face to face interview method is preferred due to its flexibility and ability to provide new ideas on the subject. Moreover, it enables to obtain in-depth information about participants' thought, beliefs, knowledge, reasoning, motivation, and feeling about the issue under study (Kothari, 2004). In order to get detail information from the informants about the performance and challenges of tire manufacturing in Addis Tire PLC. The student researcher conducted in-depth interviews with 7 from the top, executive and operational position who have been working for many years in the organization by using non probability purposive sampling technique. They

were selected as they are the individual who facilitate the realization of organization goal; the researchers assume that they have necessary information on performance and challenges of tire manufacturing.

3.5.3 Document Review

The researchers also ask the documents pertaining to the rules and regulations that govern the employees in the crime prevention sector. It is the main data collection instrument for gathering information from secondary sources. Further to collect the required data from available documents about the performance (production and marketing performance measures) of tire production performance and challenges in the context to Addis Tire PLC.

3.6 Data Analysis and Presentation

3.6.1 Descriptive Data Analysis

Descriptive data analysis involving both measures of central tendency (mean, median, and mode) and measures of dispersion (standard deviation) were computed. Descriptive statistics allows describing the data and examining relationships between variables, while inferential statistics allows examining causal relationships, testing the research hypothesis and drawing conclusion about the population from which the sample is drawn beyond calculating parameters. The summary of descriptive statistics provides general descriptions about the data (both dependent and independent variables). So as to achieve the stated objective, the collected data were analyzed using descriptive statistics analysis.

3.6.2 Production Performance Analysis (P1)

CSFs help everyone in the team to know exactly what they need to do to ensure the success of the business. This helps employees perform their own work in the right context and so pull together towards the same overall aims to achieve goal congruence. CSFs are related to the mission and goals of the business. Measurement of CSFs is possible by the creation of key performance indicators (KPIs). KPIs can be based on financial and nonfinancial information.

- The mission focuses on the overall long term aims and what is ultimately to be achieved
- Objectives break down the mission into quantifiable goals
- CSFs are the essential areas that must be perfected to achieve the objectives and therefore the mission of the business. The table below shows a number of performance indicators grouped

against CSFs. The organization will formulate its own, specific KPIs which best suit its business as indicated by Kaplan (2015), Table 3.1.

Table 3.1: Performance measurement techniques

Critical Success Factors (CSF's)	Key Performance Indicators (KPI's)
Competitiveness	<ul style="list-style-type: none"> • sales growth by product or service • measures of customer base • relative market share and position
Resource Utilization	<ul style="list-style-type: none"> • efficiency measurements of resources planned against consumed • measurements of resources available against those used • productivity measurements
Quality of Service	<ul style="list-style-type: none"> • quality measures in every unit • evaluate suppliers on the basis of quality • number of customer complaints received • number of new accounts lost or gained
Customer Satisfaction	<ul style="list-style-type: none"> • speed of response to customer needs • informal listening by calling a certain number of customers each week • number of customer visits to the factory or workplace • number of factory and non-factory manager visits to customers
Quality of Working Life	<ul style="list-style-type: none"> • days absent • labor turnover • overtime • measures of job satisfaction
Innovation	<ul style="list-style-type: none"> • proportion of new products and services to old one • new product or service sales levels
Responsiveness	<ul style="list-style-type: none"> • order entry delays and errors • wrong blueprints or specifications • long setup times • high defect count • machines that break down
Quality of Output	<ul style="list-style-type: none"> • returns from customers • reject rates • reworking costs • warranty costs
Flexibility	<ul style="list-style-type: none"> • product/service introduction flexibility • product/service mix flexibility • volume flexibility • delivery flexibility • time to respond to customer demands

Source: Kaplan (2015)

3.6.3 Market Performance and Determinants: Customer Decision to Buy Addis Tyres (P2)

Once market share was determined, the factors that determine the purchasing decision of customers to buy Addis Tire product (tire) a binary logistic regression model were employed. Binary because a respondent has purchased Addis Tire's product i.e., $p(\text{buy}) = 1$ or not, i.e., $p(\text{buy}) = 0$. This is because the classical linear methods are inappropriate for dichotomous choices since they can lead to heteroscedasticity variances. To deal with heteroskedasticity, the logit or binary logistic regression with flexible functional forms in the independent variables tends to work well.

In making purchase decisions, a car tire marketer evaluates the benefit. If the benefit of purchasing a tire which is from Addis tire SC is higher than the cost of purchasing from the same, the benefit (B) for purchase, assuming monotonic relationship between purchase and benefits, has been higher than the purchase. Suppose an individual buyer's benefit after purchase for a given vector of socioeconomic factors (Z) is denoted by $B_{Buy}(Z)$, and the benefit without participation by $B_{NBuy}(Z)$. Then, the preference for participation or not to participate can be defined as linear relationship

$$B_{Buy}(Z) = Z_{Buy} + \epsilon_{Buy} \dots\dots\dots(1)$$

$$B_{NBuy}(Z) = Z_{NBuy} + \epsilon_{NBuy} \text{-----}(2)$$

Where, β_{Buy} , β_{NBuy} and ϵ_{Buy} , ϵ_{NBuy} are response coefficients, and random disturbances associated with the purchase and non-purchase in 'Buy decision' activities respectively. By assuming that the qualitative variable Y indexes the purchase decision, then Y has taken a value of 1 if the tire buyer purchases tire from Addis Tire SC and zero if the tire buyer does not purchases tire from Addis Tire SC. The probability that a given buyer participated can be expressed as a function of Z as follows (Greene, 2008):

$$\begin{aligned} P(Y=1) &= P(B_{Buy} > B_{NBuy}) \\ &= P(Z_{Buy} + \epsilon_{Buy} > Z_{NBuy} + \epsilon_{NBuy}) \\ &= P(Z_{Buy} - \beta_{NBuy} > (\epsilon_{NBuy} - \epsilon_{Buy})) \\ &= P(Z > \eta) = F(Z) \text{-----} (3) \end{aligned}$$

where P is a probability function, $\eta = \epsilon_{NBuy} - \epsilon_{Buy}$ is a random disturbance term, $\beta = (\beta_{Buy} - \beta_{NBuy})$ is a vector of unknown parameters which can be interpreted as the net influence of the vector of the independent variables on participation in buy or purchasing, and F(Z) is the cumulative distribution function for η and Z.

The exact distribution of F depends on the distribution of the random term, η . The probit model arises from assuming a normal distribution, and a logit model arises from assuming a logistic distribution. Under the standard assumptions about the error term, there is no a prior reason to prefer probit to logit estimation (Greene, 2008). Accordingly, in most applications, it seems not to make much difference. Considering all these aspects, a logit model was used to study the factors affecting tire buyer's decision to buy from Addis Tire SC.

According to the logit model, the probability of buyer's participation, given the respondents' characteristics (Z) is P (Buy|Z) and can be specified as:

$$P(\text{Buy}|Z) = \frac{\exp(Z + \beta)}{1 + \exp(Z + \beta)} \text{-----(4)}$$

Where $-\infty < Z < \infty$.

The probability of not participate in Buy, P (NBuy|Z), is therefore,

$$P(\text{NBuy}|Z) = 1 - P(\text{Buy}|Z) = \frac{\exp(Z + \beta)}{1 + \exp(Z + \beta)} = \frac{1}{1 + \exp(Z + \beta)} \text{-----(5)}$$

The relative odds of participating versus not participating in Buy are given by:

$$\frac{P(\text{Buy}|Z)}{P(\text{NBuy}|Z)} = \frac{\exp(Z + \beta)}{1 + \exp(Z + \beta)} \cdot \frac{1 + \exp(Z + \beta)}{\exp(Z + \beta)} = \exp(Z + \beta) \text{----- (6)}$$

$$P(\text{NBuy}|Z) = [1 + \exp(Z + \beta)]$$

By taking the natural logarithms of both sides gives:

$$\ln\left[\frac{P(\text{Buy}|Z)}{P(\text{NBuy}|Z)}\right] = Z + \beta \text{-----(7)}$$

$$P(\text{NBuy}|Z)$$

The formula can be used in predicting changes in the probability of participating in buy which can be employed to estimate the changes in the number of purchase decisions (Woolridge, 2000).

The maximum likelihood estimation approach can be used to estimate the above equation.

The logit model is preferred in this study because of its simplicity to work with. Given the logarithms function which says:

$$\frac{P(\text{Buy}|Z)}{P(\text{NBuy}|Z)} = \exp(Z + \beta)$$

Where P(Buy|Z) is the probability of purchasing Addis's tire, P(NBuy/Z) is the probability of not purchasing Addis's tire, and Z is a set of explanatory variables. STATA version 13.0 was used to run the model.

The goal of the maximum likelihood (MLE) approach is to estimate the unknown parameters, denoted by β and γ in equation 7. The MLE entails finding the set of parameters for which the probability of the observed data is greatest. The maximum likelihood estimates are the values for

s that maximize the likelihood function. The critical points of a function, which are the maxima and minima occurs when the first derivative equals 0.

So, from equation 6 and 7, $\beta_0, \beta_1, \dots, \beta_{10}$ which are the unknown parameters to be estimated,

Z is a vector of independent variables Z_1, Z_2, \dots, Z_{10} , where

To estimate this s, let $\frac{\exp(Z\beta + \epsilon)}{1 + \exp(Z\beta + \epsilon)}$ = be equal to L

Maximizing equation 7 with respect to the s and setting them equal to 0 gives:

First Order Conditions

$$\frac{\delta \ln L}{\delta \beta_0} = 0 \dots\dots\dots (8)$$

$$\frac{\delta \ln L}{\delta \beta_1} = 0 \dots\dots\dots (9)$$

$$\dots \frac{\delta \ln L}{\delta \beta_{10}} = 0 \dots\dots\dots (10)$$

The solution of these equations gives the MLEs, $\beta_0, \beta_1, \dots, \beta_{10}$. However, there is no explicit solution for $\beta_0, \beta_1, \dots, \beta_{10}$ unless the unrestricted least squares estimator satisfies the restriction, the Lagrangean multipliers equalled zero and β equals b but this is unlikely (Greene, 2008). These ML estimators have to be solved numerically. This was done by using the STATA version 13.0 to run the logit model.

3.7 Ethical Considerations

According to De Vos et al. (2005), Ethics is a set of moral principles that are suggested by an individual or group, are subsequently widely accepted, and offer rules and behavioral expectations about the most correct conduct towards experimental subjects and participants, sponsors, employers, assistants, students and other researchers. Since human beings are the objects of social science studies, there are unique ethical challenges to be seriously considered, which are normally not prevalent in other pure, clinical laboratory contexts of natural science (De Vos et al., 2005). As described by Babbie and Mouton (2001), studies should consider and be aware of the general agreements about the appropriate and inappropriate acts in conducting scientific investigation. Informed consent is vital for a scientific study (Spicker, 2007). All these requirements were fulfilled throughout the process of this study.

As stipulated by Leedy and Ormrod (2005), while dealing with stakeholders who had direct or indirect relationships with the study, the researcher considered the following ethical issues;

- Protection from harm: The researcher not exposed research participants to undue harm of physical or psychological in nature. Interviews held in a safe environment and in the comfort of interviewees' workplace. No tacit or implicit pressure exerted on participants to answer questions in a specific manner. The researcher has also assured the anonymity and confidentiality of the participants by not letting write their names on the interviewing questions and asking them individually and separately;
- Right to privacy: The researcher ensured the participants' right to privacy and not disclosed responses received from any of the participants. Furthermore, the identities of participants will be respected by referring to them as 'participants' in the dissertation (Denscombe, 2002). A code or number will also be allocated to each participant. Assuring the willingness of participants and if a participant would not willing the researcher replaced the nearest participant from the target population;
- Informed consent: First of all, through preliminary discussion, permission to conduct interviews will be arranged from the respective organization of EFPCPS. Next, all participants will be informed about the nature of the study to be made; the participants are given choices of participation in the study or not. The researcher informs the participants that it is their right to withdraw from the study whenever they want to do so. Once informed consent is secured, proper orientation about the purpose of the research is provided to the participants.
- Honesty with professional colleagues: The researcher reports his findings completely and without any bias. No misrepresentations which may mislead others about the nature of the findings will be made.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Results

4.1.1 Introduction

The core of the subject matter of this research referred to the performance and challenges of Tyre Manufacturing in Ethiopia-the Case Study of Horizon Addis Tyre S.C. So as to vindicate vividly the research, the researcher designed a conceptual framework deemed to be appropriate. Hence, based on the conceptual framework designed, the results (findings) and discussions of the results are presented in this chapter. The conceptual framework designed so as to search, identify and assess statement of the problem and answers to the research questions and comprised inbound logistics, operation (value chain), outbound logistics, marketing and sales, customer survey, critical success factors and their performance indicators. Thus, the results of findings per conceptual frameworks designed are presented and there after discussed.

4.1.2 Tyre Manufacturing -Inbound Logistics

To begin, Horizon Addis Tyre S.C. manufactures tyre entirely from imported raw material and hence has been extremely dependent on the imported raw materials, equipment and machines. As the company's annual report indicated, about 98% raw materials and technology are imported. The following expenditure in millions to import the captioned items could verify the dependency on import. The reason why the firm extremely dependent has been owing to most of the major components are not available in the country-synthetic and natural rubber, carbon black ...etc that are fuel (oil) by products. Natural rubber, of course, available but it is not that much significant to support the firm in a way it desired and expected for a various reasons. The table here below shows that millions of birr that ranges from Birr 317million to 716million was expended to buy raw materials, machineries and necessary accessories from the foreign markets during the past six years period (2012-2017) as per the record of ERCA.

Table 4.1.1 Raw Materials Purchase Expenditure

Year	Purchase in ,000 birr
2012	316,502
2013	447,057
2014	519,245
2015	736,356
2016	651,414
2017	569,060

Source: ERCA Total Import of Horizon Addis (2012-2017)

Here, in addition to its dependency on the imported raw materials, foreign currency required for the purchase is huge and has become extremely scarce. In relation with the raw material constraint, the firm could not utilize the rubber plantation locally available in the country, which was under the factory when the firm owned by government now detached from its ownership during privatization and hence its contribution is regarded as insignificant, owing to proper management problem and very poor in quality and productivity. Raw material procurement is a tough and difficult task for the company. Here, the scarcity of foreign currency limited the purchase of raw materials required and would be by far more than the already spent on same if there were no foreign constraint as the operation section unutilized capacity and underperformance showed compared with capacity of machines normally made

4.1.3 The Tyre Production Value Chain in Horizon Addis Tyre SC.

In the production of tyre, there are primary, secondary and tertiary activities. Primary activities are those involved with a product's physical creation, sales and distribution, and after-sales service. In detail, this involved the product interrelations inbound logistic and operations and the market interrelations outbound logistic, marketing, sales and after-sales service (Ireland et al. 2009, Mowen and Hansen 2011). Primary activities are always defined as value-added activities

which are “those that customers perceived as adding utility to the goods or services they purchased” (Lanen et al. 2008, p. 4).

The value chain is, according to the handbook for value chain research by Kaplinsky and Morris (2002) the full range of activities which were required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use.

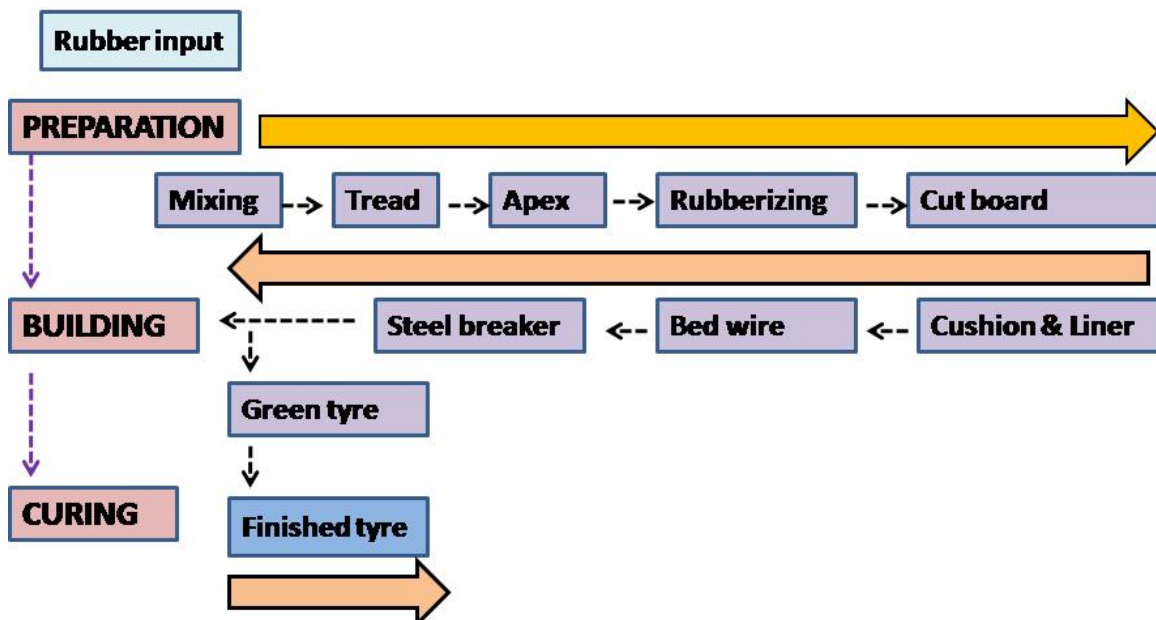


Figure 4.1: Tyre value-chain map as observed in the Horizon Addis Tyre SC
(Drawn by Tesfaye Gebrehanna, 2018)

4.1.4 Performance of the Tyre Manufacturing Processes and Productivity

The production section of the company is segmented into three major sections; namely, preparation, building and curing section. The preparation section comprised mixing (compounding), treading (duplex), apex, cord rubberizing, cutting cord, cushion & liner, bead wiring, and steel breaker. The preparation section prepares different components of tyre to be built by the building section. The second major section of the operation process refers to building section. As the name implied it builds the seven semi- finished components of tyre prepared by

the preparation section to yield green tyre in the form of cylinder shape of various sizes. Finally, the last section of the operation was a curing section that pressed or molded to yield the finished tyre of different sizes. So, the five years performance of the operations based on the given sections is depicted on the table 4.1.3.

This table depicts the underperformance and the availability of too much unutilized capacity. Again numerically it indicates the overall performance of the company is about 28.7% and 32.5% as indicated on the building and curing sections respectively, which is the final product processing sections and the total capacity utilized by the company referred to below 40% on average.

Table 4.1.2 Cycle Time for Curing

Size	Cycle Time	Handling Time	Total Time
400x8HT60	22 minutes	3 minutes	25 minutes
45x10HT60	25 minutes	3 minutes	28 minutes
560x13-4TR	17 minutes	3 minutes	20 minutes
185x70R14MP22	15 minutes	3 minutes	18 minutes
185x70R13MP22	15.5 minutes	3 minutes	18.5 minutes
650x14HT60	30 minutes	3 minutes	33 minutes
700x16HT90-10TR	45 minutes	5minutes	50 minutes
50x16HT40	49 minutes	5 minutes	54 minutes
750x16HT90	49minutes	5 minutes	54 minutes
750x16HT99	46 minutes	5 minutes	51 minutes
700x15AT15-12PR	29 minutes	5 minutes	34 minutes
700x16-12PR	31 minutes	5 minutes	36 minutes
14.9x28HTF444	83.5 minutes	7 minutes	90.5 minutes
1400x24HTG111	83.5 minutes	7 minutes	90.5 minutes
1200x20NB70	70 minutes	7 minutes	77 minutes
1200x20AT20-18TR	62 minutes	7 minutes	69 minutes
195x65R15MA33	16 minutes	1.5 minutes	17.5 minutes
195xR15TMA310	19minutes	1.5 minutes	20.5 minutes

Source: compiled from each mould (curing) machine body serial notice mark

The above table vindicates the time taken to produce finished tyres of various sizes from semi-finished green tyres of building section and ranges from 15minutes to 83.5minutes. The cycle

time taken to produce different component in the preparation and building sections are complicated and are not clearly recorded in the company.

Table 4.1.3 PRODUCTION CAPACITY AND ACTUAL PERFORMANCE

			2013	2014	2015	2016	2017
Preparation	Capa/yr	UNIT	Actual	Actual	Actual	Actual	Actual
1.Mixing	31500	Ton	11482	12179	12879	15136	13321
2. Tread	2,099,700	Meter	336257	267347	302429	342816	407422
3. Apex	1,053,000	Meter	19904	48081	24650	15931	52394
4. Rubberizing	3,510,000	Meter	877947	869,718	1,133,563	952,375	1,294,770
5. Cut Cord	4,316,400	Meter	854759	951,825	1,063,049	1,126,194	1,304,590
6. Cushion & Liner	279,000	Roll	60911	59954	66376	65530	71470
7. Beadwire	2,619,900	Pieces	410266	508658	588268	634525	769082
8. Steel breaker	1,227,600	Meter	31112	94318	57834	38088	83154
Building							
1. Green tyre	1,035,300	Pieces	187943	251811	292079	328813	425778
Curing							
1.Finished Tyre	855,000	Pieces	201641	255696	270247	296523	364868

Rate of Capacity Utilized

			2013	2014	2015	2016	2017
Preparation	Capacity	Measurement	Percentage (%) of Capacity utilized				
1.Mixing	31500	Ton	36.5	38.7	40.9	48.1	42.3
2. Tread	2,099,700	Metre	16	12.7	14.4	16.3	19.4
3. Apex	1,053,000	Metre	1.9	4.6	2.3	1.5	5
4. Rubberizing	3,510,000	Metre	25	24.8	32.3	27.1	36.9
5. Cut Cord	4,316,400	Metre	19.8	22.1	24.6	26.1	30.1
6. Cushion & Liner	279,000	Roll	21.8	21.5	23.8	23.5	25.6
7. Bead wire	2,619,900	Pieces	15.7	19.4	22.5	24.2	29.4
8. Steelastic	1,227,600	Metre	2.5	7.7	4.7	3.1	6.8
Building Section							
1. Green tyre	1,035,300	Pieces	18.2	24.3	28.2	31.8	41.1
Curing Section							
1.Finished Tyre	855,000	Pieces	23.6	29.9	31.6	34.7	42.7

Source: Daily production of the company

As a whole, the performance and capacity utilization in each operation section was very low as one easily could verify from the table above. The capacity of the plant, for instance, is used to produce over 1millions of different sizes of tyres annually. Yet, it is operating on a far below its capacity, 1/3 of its capacity. For a detail reference of the objective fact, look into the table 4.1.3

In relation with this, the productivity of the operation section in value chain and total productivity measurement methods were given on the table 4.1.4. From this table it could be seen that productivity and resource utilization, among other things, of the operation section was improving as both the value added and total productivity methods showed 23.9%, to37.4% and1.0% to 1.66% respectively in the analysis periods. The rate of defective product and scrap was very low in the six years period.

Table 4.1.4 Productivity measured in value added and total productivity Methods

A	Productivity in value added ('000)	2012	2013	2014	2015	2016	2017
	Wages and salaries	17,940	22,479	27,009	52,066	60,099	
	Depreciation	26,876	27,786	26,751	22,249	25,631	
	Rent, rates & Insurance	6328	5108	5134	5218	5932	
	Employee Benefits	1887	9598	8202	8595		
	Other overhead expenses	1524	732	535	509	2605	
	Interest paid	7045	4349	3229	14323	12253	
	Profit before Taxation	39,496	97,000	111,456	107,803	105,641	
	Total VA	101096	167052	182316	197363	212161	
	Working days	297	290	300	302	304	320
	No workers	593	689	758	803	777	726
	W.Days x No of Workers	4227	4795	5458	5820	5669	
B	Productivity of VA method	23.92	34.84	33.40	33.91	37.42	
	Total Productivity Measurement						
	Sales (output)	471,026	542,027	506,574	594,310	602,954	
	Cost of sales (input)	404,567	417,379	355,658	429,509	450,076	
	Total Productivity	1.16	1.30	1.42	1.38	1.34	
C	Total output in volume	176,697	212,846	269,206	286,619	314,472	385,279
	W days x No employees	176,121	199,810	227,400	241,703	236,208	232,310
	Output/ input	1.00	1.07	1.18	1.19	1.33	1.66

Source: Audited Financial Statement of HAT 2012-2016 *not yet prepared 2017's*

Table 4.1.5 Financial Performance Measures

Return on capital Employed = Operating profit ÷ (Non-current liability + Total Equity) X %

Item/particular	Year				
	2012	2013	2014	2015	2016
a. Operating profit	53586	105698	117914	136449	130147
b. Non-current liability + Total Equity	311741	372407	455163	578346	617557
(a ÷ b) %	17.2	28.4	25.9	23.6	21.1

Return on investment = Net Income ÷ Net Equity X %

a. Net in come	30904	68260	78687	85110	82026
b. Net Equity	25504	25041	25504	25041	25041
a ÷ b %	12.1	26.8	30.9	33.4	32.2

Return on sales = (Operating ÷ profit Revenue)%

a. Operating Profit	53586	105698	117914	136449	594310
b. Revenue	471026	542047	506574	594310	602954
(a ÷ b) X %	11.4	19.5	23.3	23	21.6

Gross Margin = (Gross Profit ÷ Revenue) %

a. Gross Profit	66458	124668	150916	164802	152878
b. Revenue	471026	542047	506574	594310	602954
Gross Margin %	14.1	23	29.8	27.7	24.4

Measuring Liquidity

5.1 Current Ratio = Current Assets ÷ current liability

	2012	2013	2014	2015	2016
a. Current Assets	332879	393029	518235	611127	629205
b. Current Liability	125132	143321	182673	184537	195151
Current Ratio	2.7	2.7	2.8	3.3	3.2

5.2 Acid Test (Quick Ratio = (Current Asset - Inventory) ÷ Current Liability

a. Current Assets - Inventory	112399	182686	206662	243470	263608
b. Current Liability	125132	143321	182673	184537	NA
Quick Ratio	0.9	1.3	1.1	1.3	NA

Measuring Activity

6.1 Asset Turnover = Revenue ÷ Capital Employed

a. Revenue	471026	542047	506574	594310	602954
b. Capital Employed	297279	365539	409707	495220	577246
Asset turnover	1.6	1.5	1.2	1.2	1

6.2 Inventory days = (Inventory ÷ Cost of Goods sold) X 365

a. Inventory	220480	210343	311573	367657	392597
b. Cost of Goods Sold	404567	417379	355658	429509	450076

Inventory days	198.9	183.9	323.9	312.4	318.4
6.3 Receivable days = (Receivables ÷ Credit Sales) X 365					
	2012	2013	2014	2015	206
a. Receivables	92945	175719	107623	216388	216671
b. Credit sales (Revenue)	471026	542047	506574	594310	602954
c. Receivables days	72	118.3	77.5	132.9	131.2
6.4 Payables days = Payables ÷ Credit purchase (Cost of Goods sold) 365					
a. Payables	21090	40248	29238	38202	51290
b. Cost of Goods sold	404567	417379	355658	429509	450076
c. Payables day	19.1	35.2	30	32.5	41.6
7.Measuring Risk					
7.1 Capital Gearing = Non-current Liability ÷ Equity					
a. Non-Current Liability	14463	6868	45456	83126	40311
b. Equity	255041	255041	255041	255041	255041
c. Capital Gearing	5.7	2.7	17.8	32.6	15.8
7.2 Interest Cover = Operating profit ÷ Finance cost					
a. Operating profit	53586	105698	117914	136449	130147
b. Finance cost	7046	4349	3229	14329	12253
c. Interest Cover	7.6	24.3	45.8	9.5	106

Source: Audited Financial Statements (2012-2017)

In general, the financial performance of the company depicted that it was good and financially reliable to meet its obligation, profitable, liquid, low risk and well organized financially. The profitability has been in between 17.2% and 28.4%; the return on investment ranged from 12.1%-32.2%; return on sales on average during the research period was 19.8%; liquidity ratio was in between 2.7%-3.3% in the five years period. Again to see the more detail of financial performance results refer to table 4.1.4. Moreover, the returns on investment and on sales ranged 12.1%-33.4 and 11.4- 23.3% respectively. Furthermore, its liquidity position (quick ratio) was in between 0.9-1.3 and the risk position ranged from 2.7-32.6

4.1.5 Outbound Logistics

Horizon Addis Tyre S.C has had various customers of its output categorized as Distributors, Associations, Government Offices, Individuals, companies and Non-Government Organizations. The output had been distributed through 26 Major distributors. 6 of them were based in Addis Ababa and the remaining outside Addis Ababa. Among the customers mentioned above Guna Trading, Ambassel Tradings, Wondo Investment Group, Trans Ethiopia and Wholesale Trade and Commodities Enterprise have been the giant consumers of the product. Though their consumption were declining Government Offices were among the major customers of the company.

So as to see the clear picture, the percentage consumption of the captioned customers is depicted on the table 4.1.6. The associations' consumption trend declined to the level of 0.4% in 2017; The government offices' also decreased 40.4% in 2011 to 19.7% in 2017 and in the same way as individuals', NGOs' and private companies' reduced from 18.3% in 2013 to 10.6% 2017. However, the consumption of distributors' increased steadily from 44.4% in 2011 to 69.3% in 2017.

Table 4.1.6 Customer Types of Horizon Addis Tyre S.C

Years	association	Distributors	Government	Individuals NGO & private comp
2011	0.4	44.4	40.4	14.8
2012	0.2	46.2	37.8	15.8
2013	1.2	46.1	34.4	18.3
2014	1.6	44.8	39.6	14
2015	1.3	52.8	31.7	14.3
2016	1.0	57.0	28.1	13.9
2017	0.4	69.3	19.7	10.6%

Source: Horizon Addis Tyre S.C. 2012-2017 Annual Report

Table 4.1.7 Total Sales Trend by Customer Group (000)

	2012	2013	2014	2015	2016	2017
a. Distributors	238498	267555	244477	346700	381323	558782
b. Government	195530	199357	216217	208006	187725	158902
c. Individuals & NGO	81644	106379	76415	93582	93167	85547
d. Associations	1067	6802	8598	8212	6730	3275
Total Sales	516739	58093	545706	656502	668945	806505

Sales volume

	2012	2013	2014	2015	2016	2017
Total sales in volume	171521	201641	255696	270247	296523	364868
Total sales in value	471,026	542,027	506,574	594,310	602,954	NA
% sales growth in volume		17.4	26.7	5.5	10	29.9
% sales growth in value		15.1	-6.5	17.2	1.5	NA

Source: Annual Reports of the Company (2012-2017)

On table 4.1.7 the trend of total sales by customer group is depicted for an easy reference.

The volume and value of sales under the study period were fluctuating and growth was very low as shown on the table above. For instance the volume of sales in 2014 grew by 26.7% and 2016 grew only by 10%.

Table 4.1.8 Defect percentage

	2012	2013	2014	2015	2016	2017
Defective Tyre Output		3322	1571	464	5565	8949
Total Tyre output		201641	255696	270247	296523	364868
% of defective tyre		1.65	0.61	2.4	1.9	2.5
Scrap percentage						
Scrap		2896	2937	2972	2898	3521
Total tyre output		201641	255696	270247	296523	364868
% of scrap		1.44	1.15	1.1	0.98	0.1

Source: Annual Reports of the Company (2012-2017)

The defect and wastage rates were not more than 1.8% and 0.95% on average during the five years period respectively. Specifically, the defective rate scrap ranged from 0.61%-2.5% and 0.1%-1.44% respectively.

4.1.6 Marketing Performance

Table 4.1.9 market share

Particular Measurement	2012	2013	2014	2015	2016	2017
a. Tyre produced	171521	201641	255696	270247	296523	364868
b. Tyres imported	1,121,050	1651935	1883440	1833091	2229414	2452509
c. Market Share in %	15.3	12.2	13.6	14.7	13.3	14.9
Customer Complaints & Solved						
a. Complaints Total	204	304	473	NA	NA	346
b. Complaints Solved/compensated	72	161	383	81	148	218
c. Out Put (T-tyres produced)	17152	201641	255696	270247	296523	364868
d. Complaint Rates (%)	0.12	0.08	0.15	0.03	0.05	0.06
Compensated Rates (90)	0.04	0.04	0.04	0.1	0.05	0.04
Marketing Cost as a % of sales						
a. Advertisement & promotion (000)	60	2124	3172	5338	3676	NA
b. Total Sales	471026	542047	506574	594310	602954	NA
c. % of Marketing cost	0.01	0.4	0.6	0.9	0.6	NA

Source: Annual Reports of the Company (2012-2017) NA=not available

Regarding marketing and sales the expenditure on the advertisement and promotion ranged from 0.01% to 0.9% of total sales, which was very minute and insignificant as indicated on the audited financial reports. The firm confessed that it employed mouth to mouth (face to face) promotion so as to be effective and compete with the undammed low cost tyre imports from the global giants of the industry. In addition to this, the market share of the product showed to be about 15% in 2017 and lower than this before.

In the meantime, the flooding of low cost as well as high quality tyre deemed to be extremely threatening to the firm. For example, in order to see the imports of tyre from all over the globe, the record of Ethiopian Customs and Revenue Authority about the imported tryes indicated that about 2.45millions of different sizes of tyres were imported and 3.78billions birr were spent for same in 2017 (table 4.1.9).

Table 4.1.10 Volume and Value Tyres Imported

Year	Total tyre in volume (Qty)	Imported in value
2012	1,121,050	2,453,386,012
2013	1,651,935	3,183,563,792
2014	1,883,440	3,164,536,266
2015	1,833,091	3,000,620,562
2016	2,229,469	3,505,773,390
2017	2,452,509	3,775,192,435

Source: ERCA Total Tyre Imported from 2012-2017

Specifically, the company was not able even to produce 50% of the tyre imported from China and millions of dollars spent for its import. Again for a vivid comprehension the seriousness of the issue, for example, 666,283 of tyres were imported from China whereas horizon Addis produced 364,868 tyres in 2017(See table 4.1.10). In addition to this, many Far East Asian countries Taiwan, Indonesia, Vietnam and S.Korea who entered to the industry contemporarily with us and lately are by far in the take off stages and have started dominating the global market (refer empirical review section).

Table 4.1.11 Major Suppliers of Tyres

Country	Meas	Year					
		2012	2013	2014	2015	2016	2017
China	Qty	203,283	393,926	595,629	502,493	617,661	666,283
	value	433,765,978	417,867,978	831,055,355	821,506,700	1,179,494,491	1,134,850,285
India	Qty	148,803	2010,637	344,441	247,196	332,530	399,491
	Value	295,717,210	419,181,169	277,172,226	480,215,861	683,350,253	487,523,033
Japan	Qty	292,756	175,027	175,465	128,652	192,696	173,892
	Value	579,042,843	483,169,865	433,437 016	113,825,793	235,708,762	442,327,053

Source: ERCA 2012-2017

4.1.7 The Support Activity

The support department of the firm was composed of human resource management, procurement, infrastructure and technological development. This section's contribution is deemed to be close to the operation section. The owner has never withdrawn a dividend since the inception of the firm but has allowed for the expansion and investment of new technology to raise capacity for the production of modern passenger cars' tires. To verify the genuineness of what was stated, refer to the table hereunder. The Horizon Addis Tyre S.C. trains its employees and motivates them by providing adequate compensation and fringe benefits such as tuition fees, medical expenses, canteen and protective drinks, awarding for best performers, cost coverage as declared hereunder on table 4.1.12-14.

Table 4.1.12 Compensation and fringe benefits trend starting from 2013 to December 2017

Item	Year				
	2013	2014	2015	2016	2017
Salary	1896538	2233388	3203817	3559887	3808468
Tuition fee paid	0	18,937	24,180	111,083	123705
Medical Expense	618,230.00	1,033,308.00	1,167,743.00	1,905,295.00	2,179,445.00
Canteen, protective drink & refreshment	2536961	3292944	3656366	5083722	4234411

Source: HR Annual Report

In relation with this, the company adopted different kinds of motivational activities to increase the commitment of the staff such as promotion, prizes for best performers, and all important human resource policies and procedure manuals for transparent operational management system. For instance in 2017, 164 employees were awarded in various departments for their best performance. Again, about 12 policy and procedure manuals were prepared to go along with strategic management set. Furthermore, the firm budgeted for training purposes to be delivered internally and externally so as to improve the overall performance of the company.

Table 4.1.13 Training Given for Employees from 2013-2017)

YEAR	TRAINING TYPE		
	IN HOUSE	LOCAL	FOREIGN
2017	1209	53	9
2016	1365	139	3
2015	1166	44	-
2014	234	60	-
2013	415	12	-

Source: HR Annual Report 2017

Table 4.1.14 Rewarded Employees in 2017

No.	Department	No. of Employees Awarded
1	General Manager	1
2	DGM(o)	1
3	Production	43
4	Plant Engineering	34
5	PIQA	23
6	Commercial	17
7	HRA	15
8	Finance and Economy	8
9	Store Administration	5
10	Industrial safety and security	17

Source: HR Annual Report 2017

In addition to this, there is a “Quality Circle Meeting” every morning to discuss on the challenges regarding the quality issues and other related problems, which is inherited from the x-owner Yokohama Tyre Company of Japan.

Finally, to motivate the women employees the company was on the process of opening day care center and preparing a place for same.

On other hand, to look into the employee satisfaction with the firm, the result of the rate of turnover was given on table 4.14 which had declined to some extent since 2015.

Table 4.1.15 Turn Over of Employee

Item	Year				
	2013	2014	2015	2016	2017
No of employees	66	758	771	777	786
Total turnover	88	164	131	98	--
Rate of turn over	13	21.6	17	12.6	--

Source: HR Annual Report

Table 4.1.16 Investment (000)

	2013	2014	2015	2016
Plan	68341	111865	110477	130563
Actual	37484	33078	39078	71105
% Variation	55	30	35	54

New Products Introduced

a. In Qty	3	3	36	107
(000) Value	9765	10063	124621	165742
b. Total output (product) Qty	202	256	270	297
% of new product	1.5	1.2	13.3	36

Source: Annual Reports of the Company (2012-2017)

The firm also introduced different sizes tyre as per the demand of the market as table 4.1.16. Currently by making huge investment, new machines were installed and tested the desirability and performance of same so as to start producing the tyres for the latest models of passengers' cars.

Table 4.1.17 Planning Accuracy

	2013	2014	2015	2016	2017
Sales Plan	259200	259200	351138	377510	408580
Actual	201641	265696	270247	296523	364868
% Variation	81	84	77	79	89
Production plan	215100	257627	344699	377520	488151
Actual	201641	255696	270247	296523	364868
% variation	94	99	78	79	75

Source: Source: Annual Reports of the Company (2012-2017)

The sales and production plans accuracy depicted above range from 77%-89% and 75%-99% respectively.

Table 4.1.18 New Development Sales Trend

	2013	2014	2015	2016	2017
BAJAJ			2858	44366	90808
PCD					2294
LTD	2523	2314	23548	48779	116906
TBD	181	392	9336	10856	8138
LTR				2973	1825
INDUSTRY				265	103
GRADER				10	308
FARM			50	453	1485
LOADER					40

Source: Annual Reports of the Company (2012-2017)

4.2 Customers' Satisfaction Survey

So as to look into the performance and the constraints of Horizon Addis Tyre from customers and distributors dimension a survey was made. Assuming the unknown number of population, 385 sample sizes of customers were taken randomly and 339 (150 organization and 189 individuals) responded properly. These randomly selected samples were users of Horizon Addis Tyre. Most of the target populations were drivers, owners, distributors and authorized and assigned responsible process owners in government offices to buy the tyre. Again to verify the reliability and dependability of the survey, it was tried to see the view of the respondents of outside Addis Ababa (52.7%). Hence, in addition to Addis Ababa survey, the data were collected from the respondents of Hawassa (22.6%), Shashemene (12.5%), Arsi Negele, Sebeta, Burayou and Sulilta. Furthermore, the sample deemed to be representative of consumers of the product under this paper for the areas selected are heavy duty and highly congested which would enable to see the performance of the tyre and its problem. As the field of livelihood (field of work), driving mostly left to men although there might be few women drivers as a livelihood in this case 100% male. That is to say that no single female came across in the sample. The levels of education of the customer show that 20.7 illiterate; 20.4% read and write; 7.9% grade 1-8; 30.2%; grade 9-12; 50.8% diploma and 1.8% degree. Meanwhile, the purpose of the customer survey was just to see the brief customers' overview about the performance of the tyre in

general, and the after sale services of the company. Finally the reliability test for the customer survey referred to 84.2% for customer and users of the product from sample size of 189.

Thereby, the results of relevant questionnaires responses of users and customers; users but not customers and distributors were given as follows.

4.2.1 Places of Survey of Customers and Users

Table 4.2.1 Cities of Survey

	Frequency	Percent	Valid Percent	Cumulative Percent
A.A	96	52.7	52.8	52.8
Shashemane	17	9.0	9.2	60.0
Hawassa	52	27.5	28.1	88.1
Arsi Negele	7	3.7	3.8	93.5
Alemgena	2	1.1	1.1	94.6
Bur	2	1.1	1.1	95.7
Sebeta	6	3.2	3.2	98.9
Sululta	2	1.1	1.1	100.0
Total	185	97.9	100.0	
Total	189	100.0		

Source: own customer satisfaction survey

4.2.2 Users and Customers Survey

1.1 Codes of the Vehicles

Table 4.2.2 codes of the vehicles

	Frequency	Percent	Valid Percent	Cumulative Percent
Code-1	81	42.9	43.1	43.1
Code-2	10	5.3	5.3	48.4
Code-3	60	31.7	31.9	80.3
Code-4	36	19.0	19.1	99.5
police	1	.5	.5	100.0
Total	188	99.5	100.0	
Missing System	1	.5		
Total	189	100.0		

Source: own customer satisfaction survey

In order to see the performance of the tyre, again different code numbers of vehicles were used such as code-1taxi;code-2,private automobiles-very few; code-3 individuals', companies', public enterprises' and code-4 government's. So, the results of code of vehicles surveyed depicted that 42.9%; 5.3%; 31.7%; 19.1% of codes 1-4 respectively.

4.2.3 Durability of the Tyre

Table 4.2.3 Durability of the Tyre

	Frequency	Percent	Valid Percent	Cumulative Percent
< 6 months	27	14.3	14.3	14.3
7-12 months	108	57.1	57.1	71.4
12-18 months	42	22.2	22.2	93.7
19-24 months	12	6.3	6.3	100.0
Total	189	100.0	100.0	

Source: own customer satisfaction survey

The responses of all codes users together about the durability of the tyre said that 6months; 7-12months; 12-18months and 19-24months 27%; 57.1%; 22.2%; and 6.3% respectively

4.2.4 Criterion for Choosing the Horizon Addis Tyre

Table 4.2.4 Criterion for Choosing the Tyre Brand

	Frequency	Percent	Valid Percent	Cumulative Percent
Price	98	51.9	52.1	52.1
Quality	87	46.0	46.3	98.4
Sales service	3	1.6	1.6	100.0
Total	188	99.5	100.0	
Total	189	100.0		

Source: own customer satisfaction survey

As it was found on the survey, 51.9% of the users and customers of Horizon Addis Tyre said their criterion for preferring the tyre was the relatively lower price than imported tyre and 46% owing to its quality.

4.2.5 Users and Customers Satisfaction with the Tyre

Table 4.2.5 Satisfaction with the Tyre Employed

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly dissatisfied	3	1.6	1.6	1.6
Dissatisfied	3	1.6	1.6	3.2
Neutral	5	2.6	2.6	5.8
Satisfied	111	58.7	58.7	64.6
Very satisfied	67	35.4	35.4	100.0
Total	189	100.0	100.0	

Source: own customer satisfaction survey

Again, regarding the satisfaction of customers with tyre they used, the result depicted that 35.4% and 58.7% were very satisfied and satisfied respectively. Moreover, 94.2% of them didn't have intention to shift to another brand of tyre. (Table 4.2.5)

4.2.6 Intention of Shifting

Table 4.2.6 Intention to Shift to Other Types of Tyre

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	10	5.3	5.3	5.3
No	178	94.2	94.7	100.0
Total	188	99.5	100.0	
Total	189	100.0		

Source: own customer satisfaction survey

4.2.7 Users but not Customers- Codes of the Vehicles

The results of the users but not customers group survey codes of the vehicles indicated that 38% code-1; 2.9% code-2; 50.3% code-3 and 7.9% code-4.

Table 4.2.7 Codes of the Vehicles

	Frequency	Percent	Valid Percent	Cumulative Percent
Code-1	54	38.8	38.8	38.8
Code-2	4	2.9	2.9	41.7
Valid Code-3	70	50.4	50.4	92.1
Code-4	11	7.9	7.9	100.0
Total	139	100.0	100.0	

Source: own customer satisfaction survey

4.2.8 Durability of the Tyre

Table 4.2.8 Durability of the Tyre

	Frequency	Percent	Valid Percent	Cumulative Percent
< 6 months	16	11.5	11.6	11.6
7-12 months	82	59.0	59.4	71.0
12-18 months	16	11.5	11.6	82.6
19-24 months	20	14.4	14.5	97.1
31-36 Months	2	1.4	1.4	98.6
More than 36 months	2	1.4	1.4	100.0
Total	138	99.3	100.0	
Missing System	1	.7		
Total	139	100.0		

Source: own customer satisfaction survey

The findings about durability of the tyre for users but not customers were that 11.5% for less than 6 months; 59.4% from 7-12 months; 14.4% from 12-18 months and the remaining for more than 30 months.

4.2.9 Criterion for Choosing the Horizon Addis Tyre

The result of this questionnaire depicted that price stood for 56.8% and quality for 41.7% as users but not customers responded.

Table 4.2.9 Criterion for choosing the Horizon Addis Tyre

	Frequency	Percent	Valid Percent	Cumulative Percent
Price	79	56.8	56.8	56.8
Quality	58	41.7	41.7	98.6
After sale and delivery service	2	1.4	1.4	100.0
Total	139	100.0	100.0	

Source: own customer satisfaction survey

4.2.10 Intention for Shifting

Table 4.2.10 Intention for Shifting

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	107	77.0	77.0	77.0
No	32	23.0	23.0	100.0
Total	139	100.0	100.0	

Source: own customer satisfaction survey

As table 4.2.10 indicated, 77% of them intended to shift and 84.9% of same confessed about quality problem. So the customers have an intention of shifting. In addition to this, they raised the price issue as a reason for their intention to shift.

4.2.11 Reasons for Shifting

Table 4.2.11 Reasons for Shifting

	Frequency	Percent	Valid Percent	Cumulative Percent
Because I intend to change the model of my car	16	11.5	11.5	11.5
Because the quality of the current tyre is getting lower (quality related reason)	118	84.9	84.9	96.4
Because the price of the current tyre is increasing (price related reason)	5	3.6	3.6	100.0
Total	139	100.0	100.0	

Source: own customer satisfaction survey

4.2.12 Mixed Brand Usage and Inner Tube Problem

During the survey, it was noted that two or more different kinds of brands were fixed on one vehicle. For instance from 139 vehicles surveyed 68(48.9%) vehicles were fixed with different kinds of brands. Horizon Addis tyres were employed as rear tyres and front other brands. They also complained about the inner tube sold together with the tyres (table4.2.12).

Table 4.2.12 Mixed Brand Usage and Inner Tube Problem

	Frequency	Percent	Valid Percent	Cumulative Percent
Mixed Brand	68	48.9	48.9	48.9
Inner tube pin	65	46.8	46.8	95.7
Inner tube pin and Mixed	1	.7	.7	96.4
inner tube pin and crack	2	1.4	1.4	97.8
break board	2	1.4	1.4	98.6
Total	139	100.0	100.0	100.0

Source: own customer satisfaction survey

4.2.13 Distributors of the Tyre -Durability

Table 4.2.13 Durability of the Tyre

	Frequency	Percent	Valid Percent	Cumulative Percent
<6 month	2	18.2	18.2	18.2
7-12 month	8	72.7	72.7	90.9
12-18 month	1	9.1	9.1	100.0
Total	11	100.0	100.0	

Source: own customer satisfaction survey

Regarding durability of the tyre, 18.2% the distributors said that the tyre would serve for less than 6 months; 72.7% of them regarded it would serve from 7-12 months: and the remaining 9.1% for over 12-18 months.

4.2.14 Customer Service of the Company

Table 4.2.14 Customer Service of the Company

	Frequency	Percent	Valid Percent	Cumulative Percent
Very fast and good	4	36.4	36.4	36.4
fast and good	4	36.4	36.4	72.7
Medium	3	27.3	27.3	100.0
Total	11	100.0	100.0	

Source: own customer satisfaction survey

The finding regarding customer service referred to be 36.4% for being very fast; again 36.4% for being fast and 27.4% for being satisfactory.

The reflection of the extent company's attention for distributors was responded as a very great, great, medium and low extent percentages as 36 %, 45.5%, 9.1% and 9.1% respectively.

4.2.15 Cooperativeness for Compensation of Defective Tyre

Table 4.2.15 Cooperation in replacing new tyre for defected products

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	4	36.4	36.4	36.4
Agree	3	27.3	27.3	63.6
neutral	3	27.3	27.3	90.9
Disagree	1	9.1	9.1	100.0
Total	11	100.0	100.0	

Source: own customer satisfaction survey

Cooperativeness of the regarding making compensation for the defective product was vindicated by the finding as 63.7% of the customers agreed with the company cooperativeness, 9.15% disagreed and the remaining 27.3% as indifferent This could show that the firm is relatively cooperative though the indifferent group may show the company should work hard to cross the fence of indifference by satisfying same.

4.2.16 The Extent of Making Customers Happy

The results of extent of customers' happiness (satisfaction) with the company were 9.1% very dissatisfied; 9.1% dissatisfied; 9.1% indifferent; 63.6 satisfied; and 9.1% very satisfied (table 4.2.16).The implication of this result there are significant number of customer who were not happy most probably because of poor quality, inner tube problem and other customer service.

Table 4.2.16 The Extent customers' happiness and satisfaction on Horizon Addis Tyre

	Frequency	Percent	Valid Percent	Cumulative Percent
very dissatisfied	1	9.1	9.1	9.1
dissatisfied	1	9.1	9.1	18.2
Neutral	1	9.1	9.1	27.3
Satisfied	7	63.6	63.6	90.9
very Satisfied	1	9.1	9.1	100.0
Total	11	100.0	100.0	

Source: own customer satisfaction survey

4.2.17 Distributors' Faced Problems

Table 4.2.17 Problems Distributors Facing Regarding the Tyre

	Frequency	Percent	Valid Percent	Cumulative Percent
price	2	18.2	18.2	18.2
supply problem	8	72.7	72.7	90.9
no problem	1	9.1	9.1	100.0
Total	11	100.0	100.0	

Source: own customer satisfaction survey.

Distributors also complained about the price and shortage of the product. Thence, 72% of the distributors complained about the supply problem and 18.2% of them complained about its high price. The distributors do not get the product on time because of raw material shortage per the marketing department response.

4.2.18 Attention Given to Distributors

Table 4.2.18 Given Attention for Customers

	Frequency	Percent	Valid Percent	Cumulative Percent
to very great extent	4	36.4	36.4	36.4
to great extent	5	45.5	45.5	81.8
to medium extent	1	9.1	9.1	90.9
to very low extent	1	9.1	9.1	100.0
Total	11	100.0	100.0	

Source: own customer satisfaction survey

4.2.19 Evaluation of the Quality of the Tyre

In the eyes of distributors, the quality of the tyre lied on medium level as regarded by 54.5% of them. Some distributors (18.2%) also regarded it as low quality and the rest 27% considered as high quality. This refers to the problem of adequate skill, technology and power problem.

Table 4.2.19 Evaluation of the Quality of the Tyre

	Frequency	Percent	Valid Percent	Cumulative Percent
very high	1	9.1	9.1	9.1
high	2	18.2	18.2	27.3
medium	6	54.5	54.5	81.8
low	1	9.1	9.1	90.9
very low	1	9.1	9.1	100.0
Total	11	100.0	100.0	

Source: own customer satisfaction survey

4.3 Customers' Satisfaction

Satisfaction of customers is determined by a multitude of factors with varied degree of influence. In the context of Horizon Addis Sc, a STATA output is generated from the customer satisfaction survey- which is one of the proxy indicators for market performance (Mike and Andy, 2003). Accordingly, model output is generated as indicated in Table 4.2.20.

Table 4.2.20 Determinants of Customer Satisfaction in the Context of Horizon Addis Sc.

Ordered logistic regression		Number of obs =		189		
Log likelihood = -205.4327		LR chi2(13) =		62.73		
		Prob > chi2 =		0.0000		
		Pseudo R2 =		0.1324		
satisfied	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
important	.1708911	.076907	-2.22	0.028	-.322733	-.0190493
customer effort	-.3730355	.4869584	-0.77	0.445	-1.334466	.5883946
modern	.0285357	.0814122	0.35	0.726	-.132201	.1892724
physical	.0492214	.0740694	0.66	0.507	-.0970181	.195461
attractive	-.0554603	.1065313	-0.52	0.603	-.2657912	.1548705
services	.1640625	.1148438	1.43	0.155	-.0626803	.3908053
timely	-.1281896	.1133907	-1.13	0.260	-.3520633	.0956842
management	.1806198	.0984978	1.83	0.068	-.01385	.3750896
right	-.0160031	.0851284	-0.19	0.851	-.184077	.1520709
punctually	-.0237979	.092265	-0.26	0.797	-.2059621	.1583663
error	-.077604	.0952695	-0.81	0.416	-.2657001	.1104921
offered	-.0562485	.0698745	-0.80	0.422	-.1942058	.0817089
willingness	-.0113484	.0926144	-0.12	0.903	-.1942024	.1715057
creates	-.0149945	.0719341	-0.21	0.835	-.1570182	.1270292
effort	-.0803042	.0937878	-0.86	0.393	-.2654748	.1048665
convenient	-.0524997	.1430397	-0.37	0.714	-.3349112	.2299119
products	.0430406	.0460183	0.94	0.351	-.0478161	.1338972
age	-.005883	.0303577	-0.19	0.847	-.06582	.054054
education	.1108085	.0465641	-2.38	0.018	-.2027427	-.0188742
how long	-.0074696	.027296	-0.27	0.785	-.0613617	.0464225
how many	.0094916	.0339005	0.28	0.780	-.0574401	.0764233
durability	.1656642	.0722241	2.29	0.023	.0230681	.3082604
_cons	4.928325	.9206349	5.35	0.000	3.110663	6.745988

As indicated in Table 4.2.20, the product related attributes (i.e., 'important'), such as design, raw material, price, sales and after sales services and most importantly price significantly contribute to the satisfaction of customers at 5% level of significance. This finding is in line with the suggestion provided in a comprehensive product attribute study by Moullin (2003). Moreover, customers' level of education has a significantly positive relationship with level of customer satisfaction at 5% level of significance. This implies that, the more educated the customer are the better the awareness they have about a country's product and hence the more sensitive or the better affiliated to the sole domestic tire producer, Horizon Addis Sc. Finally, durability of the product has a strong positive effect upon the satisfaction level of customers with 5% level of significance.

4.4 Problems Restraining the Tyre Manufacturing Process

According annual reports of the company and confirmation of the management team, the first and foremost problem restraining the tyre manufacturing process of Horizon Addis Tyre S.C had been raw materials shortage owing to foreign currency scarcity for the purchase of same. The second main restraining factor the tyre manufacturing process had been the accustomed mechanical and machine breakdown of the old and worn out machines. The third serious holding back problem was to be the frequent power or electrical interruption. Fourth, lack of adequate skilled manpower and the absence of the existing ones, in the case of emergency, would interrupt the tyre production process.

Fifth, the management team confesses that there is a capacity problem in two different dimensions; one, the firm is not able to employ the already available capacity which operating below 30% currently; and two, its type of production capacity is limited to a certain type of vehicles and no capacity to produce tyre to latest models of vehicles among other things. That is to say that the firm has the volume and type flexibility capacity problem. Finally, the company had capacity problem of producing tyres for the latest models of passengers' vehicles-very big share of the total of the vehicles in the country.

In relation with the constraints and operational performance, key informant management team has given important information about their company performance and challenges and strategies set to tackle the problems and how to raise their capacity. In sum, the key informant team has confirmed the prevalence of the restraining problems captioned in this section and strategies they have set to raise the market share, and capacity and volume and type of production flexibility.

4.5 Measures Taken to Tackle Tyre Manufacturing Problems

Per the interview made with key informant management team, the management team of the company had been trying their best to get solution for the recurrent and serious raw material shortage by dealing with different banks and further discussing with concerned government body to get foreign currency to buy the raw materials required even though the output was limited. So as to avoid mechanical breakdown and mitigate the machine breakdown, the operators, mechanics, and engineers had been solving the problems on the spot by modifying

the damaged of spares as per the annual reports of the firm and response of key informant of the operation department.

In addition to this, as the researcher and confirmed by the operation department there is a quality circle group composed of operation's sections managers, operators, engineers, and foremen to solve the mechanical and quality problems. Furthermore, the firm was replacing the old and obsolete machines by new ones bit by bit as the yearly investments showed (table 4.1.15). Finally, the company is on the process of starting production of new tyres by installing new machines to solve its capacity problems by buying new technology and machines that would enable it to produce the tyre demanded by the latest model vehicles. This might solve the type flexibility capacity problem as the management team believes and fully committed to enhance the overall performance of the company.

4.6 Discussion of the Results

Based on the framework employed on the result section of this chapter the results had been discussed in the following manner.

To begin, Horizon Addis Tyre S.C. has been extremely dependent on the import of raw materials, technology and equipment. Being dependent on the import of the captioned inputs was not by itself a problem as such. The problem lied on the scarcity of foreign currency and its scarcity has been absolute. The management has been walking in from bank to bank in searching and imploring for foreign currency. It, in general, has become a nationwide issue.

The outlay of raw materials, equipment and machine was greater than 0.5billion Birr as the annual expenditure on the captioned items indicated on the (table 4.1.1).The outlay would be in billions of birr if there were adequate foreign currency supply for purchase of inputs wanted by the firm and if it were operating at full capacity.

Hence, as a result of the scarcity of foreign currency, the operation of the firm had been forced to perform far below its capacity, about 30%; its market share below 15%; and production performance below 40% on average during the year 2013-2017 as indicated on the value chain. Meanwhile, the company's productivity was very nice, efficiency and effectiveness was dependable, given the limited amount of raw material supply. The cost of nonconformance was low rate of defective product (2.5%) and wastage (0.98%)-during the analysis period (table 4.1.4

and 4.1.5) which implied the efficiency and effectiveness of the employees. Moreover, the profitability of company had been dependable.

In the meantime, however, profitability declined yearly from 28.4% to 21.1% from 2013-2016 periods of time owing to increment of cost of sales particularly the cost of imported inputs. In addition to this, it has as well established paid up capital and the yearly dividend had been allowed to be invested for the expansion and purchase of new technology so to raise and diversify its capacity. The debt structure was minimal, which was 15.8% of the equity and could meet its obligation easily for it was liquid and profitable as the financial statement of five years depicted (Table 4.1.6).

Furthermore, it has been financially sound and low risk company as the overall financial performance reports of the five years indicated. The implications of these refer to that there is no problem in the traditional financial performance and labor productivity is in the acceptable position based on the resources available on hand.

Moreover, the company claimed there was no market problem for its product but the critical problem found to be shortage of imported inputs owing to foreign currency constraint. Currently it seems that there is no demand problem as the firm claims, however, as the finding of customers' category survey depicted, it is losing the well-established market of government offices.

In the seven years period from 2011-2017, for example, the share of consumption of same declined from 40.4% to 19.7% due to internal and external problems of the company. Most transport vehicles owners whether they are individuals, private companies or government, the choice and preference of tyre brand is decided and instructed by the respective drivers without good and convincing reasons. This indicates the need for proper promotion and advertisement scheme to tackle the problem and should work hard to catch up with this segment of the market. It moreover, might require the intervention of the senior government officials and other stakeholders.

During customers satisfaction survey, for instance, the researcher had visited about 20 government offices in Hawassa, the researcher found and noted that no a single general service process owner able to tell about the tyre they ordered to buy. The entire process owner of the

general service division pinpointed same to get the information about the tyre from the respective drivers. So there seems to be biases without a solid and sound reason for the choice of tyre brand. Hence, the decentralized government offices had been buying tyres by the recommendation and preference of drivers and drivers preferred not Horizon but mostly Bridgestone, especially for the elites of the respective offices.

Horizon Addis Tyre S.C had made unflinching endeavor to catch up with market by making contacts to the concerned offices to reason out the problem with its product but no sound and convincing reason for shifting to another brand and hence the firm had doubts on the prevailing of corruption in the areas of concerned decision making parties as key informants responded. By unflinching endeavor, the company has been able to convince the Region 3 governors to use its tyre and the regional government offices were then complied with the given instruction of same to buy Horizon Addis Tyre for their vehicles. The remaining regional states, as key informant said, are still homework for the company to convince. So customers' satisfaction question is yet to be handled properly and reliably.

On the other hand, regarding marketing and sales, the expenditure for advertisement is insignificant, less than 1%. And its market share showed to be about 15% in the past five years. In addition, the threat of low cost imported tyre and contraband was trying to stand on its neck. Annually the country imported over 2 million tyres. In 2017, for example, about 2.45 millions of tyre were imported and cost the country about 3.3 billion Birr in the same year to import the number of tyres mentioned above.

Being stayed in the market for over 4 decades, this low market share could be taken as a poor performance. Problems might be many and complicated such as the many times ownership transferring and their transitions' periods; the type government leadership attitudes; technological knowhow; commitment problems of the stakeholders and so on. Thus, these all would demand for involvement of all the concerned stakeholders and looking for solution on how to raise production and maintain increase its market share.

Regarding the product and ownership, most customers' knowledge about the tyre including in Addis Ababa was blurred and not clear cut as noted during the customers' satisfaction survey. So this confusion should be removed and cleared out employing different marketing strategies and

by supplying its product adequately. Again, having a vision to dominate the local market initially and then to exploit the opportunity in the neighboring countries it would be difficult to reach the goal unless proper marketing scheme would be used. In relation to the customers' satisfaction, in order to look in their views and attitude the survey has been made among three types of customers- users and customers, users but not customers and distributors.

The purpose of employing three groups of respondents in the survey was to take the reliable respective views about the tyre performance and its limitation. Moreover, so as to balance and make it dependable the survey, major code numbers of the vehicles were taken into consideration in the survey. In relation with this, heavily and intensively used vehicles like taxis, light trucks and buses were surveyed under codes 1, 3 and 4.

As a result, the majority of the respondents about the durability and quality responded that the tyre would serve 7-12 months when intensively and heavily used. For example, 57% of users and customers; 59.4% of users but not customers and 72.7% of the distributors verified and by this the company claimed was justified by this survey. Depending on how intensively and heavily the tyre employed the tyre would serve for more than 24 months. There was a complaint however, questioning the durability and quality and argued that the maximum service period was less than 6 months if it is intensively and being heavily on the road.

Additionally, they argued that the tyre would burst being new and would bulge out. Hence, the users but not customers avoided fixing altogether horizon and they used mixed brands. Specifically they said they fixed as rear tyre to minimize risk of accident (see table 4.2.12). Moreover, the reason why users but not customers wanted to shift to another brands was owing to quality problem as 84.9% of same claimed.

Regarding customer satisfaction, 94.1% of the users and customers and 72.8% of the distributors responded as satisfied due to relatively low price, service delivery, fast claim response to defective product and relatively quality of the product. On the other hand, 84.9% of users but not customers questioned the quality of the tyre, wanted to shift to another brand and used the tyre by mixing with other brands. As a matter of fact 56.8% of those who claimed to be users and customers and 56.8% of those only users of the company responded that they selected or

preferred the tyre because of its relatively lower price but the quality. Thus this implied that both groups had questions on the quality issue.

In the mean time, when the support activity of the firm scrutinized it indicated the support has been dependable on every dimension. The appetite for investment in new technology deemed to be dependable and reliable to produce tyres demanded by the prevailing market for the owner retains the dividend for this purpose since the inception of ownership, and the information technology is begun to support the production process (refer table 4.1.16)

On the other hand, Horizon Addis Tyre is striving to introduce new tyres with different size for the latest models passengers' cars which were not available before. Thus, the company bought and installed new machines to produce different sizes of tyres of latest models' vehicles that would solve the capacity problem in producing the latest models of passengers' cars and would increase the flexibility.

In relation with the supporting activity, the company was committed to satisfy and motivate its employees by providing the necessary fringe benefits and competitive compensation system as strategic investment in people, process, information system and organizational culture were applied to monitor acquisition, cultivation and exploitation of core competencies- a good beginning for the strategy set to develop. In sum, the value chain of production process has shown the underutilization of its available capacity (30% of its capacity); financial performance implies sound, reliable, and profitable and customers' satisfaction is yet to be handled and addressed through volume, quality and type flexibility.

4.6.1 A Discussion on Production Performance Analysis:-

Key Success Factors and Key Performance Indicators

A. Competitiveness

Competitiveness as a critical success factor was measured by the performance indicators such as sales growth by product, customer base and market share and position. HAT's in this regard placed itself in a difficult position due to inputs constraints. Foreign currency shortage, obsolete and worn out machineries, shortage of skilled manpower, power interruption were the foremost problems, as reported on daily production reports and verified by operation managers. Moreover low cost tyre imports and contraband aggravated the problem.

Even though, the 5 years audited financial statement showed growth of profitability and its gross margin, but it was with fluctuation from year to year (Refer table 4.1.4)

On the other hand it had lost and is losing the well-established government offices market owing to irrational and unsound biases created by the respective government offices drivers and process owners who determined the brand of tyre to be purchased and owing to prejudice and ignorance of same. HAT's management group was doing its best to maintain and put the market back as it had been by visiting the concerned government offices. Region 3 offices almost returned and the rest on deal and discussion. The key informant group is still working hard to catch up with the lost market of government offices.

The market share as a key performance indicator for a critical success factor applied in HAT depicted low performance because the market share on average was below 15% for the past five years due to aforementioned reasons like capacity problems, input problems owing to foreign currency scarcity, old and worn out machines and inadequate skilled manpower and electrical power interruption.

B. Resource Utilization

This success factor was measured by employing key performance indicators such as productivity, resources available against those utilized and efficiency of resources planned against consumed. Hence, HAT's performance in this regard depicted underemployment of resources owing to operating under capacity of machineries (capital) as a result of foreign currency extremely severe shortage to buy raw materials. This problem is the serious issue for the management team and troubled and puzzled how to solve it.

In relation with this productivity of labor among other things, is efficient and effective (Refer Table 4.1.4). This could imply that the labor productivity was adequate enough in employing the resources at hand.

In general, productivity implied the reduction in wastage of resources, labor, raw materials, power, space, time and capital. So, HAT's employee's productivity showed efficiency and effectiveness by reducing wastage of raw materials and defective products. During the five

years' time the average annual defective output and wastages in the production (1.8% and 1.1% respectively) of the yearly total output (Table 4.1.4).

C. Quality of Services

Quality of services was usually measured through cost of quality that comprises prevention costs, appraisal costs and non conformance cost, which was very difficult to get the identified cost of each captioned item in the company but could be seen in the low rate of defective product and scrap. One thing noticed in the company was there is quality circle meeting every morning to deliberate on the production problems faced in each working day. With regard to quality of services, hence the rate of complaints received/compensated could be said in an acceptable status as the five years rate of complaints received and solved indicated, 0.07% on average which was just a little bit greater than the standard set by the firm (0.05%) on average.

D. Quality of Working Life

Taking quality of working life as critical success factor, it was tried to look in to the company's performance indicator labor turnover. It was a quite high (12.9% in 2014) owing to hazardous working environment as it was informed by the key informant management team. Although there are a lot of fringe benefit and good compensation, quite number of employees left the firm just by being absent (Refer Table 4.1.15).

E. Innovation

The proportion of new products introduced showed growth from year to year 15%, 16.8% & 24.9% in from 2015-2017, which could be regarded as a beginning of expansion for it was verified by stable demand by the product and the same volume of output (Table 4.1.16 and 4.1.18)

F. Responsiveness

Timely responsiveness, as it is well known, was critical success factor. HAT in this regard lagged behind because of foreign currency scarcity to buy raw materials and now and then mechanical breakdown machines to cope up with the plans set to produce when there was no

material shortage as per the daily production reports of the past five years and the gap between the operational plan and actual performance depicted see table 4.1.17.

As already discussed earlier in this section the defect rate was low and the commercial section department responded that they were responsive and sensitive in responding to the complaints of defective products. In addition to this, the marketing department prepares trainings and has frequent visiting programs to agents and retail distributors about any problems related to the tyre.

G. Quality of Output

This was usually indicated by low reworking and warranty costs and low reject rates. Here, the company under this research operated in a high efficiency and effectiveness for the quality of output performance measurement indicators showed during the past five years. For instance, the defective rate, reworking warranty costs were not greater than 2.5%, 0.97% and 0.06% respectively in 2017 and the past trend in this regard was quite stable and low. Here, as understood from the key informant group, their tyre is by far better than some of the tyres imported and still working hard without fail to improve the quality of their tyre by investigating the defects and solving the problem through quality circle and have established a department called Plant Industrialization and Quality Assurance. They have daily meeting regarding the quality issues raised and give solutions as much as possible.

H. Flexibility

HAT has flexibility problem in introducing new product, product mix, volume and delivery owing to the foreign currency constraint that hindered to buy new technology to produce tyres highly demanded by the latest models vehicles and raw materials and shortage of skilled manpower. However, they introduced tyres for BAJAJs, tractors, and grader machines in the past three years. So, the capacity limitation of product mix, type, and size flexibility would be solved by the already installed new technology that would produce latest models' passenger cars. As a whole this section could indicate the firm's internal performance status and its endeavor for survival through the mirror of key success factors and the performance indicators though there are a lot of constraints. Here, the management team has assured that the flexibility problem could be solved if the foreign currency constraint is solved for there is adequate investment fund allotted for to buy the technology.

4.7 The Challenges of Horizon Addis Tyre S.C

The challenges facing the global tyre industry depend on the growth, development and employment of modern technology in each firm in the industry. Economic volatility, uncertainty, complexity and ambiguity; sustainability and technology; Threat of low cost manufacturers and economies of scale; government policy and reform; infrastructure; operational excellence and skill development have been the challenges worth mentioning. Coming to the challenges of the firm under this study specifically, they are multifaceted as briefly mentioned here under.

To begin with Horizon Addis Tyre S.C. had been extremely dependent on the imported raw materials, equipment and machines, as the company's annual report indicated about 98% raw materials and technology as a whole. Being dependable on imported raw materials and technology could not be a challenge by itself but the scarcity of foreign currency required to buy the captioned items really have been genuine and severe constraints of the firm. The expenditure in millions to import the captioned items could verify the dependency on import. The reason why the firm was extremely dependent owing to most of the major components have not been available in the country-synthetic and natural rubber, carbon black ...etc that are fuel (oil) byproducts.

Here, in addition to its dependency on the imported raw materials, the challenges have been severely aggravated by foreign currency constraint according to the response of the informant group. In relation with the inputs constraint, again the key informants dissatisfied with the rubber plantation which was under the factory when the firm owned by government now detached from its ownership during privatization and its rubber supply taken as insignificant, very poor in quality and productivity. Hence, rubber is also among the major imported inputs.

Moreover, according to the annual reports of the firm from (2012-2017) the operation excellence and productivity were suffered from now and then mechanical breakdowns, electrical power interruption, worn out and obsolescence of machines in addition to the underutilization of its capacity. This brought about the rise of cost of quality, wastage of inputs and underutilization of resources. As per the response of the management group and verified by the finding, the firm has been operated below 40% of its capacity among other things. Meanwhile, the global giant tyre manufactures have made technological paradigm shift in processing and automated at high level high product and volume flexibilities that has flooded the global market including ours.

Furthermore, the unavailability of adequate skilled manpower in the area contributed significantly to the poor operational excellence and underutilization of the firm's capacity. In relation with this, the existing employees' mind setup on the relationship between quality and productivity is not yet fully developed as the yearly reports of the company had shown.

On the other hand, the firm was threatened by uncontrolled and unlimited low cost tyre imports from giants of the global tyre industry. Moreover, there is no standard and regulation for the tyres imported as well as the vehicles. Furthermore, the threat is aggravated by contraband, poor quality and second hand import of same. So as to see this problem, total tyre imported from 2012-2017, refer table 4.1.9. As a result of this giant multinational low cost tyre flooding the country, the big customers of the firm such as government offices, private individuals, NGOs consumption declined as the reports of the firm indicated, a serious challenge.

The government offices especially are the established markets; hence their consumption decrement could affect its market now and in the future too. On the other hand, the promotion and advertisement scheme of the firm became insignificant and very low and possibly could yield adverse result for it is not yet known by most customers as the survey indicated and most government and people who have transport business buy tyre by the recommendation and instruction of the respective drivers who are biased and ignorant about tyre performance and its quality.

In addition to this, the company complains that the government support and protection is very limited and low. Moreover, the volatile, ambiguous, uncertain and complex global economic situation had influenced the performance of the firm adversely in the price of the product and input and foreign currency shortage. Furthermore, the stakeholder's limited support and being indifferent and limited concern in providing foreign currency also adversely affected the growth and expansion of the firm.

Finally, as the challenges of the firm are many and complicated; cooperation, collaboration, and coordination of the concerned stakeholders deemed to be loose and fragmented which is vindicated by the irregular supply of foreign currency, being indifferent to motivate to produce more to save foreign currency consumed to import tyre which is huge as is seen on the findings section (Table 4.1.10).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of the Findings

The evolution of modern tyre went back to 19th century and has reached to its peak in its components, design and quality in the late 1980s. As it's well known it is the only part of modern transports that touches the ground. Hence, the tyre industry is working hard to ensure its safety and reliability. It is a type of product highly demanded around the globe by vehicles' manufacturers to fix as original equipment for the vehicles and replacement for the vehicles already on the road. Seeing this thing Ethiopia has joined the market as a manufacturer of tyre in the Addis Tyre since 1972.

Its development in every dimension is not in way that has been desired and expected for various reasons. After two years of its inception, in 1974 the socialist government confiscated it and being a complacent regime it stagnated for about 17 years, followed by the current government doing nothing and privatized to different investors. Finally, it has become one of the properties of Sheh Mohammed Al Amudin in the Horizon Addis since April 2011. Its growth and performance, however, has not been in way that it was originally desired and expected owing to various reasons.

As a result this paper has tried to see into, identify and evaluate the performance and challenges why it has been stagnant since its inception of operation. Hence, so as to look into, identify and evaluate its status of performance and constraints that hindered its development, the value chain analysis, tools of operational performance measurements, financial and non financial measurements, key success factors and performance indicators, and survey of customer satisfaction were employed.

Thereby, it was found that the company had been suffering from foreign currency scarcity for the purchase of inputs 98% of which are to be imported from around the globe. Moreover, the technology employed are worn out and obsolete, which was exposed to frequent damage and the volume mix and capacity of the technology to produce mostly demanded tyre is highly limited. Furthermore, the company process of production was interrupted by power fluctuation and

finally the skilled manpower shortage was another bottleneck. Externally, the cooperation, coordination, support and commitment of the all concerned stakeholders deemed to be insignificant. Therefore, the stagnation, low capacity utilization, underperformance and low market share status were caused by these captioned bottlenecks.

In relation with operational performance success, efficiency and effectiveness, the management and employees of the company have been committed to make their company the best performer as their past six years overall performance vindicated. They had set five years strategic plan to bring about growth and better achievements so as to increase its market share by supplying best quality of product and volume mixes. The owner also allowed the retaining earning generated to employ it for the expansion and development of the firm.

Finally, in order to bring about success, expansion and development of the firm the involvement, commitment and unreserved support of owner, the management team, employees and at large the development state of the nation is indispensable for the company by itself cannot achieve it for it requires very huge capital investment and other resources. The value chain map of the operation process of the company showed that it is operating far below the normal capacity; financial performance is sound, customer satisfaction is under question in relation with quality, capacity and supply problems; raw material shortage owing to foreign currency is the critical and serious challenge of the company, among other things and the innovation and capacity building under process to introduce new models' vehicles tyre by making huge investments to buy new technology.

5.2 Conclusion

The purpose of this paper has been to look into, identify and evaluate the performance and challenges that hindered the growth of Horizon Addis Tyre S.C. by employing different performance measurements and value adding processes and other research tools. Hence, when the researcher started searching for cause of stagnation, in the first place the researcher wondered how the value chain the company looked like so as to look into and identify where the problems were in the production process. Then the researcher wanted to know the financial and non-financial performances (customer satisfaction, learning and growth and internal business processes).

Finally, the researcher wondered what strategies and efforts were made by the owner and the management team so as to enhance operation and raise and solve the market share problem. Thus, to answer the captioned wonders of the research, the researcher deeply searched to all areas of the enquires and then it was found that the operational performance, the capacity utilization and market share were about 40%, 30% and 15% respectively.

The main factors contributing for such situations referred to foreign currency scarcity to buy inputs and technology; the breaking down of the old and obsolescence machines; the now and then power interruption; scarcity of required skilled manpower; capacity and the limited cooperation, involvement and support of the concerned stakeholders. There is also a capacity problem genuinely speaking because what it produces is limited type and sizes of tyres. It does not produce tyres for the latest models passengers' cars. There upon, it can be concluded that the above mentioned factors have contributed for the stagnation, low market share and low capacity performance. Again, when the details of all categories financial performance were seen into deeply, it can be generalized that the traditional financial performance is sound, profitable and dependable to meet its obligations.

Moreover, from the customer satisfaction survey made it can be concluded that the quality of the tyre is in question, significant number of customers (48.9% of 139 customers surveyed) fixed different brands for their vehicles, which might show low confidence on the quality of the product and there is confusion about the tyre in many angles which is an indication of weak marketing performance. It is also noted that the firm is losing its well established market of government offices tyre consumption.

Furthermore, the availability of committed management team and industrious workforce, however, made the company to survive by making the available limited resources on hand efficiently and effectively (high productivity as indicated by the result of key success factors and their key performance indicators) and by repairing and modifying the old and obsolete machines as indicated on the achievements of the overall operational and financial performances' assessments of the research. The owner also allowed employing the total income for expansion and enhancement of the company starting from 2013. Here, allotting the income for the captioned purpose is one thing but being indifferent to manage and handle the constraint is another thing. This implies that it is like one of the Ethiopia sayings 'giving meat without a

knife' because the owner has the capacity and alternatives to solve foreign currency constraint of the firm.

Meanwhile, the company has started buying new technologies to raise and diversify its capacity and replacing the old machines by new ones. Hence, this is a good beginning to be claimed by the company. However, there seems to be little commitment, involvement and support of the concerned stakeholders as it is indicated on the low capacity performance (30%), low market share (15%) and low operational performance (40%) as a result of unbelievable and unconvincing foreign currency shortage for the owner has a lot of alternatives to solve the foreign currency issues.

In general, the government being developmental state and giving priority to manufacturing sectors, the involvement, commitment and support seems to be minute. Finally, from their marketing performance result there is unseen and unvalued problem of the firm, little value to promotion and advertisement that could severely affect it now and in the future owing to complacency of status quo.. In addition to the internal problems mentioned above, the firm has been affected by external problems of foreign currency shortage; lack of involvement support of the concerned stakeholders; the frequent power interruption; low-priced, low quality, second hand and contraband of imported tyres.

Finally, it can be concluded that the favorable market opportunities are untapped and will to be favorable among other thing. Moreover, the available idle capacity of the firm comes to be about 70% implying that if the constraint of foreign currency solved it would be able to produce more than one million of different sizes of tyres, which would come to be and cover 50% of the total market share.

In effect, this would decline the import of the low standard and poor quality tyre and hence saves foreign currency to be spent for import of tyres. If this is so thus, broadly speaking, the value added chain impact of the firm to the nation would be multifaceted in many dimensions.

5.3 Limitation of the Study

The study explored the performance and challenges of tire manufacturing in the context of a single country. The study is focused on a single company and hence the conclusions from the study may not represent the macro level reality about tire manufacturing in general. Moreover,

with specific reference to methodological approach, it could have been more informative had the study followed a comparative research methodology whereby the case at hand (Horizon Addis SC) was compared with other tire producers such as those in Taiwan, Indonesia, and Thailand.

5.4 Recommendation

The issues raised on this research paper like foreign currency scarcity for the purchase of inputs and technology demand the involvement, commitment and unreserved support of all concerned stakeholders. In the first place, the owner himself can solve the problem if he is willing for he can and has ample of alternatives. Allotting the dividend for the expansion and enhancement is necessary but not sufficient condition. The owner should involve with full commitment to handle the foreign currency constraint. Especially, the identified problems in this paper require the ultimate support of the government, being the developmental state, whose due attention is giving priority to the manufacturing sectors.

The government also should look for solution for the pending rubber plantation ownership which is indispensable and among the major inputs for tyre production. The government further should motivate the company to expand and exploit the competitive advantage and to operate at the economies of scale to raise its market share so as to save foreign currency of the country.

Moreover, the attitude of the company's management for promoting the products of the company should be changed because there is confusion and it is not known in the market as such. The well-established market of government offices should be maintained for diversion or shifting to individuals is not the best solution but expansion to satisfy both. Furthermore, the overall business and operational existence of the company is at risk which requires a comprehensive overhaul to boost the contribution of the company both to the owners and to the country.

Thereby, there is a serious, professional, and interdisciplinary investigation (action research) of the current bottlenecks of the company that investigate its economic, strategic, and legal environment so as to devise a short term, mid-term and long-term business strategic objectives of the company.

REFERENCE

- Amaratunga, D., & Baldry, D. (2002). Moving from performance measurement to performance management. *Facilities* 20(5), 217-223.
- Armstead, C. and Clark, G. (1993) "Resource Activity Mapping: The value Chain in Operations strategy," *The Service Industries Journal* 13 PP 221-239
- Armstrong, M., & Baron A. (1998). *Performance Management*, Boston, USA: Irwin/McGraw-Hill.
- Babbie, E. & Mouton, J. 2001. The practice of social research. Cape Town: Oxford University Press.
- Basu, R. (2001). New criteria for performance management: a transition from enterprise to collaborative supply chain. *Measuring Business Excellence*, 5, pp. 7-12.
- Berg, B. 2004. *Qualitative Research Methods for the Social Sciences*, 5th edition. Boston: Pearson Education, Inc.
- Bitici, S., Carrie, A.S. & Mcdevitt, L. (1997). Integrated performance measurement systems: a development guide. *International Journal of Operations & Production Management*, Vol. 17, No. 5, pp. 522-534.
- Bruce Davis, (2017) World Top Exports Rubber tyre exports by country <http://www.Worltopexports.com-tires-exports-country> *Tire Business Global tire rankings* <http://www.Tirebusiness.com/articles/20170905/News/global-tire-rankings>
- Chavda, A., Patil, MY. 2011. Increased Productivity of Tyre Manufacturing Process using Lean Methodology. Institute of Technology, Nirma University, Ahmed Abad-382 481, 08-10 Cranfield University *International Journal Business Performance Management* Vol 5, No. 1, 2003 Implementing performance measurement systems
- Chauda, A., Patil, Y. 2011. Rubber processing industries in Asia. Spiceland Cengage Learning Services, p. 27.
- Creswell, J.W. 2009. *Research Design, Qualitative, Quantitative & Mixed Method Approaches. 3rd edition*. Thousand Oaks: Sage Publications.
- Cross, K.F. and Lynch, R.L. (1989) The SMART way to define and sustain success. *National Productivity Review*, 9(1), 23-33.
- Daniel Workman, (2016) Worlds' Top Exports Rubber Tyres exports by world rubber industry corner

- Dixon, J.R., Nanni, A.J. and Vollmann, T.E. (1990) *The New Performance Challenge: Measuring operations for world class competition*, Dow Jones-Irwin: Homewood, IL.
- Denscombe, M. 2002. *Ground Rules for Good Research: A 10 Point Guide for Social Researchers*. Buckingham: Open University Press.
- De Vos, A.S.; Strydom, H.; Fouché, C.B. and Delpont, C.S.L. 2005. Research at grass roots for the social sciences and human service professions. 3rd edition. Pretoria: Van Schaik Publishers.
- Drucker, P. (1954), *The Practice of Management*, Harper, New York, NY.
- Durrheim, K. 1999. Research Design. In Terre Blanche, M. & Durrheim, K. (eds.) 1999. *Research in Practice: Applied Methods for the Social Sciences*. Cape Town: University of Cape Town Press.
- Fafchamps, Marcel. 2004. *Market Institutions and Sub-Saharan Africa: Theory and Evidence*. Cambridge, MA: MIT Press.
- Fitzgerald, L., Johnston, R., Brignall, S., Silvestro, R. and Voss, C. (1991), *Performance Measurement in Service Business*, CIMA, London.
- Freddy Radder 2017 the evolution of tyre, tire recappers news <https://www.com/blog/2013/12/10/this-day-in-history> Economic Analysis of the Rubber Tyre Manufacturing
- Ghalayini, A. M., & Noble, J. S. (1996). The changing basis of performance measurement. *International journal of Operations & Production Management*, 16(8), 63-80.
- Gomes, C. F., Yasin, M. M., & Lisboa, J. V. (2004). A literature review of manufacturing performance measures and measurement in an organizational context: a framework and direction for future research. *Journal of Manufacturing Technology Management*, 15(6), 511-518.
- Gordner, H., & Soderquist, E. (2004). *The disciplined mind*. New York: Simon and Schuster.
- Hudson, M., Smart, A., & Bourne, M. (2001). Theory and practice in SME performance measurement systems. *International Journal of Operations & Production Management*, 21(8), 96-115.
- Greene, W.H. 2008. *Econometric Analysis*. 6 edition. Prentice Hall.
- Grover, MR. 2011. *Tire manufacturing process. Guidelines for value chain analysts*. NJ: Prentice Hall.

- Ireland RD, Covin JG, Kuratko DF. 2009. Conceptualizing corporate entrepreneurship strategy. *Entrepreneurship Theory and Practice* 33(1): 19-46.
- Ita, P.A., and A.C. Gross 1995 "Business Economics 30(1)
- Johnson, H. T., & Kaplan. R. S. (1987). *Relevance Lost: The Rise and Fall of Management Accounting*. Boston: Harvard Business School Press.
- Kaplan, R. 2015. Performance measurement techniques, Kaplan Publishing Limited.
- Ketchen, D.J. Sr, Hult G.T.M /2007 "Bridging organization theory and supply chain management the case of best supply chains" *Journal of Operations Management*, vol 25 (2) PP 573-880
- Kothari, C.R. 2004. *Research Methodology (Methods and Techniques): Second Revised Edition*. New Delhi: New Age International.
- Kaplan, R. S., & Norton D. P. (1996). *The Balanced Scorecard: Translating Strategy into*
- Kaplan, R. S., & Norton, D. P. (1992). The Balanced Scorecard: Measures that drive performance. *Harvard Business Review*: 1, 71-79.
- Kaplinsky, R. and M. Morris (2001) *A Handbook for Value Chain Research*, Prepared for the International Development Research Centre (IDRC), p.4-6 (emphasis added) (Accessed 19/01/15)
- Kothari, C.R. 2004. *Research Methodology (Methods and Techniques): Second Revised Edition*. New Delhi: New Age International.
- Lanen, W. N., Anderson, S. W. and Maher, M.W. 2008. Fundamentals of cost accounting. New York: McGraw-Hill/Irwin, p. 4.
- Lebas, M.J. (1995). Performance measurement and performance management. *International Journal of Production Economics*, Vol. 41, No. 1-3, pp. 23-35.
- Leedy, P. D., & Ormrod, J. E. 2013. *Practical research: Planning and design 10th ed.* Upper Saddle River, NJ: Prentice Hall.
- Lillian G. Bradley 2000 Economic Analysis of the rubber Tire Centre for economic research U.S. Environmental Protection Agency Research Triangle Park.
- Mike Bourne and Andy Neely, (2003) Centre for Business Performance, School of Management
- Mason, J. 1996. *Qualitative Researching*. London: Sage Publications.
- Moullin, M. (2003). Defining Performance Measurement. *Perspectives on Performance*, 2(2), 3.
- Moullin, M. (2003), "Defining performance measurement", *Perspectives on Performance*, Vol. 2 Nos 1/2, p. 3.

- Moullin, M. (2003), "Defining performance measurement", *Perspectives on Performance*, Vol. 2 Nos 1/2, p. 3.
- Mowen, M.M. and Hansen, D.R. 2011. *Introduction to cost accounting* (International edn). Spiceland Cengage Learning Services, p. 27.
- Neely, A. D. (1998). *Beyond Balance: Three Key Roles for Measurement*. Business Intelligence Conference, London.
- Neely, A.D., Marr, B., Adams, C., & Kapashi, N. (2001). *Measuring eBusiness Performance* in "Business Performance Measurement: Theory and Practice, Neely, A. D. (ed), Cambridge University Press, Cambridge.
- Parmanter, D (2007). *Key Performance Indicators: Developing, Implementing and Using Winning KPIs*. New Jersey: Hohn Wiley & sons. Key Performance Indicators. ISBN 978-0-470-09588-1
- Porter, M.E., (1985) *Competitive advantage: creating and sustaining superior performance*. Nova science publisher.
- Porter, M.E., (2001) *Competitive advantage: "Strategy and internet"* Harvard business review 2001, pp.63-78
- Robinson, H.S., Carrillo, P.M., Anumba, C.J., & Al-Ghassani, A.M. (2005). Review and implementation of performance management models in construction engineering organizations. *Construction Innovation*, 5, pp. 203 217.
- Salem, M. A., Hasnan, N., & Osman, N.H. (2012), *Balanced scorecard: Weaknesses, strengths, and its ability as performance*.
- Spicker, P. 2007. *Research without consent*. Social research update, Thompson, P. 2011. The trouble with HRM, *Human Resource Management Journal*, Vol.21, No.1, 355–67.
- Wagner. J, Petera .P, & Mensik.M, (2012), Strategic performance measurement system, *Journal of Competitiveness*. Vol.Issue 4 pp 67-85
- Woolridge, J. 2000. *Introductory Econometrics: A Modern Approach*. New York: Southwestern Publishers.
- Yeniyurt, S. (2003). A Literature Review and Integrative Performance Measurement Framework for Multinational Companies. *Marketing Intelligence and Planning*, 21(3), 134-142.

Appendix 1: Questionnaire

ST. Mart's University School of Graduate Studies, MBA Program



Customer Survey Questionnaire

Dear Respondent,

First of all, thank you for your willingness to be part of the survey. This questionnaire is prepared by Mr. Tesfaye Gebrehana, Masters Degree student of St. Mary's University to collect data to be analyzed for a masters thesis [study] which is a requirement for a student to accomplish his masters study program. The title of the study is "Performance and challenges of Tyre manufacturing in Ethiopia: The case of Horizon Addis Tyre Factory". The objective of the study is to identify and map-out the value chain of Tyre manufacturing for better understanding of the process and evaluate the performance as well as bottlenecks in the context of Horizon Addis Tyre. Finally, I want to assure you that the information which you will share with me will be kept confidential and only used for the academic purpose. No individual's responses will be identified as such and the identity of persons responding will not be published or released to anyone. All information will be used for academic purposes only.

Thank you again for your kind cooperation and time!

Date of survey: _____ Respondent code: _____;

SECTION I: RESPONDENTS' BASIC PROFILE

1. Address: City _____, District _____
2. Age [1] 18-25 [2] 25-32 [3].36-40 [3]. 41-50 [4]. 51-60 [5]. 61-70 [6]. > 70
3. Gender: [1] Male _____; [0] Female _____
4. Marital status: [1] Single: [2] Married/Living together: [3] Widowed: [4] Divorced: [5] Separated
5. Family size: _____
6. Religion: [1] Orthodox: [2] Catholic: [3] Muslim: [4] Protestant: [5] Other, _____
7. Level of education:

1=Illiterate	2=Read and write [traditional Educ.]	3=1-8 Grade	4= 9-12 Grade
5= TVET graduate	6= College Diploma	7=Degree	9= Above degree

8. For how long [for how many years] do you use your car? _____
9. What is the code of your car: [1] Code-1 [2] Code-2 [3] Code-3 [4] Code-4 [5] Code-5 [6] Other
10. Customer type: [1] Distributors [2] Government [3] Individuals and NGOs [4] Associations

SECTIONII: TYRE PURCHASE DECISION AND RELTATED QUESTIONS

11. So far, how many times have you purchased tyre for your car? _____
12. Durability: For how long [months] do you use the tyre?
 - [1] ≤ 6 months [2] 7-12 months [3] 12-18 months [4] 19-24 months
 - [5] 25-30 months [6] 31-36 Months [7] More than 36 months
13. Which brand of tyre did you purchase/prefer the most?
 - [1] Horizon Addis [2] Dunlop [3] Bridgestone [4] MRF [5] Pirilli [6] [7] Other
14. Ref Q13, what is your criterion to choose the type of tyre [brand]?
 - (1) Price [2] Quality [3] Sales service [4] After sale and delivery service
 - [5] Payment method [6] other factor[s] [Mention _____]
15. From whom do you usually purchase the tyre?
 - [1] From the factory's outlets [2] From other wholesalers [3] Other retailers
 - [4] Others [Mention _____]

SECTIONIII: BUYERS' LEVEL OF SATISFACION AND RELATED QUESTIONS

16. How much are you satisfied with the tyre you are you using now?
 - [1] Strongly dissatisfied [2] Dissatisfied [3] Neutral [4] Satisfied [5] Very satisfied
17. Do you have intention to shift other types of tyre? [1] Yes [2] No
18. Ref Q.16, if 'No' go to Q19; If 'Yes' why do you intend to shift to other type of tyre?
 - [1] Because I intend to change the model of my car
 - [2] Because the quality of the current tyre is getting lower (quality related reason)
 - [3] Because the price of the current tyre is increasing (price related reason)
 - [4] Because other tyre sellers have netter additional after sale service (service related reason)
 - [5] Because of other reason(s)
19. What do you think is the most important product related variable for tyres to be used by cars?
 - [1] Design [2] Raw material [3] Price [4] Sales service [5] After sales service [6] Other
20. Do you identify yourself as the customer of Horizon Addis Tyre? [1] Yes [2] No
21. Ref Q.20, If 'Yes', Answer the questions stated under SECTION IV in the next page.

**SECTION IV: TO FILLED BY THOSE WHO IDENTIFY THEMSELVES AS CUSTOMERS OF HORIZON
ADDIS TYRE**

Horizon Addis Tyre SC	Strongly Disagree				Strongly Agree		
Its modern looking factor contributes to the quality of its service.	1	2	3	4	5	6	7
Its physical facilities add to the quality of its service.	1	2	3	4	5	6	7
Its personnel attractive appearance positively affects the quality of its service.	1	2	3	4	5	6	7
Its services such as its promotions contribute to its service quality.	1	2	3	4	5	6	7
Its timely delivery of promised services contributes to overall service quality.	1	2	3	4	5	6	7
Its management is interest to solve your problem whenever it occurs related to the tyre the company sells	1	2	3	4	5	6	7
It get things right the first time that positively affects its service and product quality.	1	2	3	4	5	6	7
It gets things punctually that contributes to its product-service quality.	1	2	3	4	5	6	7
Its error-free records add value on the product and service quality.	1	2	3	4	5	6	7
The services offered by its personnel satisfies customers and this affects its product and service quality.	1	2	3	4	5	6	7
The willingness of Horizon Addis tyre to help customers positively is high	1	2	3	4	5	6	7
It creates the environment that makes customers to feel safe that contributes to its product and service quality.	1	2	3	4	5	6	7
Its effort to provide individual attention to customers positively affects its customers' loyalty	1	2	3	4	5	6	7
Its convenient operating hours to all its customers adds to its product and service quality.	1	2	3	4	5	6	7
Its products are more preferable than competitors'	1	2	3	4	5	6	7

በሆራይዘን አዲስ ጎማ አከፋፋዮች የሚሞላ መጠይቅ

1. አድራሻ ከተማ _____ ወረዳ _____

2. እድሜ
 ሀ/ 20-30 ለ/ 31-40 ሐ/ 41-50 መ/ 51-60 ሠ/ >60

3. ጾታ ወንድ ሴት

4. የጋብቻ ሁኔታ ያላገባ በለትዳር

5. የቤተሰብ ብዛት _____

6. የትምህርት ደረጃ

ማንበብና መጻፍ	አንደኛ ደረጃ	መለስተኛ ሁለተኛ ደረጃ	ሁለተኛ ደረጃ
ተግባራዊ	ዲፕሎማ	የመጀመሪያ ዲግሪ	ከመጀመሪያ ዲግሪ በላይ

7. በማከፋፈል ስራ ላይ ለምን ያህል ጊዜ ቆይተዋል?
 ሀ/ 1-5 ለ/ 6-10 ሐ/ 11-15 መ/ 16-20 ሠ/ ከ >20

8. ጎማው ለምን ያህል ጊዜ ያገለግላል?
 ሀ/ እስከ 6 ወር ለ/ ከ7-12 ወራት ሐ/ 12-18 ወራት መ/ 19-24 ወራት

9. ደንበኞቻችሁ በሆራይዘን ጎማ ምን ያህል ደስተኞች ናቸው?
 ሀ/ በጣም ደስተኛ አይደሉም ለ/ ደስተኛ አይደሉም ሐ/ ግድ የላቸውም
 መ/ ደስተኛ ናቸው ሠ/ በጣም ደስተኛ ናቸው ረ/ እጅግ በጣም ደስተኛ ናቸው

10. ስለጎማው የገጠመዎት ችግር ምንድነው?
 ሀ/ የጥራት ችግር ለ/ የዋጋ ችግር ሐ/ የአቅርቦት ችግር
 መ/ የገበያ እጦት ችግር ሠ/ ሌላ ካለዎት

11. ከጎማ ጋር በተገናኘ በተሽከርካሪዎች መጠቀም (መመረጥ) አለበት ብለው የሚያስቡትን ይግለጹልን።
 ሀ/ ጥራት ለ/ ጥሬ እቃ ሐ/ ዲዛይን
 መ/ ዋጋ ሠ/ ሌላ
 ካለዎት.....

12. ሆራይዘን ጎማ በገበያ ላይ ምን ያህል ይታወቃል?
 ሀ/ እጅግ በጣም ይታወቃል ለ/ በጣም ይታወቃል ሐ/ መካከለኛ
 መ/ አይታወቅም ሠ/ በጣም አይታወቅም

13. የፋብሪካው የምርት አቅርቦት በተፈለገ መጠንና አይነት የማቅረብ አቅሙ ምን ያህል ነው?
 ሀ/ በጣም ከፍ ያለ ለ/ ከፍ ያለ ሐ/ መጠነኛ
 መ/ ዝቅተኛ ሠ/ በጣም ዝቅተኛ

14. የፋብሪካው የደንበኞች አገልግሎት ሲገመገም
 ሀ/ እጅግ በጣም ጥሩና ቀልጣፋ ለ/ በጣም ጥሩና ቀልጣፋ
 ሐ/ ጥሩና ቀልጣፋ መ/ ደካማና ዝግ ያለ ሠ/ መጥፎና ዘገምተኛ

15. የሆራይዘን አዲስ ምርቶች ከተፎካካሪዎች ምርቶች ምን ያህል ተመራጭ ናቸው?
 ሀ/ እጅግ በጣም ተመራጭ ለ/ በጣም ተመራጭ ሐ/ ተመራጭ
 መ/ ተመራጭ አይደለም ሠ/ በጣም ተመራጭ አይደለም
16. ፋብሪካው ብዙ ማስታወቂያዎችን በየቦታው በመስቀል ምርቱን ያስተዋውቃል ብለው ያስባሉ?
 ሀ/ በጣም ያስታውቃል ለ/ ያስተዋውቃል ሐ/ አነስተኛ ነው መ/ በጣም አነስተኛ ነው
17. ድርጅቱ ደንበኞች ስጋት እንዳይገባቸው የሚያደርግበት ሁኔታ ምን ያህል ነው?
 ሀ/ እጅግ በጣም ጥሩ ለ/ በጣም ጥሩ ሐ/ ጥሩ
 መ/ አነስተኛ ሠ/ በጣም አነስተኛ
18. የምርት ግድፈት ባጋጠመ ጊዜ ምርቱን ለመተካት የፋብሪካው ትብብር
 ሀ/ እጅግ በጣም ጥሩ ለ/ በጣም ጥሩ ሐ/ ጥሩ
 መ/ አነስተኛ ሠ/ በጣም አነስተኛ
19. ለእያንዳንዱ አከፋፋይ ፋብሪካው የሚሰጠው ትኩረት
 ሀ/ እጅግ በጣም ጥሩ ለ/ በጣም ጥሩ ሐ/ ጥሩ
 መ/ አነስተኛ ሠ/ በጣም አነስተኛ
20. እርስዎ ለራስዎ ተሽከርካሪ የሚጠቀሙት ጎማ
 ሀ/ የሆራይዘን አዲስ ለ/ ብሪጅስቶን ሐ/ አፖሎ
 መ/ ኤም አር ኤፍ ሠ/ ዮኮሀማ ረ/ ኤኦሊስ
 ሰ/ ሌላ ካለዎት.....
21. ፋብሪካው ማሻሻልና መለወጥ አለበት የሚሉት ሃሳብ ካለዎት

SECTION IV: TO FILLED BY THOSE WHO IDENTIFY THEMSELVES AS CUSTOMERS OF HORIZON

ADDIS TYRE

ተ.ቁ	Horizon Addis Tyre SC	Strongly Disagree	Strongly Agree
1	አንድ ጎማ ዘመናዊነት መላበሱ ለጥራት አገልግሎት አስተዋጽኦ ያበረክታል Its modern looking factor contributes to the quality of its service.	1 2 3 4 5 6 7	
2	የጎማ ሙሉ አገልግሎቶች መግለጻት ጥራቱን ይጨምራሉ Its physical facilities add to the quality of its service.	1 2 3 4 5 6 7	
3	የሻጮቹ ባለቤቶች መስህብነት በጎማው ጥራት ላይ በበጎ ጎኑ አስተዋጽኦ ያደርጋል Its personnel attractive appearance positively affects the quality of its service.	1 2 3 4 5 6 7	
4	የሽያጭ ማስታወቂያዎቹ በጎማው ላይ የአገልግሎት ጥራት ይጨምራሉ Its services such as its promotions contribute to its service quality.	1 2 3 4 5 6 7	
5	በወቅቱ በተፈለገ ጊዜ ጎማውን ለገበያ ማቅረብ የአገልግሎት ጥራትን ያሳያል Its timely delivery of promised services contributes to overall service quality.	1 2 3 4 5 6 7	
6	የድርጅቱ ማኔጅመንት ሁሌም ከጎማው ሽያጭ ጋር የተዛመደ ችግሮችን ለማቃለል ፍላጎት አላቸው Its management is interest to solve your problem whenever it occurs related to the tyre the company sells	1 2 3 4 5 6 7	
7	በመጀመሪያ ባጋጠመ ችግር ድርጅቱ ነገሮችን ማስተካከል ለምርት ጥራትና አገልግሎት በጎ የሆነ ተጽእኖ አለው It get things right the first time that positively affects its service and product quality.	1 2 3 4 5 6 7	
8	ምርትን በተፈለገ ጊዜና ወቅት ማቅረብ በምርትና አገልግሎት ላይ በጎ ተጽእኖ አለው It gets things punctually that contributes to its product-service quality.	1 2 3 4 5 6 7	
9	ከግድፈት ነፃ የሆነ አሠራር በምርትና አገልግሎት ጥራት ላይ ዋጋ አለው Its error-free records add value on the product and service quality.	1 2 3 4 5 6 7	
10	የድርጅቱ ሠራተኞች ደንበኞችን የሚያረክ አገልግሎት በምርቱና በአገልግሎት ጥራቱ ተጽእኖ ይኖረዋል The services offered by its personnel satisfy customers and this affects its product and service quality.	1 2 3 4 5 6 7	
11	የሆራይዘን አዲስ ጎማ ሠራተኞች በበጎነት ደንበኞችን ለማገልገል ያላቸው ተነሳሽነት ከፍተኛ ነው The willingness of Horizon Addis tyre to help customers positively is high	1 2 3 4 5 6 7	
12	ድርጅቱ ደንበኞች ስጋት እንዳይገባቸው የሚያደርግበት ሁኔታ ለምርትና አገልግሎት ጥራት ተጽእኖ አለው It creates the environment that makes customers to feel safe that contributes to its product and service quality.	1 2 3 4 5 6 7	
13	ለእያንዳንዱ ደንበኛ የሚሰጠው ልዩ ትኩረት ደንበኛው ቋሚና ታማኝ እንዲሆን የማድረግ ተጽእኖ አለው Its effort to provide individual attention to customers positively affects its customers' loyalty	1 2 3 4 5 6 7	
14	የተመቻቸ የሥራ ሰዓት ለሁሉም ደንበኛ መጠቀሙ ለምርትና ለአገልግሎት ጥራት አስተዋጽኦ ያደርጋል Its convenient operating hours to all its customers adds to its product and service quality.	1 2 3 4 5 6 7	
15	ምርቶቹ ከተጮካሪዎች ምርቶች ይልቅ ተመራጭ ናቸው Its products are more preferable than competitors'	1 2 3 4 5 6 7	

Appendix 2: Key informant interview

To be answered by top management

1. What are the tyre manufacturing processes?
2. How is performance measurement of HAT measured?
3. What are the key financial and non-financial indicators that you employ for performance measurement?
4. What are the important indicators to map the company performance?
5. What are the main components that make up effective performance measurement system?
6. What is the impact of government regulation on the company performance?
7. What is the government support for the success and growth of the company?
8. What are the challenges of the firm on its performance?
9. Please discuss [explain] the internal and internal factors affecting your performance.
10. What are the critical success factors?
11. How do you market and channel your output?
12. What strategies do you use to tackle threats of the company?
13. How do you meet customers' demand of better quality, greater speed and lower costs?
14. What kind of after-sale service do you give?
15. What strategic measures do you use to improve customer organization relationship?