

ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS

MBA DISTANCE PROGRAM

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY DEPARTMENT OF BUSINESS ADMINISTRATION FOR PARTIAL FULFILLMENT OF MASTERS OF BUSINESS ADMINISTRATION

TITLE:- THE EFFECT OF AFTER SALES SERVICE QUALITY ON CUSTOMER SATISFACTION IN THE AGRICULTURAL MACHINERY BUSINESS INDUSTRY: THE CASE OF RIES ENGINEERING SH. CO.

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JUNE/ 2026
ADDIS ABABA
ETHIOPIA

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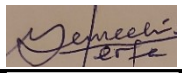
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Letter of Certification

This is to certify that Kedir Musema has carried out his thesis on the topic entitled: The Effect of After Sales Services Quality on Customer Satisfaction: The Case of Ries Engineering Sh. Co. This work is original in nature and suitable for the award of Master of Art (MA) in Business Administration.



Dr. Gemechis Terfa

(The Research Advisor)

Declaration

I hereby declare that this thesis report entitled " The Effect of After Sale Services Quality on Customer Satisfaction: The Case of Ries Engineering Sh. Co", is my original work and that it has not been submitted partially; or in full, by any other person for an award of a degree in Addis Ababa university and any other university/institution. I have made it independently with the close advice and guidance of my advisor.

Declared by: Kedir Musema

Signature 

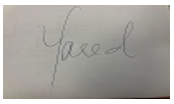
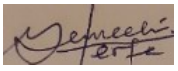
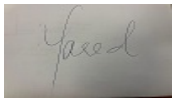
Date June/2026

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ACKNOWLEDGMENT

First and for most, I would like to praise the Almighty Allah for giving me the strength to succeed in this work. Next, I would like to express my sincere gratitude to my advisor, Dr. Gemechis Terfa, for his relentless support, guidance and encouragement throughout this research work, which is enabled me to develop an understanding of the subject and complete the thesis. Then, I would like to extend my grateful acknowledgement to Ries Engineering Sh.Co staff and their after sales service department customer for providing all the necessary information and documents required to carry out this study. Lastly I am also indebted for my wife and children who shares their time to support me, co-workers and to all those who helped me for the accomplishment of this research.

Table of Contents

Content **Page**

ACKNOWLEDGMENT iv
Table of Contents v
List of Tables ix
List of Figures xi
List of Appendix xii
List of Abbreviation and Acronyms xiii
Abstract xiv
CHAPTER ONE 1
1. INTRODUCTION 1
1.1. Background of the Study 1
1.2. Statement of the Problem 3
1.3 Research Gap 4
1.4. Research Questions 5
1.5. Objectives of the Study: 5
1.6 Significance of the Study 6
1.7 Scope of the Study/Delimitations 7
1.8. Organization of the Study 7
CHAPTER TWO 9
2.1. REVIEW OF RELATED LITERATURE 9
2.1.1 Introduction 9
2.2. Agricultural Mechanization 11
2.3. Trends in agricultural mechanization and structural change 14
2.4. Renewed Attention to After Sales Service in Mechanization 16
2.4.1 Tangibility and Customer Satisfaction 17
2.4.2 Reliability and Customer Satisfaction 18
2.4.3 Responsiveness and Customer Satisfaction 18

2.4.4 Assurance and Customer Satisfaction 19
2.4.5 Empathy and Customer Satisfaction 19
2.5. Conceptual and Theoretical Review 20
2.5.1. Definitions of Key Terms in Agricultural Machinery Context 20
2.5.1.1. After-Sales Service 20
2.5.1.2. Delivery 20
2.5.1.3 Installation and Commissioning 21
2.5.1.4. Service Warranty 21
2.5.1.5. Customer Satisfaction 21
2.5.2. Concept of Service in Heavy Equipment Industries 21
2.5.2.1. Agricultural Mechanization and After-Sales Service Linkages 21
2.5.2.2. World Bank Report 22
2.5.3. Service Quality in Agricultural Machinery 23
2.5.4. After-Sales Service as a Competitive Adv. in Machinery Markets 24
2.5.5. Customer Satisfaction in Agricultural Machinery 25
2.5.6. Relationship b/n After-Sales Service Quality and CS 26
2.5.6. Measurement of After Sales Service Quality in Machinery Sector 26
2.6. Empirical Review in Agricultural Machinery Sector 26
2.7. Conceptual framework and Hypotheses 29
2.7.1. Reliability 29
2.7.2. Assurance 30
2.7.3 Tangibles: 30
2.7.4. Empathy 30
2.7.5. Responsiveness 30
2.7. Conceptual Framework 31
CHAPTER THREE 32
3. RESEARCH METHODOLOGY 32
3.1 DESCRIPTION OF THE RESEARCH AREA 32
3.2 Research Approach 33
3.3. Research Design 33

3.4. Population and Sample 34
3.4.1. Population 34
3.4.2. Sample Design 34
3.4.3 Sampling Procedure 35
3.4.4 Sample Size 35
3.5. Source of Data 36
3.6 Data Collection Instruments 36
3.7 Reliability and Validity of Data Collection Instrument 37
3.7.1 Validity 37
3.7.2 Reliability 38
3.8 Data Presentation Analysis 38
3.9 Empirical Model 39
3.10. Ethical Consideration 40
CHAPTER FOUR 41
4. DATA PRESENTATION, ANALYSIS, INTER. AND DISCUSSION 41
4.1 INTRODUCTION 41
4.1. Data Cleaning and Editing 41
4.2. Test of Normality of the Data 41
4.3. Descriptive Statistics 42
4.3.1. General Profile of Respondents 42
4.3.2. SERVPERF Dimensions 46
4.3.2.1 Tangibility 46
4.3.2.2. Reliability 47
4.3.2.3. Responsiveness 48
4.3.2.4 Empathy 49
4.3.2.5. Assurance 50
4.3.3. Customer Satisfaction 51
4.4. Inferential Statistical Analysis 53
4.4.1. Correlation Analysis 53

4.4.2 Regression Analysis 54
4.4.2.1. Diagnosis Test 54
4.4.2.2 Normality Assumption 54
4.4.2.3 Linearity test 55
4.4.2.4 Multicollinearity Test Assumption 56
4.4.2.5 Homocedasticity 57
4.4.2.2. Tangibility 58
4.4.2.3. Reliability 59
4.4.2.4. Responsiveness 60
4.4.2.5. Assurance 61
4.4.2.6. Empathy 62
4.4.2.6. Overall Regression Analysis 63
4.4.2.7. ANOVA Results 65
4.5. Hypothesis Testing 66
4.6. Discussion 66
CHAPTER FIVE 69
5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 69
5.1 Summary of the Major Findings 69
5.2. Conclusion 70
5.3 Recommendations 70
5.4. Limitations and Direction for future research 72
References 73

List of Tables

Table 3.1 Sample det ermination method 35
.Table3.2 Work plan 40
Table 4.1 Normality of distribution using Descriptive statistics 42
Table 4.2 Gender profile of the respondents 43
Table 4.3 Age of the respondents 43
Table 4.4 Education level of the respondents 44
Table 4.5 Income level of the respondents 44
Table 4.6 Current occupation of the respondent 45
Table 4.7 The type of agricultural machinery the respondents owns 45
Table 4.8 Frequency of visit to the dealer's Maintenance Center. 46
Table 4.9 Descriptive Statistics of Tangibility 47
Table 4.10 Descriptive statistics of Reliability 48
Table 4.11 Descriptive statistics of responsiveness dimension 49
Table 4.12 Descriptive Statistics for Empathy 50
Table 4.13 Descriptive statistics of Assurance 50
Table 4.14 Descriptive Statistics for Service quality dimensions 51
Table 4.15 Overall Customer satisfaction level 52
Table 4.16 correlation analysis b/n after sales service quality dimensions and CS 53
Table 4.17 Multicollinearity analysis 57
Table 4.18A Model Summary of Tangibility 58
Table 4.18B. Coefficient Table of Tangibility 59
Table 4.19A. Model Summary of Reliability 59
Table 4.19B.Coefficients Table for Reliability 60
Table 4.20A. Model Summary of Responsiveness 60
Table 4.20B.Coefficients Table for Responsiveness 61
Table 4.21A Model Summary for Assurance 61
Table 4.21B. Coefficients Table for assurance 62
Table 4.22A Model Summary for Empathy 62
Table 4.22B Coefficients Table for empathy 63

Table 4.23A Model Summery 63
Table 4.23B Regression Analysis 64
Table 4.24 ANOVA Results 65
Table 4.25 Overall Outcome of the Regression Analysis and Hypotheses Testing .. 66

List of Figures

Figure 2.1 Number of Tractors per 100 km2..... 15
Figure 2.2 Tractor import demand over time-periods.....15
Figure 2.3: Farm machinery sales demand growth..... 16
Figure 2.5 Conceptual framework..... 31
Figure 4.1. Normality test graph.....55
Figure 4.2. Graph of Linearity test..... 56
Figure 4.3. Homosedasticity.....58
Figure 5 The mean mechanization hiring cost over districts.....56

List of Appendix

Appendix 1: English questionnaire.....77
Appendix 2: Amharic Questionnaire.....81

List of Abbreviation and Acronyms

ANOVA - Analysis of Variance

SPSS - Statistical Package for Social Science

RESCO - Ries Engineeing Sh.Co.

SERVQUAL - Service Quality

SERFPERF - Service Performance

H: Hypotheses

CS - Customer Satisfaction

Abstract

In the study, the effect of after sales service quality dimensions on customer satisfaction within the Ethiopian agricultural machinery industry was investigated with on the case of Ries Engineering Share Company (RESCO). The purpose of the study was to investigate the relationship between after sales service quality and customer satisfaction and identify key dimensions. Quantitative research methodology, adopting the explanatory and descriptive research approaches, was used. Primary data were collected using structured questionnaires distributed among 125 customers using the users of Massey Ferguson brand tractors and combine harvesters. SERVPERF approach was used for measurement of five dimensions of after sales service quality: tangibility, reliability, responsiveness, assurance, and empathy. Descriptive statistics, correlation analysis, and multiple regression analysis techniques were used for statistical analysis using SPSS software. Results showed a positive relationship between all dimensions of after sales service quality and customer satisfaction levels. Multiple Regression analysis showed that the model explained 37.3% of variations of customer satisfaction ($R^2 = 0.373$). It was observed that responsiveness had the highest impact ($\beta = 0.355$), followed by empathy ($\beta = 0.196$) and assurance ($\beta = 0.087$), having significant positive impacts on customer satisfaction. Tangibility and reliability had insignificant impacts on customer satisfaction.. It is concluded that the improvement of responsiveness, empathy, and assurance can help increase customer satisfaction and support the sustainable development of agricultural mechanization in Ethiopia.

CHAPTER ONE

1. INTRODUCTION

This chapter presents the background, statement of the problem, research questions, objective, significance, scope, limitations, organization of the research report and definitions of key terms.

1.1. Background of the Study

After Sales service is the most significant component of any business success, particularly in an agricultural mechanization business, as this type of business is capital intensive. It incorporates maintenance, spare parts supply, as well as warranty service are just examples of after-sale services delivered by a company (Cohen et al., 2006; Oliva & Kallenberg, 2003, as cited in Muhammed et al., 2011).

In the highly competitive business environment with limited product differentiation, after sales service quality has become one facet on which the satisfaction, loyalty, and repurchasing behavior of customers rely (Rajnish K., 2010). Besides, the sales achieved by the company from the services may even be five times more than the sales achieved on the sale of the product, thus making many organizations rely on after sales services. (Bundschuh & Dezvane, 2003; Saccani et al., 2007; Senter & Flynn, 2010)

As agriculture remains the backbone of the Ethiopian economy and its mechanization service has to be improved. Majority of Ethiopian farming community uses imported farm machinery and operated far from the manufacturers. According to the Ministry of Agriculture (2021), the lack of an adequate supply of skilled technical personnel and an after sales system is a major impediment to promoting farming modernization programs. Besides, lack of infrastructure, particularly to provide field maintenance service, still remains an impediment as noted by the Ministry of Transport (2020). Consequently, local machinery dealers are expected to play a central role in providing after sales support; however, many lack sufficient technical capacity and nationwide service coverage.

Agricultural mechanization has been shown significantly improve land and labor productivity, profitability, and sustainability (Olaoye & Rotimi, 2010). Achieving productivity among smallholder farmers is difficult without utilization of appropriate agricultural technologies and reliable support systems (Asfaw et al., 2012; Estrella et al., 2022). In this context, effective after sales service is not only a commercial necessity for machinery dealers but also a critical enabler of sustained machinery use and agricultural productivity.

Recent literature emphasizes that high quality after sales service enhances customer lifetime value and supports long term relationship building, rather than short term transactional gains (Gupta & Lehmann, 2007). International studies have extensively examined the relationship between after sales service quality and customer satisfaction, empirical evidence in the Ethiopian agricultural machinery sector is scarce. I have reviewed some research papers related to the effect of after sales service on customer satisfaction such as in telecomm sector by (Dagmawit 2018), and in car business industry by (Yahi Hussen, 2022) research done on the Effect of After Sales Service on Customer Satisfaction: the case of the Motor & Engineering Company of Ethiopia (MOENCO). Both researches identified that after sales service quality has significant effect on customer satisfaction, However research on agricultural machinery are limited, I couldn't find such types of research done on specifically on agricultural machinery industry in Ethiopia. As agricultural machinery are different from vehicles in function, place of operation and owner's technical know how, effects on agricultural productivity, it needs a research specific to Agricultural Machinery industry.

Accordingly, this research aimed to address this gap by assess the effect of after sales service quality on customer satisfaction in the agricultural machinery business in Ethiopia, using Ries Engineering Share Company as a case study. By providing firm level empirical evidence, the study contributed to filling the existing knowledge gap and offered practical insights for improving after sales service strategies to enhance customer satisfaction, competitiveness, and sustainable agricultural mechanization.

Ries Engineering Share Company is an old and well known company in Ethiopia. It has been around for more than sixty years and has been providing solutions to engineering problems and giving technical support to its customers. The company has started operation in 1961 by the founder named Mr. Ries. At first it was an engineering department of it's parent company called Paul Ries & Sons which was located in the Piassa area of Addis Ababa. In 1965 founded as an independent company around Saris area by the name of Ries Engineering Share Company. At that time the company had a paid up capital of 200,000 Birr and forty employees. Today its capital raised to Birr 957,012,900.00 and 507 employees who are well skilled technicians, this change allowed it to do more than basic engineering work. It started to sell equipment, maintenance and provide support to customers who bought construction, mining, power generation, automotive and agricultural machinery. Over time these services became major business as of equipment sales.

1.2. Statement of the Problem

After sales service quality has been recognized as an essential determinant of customer satisfaction, loyalty, and long term business performance in capital intensive industries like agricultural machinery by Cohen et al. (2006) and Rajnish K. (2010). Quality after sales services regarding timely maintenance, availability of spare parts, warranty fulfillment, and technical support are critical to ensuring equipment reliability and continued customer relationship satisfaction. According to Omotuyi & Zairi, 1996; Oliva & Kallenberg, 2003,

Providing consistent and high quality after sales service remains a significant challenge for agricultural machinery suppliers in many developing countries due to limited technical capacity, inadequate spare parts supply, weak service networks, and infrastructure constraints (Food and Agriculture Organization, 2018). In Ethiopia, this challenge is exacerbated by weak infrastructure, shortages of skilled technical manpower, and heavy reliance on imported machinery that limits their immediate access to manufacturers' technical support. According to Amare & Endalew (2016); Fadavi et al., 2010, Customers may often face delays in maintenance services, limited access to spare

parts, weak warranty enforcement, and insufficient technical assistance, and as a result, dissatisfaction, negative word-of-mouth, and customer switching behavior may occur, according to Cohen & Whang, 1997.

Even though there is a basis for protecting consumers through legislation, such as a law on trade practice and consumer protection, proclamation No. 685/2010, there is a lack of effective realization of this law, especially regarding agricultural equipment and machinery, where after sales service is only up to the sales outlet, and customers face a challenge since there is a lack of effective after sales service as well as inadequate after sales service other than the head office itself.

There are numerous empirical studies on after sales service quality, as well as customer satisfaction, that mainly concentrated on consumer products and automotive products, particularly in developed countries. On the other hand, there are limited studies that have focused on agricultural machinery products, particularly in Ethiopia, as it experiences machinery standstills that have major economic impacts on customers, particularly in fostering agricultural mechanization in rural areas, as well as after sales service that plays an integral role in fostering customer satisfaction. In addition, there are limited findings on after sales service dimensions that have major impacts on customer satisfaction.

Therefore, it is against this limitation that this particular research identified a critical scientific research problem based on the lack of scientific literature that has explored the effect of after sales service quality on customer satisfaction within the Ethiopian agriculture machinery business sector. Therefore, this particular research intended to investigate how key after sales service quality factors determined customer satisfaction at Ries Engineering Share Company.

1.3 Research Gap

Even though many studies have conducted to test the relationship between after sales service quality and customer satisfaction in sectors such as telecommunications, automotive, and consumer products, empirical evidence from the agricultural machinery industry remains limited, particularly in Ethiopia. Existing studies have largely

overlooked the agricultural machinery sector, where effective after sales service is critical due to the high capital investment, operational complexity, and productivity implications associated with machinery use. Furthermore, limited evidence exists regarding the relative influence of specific service quality dimensions on customer satisfaction within the Ethiopian agricultural machinery market. This study addresses this gap by investigating the effect of after sales service quality dimensions on customer satisfaction in the agricultural machinery industry.

1.4. Research Questions

This study is trying to answer these questions:

1. How do customers think about the after sales service they get from machinery supplier?
2. Which parts of the service make the customers happy?
3. How much does the after sales service affect how happy the customers are overall after the machine is sold?
4. Are the customers getting the service they expect when they buy machinery?

1.5. Objectives of the Study:

General Objective of the Study

The general objective of this study is to examine the effect of after sales service quality on customer satisfaction in the agricultural machinery industry of Ethiopia: The case of Ries Engineering Sh. Co.

Specific objectives of the Study

1. To examine the relationship between service quality dimensions and customer satisfaction in the Ethiopian automotive industry.
2. To examine the effect of service quality on customer satisfaction.
3. To identify the dominant after sales service quality dimension which highly affects customer satisfaction in the agricultural machinery industry in Ethiopia

4. To offer suggestions on how companies can improve their after sales service to boost customer satisfaction and loyalty.

1.6 Significance of the Study

This study is significant from theoretical, practical, and policy perspectives.

Theoretical contribution: This study contributes to the existing body of knowledge on after sales service quality and customer satisfaction by providing empirical evidence from the Ethiopian agricultural machinery industry, a sector that has received limited scholarly attention. While previous studies have mainly focused on the automotive, telecommunications, and other consumer product industries, this research examines the agricultural machinery sector using the SERVPERF dimensions of tangibility, reliability, responsiveness, assurance, and empathy. Consequently, the study fills an important knowledge gap and provides a reference for future researchers interested in after sales service quality, customer satisfaction, and agricultural mechanization in developing countries.

Practical contribution: The findings provide practical and evidence based solutions for agricultural machinery suppliers, particularly Ries Engineering Share Company (RESCO), by identifying the after sales service quality dimensions that significantly influence customer satisfaction. The results can assist managers in prioritizing improvements in service responsiveness, technical support, customer communication, employee competence, warranty management, spare parts availability, and customer relationship management. Implementing these improvements can enhance customer satisfaction, strengthen customer loyalty, improve operational efficiency, reduce machinery downtime, and increase the competitiveness of agricultural machinery suppliers.

Contribution to policy and extension: The findings offer useful evidence for policymakers, the Ministry of Agriculture, the Ethiopian Agricultural Transformation Institute (ATI), agricultural extension organizations, and other stakeholders involved in agricultural mechanization. The study provides policy relevant insights that can support the development and strengthening of standards and guidelines for after sales service,

technician capacity building programs, spare parts distribution systems, and service network expansion. The findings may also support the implementation of Ethiopia's Agricultural Mechanization Strategy by promoting reliable after sales support systems that enhance machinery utilization, improve farmers' confidence in mechanized agriculture, and contribute to sustainable agricultural productivity and national food security.

1.7 Scope of the Study/Delimitations

This research particularly looked at companies in Addis Ababa that sell and support machinery and it's customer working in different parts of the country. We will use a numbers based approach collecting data from customers who have used after sales services, at least once.

1.8. Organization of the Study

As shown below the study has organized into five chapters. The chapters are comprised of: Introduction, Review of related Literature, research design and methodology, Results and Discussions and, Summary, conclusions and recommendations.

Chapter One presents the introduction, including the background of the study, statement of the problem, research questions, research objectives, significance of the study, scope and limitations of the study, and definitions of key terms.

Chapter Two reviews the relevant theoretical and empirical literature on agricultural mechanization, after-sales service quality, customer satisfaction, and the SERVPERF model. It also presents the conceptual framework and research hypotheses.

Chapter Three describes the research methodology, including the research approach and design, study area, population, sampling technique, sample size, data sources, data collection instruments, data analysis methods, and ethical considerations.

Chapter Four presents the data analysis, findings, and discussion of the results based on descriptive and inferential statistical analyses.

Finally, **Chapter Five** summarizes the major findings, presents the conclusions, provides recommendations, discusses the limitations of the study, and suggests directions for future research.

CHAPTER TWO

2.1. REVIEW OF RELATED LITERATURE

This chapter provides an insight to the readers about the theoretical framework, empirical review and conceptual framework and hypothesis of the topic under study also discusses research gaps. In line with the objectives of the study, this chapter covers topics related to after sales service, service quality, customer satisfaction and empirical review. Furthermore, the conceptual framework of this study will be presented at the end of this chapter.

2.1.1 Introduction

Despite growing interest in after sales service quality and its effect to customer satisfaction in different business sectors there is a big gap exists in literature about after sales service quality in agricultural machinery marketing. Although recent studies have looked at aspects of customer satisfaction across industries few have focused on agriculture, where after sales service quality greatly impacts customer experience. Research by González et al. (2024) Explored service quality in settings but did not use specific models for the agricultural market. Also lack of studies using causal approaches limits understanding of how post sale service quality variables relate and affect customer satisfaction for these goods. In Latin America in Peru rapid agricultural modernization has driven demand for tech solutions that boost productivity. In this setting after sales service is strategically important because inefficient dispatch or poor technical support can cause delayed production.

In a world with innovation and global competition excellent after sales service is a key differentiator. Moreover providing reliable post sale dispatch that builds customer trust is vital for long term relationships and reputation. The experience of buying machinery, technical support and prompt after sale dispatch are crucial for a positive perception of quality. Here trust is a component when customers believe in service effectiveness easing fears about investing in high value equipment.

Using evaluation and monitoring models, for post sale dispatch quality increases user satisfaction. Makes providers seem reliable and committed to excellence.The study is based on the SERVQUAL model developed in 1985 by Parasuraman et al., which rigorously measures the effect of tangibles, reliability, responsiveness, assurance, and empathy, involving the ability to meet expectations for precise and reliable after sale service as well as optimal responsiveness (Yang et al., 2024). According to Badajoz et al. (2023), high quality in after sale service significantly increases the likelihood of customers making repeat purchases, as they perceive greater support and trust. Silva et al. (2021) emphasize that good after sale service encourages customers to return in the long term and to recommend the company to potential clients. Evaluating the quality of post-sale service involves various factors that contribute to a satisfying customer experience. Zambrano (2023) identifies aspects such as effectiveness in problem resolution, efficiency in response times, staff empathy and friendliness, as well as service personalization as key elements that determine customer perception of post-sale service quality.

The SERVIQUAL model comprises **tangibility**, which refers to the physical assets such as infrastructure, equipment, and personnel of the service provider (Hui et al., 2023); complemented by professional attributes and means aligned with attractive services (Setiono & Hidayat, 2022); and visual aspects of the service, such as design and appearance of facilities, equipment, and personnel (Amro et al., 2025; Uzir et al., 2020), fundamental factors for developing quality services (Qing et al., 2023).

Reliability refers to the ability to deliver the promised service under consistent and accurate conditions (Hui et al., 2023). It is also related to the knowledge, courtesy, and capability of personnel to foster trust and alleviate doubts regarding service quality (Setiono & Hidayat, 2022), as well as the ability to provide services as promised, with quality, within the established timeframe, without errors, and aligned with customer service management (Qing et al., 2023). It is associated with the accuracy, consistency, and reliability of the service provided (Amro et al., 2025).

Responsiveness denotes the willingness to promptly assist customers and provide timely service (Hui et al., 2023). It is closely related to the readiness to help customers and deliver services swiftly. Among its attributes is informing customers about the service delivery time frame (Setiono & Hidayat, 2022). Furthermore, it evaluates the speed and quality with which service providers attend to customers (Amro et al., 2025), indicating determination to provide timely assistance (Qing et al., 2023).

Empathy represents the willingness to care for the customer and personalize their service (Hui et al., 2023). It is linked to the personalized attention provided by the service provider. Its attributes include individualized attention, diligent treatment by employees, prioritization of customer interests, understanding of their needs, and appropriate service hours (Setiono & Hidayat, 2022). It also encompasses the capacity and willingness to understand and attend to customers (Amro et al., 2025), taking care of the customer as a result of service quality (Qing et al., 2023).

Assurance encompasses the capability, respect, and sensibility of personnel to inspire trust (Hui et al., 2023). It also refers to the guarantee and courtesy of employees to generate confidence (Qing et al., 2023). Its attributes include the ability to make customers trust you during transactions and being polite when they ask questions (Setiono & Hidayat 2022). This concept is about the experience, skills and trustworthiness that employees must show when it comes to the quality of service they offer (Amro et al. 2025).

Customer satisfaction in services is very important. It is about how a product or service meets or exceeds what customers expect (Ramírez et al. 2020; Yaranga et al. 2025). When customers are satisfied they are more likely to be loyal buy and tell others about the company (Triana & Gómez 2023; Illa-Sihuincha et al. 2025). Research shows that good service, personalized attention and efficient delivery are key to making customers happy and committed (Quesada, 2021).

2.2. Agricultural Mechanization

Agricultural mechanization is generally defined as the use of hand tools, implements, and machinery for farm activities in all stages of agricultural production (FAO, 2016; Van Loon et al., 2020). A vast body of literature emphasized that mechanization contributes to

efficient utilization of resources and increased factor productivity due to the benefits of higher precision, timely operation, reduced drudgery, and saving of labor (Clarke, 2000; Clarke & Bishop, 2002b; Sims & Kienzle, 2016). Mechanization is an important element of agricultural growth (Daum & Birner, 2020) and the factor for the transformation of agricultural production or the rural communities at large (Schmitz & Moss, 2015).

Traditional farms that are predominantly dependent on the productivity of agricultural labor were not able to meet the dynamic food and nutrition security needs of the society (Fuglie & Rada, 2013). Donors and policymakers granted continued support for the sector though the efforts come up with less fruitful results (Mrema et al., 2008; Pingali et al., 1988b; Mrema, 2014; FAO, 2008). A large mass of land is brought under cultivation in Sub-Saharan Africa, Latin America, and South Asia but utilization of mechanical power and tractors, in particular, is considerably low (Baudron et al., 2015; Mrema et al., 2008). The discrepancy of the economies of scale of mechanization and small farm size characterized by dispersion and crop diversity is the major impediment for the wider adoption. The proposed solution of consolidation of small farms to harmonize with large machines was also not successful in many countries. The literature and policy suggestions are in favor of reversing the approach and state that scale-appropriate machinery is the alternative taking into account the resource endowment factors (Sims & Kienzle, 2016; Van Loon et al., 2020).

Enhancement of the demand and adoption of mechanization technologies requires a system perspective beyond the plot and farm level situations, which encompasses the supply chain processes, local manufacturers, dealers, and repair and maintenance centers (Kahan et al., 2018). The past perception towards the mechanization of agriculture where it is feasible only under large-scale farming is misguiding and rather mechanization should be customized to the circumstances of small farms (Diao et al., 2014). In developing countries, the state interference through the direct support to farmer cooperatives while ignoring the need for maintaining a conducive environment to the suppliers involved in manufacturing, imports, distribution and sales, and After-sales services has constrained the growth of the sector (Mrema et al., 2008; Clarke, 2000;

Pingali et al., 1988). Concurrently, the factors of farmers' know-how, skills in operation, maintenance and repair, and access to spare parts have not been well considered (Diao et al., 2018). The importance of the catalyzing role of the public through the building up of an enabling financial and infrastructural environment is emphasized (Mrema, 2014; Sims & Kienzle, 2016).

Agricultural mechanization in Ethiopia has undergone a structural change from the state of government subsidized provision of hiring services in the 1980s, which experienced a collapse in similar ways to other Asian and African countries. After the market liberalization, the majority of the farmers in the Arsi area obtain services from private service providers whereas there has been a limited role of the government and state farms (Hassena et al., 2000). The relatively free market operation at least permitted the involvement of the private sector, however, farm machinery and the hiring service became too expensive (World Bank, 2014). The government posed no clear direction for maintaining favorable institutional and infrastructural facilities that are important for the success of mechanization service through the involvement of private operators.

Due to the underdevelopment of agricultural mechanization in Ethiopia, agriculture remained largely dependent on draught and human sources of farm power. The demand for mechanization in the country has gained a revival in the recent decade. Recognizing the benefits of agricultural mechanization and the ongoing dynamics, the formulation of the Agricultural Mechanization Strategy (AMS) and amendment of import duty on machinery are the steps taken to encourage the development of mechanized farming in Ethiopia.

For transformation of the agricultural production through the promotion of crop and livestock technology packages, the extension system further incorporated row planters, threshers, and post-harvest technologies (MoANR & ATA, 2014). Various public and private institutions nowadays have shown interest to make the necessary interference for the development of the sector. The paper characterizes on the effect of quality after sales services on customer satisfaction which benefits both farm machinery dealers enable to

generate high profit and increase their sales performance and end users enables the to get high return on their investments mean while agricultural mechanization is promoted to high level which contributes to the country's plan to be food self sufficient.

2.3. Trends in agricultural mechanization and structural change

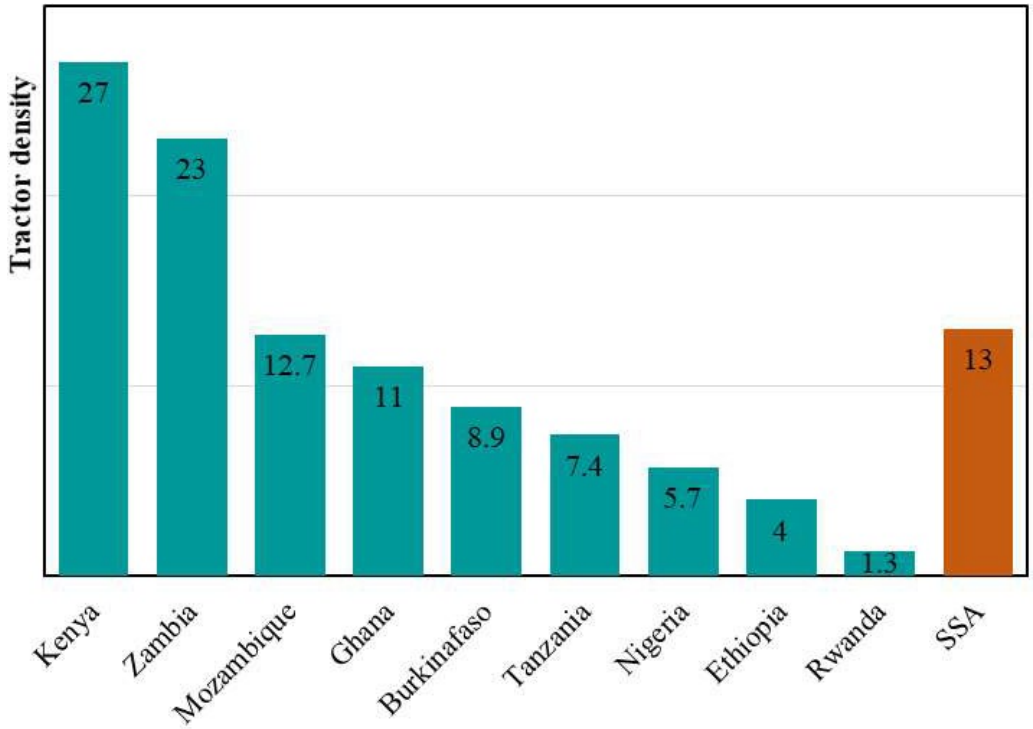
The expansion of private large-scale commercial farms during the 1960s, which later on handed over to the state-owned farm enterprises were the earlier adopters of agricultural mechanization practices in Ethiopia. Notably, the mechanization hiring schemes that came into existence have laid down the foundation in the promotion and use of mechanical technologies by peasant households. The Agricultural Mechanization Service Corporation (AMSC) was established in 1985 under the Ministry of Agriculture (MOA) with the primary purpose of rendering mechanization services to the small scale sector (Clare, 1991). Two service modalities were designed in parallel to differing production systems i.e., the fully subsidized services access to the tsetse fly affected areas whereas the cost-recovery brand to producer cooperatives and farmers predominantly in southeast, northwest, and central regions. The hiring rate was set by the government in such a way that it covers the full cost of variable costs while only 10–15% of fixed costs.

The rural technology centers simultaneously targeted the establishment of mechanization services along with the dissemination of farm technologies, for example, maize shelling hiring schemes have been started, which have an output capacity of 4–5 tons/hr (Kelemu, 2015). The ambitious rural settlement program and the expansion of smallholder mechanized farming is the other scenario that has undertaken during the 1980s (Dessalegn, 2003) through the program experienced little success.

A major structural change was devised during the subsequent regime, the policy argument positioned in favor of labor intensive agricultural production while against the allocation of scarce capital resources to smallholder farming (MoFED, 2010). The below figure illustrates the involvement of tractor imports during the two periods, 1975–1991 and 1994–2018 (Fig. 2). The UN COMTRADE data evidence that the structural change had an impact on agricultural mechanization, which is explained by thereafter reduction

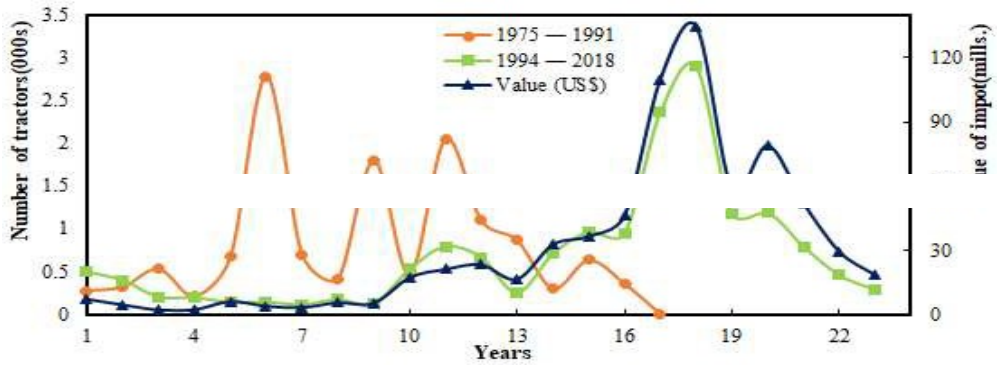
of tractor imports. The value of import (World Bank data) is correlated with the quantity while it only captures the post-liberalization period (1994–2018). For about 16 years in the second lapse of time, tractor imports stood largely lower than the import quantity demand during the previous regime. However, this has shown a surpassing growth lately from 2010 through 2014.

Figure 2.1 Number of Tractors per 100 km2 (Source: World Bank, 2014)



According to the data shown in this chart Kenya has biggest fleet of tractors per square kilometer than other African countries indicated. Ethiopia has the lowest tractor density than other.

Figure 2.2 Tractor import demand over time-periods (Source: UN COMTRADE and World Bank, 2020)



According to this chart agricultural machinery sales volume is increasing.

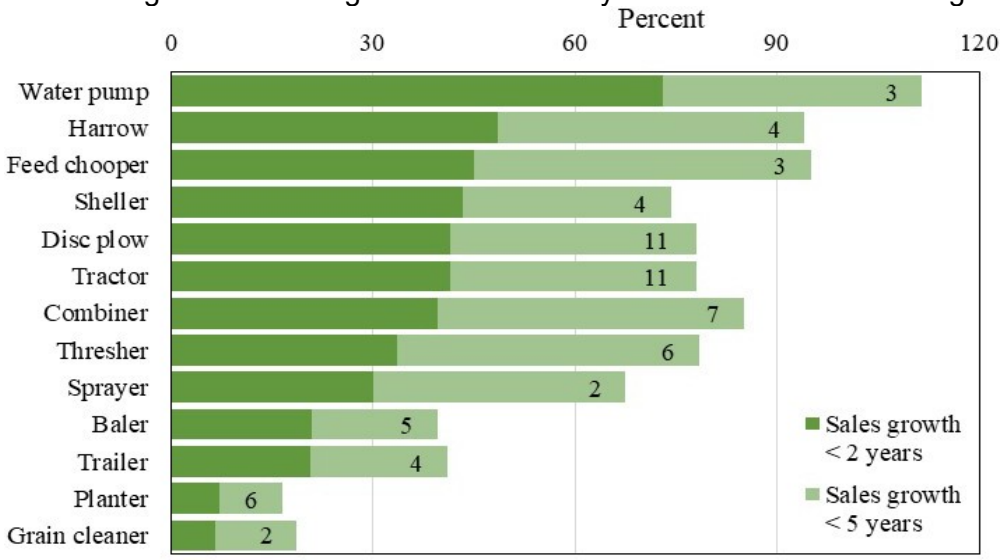
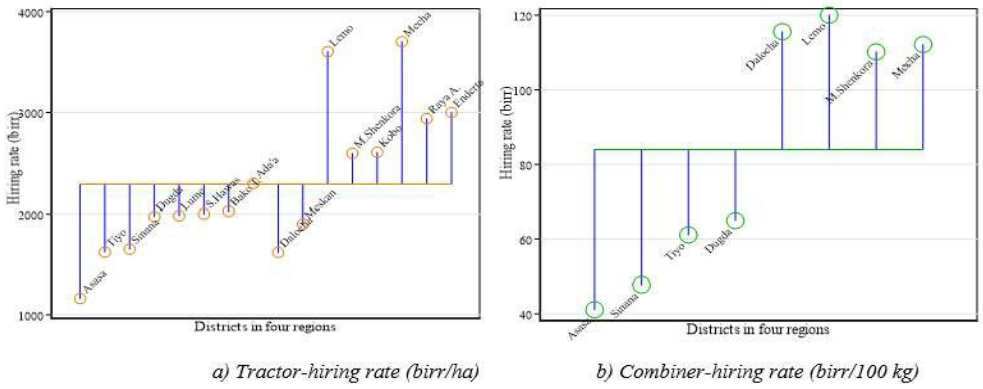


Figure 2.3: Farm machinery sales demand growth



a) Tractor-hiring rate (birr/ha) *b) Combiner-hiring rate (birr/100 kg)*

Figure 2.4: The Mean Mechanization Hiring cost Over Districts

2.4. Renewed Attention to After Sales Service in Mechanization

The emerging interest in mechanization has led to the formation of the Agricultural Mechanization Strategy in 2014.

> ***The strategy has a mission for raising the current mechanical power uses from 0.13 kW/ha to 1 kW/ha, improving smallholders' access to mechanization by 30%, and reduction of animal power by 50% (MoANR & ATA, 2014).***

A policy appraisal raises an agenda of the mechanization policy that guides and sets full-fledged targets and priorities at various levels. The import policy gives a special

advantage to investors while cooperatives and smallholder farmers hardly get any of the benefits (Deribe & Jaleta, 2019). On this account, the advocacy and ongoing dialogue has induced a reexamination of the circumstances and currently, the policy has waived import taxes on agricultural machinery, irrigation technologies, and livestock feed ingredients.

2.4.1 Tangibility and Customer Satisfaction

Tangibility refers to the physical aspects of service delivery, including physical facilities, equipment, personnel appearance, communication materials, and the availability of modern service tools (Cronin & Taylor, 1992). In the agricultural machinery sector, tangibility includes well-equipped service workshops, modern maintenance equipment, clean service centers, adequate spare-parts inventory, branded service vehicles, and professional appearance of service technicians. These physical cues shape customers' perceptions of service quality and influence their confidence in the supplier.

According to the SERVPERF model developed by Cronin and Taylor (1992), customers use tangible aspects as one of the key indicators when evaluating overall service quality. Well-maintained service facilities and modern equipment create positive first impressions and signal the organization's commitment to quality service delivery.

Empirical studies have reported mixed findings regarding the influence of tangibility on customer satisfaction. Senter and Flynn (2010) found that tangible service attributes, including service facilities and equipment availability, positively influenced customer satisfaction among equipment users. Similarly, Yahi Hussen (2022) reported that tangibility had a positive relationship with customer satisfaction in Ethiopia's machinery sector, although its influence was weaker than responsiveness and assurance. Conversely, some studies suggest that while tangibility contributes to customer satisfaction, customers purchasing agricultural machinery tend to place greater emphasis on technical competence, timely maintenance, and problem-solving capability than on physical facilities alone.

For agricultural machinery suppliers such as RESCO, maintaining well-equipped workshops, ensuring adequate spare-parts availability, and deploying professionally

trained service personnel are expected to improve customers' perceptions of service quality and satisfaction.

2.4.2 Reliability and Customer Satisfaction

Reliability refers to the ability of an organization to perform the promised service accurately, consistently, and dependably (Cronin & Taylor, 1992). In the agricultural machinery sector, reliability is demonstrated through timely repair services, accurate diagnosis of machinery faults, fulfillment of warranty commitments, and consistent availability of genuine spare parts.

The SERVPERF model identifies reliability as one of the strongest dimensions influencing customers' evaluation of service quality. Customers expect suppliers to deliver services correctly the first time and honor their service commitments.

Empirical evidence consistently identifies reliability as a significant predictor of customer satisfaction. Cohen, Agrawal, and Agrawal (2006) reported that reliable after-sales service enhances customer trust and encourages repeat purchasing. Likewise, Saccani, Songini, and Gaiardelli (2007) found that organizations with dependable maintenance services and effective spare-parts management achieved higher customer satisfaction and stronger customer loyalty. In Ethiopia, Yahi Hussen (2022) also found reliability to have a significant positive effect on customer satisfaction in the machinery industry.

For agricultural machinery customers, unreliable service may result in prolonged machinery downtime, increased operating costs, and reduced agricultural productivity. Therefore, ensuring reliable after-sales service is essential for maintaining customer satisfaction.

2.4.3 Responsiveness and Customer Satisfaction

Responsiveness refers to the willingness and readiness of employees to assist customers promptly and provide timely services (Cronin & Taylor, 1992). It reflects how quickly service personnel respond to customer inquiries, maintenance requests, complaints, and emergency breakdowns.

According to the SERVPERF model, responsiveness enhances customers' perceptions of service quality because it demonstrates organizational commitment to customer needs. In agricultural machinery businesses, rapid response is particularly important because machinery failures during planting or harvesting seasons may lead to significant production losses.

Empirical studies consistently identify responsiveness as one of the strongest determinants of customer satisfaction. Cohen et al. (2006) emphasized that rapid maintenance response and timely technical support increase customer confidence and loyalty. Similarly, Senter and Flynn (2010) found that prompt after-sales support significantly improves customer satisfaction. In Ethiopia, Yahi Hussen (2022) reported responsiveness as one of the most influential service quality dimensions affecting customer satisfaction.

2.4.4 Assurance and Customer Satisfaction

Assurance refers to employees' knowledge, competence, courtesy, and ability to inspire customer trust and confidence (Cronin & Taylor, 1992). In the agricultural machinery sector, assurance is reflected in technicians' technical expertise, effective communication, professional behavior, and the supplier's ability to resolve machinery problems accurately.

Customers are more satisfied when they trust the competence of service personnel and believe that their machinery will be repaired correctly. Saccani et al. (2007) argued that technically competent employees significantly enhance customer confidence and perceived service quality. Likewise, Yahi Hussen (2022) found assurance to be one of the strongest predictors of customer satisfaction in Ethiopia's machinery sector.

2.4.5 Empathy and Customer Satisfaction

Empathy refers to providing individualized attention and understanding customers' unique needs (Cronin & Taylor, 1992). In agricultural machinery businesses, empathy involves understanding farmers' operational challenges, providing personalized technical advice, maintaining regular communication, and offering flexible service solutions.

Customers appreciate organizations that genuinely understand their needs and demonstrate concern for their operational success. Senter and Flynn (2010) found that personalized customer support strengthens customer relationships and improves satisfaction. Similarly, Dagmawit (2018) reported that customer-oriented service practices positively influence customer satisfaction.

For agricultural machinery suppliers, demonstrating empathy through proactive communication, follow-up visits, and customer education can strengthen long-term relationships and increase customer loyalty.

2.5. Conceptual and Theoretical Review

2.5.1. Definitions of Key Terms in Agricultural Machinery Context

2.5.1.1. After-Sales Service

In the agricultural machinery sector, after-sales service is what happens when people help you with your machines after you buy them. This help makes sure the machines keep working do not break down and do their job well for a time. The people who sell the machines do things like put them together get them started fix problems before they happen repair them when they are broken give you the parts you need deal with warranties and send someone to help you at your place. Some people call this kind of help field service, which's what Simmons talked about in 2001.

2.5.1.2. Delivery

Delivery in heavy machinery contexts involves the safe, timely, and accurate transportation of equipment to project sites or farms, often located in remote or infrastructure-limited areas. It includes proper handling, documentation, scheduling accuracy, and coordination with customers to minimize project delays and idle time (Lele et al., 1983).

2.5.1.3 Installation and Commissioning

Installation refers to the technical processes performed during machine setup, testing, calibration, and initial operation. In agricultural machinery, installation quality directly affects machine performance, safety, fuel efficiency, and lifespan. Proper commissioning ensures that operators are trained and equipment is ready for immediate and efficient use (Karmarkar, 1983).

2.5.1.4. Service Warranty

A service warranty in capital-intensive machinery represents the supplier's contractual obligation to repair, replace, or adjust defective components within a defined period. Warranty services are critical in mitigating operational risk for contractors and farmers, particularly in markets where equipment replacement is costly and downtime has severe financial consequences (Anderson, 1968).

2.5.1.5. Customer Satisfaction

Customer satisfaction in machinery markets refers to the customer's overall evaluation of both the equipment performance and the effectiveness of post-purchase technical support, based on the comparison between expected service reliability and actual service experience (Parasuraman et al., 1996).

2.5.2. Concept of Service in Heavy Equipment Industries

2.5.2.1. Agricultural Mechanization and After-Sales Service Linkages

Agricultural mechanization is something that really helps farms in developing countries produce food.. In Sub-Saharan Africa this has not happened very quickly. There are reasons for this, including the way the country is set up and the environment.

The World Bank did a study with Pingali, Bigot and Binswanger back, in (1987). They found out that African farmers do not just adopt mechanization because the technology is available. It also depends on how they farm the land and how they use it.

African farmers usually start using ploughs when they stop moving from one place to another to farm and start farming in one place all the time. This shows that African farmers start using this equipment when it makes sense for them in the run not just because the equipment is available. Agricultural mechanization is something that is influenced by things, including the economy and the environment not just the equipment itself..

2.5.2.2. World Bank Report

Highlight that many mechanization projects and tractor introduction programs across Sub-Saharan Africa failed due to inadequate post-purchase support structures such as limited spare-parts access, poor machinery repair systems, and weak operator training services. These challenges reduced machine utilisation levels, increased breakdown frequency, and lowered overall customer confidence in mechanization supply systems

This historical evidence aligns directly with the core argument of the present research: customer satisfaction in agricultural machinery markets is significantly influenced by after-sales service quality, including repair service availability, maintenance support, and technical skill access.

The study shows that farmers need help with machinery all the time. They need this help after they buy the machinery in places where people are just starting to use machines. If farmers do not get this help the machines will break down often and the farmers will not get as much money back from their investment. This will make them not want to buy machines in the future. They will think badly of the people who sell the machines.

So the study confirms that mechanization sustainability is not about buying a machine one time. Mechanization sustainability is about having a system that works for a time and this system needs to be supported by people who sell the machines and by people who can fix the machines and provide extra parts. Mechanization sustainability also needs to have specialists who can help the farmers.

In Ethiopia the people who sell machinery are working in a place where more and more people are using machines. The people who buy these machines want them to work well. They want to get help when they need it. In Sub-Saharan Africa it has been shown that it is very important to have systems in place to help customers after they buy the machines. This helps to keep the customers happy and loyal to the businesses that sell the machines.

The study also shows that when businesses provide service to their customers the customers are happier and the businesses do better. This good service includes helping the customers fix their machines having extra parts available and teaching the customers how to use the machines. Mechanization sustainability is important for farmers and for the people who sell the machines. Mechanization sustainability is, about having machines that work well and having people who can help the farmers use the machines.

In agricultural machinery industries, service extends beyond transaction support and becomes an integral component of the product offering. Kotler (2000) defined service as an intangible act or performance that accompanies physical goods. In machinery markets, service is inseparable from the equipment itself, as machine value is realized only when equipment remains operational.

Unlike consumer goods, heavy machinery services are:

- ✓ Highly technical
- ✓ Location-dependent (on-site service)
- ✓ Time-critical due to downtime costs
- ✓ Relationship-driven between dealer and customer

As Gronroos (1985) emphasized, service quality in industrial markets depends not only on technical outcomes but also on how services are delivered in demanding operational environments.

2.5.3. Service Quality in Agricultural Machinery

Service quality in machinery after-sales service is the customer's assessment of the dealer's ability to maintain equipment uptime and operational efficiency. It consists of:

- **Technical quality:** refers to what customers receive after the service is completed. It includes the accuracy of diagnosing machinery problems, the effectiveness of repairs, the availability of genuine spare parts, and the reliability of the machine after servicing. High technical quality ensures that machinery performs efficiently, reduces breakdowns, and increases customer confidence in the service provider (Grönroos, 1983).
- **Functional quality:** refers to how the service is delivered to customers. It includes prompt response time, effective communication, professional technician behavior, transparency in service processes and costs, and proper coordination of service activities. High functional quality enhances customers' service experience and strengthens their satisfaction and trust in the service provider (Grönroos, 1983).

Parasuraman et al. (1988) explained that service quality results from the gap between expected and perceived performance. In agriculture mechanization, expectations are particularly high due to:

- **High capital investment:** Agricultural machinery requires substantial financial investment, increasing customers' expectations for reliable after-sales service.
- **Seasonal farming requirements:** Machinery must operate efficiently during critical farming seasons, making timely service essential to avoid production delays.
- **Low infrastructure to access farming sites:** Poor road and transport infrastructure can delay service delivery and spare parts supply to remote farming areas.
- **Low technical know-how of the farming community:** Limited technical knowledge among farmers increases their dependence on dealers for machine operation, maintenance, and repair support.

Failure in service quality can lead to farming delays, yield losses, loss of customer trust.

2.5.4. After-Sales Service as a Competitive Advantage in Machinery Markets

After-sales service has become a primary source of revenue and competitive differentiation in agricultural machinery industries. Kotler (2002) noted that manufacturers and dealers increasingly rely on services rather than equipment sales for profitability.

After-sales service in machinery markets includes:

- **Preventive and corrective maintenance:** Preventive maintenance reduces the risk of breakdowns, while corrective maintenance restores machinery after failures.
- **Spare parts logistics:** Efficient spare parts logistics ensures the timely availability and delivery of replacement parts to minimize machine downtime.
- **Field service and mobile workshops:** Field service and mobile workshops provide on-site repair and maintenance, reducing the need to transport machinery.
- **Technical training for operators:** Training equips operators with the skills to use, maintain, and troubleshoot machinery effectively.
- **Warranty and service contract management:** Warranty and service contract management provides repair coverage and scheduled maintenance, enhancing customer confidence and long-term support

Cohen and his team (2006) pointed out that after-sales service margins in durable goods industries are often times higher than product margins. Senter and Flynn (2010) found that machinery sales have margins so dealers rely heavily on service revenue to keep their operations going.

2.5.5. Customer Satisfaction in Agricultural Machinery

Customer satisfaction with equipment is a long-term evaluation based on experience not just a reaction after a purchase. Oliver (1997) said that satisfaction is a process that builds up over time through repeated service encounters.

In machinery satisfaction is influenced by:-

- How often the equipment is working
- How quickly problems are fixed
- How easily spare parts can be found
- How skilled the service technicians are
- How fairly warranty claims are handled

Satisfied customers tend to buy equipment from the same dealer sign service contracts and recommend the supplier to others (Barsky, 1995).

2.5.6. Relationship between After-Sales Service Quality and Customer Satisfaction

Good service quality is widely recognized as a factor in customer satisfaction in industrial markets (Cronin & Taylor 1992). In machinery after-sales service quality directly affects customer satisfaction because service failures cause operational and financial losses. Alexander (2002) argued that effective after-sales service builds trust reduces customer risk and creates long-term relationships between dealers and customers. This relationship is especially important in emerging markets where customers rely heavily on dealers.

2.5.6. Measurement of After Sales Service Quality in Machinery Sector

Service quality models like SERVQUAL are useful but need to be adapted for industrial and agricultural machinery contexts. Cronin and Taylors SERVPERF model, which focuses on performance than expectations is particularly suitable for machinery after sales service.

2.6. Empirical Review in Agricultural Machinery Sector

Empirical evidence indicates that after sales service quality is a key determinant of customer satisfaction and long term business performance, particularly in industries that supply capital intensive equipment such as agricultural machinery. Unlike ordinary consumer products, agricultural machinery requires continuous technical support, preventive maintenance, timely repair services, and reliable spare parts throughout its operational life. Consequently, the quality of after-sales service significantly influences customers' purchasing decisions, machinery utilization, and supplier loyalty.

Oliva and Kallenberg (2003) examined the strategic role of after sales services in manufacturing firms and found that organizations providing comprehensive maintenance services, technical assistance, and customer support achieved higher customer

satisfaction and stronger long term customer relationships. Their study emphasized that after sales service has evolved from a supplementary business function into a strategic source of competitive advantage, particularly in industries where equipment reliability directly affects customer productivity.

Similarly, Cohen, Agrawal, and Agrawal (2006) argued that after sales service has become one of the most important drivers of profitability and customer retention in durable goods industries. Their study revealed that customers evaluate suppliers not only based on product quality but also on the availability of spare parts, responsiveness of service personnel, warranty support, and the speed with which technical problems are resolved. Firms that consistently deliver reliable after sales services are therefore more likely to retain customers and strengthen their market position.

Supporting these findings, Saccani, Songini, and Gaiardelli (2007) reported that effective management of after-sales services enhances customer satisfaction while improving organizational competitiveness. Their study demonstrated that efficient service delivery systems, competent technicians, and well managed spare parts logistics contribute significantly to customers' perception of service quality. The researchers concluded that manufacturing firms should integrate after sales service into their overall business strategy rather than treating it as a separate operational activity.

Senter and Flynn (2010) also emphasized that customer satisfaction depends on the supplier's ability to provide dependable maintenance services, timely technical support, and continuous customer assistance after product delivery. Their findings suggest that responsive after sales service not only reduces equipment downtime but also strengthens customer confidence and promotes long term business relationships.

Within the agricultural machinery sector, the importance of after sales service is even greater because machinery is frequently operated under demanding field conditions and requires regular maintenance throughout its service life. Clarke (2000) noted that sustainable agricultural mechanization depends not only on the availability of machinery but also on efficient repair facilities, adequate spare parts supply, and skilled service

technicians. Without these support systems, machinery performance deteriorates, resulting in reduced productivity and increased operating costs for farmers.

Likewise, Berhane et al. (2017) observed that agricultural mechanization in Ethiopia continues to face challenges related to inadequate maintenance services, shortages of spare parts, and limited technical support. These constraints reduce machinery utilization and discourage farmers from adopting mechanized farming technologies. Baudron et al. (2015) similarly reported that weak service delivery systems remain one of the major barriers to successful mechanization in Sub-Saharan Africa, highlighting the importance of strengthening after-sales support alongside machinery distribution.

The Food and Agriculture Organization (FAO, 2018) further emphasized that sustainable agricultural mechanization requires strong after-sales service systems, including accessible maintenance facilities, trained technicians, effective spare parts distribution networks, and continuous operator training. According to FAO, these services are essential for improving machinery reliability, extending equipment lifespan, increasing farmer confidence, and ensuring sustainable agricultural productivity.

Evidence from Ethiopia also supports the importance of after sales service quality. Dagmawit (2018) found that service quality dimensions significantly influenced customer satisfaction, demonstrating that customers place considerable value on reliable, responsive, and customer oriented services. Similarly, Yahi Hussen (2022).

More recently, Cherkos and Olaniyan (2024) highlighted that although Ethiopia has made progress in promoting agricultural mechanization, several institutional and operational challenges continue to hinder its effectiveness. These include inadequate maintenance infrastructure, limited availability of spare parts, insufficient technical capacity, and weak service delivery systems. The authors recommended strengthening after sales support as an essential strategy for improving machinery utilization and enhancing agricultural productivity.

Although previous empirical studies consistently demonstrate a positive relationship between after-sales service quality and customer satisfaction, most have focused on

manufacturing industries, automotive businesses, or general service sectors. Very limited empirical evidence exists regarding the agricultural machinery sector in Ethiopia. In particular, few studies have examined how the five SERVPERF dimensions—tangibility, reliability, responsiveness, assurance, and empathy influence customer satisfaction among agricultural machinery customers.

Therefore, an important empirical research gap remains in understanding the determinants of customer satisfaction within Ethiopia's agricultural machinery industry. This study addresses that gap by examining the effect of after-sales service quality dimensions on customer satisfaction at Ries Engineering Share Company (RESCO). The findings are expected to contribute to the existing literature while providing practical evidence for improving after-sales service quality and supporting sustainable agricultural mechanization in Ethiopia.

2.7. Conceptual framework and Hypotheses

Berndt, A. (2009) explained the five dimensions of SERVQUAL model which is also the dimension for SERVPERF model/ with respect to automobile service center and these are reliability, assurance, tangibles, empathy and responsiveness. In this research this concept is adopted to farm machinery after sales service.

2.7.1. Reliability

This refers to the extent to which the service provider (the dealership) delivers on the promises made to the customer (O‟Neill and Palmer, 2003; Buttle, 1996). Dealerships are known to contact the customer, promising that the machinery will be ready for collection at a specific time. Upon arrival at the dealership, the customer is told that the machinery is “nearly ready”, much to their frustration. Reliability is regarded as the most important dimension of service quality (Chowdhary and Prakash, 2007; Zeithaml et al., 2006).

H1: Reliability has a significant positive impact on customer satisfaction.

2.7.2. Assurance

This refers to the degree of confidence and trust that the dealership is able to engender in the customer, based on the interactions between the parties (Zeithaml et al., 2006; O‟Neill and Palmer, 2003; Buttle, 1996). In the case of the dealership, the main source of assurance is with the service adviser. Their knowledge and manner of interaction with the customer inspires trust in the organization.

H2: Assurance has a significant positive impact on customer satisfaction.

2.7.3 Tangibles:

This refers to the physical cues that are part of the service delivery process (Zeithaml et al., 2006; O‟Neill and Palmer, 2003). They are used to communicate to the customer about the service that can be expected. Tangible cues that form part of this dimension include the signage, parking and layout of the dealership itself.

H3: Tangibility has a significant positive impact on customer satisfaction.

2.7.4. Empathy

Here, the customer is treated in such a way that they feel important to the organization, and that their needs are important to the organization, such as that they receive caring, individualized attention (Zeithaml et al.,2006; O‟Neill and Palmer, 2003). In the case of the farm machinery dealership, this can be seen in the interactions between the organization and the customer, and the nature of this interaction. Commenting on this Parasuraman et al (1988), said that customers want to feel understood and important to the service providers‟ firm.

H4: Empathy has a significant positive impact on customer satisfaction.

2.7.5. Responsiveness

This refers to the willingness on the part of the service provider to deliver assistance to the customer (Zeithaml et al., 2006; O‟Neill and Palmer, 2003). In the case of the farm

machinery dealership, this refers to the changes that have been observed in service hours from just being weekdays to include weekend and night services, due to the changes in the needs of customers.

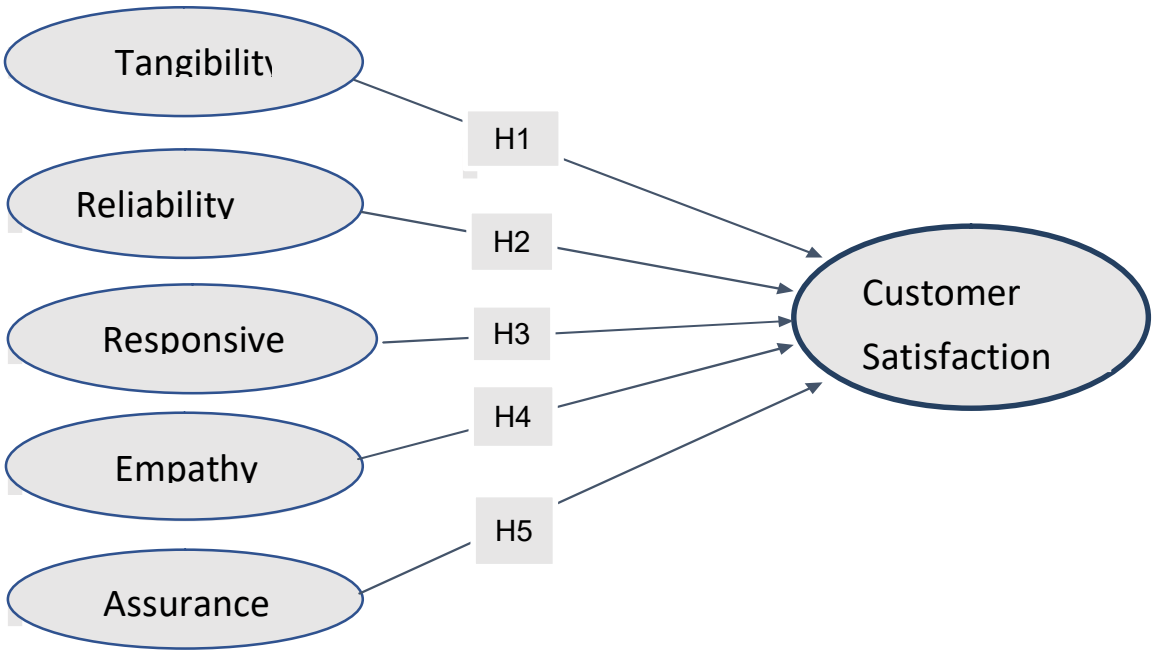
H5: Responsiveness has a significant positive impact on customer satisfaction.

2.7. Conceptual Framework

The conceptual framework indicates the crucial process, which is useful to show the direction of the study. The study shows the relationship between the five service quality dimensions and customer satisfaction.

Also the study focuses on SERVPERF model.

Figure 2.5 Conceptual framework



Source: Parasuraman et al., 1988

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 DESCRIPTION OF THE RESEARCH AREA

This study was conducted on agricultural machinery dealer/Ries Engineering Sh.Co/ and Massey Ferguson agricultural machinery users working around East Shewa and Arsi Bale areas, Ries Engineering Sh.Co. Is a dealer of Massey Ferguson Agricultural machinery, Komatsu Construction machinery, Cummins power generator, Ford Vehicles and others, It has four branches one each in Bahir Dar, Hawass, Mekele and Dire Daw, In addition to machine sales it provides the necessary after sales services like spare part supply, maintenance service in it's work shop including branch workshops and at customer site as necessary, provides training to machine operators and maintenance crew training and warranty services to its customers operating all the country. East Shoa, and Arsi-Bale areas are well known for agricultural mechanization and well located to provide the necessary after sales services, and will be easy to collect the necessary data for this study. Now a day Ethiopian government gives top priority for promotion of agricultural mechanization as it's a mandatory tool to become food self sufficient, so agricultural machinery sales, distribution and after sales services should have been studied and provide the necessary findings to the policy makers to promote agricultural mechanization.

In this regard RESCO is supplying world wide known Massey Ferguson high quality tractors and other brand agricultural machinery and provides the necessary after sales services, however the are certain limitations on providing high quality after sales services, so these limitations has to be studied thoroughly figure out their effects and find out the necessary solution.

3.2 Research Approach

The research used a deductive style of reasoning which operates from the general to specific. A general set propositions relating to a given phenomenon is narrowed down to a specific set of testable hypotheses or to a single testable hypothesis. John A. et al. (2007) Quantitative research is a means for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures. The final written report has a set structure consisting of introduction, literature and theory, methods, results, and discussion Creswell, (2009). Based on the objectives of the study and the availability of relevant information, this study has used quantitative research approach to test the credibility of the SERVPERF model in the context after sales service quality in the Agricultural Machinery industry in Ethiopia.

The quantitative approach with a deductive style of reasoning was applied to examine the relationship between the dependent variable (i.e. customer satisfaction) and independent variables (i.e. the five dimensions of SERVPERF model)

3.3. Research Design

Research design can be described as a plan for executing the research and answering the research aim and objectives. It provides the structure to resolve the identified problem and avoid situations where the evidence does not address the initial research problems. There are three forms of research design which are descriptive, exploratory and explanatory research designs.

Explanatory research design is a fact finding research design where the major emphasis is on clarifying the research problem and research direction. (Yin, 2009) as cited by Erika E. (2013). Explanatory research design is concerned with learning of why (i.e. how one variable produces changes in another (Yin, 2009) as cited by Erika E. (2013).

Descriptive research design is practical for collecting and assessing opinions, behaviors and features of a population or for studying the state of affairs. (Yin, 2009) as cited by Erika E. (2013).

Based on the objective and research questions the researcher has used descriptive as well as explanatory research design. The reason behind using descriptive research design is to describe the service quality dimensions that lead to customer satisfaction, and that of explanatory is to explain, understand, predict and control the relationship between the independent variable (SERVPERF dimensions) and the dependent variable (customer satisfaction).

3.4. Population and Sample

3.4.1. Population

Target population of this study were Massey Ferguson Agricultural Tractor users in East Shewa and Arsi Bale areas and Massey Ferguson Combine Harvester users in Arsi-Bale Areas with a population of 700 .

3.4.2. Sample Design

According to the methodology literature, there are two main sampling methods, probability and non-probability sampling Zikmund(2000). Probability sampling is based on the concept of random selection and the population will have an equal chance for being selected, whereas Non probability sampling is that sampling procedure which does not afford any basis for estimating the probability that each item in the population has of being included in the sample. In this type of sampling, items for the sample are selected deliberately by the researcher; his choice concerning the items remains supreme. In other words, under non probability sampling the organizers of the inquiry purposely choose the particular units of the universe for constituting a sample on the basis that the small mass that they so select out of a huge one will be typical or representative of the whole. Kothari (2004).

This research targeted the supplier's after sales service structure, asses skilled manpower and service equipment available to provide the necessary after sales services of the local agricultural machinery suppliers, RESCO as an example and level of after sales service demand of end users and their satisfaction on current after sales service provided by the

suppliers. Since the nature of customers are different like rental service providers, investors working only in their farm sites and cooperatives working in their member farms, so the company's after sales services strategies are vary accordingly, so our approach of the study or data collection will be distributed accordingly.

3.4.3 Sampling Procedure

The study employed non-probabilistic sampling procedure because of impracticality of accessing randomly selected target respondents. This is due to being bounded by time, money and workforce, because of these limitations, it is almost impossible to randomly sample the entire population and it is often necessary to employ another sampling technique, the non-probabilistic sampling method.

3.4.4 Sample Size

Data was collected from the company's customers using the sample determination method developed by Carvalho (1984),

Table 3.1 Sample det ermination method

	Sample Size		
Population	Small	Medium	Large
51 – 90	5	13	20
91- 150	8	20	32
151 – 280	13	32	50
281 -500	20	50	80
501 – 1200	32	80	125
1201 – 3200	50	125	200
3201 – 10000	80	200	315
10001 – 35000	125	315	500
35001 – 150000	200	500	800

Based on the table the researcher has took a sample of 125 from the population of 700 Massey Ferguson Tractor and Combine harvester users

One of the basic reasons for using sample is economical in terms of effort exerted, cost incurred, and the time spent for the accomplishment of the study. Besides, it is also difficult to access each population unit and their respective addresses hence the study did not use probability sampling technique. The method that was employed to obtain information about after sales service quality and customer satisfaction at the regional customer site through a survey conducted on a sample of targeted respondents is convenient non-probabilistic sampling method. In the case of non probability samples, the choice of sample size was determined by the insight, judgment, experience or financial resource of the researcher. Thus, the researcher considers available fund and time, and own judgment to determine the sample size and due to the nature of homogeneity.

3.5. Source of Data

There are two types of sources when collecting data; primary and secondary data sources (Arbnor, 1994). Primary sources are directly related to the study purpose. Primary data consists of all the data collected throughout the study that can be directly related to the study purpose, both personally gathered as well as data from a third party that has been collected with equivalent purpose. Secondary data on the other hand, contains relevant data that has been collected for a different purpose, but from which the conclusion is valuable for the purpose. Throughout the study, basically primary data were used for analysis. The data directly related to the purpose were collected through an empirical study. Besides, secondary data sources, indirectly relating to the purpose, were collected through a theoretical study comprised of books, research thesis, articles and internet sources.

3.6 Data Collection Instruments

This study was done using both quantitative and qualitative data. Quantitative data of ASS attributes were collected through close-ended questionnaire based on SERVPERF model. The researcher will try to collect the data from different people using different

agricultural machines. A local language (Amharic) and English questionnaire will be with questions that are relevant and helpful to extract the opinions of customers regarding the acquisition of their respective After Sales service from RESCO.

Standardized questionnaires are designed to enable the research participants to express their opinion on the effectiveness of after sales service on selected three parameters such as delivery service, installation service and service warranty. Meanwhile, the influence of their satisfaction level on repurchases intention as well as recommendation of the service to others (word of mouth). Which contains only closed ended questions and distributed to the machinery users and RESCO personnel who are participating on After Sales services and and machinery sales. Questionnaires for the purpose of this study were prepared based on different literature reviews related to the objectives of the study. The questionnaires have three parts. The first part contains questions regarding respondents' demographic profile; the second part includes questions regarding after sales service dimensions and behavioral (repurchase and word of mouth) intention; the third part comprises questions regarding their overall satisfaction, were asked to rate according to their choice. The method of data collection was purposive (convenience and judgmental) type. Questionnaires were designed to be self-administered by the respondents and collected within the shortest time possible.

Many studies utilize the single scale to measure satisfaction using scale 1 to 5 or 1 to 7, where 1- very dissatisfied and 5 or 7 - very satisfied. However, this simple measurement does not represent the complexity of customer's satisfaction because customer satisfaction is behavior and emotion that cannot be measured directly (Fornell et al. 2007). This study, however, adopted five-scale construct to measure service quality, overall customer satisfaction and their behavioral intentions based on Cronin's (1992) SERVPERF model.

3.7 Reliability and Validity of Data Collection Instrument

3.7.1 Validity

Validity is the extent to which data collection method(s) accurately measure what they are intended to quantify (Saunders et al., 2009). MacKenzie (2003) also clarifies that

construct validity is the degree to which a test measures the concept or theory that it is intended to measure, therefore, the study ensured the construct validity by administering both theoretical and conceptual reviews in preparing questionnaires. The researcher ensured validity of the study by pre-testing (external validity) with questionnaires to correct any ambiguity in the questions when detected and also by asking clearly stated questions to the respondents (Trochim, 2009).

3.7.2 Reliability

According to Nachmias (2004) reliability refers to the degree to which a measuring instrument includes variable errors that appear variably from observation to observation during any one measurement attempt or at the same measuring instrument. The researcher made sure there is an accurate coding and numbering to the subjects also a reliability computation was used to compute mean reliability coefficient estimates for Cronbach Alpha with a significance level of $p \leq 0.05$. According to Mugenda (2003) reliability is the ability of a research instrument to produce consistent results after repeated trials.

The use of Cronbach Coefficient to measure reliability of instrument enabled to identify the strength of items included in the questionnaire such that measure between 0.7 and 1.0 signifies a strong consistency of item used in questionnaire (Mugenda, 2003). However, the acceptable Alpha value that meets the statistical prerequisite for the instrument to be characterized as reliable should be between
0.70 and 0.9 as the value more than 0.9 could be an implication of redundant variables measuring same subject (Travakol, 2011).

3.8 Data Presentation Analysis

Descriptive analysis such as mean, percentage, correlation and multi-regression analysis will be used in analyzing the quantitative data and exploratory approach to analyze respondents' perception result. Further, a regression model will be applied to analyze the quantitative data, to check the association of variables and predict the dependent variable.

SPSS and AMOS software will be used to compare and analyze statistical data results and path analysis then interpret the result accordingly. Tables and graphs will be used to present the analysis results pictorially.

The following Likert scale decision criteria used for interpretation of results of analysis:

Mean Range	Interpretation
1.00–1.80	Very Low / Strongly Disagree
1.81–2.60	Low / Disagree
2.61–3.40	Moderate / Neutral
3.41–4.20	High / Agree
4.21–5.00	Very High / Strongly Agree

3.9 Empirical Model

The study will use linear regression analysis models for testing the hypothesis drawn from the conceptual framework. Regression analysis is a statistical method to deal with the formulation of mathematical model depicting relationship among variables which can be used for the purpose of prediction of the value of dependent variable, given the value of the independent (Kothari,2004). Linear regression estimates the coefficients of the linear equation, involving one or more independent variables that best predict the value of the dependent variable. Multiple linear regressions were conducted to identify the relationship and to determine the most dominant variables that influenced the customer satisfaction of RESCO's machinery users as well as to determine the effect of their satisfaction on repurchase intention and word of mouth or intention of service recommendation to others. Thus, the multi-regression analysis for testing the formulated hypotheses is depicted as:

To evaluate the relation between after sales service dimensions and customer satisfaction:

$$Y= \beta0+\beta1X1+ \beta2X2+\beta3X3 +e$$

Where:

Y = Overall Customer Satisfaction
X1 = Tangibility
X2 = Reliability
X3 = Responsiveness
X4=Empathy
X5 = Assurance
e = error term,
β0 = constant, term
β1, 2, 3,4, 5 = coefficient terms of Tangibility, Reliability, Responsiveness, Empathy and Assurance respectively.

3.10. Ethical Consideration

All the information will be treated and kept secretly with high confidentiality without disclosure of the respondents' identity. No information is changed or modified, hence the information is presented as collected and the same with the literature collected for the purpose of this study. There is no any intention to use unfair means to influence the participants to obtain information. The questionnaire anonymous and high level of confidentiality will be considered. The information gathered through questionnaire be used only for its purpose i.e. for the fulfillment of the requirement of my MA degree in business administration.

3.2.Table Work plan

Activities in year 2025/2026	Oct-Dec/ 2025	Feb-26	Apr-26	May-26	Jun-26
Proposal Writing	X				
Data Collection		X	X		
Piloting and revision of instruments			X		
Data Analysis				X	
Defense					X

CHAPTER FOUR

4. DAT PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 INTRODUCTION

In this chapter, the collected data will be summarized and analyzed to realize the ultimate objectives of this research. The purpose of this study is to examine the effect of the quality of after sales service on customer satisfaction in the Ethiopian agricultural machinery industry. Accordingly, the data collected from the respondents of the questionnaire analyzed, presented, summarized and interpreted the result and discussed the outcomes and put recommendations for future study

4.1. Data Cleaning and Editing

Out of 130 Questionnaires distributed to customers 125 questionnaires were returned and found to be valid which accounts 96.15 percent of the total. The questionnaire include demography of the respondent and technical questions measured with a likert scale within the range of 1 and 5 was applied and to check that there were no outliers a descriptive statistics which shows the minimum and maximum was made and it was found that all answers were within the range of 1 and 5 its attached as annex.

4.2. Test of Normality of the Data

The assumption of normality is important to select the data analysis method (Greene, Walls, & Schrest, 1994). Thus, testing whether the sample data differ significantly from normal is important in addition to sample adequacy.

The normality probability plots were plotted to assess normality and the values of skewness and kurtosis should be zero in normal distribution; positive values of skewness indicate a pile-up scores on the left of the distribution, whereas negative values indicate a pile-up on the right. The further the value is from zero, the more likely it is that the data are not normally distributed (Field, 2005).

A common rule of thumb test for normality is to run descriptive statistics to get skewness and kurtosis. Skew should be within the +2 to– 2 range when the data are normally distributed. Kurtosis also should be within the +2 to -2 range when the data are normally distributed (Hair, Anderson, Tatham, & Black, 1998).

Normality analysis for the 6 variables was conducted. As a result, all the 6 variables in this study are with in +2 to -2 range. That means they are normally distributed.

Table 4.1 Normality of distribution using Descriptive statistics

		Skewness		Kurtosis	
	N	**Skewness**	**SE**	**Kurtosis**	**SE**
Tangibles	125	-0.0660	0.217	0.157	0.430
Reliability	125	-0.2342	0.217	0.346	0.430
Responsiveness	125	5.37e-4	0.217	0.161	0.430
Assurance	125	-0.5023	0.217	0.112	0.430
Empathy	125	-0.2348	0.217	-0.729	0.430
Customer Satisfaction	125	-0.1337	0.217	1.355	0.430

Source: Researcher's Survey, 2026

4.3. Descriptive Statistics

4.3.1. General Profile of Respondents

To find out general background of customers of Ries Engineering Sh.Co. after sales service, the respondents were asked their Gender, Age, income level, Educational Status, occupation, the type of agricultural machinery they own and visiting frequency of the service center in the last one year. The results obtained from the structured questionnaires are represented on the tables below.

Table 4.2 Gender profile of the respondents

Frequencies of Gender			
Gender	**Frequency**	**% of Total**	**Cumulative %**
1. Male	112	89.6%	89.6%
2. Female	13	10.4%	100.0%
Total	125	100%	

Source: Researcher's Survey, 2026

As shown on the above table from 125 respondents majority of the respondents, 112(89.6%) were male and 13(10.4%) of the respondents were female which shows that activities surrounding agricultural mechanization business is left for men.

Table 4.3 Age of the respondents

Frequencies of Age			
Age	**Frequency**	**% of Total**	**Cumulative %**
18 - 29	4	3.2%	3.2%
30 - 39	25	20.0%	23.2%
40 - 49	46	36.8%	60.0%
50+	50	40.0%	100.0%
Total	125	100%	

Source: Researcher's Survey, 2026

As shown on the table 4.3 from 125 respondents 4(3.2%) were between 18-29 years old. 25(20.0%) of the respondents were between 30-39 years old. Whereas 46(36.8%) of the respondents were within the age group of 40-49 and the remaining 50(40.0%) were above the age of 50. which shows those who are engaged in agricultural mechanization business are elders.

Table 4.4 Education level of the respondents

Frequencies of Educational Level			
Educational Level	**Frequency**	**% of Total**	**Cumulative %**
Certeficate	37	29.6%	29.6%
Bachlers Degree and Above	47	37.6%	67.2%
Deploma	28	22.4%	89.6%
Others	13	10.4%	100.0%
Total	125	100%	

Source: Researcher's Survey, 2026

Out of 125 respondents in the table 4.4, 37(29.6%) of them have got certificate, 47(37.6%) of the respondents have got BA/BSC degree and above, the respondents which is 28(22.4%) have got diploma and the remaining 13(10.4%) have at least finished their elementary classes.

Table 4.5 Income level of the respondents

Frequencies of Monthly Income			
Monthly Income	**Frequency**	**% of Total**	**Cumulative %**
5001 - 7500	1	0.8%	0.8%
7501 - 10000	12	9.6%	10.4%
10,000+	112	89.6%	100.0%
Total	1125	100%	

Source: Researcher's Survey, 2026

Out of 125 respondents shown on Table 4.5, majority of them 112(89.6%) are within the income group of >10,000, 12(9.6%) of them were in the income group of 7501-10,000, the remaining 1(0.8%) of the respondents have got an income of 5001– 7500. This is because majority of the respondents are self employed and managers of high income,

Table 4.6 Current occupation of the respondent

Frequencies of Current Occupation			
Current Occupation	**Frequency**	**% of Total**	**Cumulative %**
Self Employed	77	61.60%	61.60%
Private Sector	38	30.40%	92.00%
Public Sector	4	3.20%	95.20%
Others	6	4.80%	100.00%
Total	125	100%	

Source: Researcher's Survey, 2026

From the total of 125 respondents shown on Table 4.6, majority of them which accounts 77(61.6%) were self-employed, 38(30.4%) of them were engaged in private sector, 4(3.2%) are engaged in public sector and the remaining 6(4.8%) of the respondents were in other occupations.

Table 4.7 The type of agricultural machinery the respondents owns

Frequencies of Types of Machinery			
Types of Machinery	**Frequency**	**% of Total**	**Cumulative %**
Tractor	47	37.6%	37.6%
Implements	1	0.8%	38.4%
Tractor with Implement	64	51.2%	89.6%
Tractor, Implement and Combine Harvester	13	10.4%	100.0%
Total	**125**	**100%**	

Source: Researcher's Survey, 2026

Based on the information on table 4.7. from the total 125 respondents 47(37.6%) were users of Agricultural Tractors, only 1(0.8%) of the respondents were used Implements, 64(51.2) of the respondents were used both Tractor with implements and the other 13(10.4%) of the respondents were Combine Harvester and Tractor with Implements. In

most cases tractors are purchased with implements as tractor is a prime mover or power source, it needs implements to do the required operation.

Table 4.8 Frequency of visit to the dealer's Maintenance Center.

Frequencies of Visit to the firms maintenance Center			
Frequency of Visit	**Counts**	**% of Total**	**Cumulative %**
First time	15	12.0%	12.0%
2 – 3	29	23.2%	35.2%
4 – 10	70	56.0%	91.2%
More than 10 times	11	8.8%	100.0%
Total	**125**	**100%**	

Source: Researcher's Survey, 2026

As shown on **table 4.8**. out of the total 125 respondents annually 15(12%) were visited for the first time, 29 (23,2%) were visited 2-3 times, majority of the 70 (56.0%) were visited 4-10 times and 11(8.8%) of the respondents were visited more than 10 times. Which shows that majority of agricultural machinery owners intensively uses dealers work shop to service their agricultural machinery.

4.3.2. SERVPERF Dimensions

SERVPERF dimensions are service performance or service quality elements which are reliability, tangibility, responsiveness, empathy and assurance, which are independent variables which have impact on customer satisfaction.

4.3.2.1 Tangibility

Tangibility refers to the physical facilities, equipment, personnel, and communication materials associated with service delivery. The grand mean score for the tangibility dimension was 3.33. Based on the decision criteria for the five point Likert scale (2.61–3.40 = Moderate), this indicates that customers had a moderate perception of the

company's tangible service attributes. Among the tangibility items, the highest mean score was obtained for the convenience of the company's entry, exit, and parking facilities, while the lowest mean score was recorded for the use of current technology. This suggests that the company should improve its technological facilities and equipment to enhance customers' perceptions of its tangible service quality.

Table 4.9 Descriptive Statistics of Tangibility

	N	Mean	Std. Deviation
The after sales department has a convenient entry exit and parking	123	4.25	0.451
The after sales department gives a certificate for the quality of standards	125	4.11	0.462
The after sales department uses technology	125	2.41	0.462
The waiting lounge of the after sales department is visually appealing	125	2.51	0.799
Tangibles Dimension	**125**	**3.33**	**0.343**
Valid N (listwise)	125		

Source: Researcher's Survey, 2026

4.3.2.2. Reliability

Reliability refers to the ability of the service provider to perform the promised service dependably, accurately, and consistently. It reflects the firm's ability to deliver services as promised and fulfill its commitments to customers. The grand mean score for the reliability dimension was 3.86. Based on the decision criteria for the five point Likert scale (3.41–4.20 = High), this indicates that customers had a high perception of the reliability of the company's after-sales services. This suggests that customers generally believe the company provides dependable and consistent services.

Among the five reliability items, the highest mean score was obtained for the statement that the after-sales service department uses original (genuine) spare parts, indicating that customers have confidence in the authenticity and quality of the products used during maintenance and repair services. However, the lowest mean score was recorded for the statement regarding whether the company provides services at the promised time. Although this item was still positively rated, it suggests that timely service delivery

remains an area requiring improvement. Therefore, the company should strengthen its service scheduling, improve coordination of technicians and spare parts availability, and closely monitor service turnaround times to ensure that services are delivered within the promised time frame.

Table 4.10 Descriptive statistics of Reliability

	N	Mean	Std. Deviation
After sales service department provide its service at the time it promised to do so	125	3.31	0.893
The after sales department keeps accurate records about the machinery	125	3.96	0.559
The failures Detect on the machine are accurately detected	125	3.58	0.674
The after sales department uses original products	125	4.51	0.679
The after sales department is reliable in repairing	125	3.90	0.601
In the after sales department personal information is secured	125	3.96	0.498
Reliability Dimensions	**125**	**3.86**	**0.336**
Valid N (listwise)	125		

Source: Researcher's Survey, 2026

4.3.2.3. Responsiveness

Responsiveness refers to the willingness of employees to provide prompt and timely service to customers. The grand mean score for the responsiveness dimension was **3.70**. Based on the decision criteria for the five point Likert scale (3.41–4.20 = High), this indicates that customers had a high perception of the company's responsiveness. Among the responsiveness items, the highest mean score was obtained for the statement that the service firm's staff are competent, while the lowest mean score was recorded for the statement that staff give customers attentive service. This suggests that although customers generally perceive the company as responsive, greater attention should be given to providing more attentive and personalized service.

Table 4.11 Descriptive statistics of responsiveness dimension

	N	Mean	Std. Deviation
The after sales service staffs tell the time the service will be delivered	125	3.82	0.787
After sales service staffs are always willing to help customers	125	3.7	0.687
The after sales service staffs are never busy to respond to your requests	125	3.42	0.754
The after sales staffs are compatible	125	3.94	0.693
There is an adequate transportation facility in the after sales service outlets	125	3.88	0.799
The after sales service staffs are qualified	125	3.9	0.574
The after sales service staffs gives equal treatment to all the customers	125	3.72	0.655
The staffs in the after sales service department gives attentive service	125	3.19	0.769
Provision of information.	**125**	**3.7**	**0.326**
Valid N (listwise)	125		

Source: Researcher's Survey, 2026

4.3.2.4 Empathy

Empathy refers to the provision of caring and individualized attention to customers and the ability of the service provider to understand and respond to customers' specific needs. The grand mean score for the empathy dimension was 3.46. Based on the decision criteria for the five-point Likert scale (3.41–4.20 = High), this indicates that customers had a high perception of the company's empathy. Among the empathy items, the highest mean score was obtained for the availability of different payment options, while the lowest mean score was recorded for the statement that the service firm offers gifts and promotions. This suggests that although customers generally perceive the company as empathetic, greater effort is needed to strengthen customer relationship programs through promotional offers and value-added incentives.

Table 4.12 Descriptive Statistics for Empathy

	N	Mean	Std. Deviation
After sales service staffs give you individualized attention	125	3.92	0.533
After sales service staffs deliver you a quality service	125	3.83	0.749
There are different options to make payments in the after sales department	125	4.08	0.938
After sales service department offers gifts and promotions	125	2.38	0.715
After sales service staffs understands the customer's specific needs	125	3.08	0.703
Empathy Dimension	**125**	**3.46**	**0.39**
Valid N (listwise)	125		

Source: Researcher's Survey, 2026

4.3.2.5. Assurance

Assurance refers to the knowledge, competence, courtesy, and trustworthiness of employees, as well as their ability to inspire customer confidence. The grand mean score for the assurance dimension was **3.44**. Based on the decision criteria for the five point Likert scale (3.41–4.20 = High), this indicates that customers had a high perception of the company's assurance. Among the assurance items, the highest mean score was obtained for the politeness and courtesy of employees, while the lowest mean score was recorded for the reasonableness of service prices. This suggests that although customers generally have confidence in the professionalism of the company's employees, improvements in pricing perceptions could further enhance customer confidence and satisfaction.

Table 4.13 Descriptive statistics of Assurance

	N	Mean	Std. Deviation
The after sales service staffs have sufficient knowledge to understand what you are saying	125	3.46	0.575
You feel safe in the after sales service delivery	125	3.55	0.665
The after sales service staffs are polite and courteous	125	4.13	0.66
Employees in the after sales department give informative explanation for their customers	125	3.83	0.727
The price of after sales service is reasonable	125	2.25	0.703
Assurance Dimension	**125**	**3.44**	**0.321**
Valid N (listwise)	125		

Source: Researcher's Survey, 2026

To summarize the mean and standard deviation of each service quality dimensions is represented in the table below. The service quality dimension with the highest mean score is Reliability 3.87 followed by Provision of Information 3.70, Empathy 3.46, Assurance 3.44 and Tangibility 3.33. With this we can infer that the after sales service provided by Ethiopian Agricultural Machinery Dealers service centers is somewhat satisfactory.

Table 4.14 Descriptive Statistics for Service quality dimensions

	N	Mean	Std. Deviation
Tangibles Dimension	125	3.33	0.343
Reliability Dimensions	125	3.87	0.336
Responsiveness Dimension	125	3.7	0.326
Assurance Dimension	125	3.44	0.321
Empathy Dimension	125	3.46	0.39
Valid N (listwise)	125	3.75	0.341

Source: Researcher's Survey 2026

Dimension	Grand Mean	Interpretation
Tangibility	3.33	Moderate
Reliability	3.87	High
Responsiveness	3.70	High
Assurance	3.46	High
Empathy	3.44	High
Customer Satisfaction	3.75	High

4.3.3. Customer Satisfaction

As explained in the literature review, customer satisfaction involves the fulfillment of customers' anticipation of the goods and services. Customers become satisfied if the performance of the good or service is equivalent to, or even surpasses, the original expectation.

The mean score for the customer satisfaction is 3.75. from the three questions which contributed for the total mean value the highest score was found on the second question which asks whether the customer feels he do the right thing when choosing this

machinery service company and the lowest score was obtained on the third question asked whether the after sales departments meets his expectations.

Table 4.15 Overall Customer satisfaction level

	N	Mean	Std. Deviation
Overall I am satisfied with the after sales service of the company	125	3.94	0.497
I feel I do the right thing when I choose this machinery service company	125	3.98	0.311
The after sales departments service meet my expectations	125	3.33	0.565
Customer Satisfaction	**125**	**3.75**	**0.341**
Valid N (list wise)	125		

Source: Researcher's Survey, 2026

4.4. Inferential Statistical Analysis

4.4.1. Correlation Analysis

Table 4.16 correlation analysis between after sales service quality dimensions and customer satisfaction

Correlation Matrix							
		Tangibles Dimension	**Reliability Dimensions**	**Provision of information**	**Assurance Dimension**	**Empathy Dimension**	**Customer Satisfaction**
Tangibles Dimension	**Pearson's r**	—					
	df	—					
	p-value	—					
	N	—					
Reliability Dimensions	**Pearson's r**	0.254	—				
	df	123	—				
	p-value	0.004	—				
	N	125	—				
Provision Dimensions	**Pearson's r**	0.404	0.527	—			
	df	123	123	—			
	p-value	<.001	<.001	—			
	N	125	125	—			
Assurance Dimensions	**Pearson's r**	-0.097	0.124	0.259	—		
	df	123	123	123	—		
	p-value	0.282	0.168	0.004	—		
	N	125	125	125	—		
Empathy Dimensions	**Pearson's r**	0.256	0.39	0.64	0.351	—	
	df	123	123	123	123	—	
	p-value	0.004	<.001	<.001	<.001	—	
	N	125	125	125	125	—	
Customer Satisfaction	**Pearson's r**	0.23	0.385	0.566	0.26	0.515	—
	df	123	123	123	123	123	—
	p-value	0.01	<.001	<.001	0.003	<.001	—
	N	125	125	125	125	125	—

Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher's Survey, 2026

This study employs correlation analysis, which investigates the strength of the relationships between the studied variables. Pearson correlation analysis was used to

provide evidence of convergent validity. Pearson correlation coefficients reveal magnitude and direction of relationships (either positive or negative) and the intensity of the relationship (-1.0 + 1.0). Correlations are perhaps the most basic and most useful measure of association between two or more variables (Marczyk, Dematteo and Festinger, 2005). General guidelines of correlations of .01 to .03 are considered small, correlations of 0.3 to 0.7 are considered moderate, correlations of 0.7 to 0.9 are considered large and correlations of 0.9 to 1.00 are considered to be very large (Marczyk, Dematteo and Festinger, 2005). Depending on these assumptions, all basic constructs were included into the correlation analysis and a bivariate two tailed correlation analysis was done.

The coefficients show that the five factors measuring after sales service quality were all positively related with the customer satisfaction within the range of 0.23 to 0.566, all except assurance were significant at $p<0.01$ level. Three independent variables Reliability, Responsiveness and Empathy show a moderate level of positive relation (0.385, 0.566 and 0.515 respectively) while the other two independent variables Tangibility and Assurance show a low level of positive relation (0.23 and 0.26 respectively) with customer satisfaction. Table 4.14 also shows the correlation of the independent variables within themselves. It can be noted that except Assurance all variables are positively correlated with each other where the strongest correlation goes to the one between Empathy and Responsiveness (0.64) followed by Reliability and responsiveness (0.527) and Responsiveness and Tangibility (0.404) while the correlation is very negative between Assurance and Tangibility (-0.097)

4.4.2 Regression Analysis

4.4.2.1. Diagnosis Test

Before running a regression analysis tests were conducted in order to ensure the appropriateness of the data for the assumptions of regression

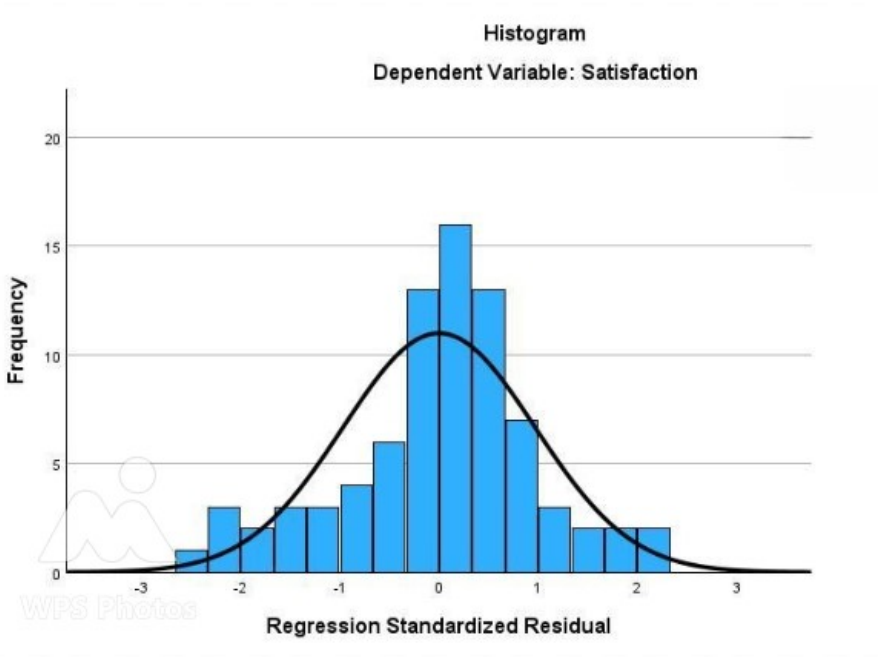
4.4.2.2 Normality Assumption

Normality of a data should be test before running the regression analysis because multiple regressions require that the independent variables in the analysis be normally distributed. According to Brooks (2008), as cited by Abate (2012) if the residuals are

normally distributed, the histogram should be bell- shaped and thus this study implemented graphical methods to test the normality of data. From the Histogram figure 4.1 it can be noted that the distribution is normal curve, demonstrating that data witnesses to the normality assumption.

As the assumption holds as the histogram was a bell- shaped and the residuals were normally distributed around its mean of zero.

Figure 4.1. Normality test graph



Source: Researcher's Survey, 2026

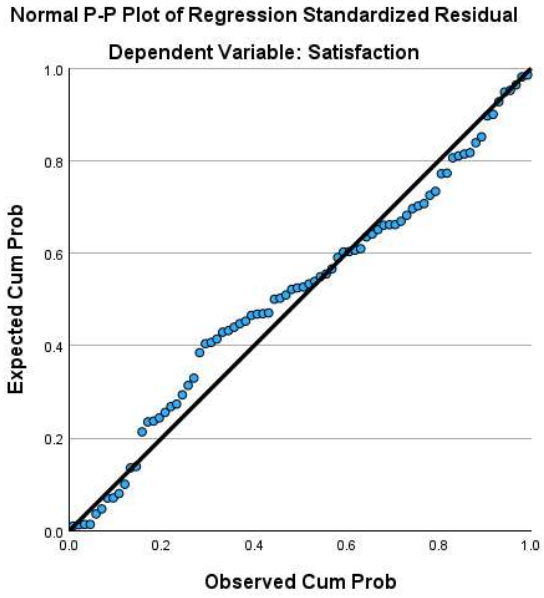
4.4.2.3 Linearity test

Linearity refers to the degree to which the change in the dependent variable is related to change in the independent variable. To determine whether the relationship between the dependent and independent variables the normal probability plots were used to test the normality assumption as shown by the Normal P P-Plot Figure 4.2 as you can see from the graph below.

As shown in the Figure below residuals were normally distributed around its mean of zero which indicates that the data were normally distributed and it was consistent

with a normal distribution assumption. As the figures confirmed the normality assumption of the data, this implies that the inferences made about the population parameters from the sample statistics tend to be valid.

Figure 4.2. Graph of Linearity test



4.4.2.4 Multicollinearity Test Assumption

In regression, multicollinearity occurs when independent variables in the regression model are more highly correlated with each other than with the dependent variable. When the independent variables of the regression model is highly correlated with one another; they are basically measuring the same thing. In other words, when two variables are highly correlated, they both communicate essentially similar information. One way to assess multicollinearity is to examine correlations among the independent variables. If a correlation matrix demonstrates correlations of 0.90 or higher among the independent variables, they may be a problem with multicollinearity. Hair et al. (2006) argued that correlation coefficient below 0.90 may not cause serious multicollinearity problem, as cited by Muhammed (2012). Multicollinearity can also be detected using tolerance value and variance inflator

factor (VIF) value. Multicollinearity does not exist among all the independent variables provided that the tolerance value of all the independent variables was greater than 0.1 and the VIF values of all the independent variables are also less than 10. As you can see from Table 4.16 below all independent variables are greater than 0.1 tolerance and the VIF value of all the independent variables are also less than 10.

Table 4.17 Multicollinearity analysis

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Tangibles Dimension	1.27	0.789
	Reliability Dimensions	1.4	0.715
	Provision of information.	2.21	0.453
	Assurance Dimension	1.21	0.826
	Empathy Dimension	1.82	0.548

a. Dependent Variable: Customer satisfaction

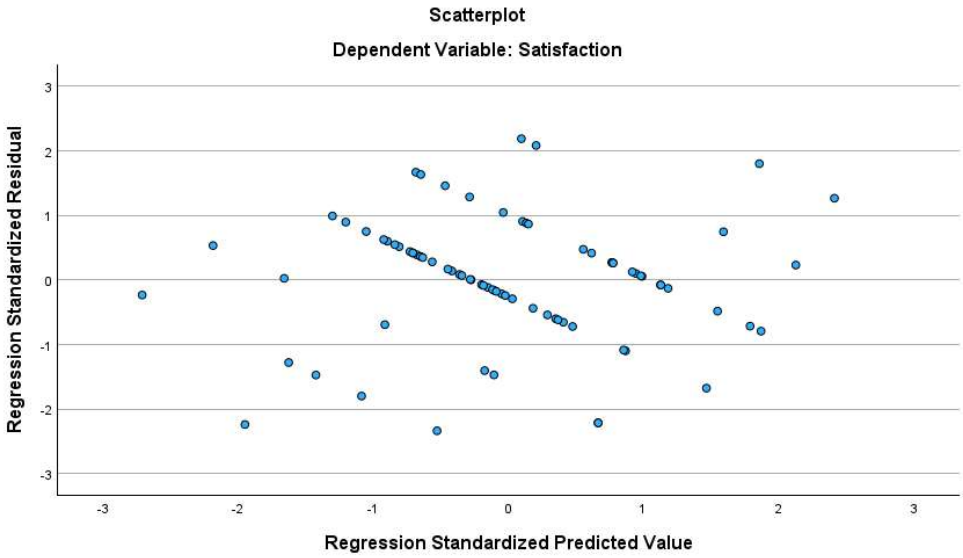
Source: Researcher's Survey, 2026

4.4.2.5 Homocedasticity

This assumption tells us that for each value of the predictors the variance of the error term should be constant. Said in another way, Homoscedasticity is an assumption in regression analysis that the residuals at each level of the predictor variables have similar variances. That is, at each point along any predictor variable, the spread of residuals should be fairly constant. For a basic analysis, we first plot *ZRESID (*Y*-axis) against *ZPRED (X-axis) on SPSS because this plot is useful to determine whether the assumptions of random errors and homoscedasticity have been met (Field, 2009). The graph of *ZRESID and *ZPRED should look like a random array of dots evenly dispersed around zero. If there is any sort of curve in this graph, then, the chances are that the data have broken the assumption of linearity (Field, 2009). As can be seen in the scattered plot below, the residuals at each level of explanatory variables look like they are evenly dispersed around zero and that the graph is not

something like cone shaped. Therefore, it is safe to say that this study has no homoscedasticity problem.

Figure 4.3. Homosedasticity



Source: Researcher's Survey, 2026

Based on the normality and homoscedasticity tests and the researcher believes that this result from the regression analysis can be used by the agricultural machinery business industry in Ethiopia.

4.4.2.2. Tangibility

Table 4.18A Model Summary of Tangibility

Model Fit Measures							
				Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**F**	**df1**	**df2**	**p**
1	0.23	0.053	0.0453	6.89	1	123	0.01

Note. Models estimated using sample size of N=125
a. Predictors: (Constant), Reliability Dimensions
b. Dependent Variable: Satisfaction
Source: Researcher's Survey, 2026

From the regression analysis we can see that here is a positive statistical relationship between tangibility (the independent variable) and customer satisfaction (the dependent variable). As the table below presents the coefficient of determination (R-squared) indicates the proportionate amount of variation in the response variable (customer satisfaction) explained by the independent variable (tangibility) in the linear regression model. The larger the R-squared is, the more variability is explained by the linear regression model. Thus, 5.3% (R Squared=0.053) of the variation on customer satisfaction is explained by tangibility.

Table 4.18B. Coefficient Table of Tangibility

Model Coefficients - Customer Satisfaction					
Predictor	**Estimate**	**SE**	**t**	**p**	**Stand. Estimate**
Intercept	2.991	0.2919	10.25	.001	
Tangibles	0.229	0.0873	2.62	0.01	0.23

Source: Researcher's Survey, 2026

On the coefficient table we find the beta value which measures of how strongly each independent variable influences the dependent variable.

Thus a unit increase in tangibles leads to .299 increases in customer satisfaction other things being constant. Therefore the more the after sales service departments invests on its physical facilities equipment, technology and appearance of its personnel the more it satisfies its customers.

4.4.2.3. Reliability

Table 4.19A. Model Summary of Reliability

Model Fit Measures								
					Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**SE of the Est.**	**F**	**df1**	**df2**	**p**
1	0.385[a]	0.148	0.141	0.313	21.4	1	123	<.001

a. Predictors: (Constant), Reliability Dimensions

b. Dependent Variable: Satisfaction

c. Note. Models estimated using sample size of N=125

Sourrce: Reserchers Survey 2026

As depicted on the table above the result of the regression analysis of the independent variable reliability on the dependent variable customer satisfaction shows existence of positive and statistically significant relationship. The independent variable reliability alone explain (0.141) 14.1% variation.

Table 4.19B.Coefficients Table for Reliability

Model Coefficients - Customer Satisfaction					
Predictor	**Estimate**	**SE**	**t**	**p**	**Stand. Estimate**
Intercept	2.241	0.3279	6.84	<.001	
Reliability	0.391	0.0844	4.63	<.001	0.385

Source: Researcher's Survey, 2026

On the coefficient table we find the beta value which shows that a unit increase in reliability leads to .391 increases in customer satisfaction other things being constant. The service firms should invest to enhance its ability to perform the promised service dependably and accurately so that the satisfaction level of its customers increases.

4.4.2.4. Responsiveness

Table 4.20A. Model Summary of Responsiveness

Model Fit Measures								
					Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**SE of the Esti.**	**F**	**df1**	**df2**	**p**
1	0.566[a]	0.32	0.314	0.28	57.9	1	123	<.001

Note. Models estimated using sample size of N=125
a. Predictors: (Constant), Responsiveness
b. Dependent Variable: Satisfaction
Source: Researcher's Survey, 2026

As depicted on the table above the result of the regression analysis of the independent variable provision of information on the dependent variable customer

satisfaction shows existence of positive and statistically significant relationship. The independent variable reliability alone explain (0.314) 31.4% variation.

Table 4.20B.Coefficients Table for Responsiveness

Model Coefficients - Customer Satisfaction					
Predictor	**Estimate**	**SE**	**t**	**p**	**Stand. Estimate**
Intercept	1.564	0.2889	5.42	<.001	
Provision of Inf	0.592	0.0778	7.61	<.001	0.566

Source: Researcher's Survey, 2026

On the coefficient table we find the beta value which shows that a unit increase in provision of information leads to 0.592 increases in customer satisfaction other things being constant. The service firms should invest to enhance its ability to perform the promised service dependably and accurately so that the satisfaction level of its customers increases.

4.4.2.5. Assurance

Table 4.21A Model Summary for Assurance

Model Fit Measures								
					Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**SE of Esti**	**F**	**df1**	**df2**	**p**
1	0.26	0.0676	0.06	0.328	8.91	1	123	0.003
Note. Models estimated using sample size of N=125								
a. Predictors: (Constant), Assurance Dimension b. Dependent Variable: Customer Satisfaction								

Source: Researcher's Survey, 2026

As shown on the table above the result of the regression analysis of the independent variable assurance on the dependent variable customer satisfaction shows existence of positive and statistically significant relationship. The independent variable reliability alone explain (0.068) 6.8% variation.

Table 4.21B. Coefficients Table for assurance

Model Coefficients - Customer Satisfaction					
Predictor	**Estimate**	**SE**	**t**	**p**	**Stand. Estimate**
Intercept	2.803	0.3197	8.77	<.001	
Assurance	0.276	0.0924	2.99	0.003	0.26
a. Dependent Variable: Customer Satisfaction					

Source: Researcher's Survey, 2026

On the coefficient table above we find the beta value which shows that a unit increase in assurance leads to 0.276 increases in customer satisfaction other things being constant. Therefore the more the Service gives care and individualized attention to customers, the more the customer is satisfied.

4.4.2.6. Empathy

Table 4.22A Model Summary for Empathy

Model Fit Measures								
					Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**SE of Est.**	**F**	**df1**	**df2**	**p**
1	0.515[a]	0.265	0.259	0.291	44.4	1	123	<.001
Note. Models estimated using sample size of N=125 c. Predictors: (Constant), Empathy Dimension d. Dependent Variable: Customer Satisfaction								

Source: Researcher's Survey, 2026

As shown on the table above the result of the regression analysis of the independent variable empathy on the dependent variable customer satisfaction shows existence of positive and statistically significant relationship. The independent variable reliability alone explain (0.256) 25.6% variation.

Table 4.22B Coefficients Table for empathy

Model Coefficients - Customer Satisfaction					
Predictor	**Estimate**	**SE**	**t**	**p**	**Stand. Estimate**
Intercept	2.198	0.2349	9.36	<.001	
Empathy	0.45[a]	0.0675	6.66	<.001	0.515
a. Dependent Variable: Customer Satisfaction					

Source: Researcher's Survey, 2026

On the coefficient table above we find the beta value which shows that a unit increase in empathy leads to 0.45 increases in customer satisfaction other things being constant. Therefore the more the Service gives care and individualized attention to customers, the more the customer is satisfied.

4.4.2.6. Overall Regression Analysis

Table 4.23A Model Summery

Model Fit Measures								
					Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**SE of Est.**	**F**	**df 1**	**df2**	**p**
1	0.611[a]	0.373	0.346	0.269	14.1	5	119	<.001
Note. Models estimated using sample size of N=125 a. Predictors: (Constant), Empathy Dimension, Tangibles Dimension, Reliability Dimensions, Assurance Dimension, Provision of information. a. Dependent Variable: Customer Satisfaction								

Source: Researcher's Survey, 2026

Table 4.23B Regression Analysis

Model Coefficients - Customer Satisfaction							
			95% Confidence Interval				
Predictor	**Estimate**	**SE**	**Lower**	**Upper**	**t**	**p**	**Stand. Estimate**
Intercept	0.9964	0.4237	0.1575	1.835	2.352	0.02	
Tangibles	0.0172	0.0813	-0.1438	0.178	0.211	0.833	0.0173
Reliability	0.1063	0.087	-0.0661	0.279	1.221	0.225	0.1048
Responsiveness	0.3545	0.1129	0.1311	0.578	3.141	0.002	0.3388
Assurance	0.0872	0.0848	0.0807	0.255	1.029	0.006	0.0822
Empathy	0.1957	0.0857	0.0261	0.365	2.285	0.024	0.2241
a. Dependent Variable: Customer Satisfaction							

Source: Researcher's Survey, 2026

The coefficient table for service quality dimensions indicates the beta values of the independent variables. From this the regression equation is derived as:

Regression Equation

Y = a + bX1 + bX2 + bX3 + bX4…

CS = 0.9964 + 0.0172Tan + 0.1063Rel + 0.3545Res + 0.1957Emp + 0.0872Ass

Where,
CS = Customer satisfaction
Tan = Tangibility
Rel = Reliability
Res = Responsiveness
Emp = Empathy
Ass = Assurance

In the regression analysis table all explanatory variables significantly and positively affect the dependent variable customer satisfaction at ($p<0.05$) except the variable responsiveness with a significance level of 0.452 which the $p>0.05$ and so the effect of responsiveness on customer satisfaction is insignificant.

As we can see from the Beta coefficient Responsiveness dimension has the highest contribution to customer satisfaction followed by empathy, reliability, assurance and tangibility respectively.

4.4.2.7. ANOVA Results

Table 4.24 ANOVA Results

Dimensions		N	Mean	Std. Deviation	Std. Error	F	Sig.[a]
Tangibles Dimension	Tractor	47	3.3750	.39528	.07752	.793	.501
	Implement	1	3.0000	.	.		
	Tractor & Implenet	64	3.3837	.38710	.05903		
	Tractor Implenet & Combine Harvester	13	3.2250	.27513	.08700		
	Total	125	3.3563	.37689	.04214		
Reliability Dimensions	Tractor	47	3.9092	.36923	.07241	1.958	.127
	Implement	1	3.8300	.	.		
	Tractor & Implenet	64	3.8370	.35110	.05354		
	Tractor Implenet & Combine Harvester	13	3.5990	.22521	.07122		
	Total	125	3.8306	.35115	.03926		
Provision of information.	Tractor	47	3.7819	.35307	.06924	.830	.482
	Implement	1	3.8800	.	.		
	Tractor & Implenet	64	3.6507	.37578	.05731		
	Tractor Implenet & Combine Harvester	13	3.7030	.22281	.07046		
	Total	125	3.7027	.35230	.03939		
Assurance Dimension	Tractor	47	3.5308	.28252	.05541	4.874	.004
	Implement	1	3.4000	.	.		
	Tractor & Implenet	64	3.2977	.32182	.04908		
	Tractor Implenet & Combine Harvester	13	3.6000	.18856	.05963		
	Total	125	3.4125	.31718	.03546		
Empathy Dimension	Tractor	47	3.5231	.41982	.08233	2.052	.114
	Implement	1	3.8000	.	.		
	Tractor & Implenet	64	3.3721	.39900	.06085		
	Tractor Implenet & Combine Harvester	153	3.6600	.26750	.08459		
	Total	125	3.4625	.40075	.04481		

Source: Researcher's Survey, 2026

From the Table 4.22: ANOVA results customers who have different types of machinery respond as per their machinery complexity, the more the machinery is complex like combine harvester needs more support and less complex machinery like implements needs less support form the supplier.

4.5. Hypothesis Testing

Table 4.25 Summary of the Overall Outcome of the Regression Analysis and Hypotheses Testing

Hypotheses	**Result**	**Analysis Technique**	**Reason**
H1: Tangibility has a significant positive impact on customer satisfaction.	H1: Rejected	Multiple Regression	β=0.017, P>0.05
H2: Reliability has a significant positive impact on customer satisfaction.	H2: Rejected	Multiple Regression	β=0.106, P>0.05
H3: Responsiveness has a significant positive impact on customer satisfaction.	H3: Accepted	Multiple Regression	β=0.355, P<0.05
H4: Empathy has a significant positive impact on customer satisfaction.	H4: Accepted	Multiple Regression	β=0.196, P<0.05
H5:Assurance has a significant positive impact on customer satisfaction.	H5: Accepted	Multiple Regression	β=0.087, P<0.05

Source: Researcher's survey, 2026

4.6. Discussion

When we looked at the relationship between service quality dimensions and customer satisfaction we found that all parts of service quality are interrelated with to customer satisfaction which is similar to what other studies have found, like the ones done by the studies of Cronin, J. & Taylor, S. (1992), Minwir Al-Shammari and Ahmad Samer Kanina (2014), and Panduro Escalera et al. (2025), who reported that higher perceived service

quality leads to higher customer satisfaction. These studies showed that when customers relieves that the service quality is high they are more satisfied.

The second goal of the study was to see how each part of service quality affects customer satisfaction. We found that responsiveness, empathy and assurance have an impact on customer satisfaction. This means that customers care more about getting help being treated like individuals and having confidence in the people providing the service than they do about the physical facilities or how the service looks. Being responsive was found to be the important factor in customer satisfaction in agricultural machinery industry as farming is seasonal and time sensitive. This makes sense because people who use agricultural machinery need help quickly especially during top operation times when they are very busy. If their machinery breaks down they can lose a lot of time and money. So they want service that's fast and easy to get.

Empathy was also very important for customer satisfaction. This means that customers like it when they are treated like individuals and when the service people understand their needs. Agricultural machinery customers often work in areas and need a lot of support from the companies that sell them the machinery. So being treated like an individual is very important to them. Assurance was also important for customer satisfaction. This means that customers want to know that the people providing the service are knowledgeable and trustworthy. They want to feel confident that the service they get is good and that the people providing it know what they are doing. On the hand tangibility and reliability were not much important for customer satisfaction. Even though other studies have found these to be important our study found that customers in the agricultural machinery industry care more about getting help quickly and having good technical support than they do about the physical facilities or how the service looks. This might be because the industry is still developing in Ethiopia and customers are more concerned with getting help than with how things look.

The study found that the quality of after sales service explains about 37% of customer satisfaction. This means that service quality plays a role in how satisfied customers are. However there are other factors that affect customer satisfaction that we did not included

in this study like the price of spare parts,performance of the machinery and what kind of warranty is offered.

Future studies should look at these factors in addition these factors studied to get an understanding of what affects customer satisfaction in the agricultural machinery industry. Overall the study found that improving responsiveness, empathy and assurance can make a difference in customer satisfaction. So companies that sell agricultural machinery should focus on providing fast service, treating customers like individuals and developing skilled technical personnel to improve customer satisfaction and build long term relationships, with customers.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter winds up the study undertaken so far by giving insights about summary, conclusions, recommendations and the limitations of this study and highlighting future research areas.

5.1 Summary of the Major Findings

The main objective of this study was to examine the effect of after sales service quality on customer satisfaction in the Ethiopian agricultural machinery industry, using Ries Engineering Share Company (RESCO) as a case study.

The descriptive analysis indicated that customers were generally satisfied with the after-sales services provided by the company. Among the five SERVPERF dimensions, reliability received the highest customer rating, while tangibility received the lowest.

The correlation analysis showed that all five after sales service quality dimensions had positive relationships with customer satisfaction. Responsiveness, empathy, and reliability demonstrated relatively stronger relationships, whereas tangibility and assurance showed weaker positive relationships.

The multiple regression analysis revealed that the five after sales service quality dimensions jointly explained 37.3% of the variation in customer satisfaction. Among the dimensions, responsiveness was found to be the strongest predictor of customer satisfaction, followed by empathy and assurance. The results further indicated that responsiveness, empathy, and assurance had significant positive effects on customer satisfaction, while reliability and tangibility did not have statistically significant effects.

Overall, the findings suggest that improving the responsiveness, empathy, and assurance of after sales services is more likely to enhance customer satisfaction than focusing solely on the physical aspects of the service or reliability.

5.2. Conclusion

The main objective of this study was to examine the effect of after sales service quality on customer satisfaction in the Ethiopian agricultural machinery industry. The findings confirm that after sales service quality has a significant influence on customer satisfaction, although the effect varies across the different service quality dimensions.

Among the five SERVPERF dimensions, responsiveness, empathy, and assurance were found to have significant positive effects on customer satisfaction, with responsiveness emerging as the most influential dimension. This indicates that customers place greater value on prompt service, employees' willingness to help, personalized attention, and the competence and trustworthiness of service personnel than on the physical appearance of facilities or the consistency of service delivery.

The study also found that customers were generally satisfied with the after-sales services provided by the company. However, the regression results indicate that service quality explains only part of customer satisfaction, suggesting that other factors beyond after-sales service also influence customers' overall satisfaction.

Overall, the study concludes that improving the quality of after-sales services, particularly in terms of responsiveness, empathy, and assurance, is essential for enhancing customer satisfaction in the Ethiopian agricultural machinery industry. Strengthening these service dimensions can help machinery dealers improve customer relationships, increase customer loyalty, and achieve a sustainable competitive advantage.

5.3 Recommendations

Based on the findings and conclusions of this study, the following practical recommendations are proposed for agricultural machinery dealers and their after sales service departments.

1. Improve service responsiveness through service process redesign

Since responsiveness was found to be the strongest determinant of customer satisfaction, the company should establish clear service standards for responding to customer requests and complaints. A service response time target (for example, acknowledging customer requests within 24 hours and scheduling field service within 48 hours where feasible) should be introduced and monitored. The company should also establish a customer service hotline and digital communication channels (telephone, SMS, or WhatsApp) to enable customers to report machine failures and receive timely technical support. During peak agricultural seasons, additional mobile service teams should be deployed to reduce waiting times and minimize machinery downtime.

2. Strengthen employee empathy through continuous training and customer relationship management

To improve empathy, the company should provide regular customer service training for technicians and service advisors focusing on communication skills, active listening, problem-solving, and customer handling. Service personnel should be encouraged to understand each customer's farming conditions before recommending maintenance or repairs. The company should also introduce a customer follow-up system whereby customers are contacted after service completion to confirm that the problem has been resolved and to collect feedback for continuous improvement.

3. Enhance customer assurance by improving technical competence and service transparency

The company should strengthen assurance by providing regular technical training and certification for service technicians on new machinery models and diagnostic procedures. Customers' confidence can also be improved by providing written service reports, clear explanations of repair work performed, estimated completion times, and transparent pricing before maintenance begins. In addition, maintaining an adequate inventory of genuine spare parts will help ensure reliable repairs and increase customer trust.

4. Adopt a continuous customer satisfaction monitoring system

The company should conduct periodic customer satisfaction surveys, preferably after every major service intervention, using standardized questionnaires. The survey results should be reviewed regularly by management to identify recurring service problems, monitor improvements over time, and establish performance indicators for after-sales service employees.

5. Address other factors affecting customer satisfaction

Since after sales service quality explained only 37.3% of customer satisfaction, management should also investigate other factors that influence customers' experiences. These may include spare parts availability, service pricing, warranty policies, machine reliability, accessibility of service centers, and technical support availability. The findings should be used to develop a comprehensive customer satisfaction improvement strategy.

5.4. Limitations and Direction for future research

This study has covered those customers who have purchased agricultural machinery from one dealer, but there are more than eleven major farm machinery dealers in the country. Therefore, it would be better for any forthcoming researchers who want to investigate the effect of after sales service quality on customer satisfaction in agricultural machinery industry should including more number of farm machinery dealers and more agricultural machinery users so as to find out other factors that can affect after sales service quality.

This study only utilized the traditional five factors of the SERVQUAL tool, namely tangibles, reliability, responsiveness, assurance, and empathy. There are still other factors and tools that can consider using in this type of study thus limiting the findings of this study. Future researchers can explore these factors using the latest improved tools and models that are applicable in this type of study. The study also focuses only on one after-sales service dealer. Future studies can overcome such limitations by exploring other servicing dealers and industries.

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List of Appendix

Appendix 1: English questionnaire

Addis Ababa University College of Business & Economics Department of Business Management

Dear respondents,

I, Kedir Musema, am post graduate student in Addis Ababa University College of Business & Economics in business administration department. First of all I would like to thank you for spending your valuable time in filling the questionnaire. I am conducting a research on examining the effect of after sales service quality on customer satisfaction. You are the one who can give the researcher the real picture of services offered by the company. Your responses to the questionnaire will be kept strictly confidential and the information is accessed only by the researcher for academic purpose.

Part I

General Information

Instruction please put a tick mark on the most appropriate category against each question

1. Age

A. 18-29 ☐ C. 40-49 ☐

B. 30-39 ☐ D. 50 years and above ☐

2. Gender

A. Male ☐ B. Female ☐

3. Monthly income

A. 5000 and below ☐ B. 5001 - 7500 ☐
B. 7501 - 10000 ☐ D. 10000 and above ☐

4. Education level

A. Certificate ☐ B. Diploma ☐
B. Bachelor's Degree and above ☐ D. Others ☐

5. Current Occupation
A. Self Employed ☐ C. Public Sector ☐
B. Private Sector ☐ D. Others ☐

7. The type of agricultural machinery you owned
A. Tractor ☐ C. Combine Harvester ☐
B. Implements ☐

8. Frequency of visiting the after sales department per year
A. First time ☐ C. 2 – 3 times ☐
B. 4 – 10 time ☐ D. More than 10 times ☐

Part II

Perception statements Instruction:

Please put a tick mark the most appropriate response number against each statement where (1= Strongly Disagree; 2= Disagree; 3=Neutral; 4= Agree; 5= Strongly Agree)

No	Statements	Strongly Disagre	Disagree	Neutral	Agree	Strongl Y Agree
	Tangibles Dimension	1	2	3	4	5
1	The after sales department has a convenient entry exit and parking					
2	The after sales department uses technology					
3	The after sales department gives a certificate for the quality of standards					
4	The waiting lounge of the after sales department is visually appealing					
Reliability Dimensions						
5	After sales service department provide its service at the time it promised to do so					
6	The after sales department keeps accurate records about the machinery					

7	The failures on the machine are accurately detected					
8	The after sales department uses original products					
9	The after sales department is reliable in repairing					
10	In the after sales department personal information is secured					
	Responsiveness Dimension					
11	The after sales service staffs tell the time the service will be delivered					
12	After sales service staffs are always willing to help customers					
13	The after sales service staffs are never busy to respond to your requests					
14	The after sales staffs are compatible					
15	There is an adequate transportation facility in the after sales service outlets					
16	The after sales service staffs are qualified					
17	The after sales service staffs gives equal treatment to all the customers					
18	The staffs in the after sales service department gives attentive service					
	Assurance Dimension					
19	The after sales service staffs have sufficient knowledge to understand what you are saying					
20	You feel safe in the after sales service delivery					
21	The after sales service staffs are polite and courteous					
22	Employees in the after sales department give informative explanation for their customers					

23	The price of after sales service is reasonable					
	Empathy Dimension					
24	After sales service staffs give you individualized attention					
25	After sales service staffs deliver you a quality service					
26	There are different options to make payments in the after sales department					
27	After sales service department offers gifts and promotions					
28	After sales service staffs understands the customer's specific needs					
	Satisfaction					
29	Overall I am satisfied with the after sales service of the company					
30	I feel I do the right thing when I choose this machinery service company					
31	The after sales departments service meet my expectations					

Appendix 2: Amharic Questionnaire

አዲስ አበባ ዩኒቨርሲቲ የቢዝነስና ኢኮኖሚክስ ኮሌጅ የንግድ አስተዳደር ማኔጅ መንት ዲፓርትመንት

ውድ የመጠይቁ ተሳታፊዎች፣ተማሪ ከድር ሙሰማ እባላለሁ በአሁኑ ሰዓት በንግድ አስተዳደር የትምህርት ዘርፍ ሁለተኛ ዲግሪ በመስራት ሊይ የምገኝ ሲሆን፣ ይህ ጥናትም የዚሁ የድህረምረቃ ትምህርት ማሚያነት ምሰራው ነው፡፡ የዚህ ጥናት አላማ በኢትዮጵያ የሚገኘው የእርሻ መሳሪያ ኢንዱስትሪ ውስጥ

ድህረ ¨ሽያጭ አገልግሎት ጥራት በተገልጋዮች እርካታ ላይ የሚኖረውን ውጤት ለይቶ ለማወቅ ነው፡፡ በኩባንያው የሚሰጠው የድህረ ሽያጭ አገሌግሎት ጥራት ምን አይነት መልክ እንዳለው ለአጥኚው የምትገልጹት እናንተ የመጠይቁ ተሳታፊዎች ናችሁ፡፡ ስለሆነም እናንተ በመጠይቁ ላይ ለቀረቡት ጥያቄዎች የምትሰጡት ምላሽ በሚስጥር ተጠብቆ የሚቆይ ሲሆን፣ መረጃው ተደራሽ የሚደርገው በአጥኚው ሆኖ ለትምህርት ብቻ የሚያገለግል ይሆናል፡፡በዚህ መጠይቅ ላይ የቀረቡት ጥያቄዎች ለጥናቱ ስኬታማነት ቁልፍ ሚና ስለሚኖራቸው ለሁሉም ጥያቄዎች መልስ በመስጠት ትብብር እንድታደርጉልኝ በትህትና እጠይቃለሁ፡፡ ለምታደርጉልኝ ቀና ትብብር በቅድሚያ ምስጋናዬን አቀርባልሁ፡፡

ክፍሌ 1
አጠቃላይ መረጃ

መመሪያ፡ እባክዎ ለእያንዳንዱ ጥያቄ ተገቢው ምላሽ በቀረበበት ምርጫ ትዩዩ (√) ምልክት ያኑሩ

1. ዕድሜ

ሀ) 18-29 ☐ ለ) 30-39 ☐ ሐ) 40-49 ☐
መ) 50 ዓመት እና በላይ ☐

2. ጾታ

ሀ) ወንድ ☐ ለ) ሴት ☐

3. ወርሃዊ ገቢ

ሀ) 5000 እና በታች ☐ ለ) 5000 - 7500 ☐
ሐ) 7500 - 10000 ☐ መ) 10000 እና በላይ ☐

4. የትምህርት ደረጃ

ሀ) ሰርተፊኬት ☐

ለ) የመጀመሪያ ዲግሪና ከዚያ በላይ ☐ ሐ) ዲፕሎማ ☐

መ) ሌሎች

5. አሁን ያሎት ስራ

ሀ) በግል ስራ ፈጥረው ☐ ለ) የግል ሴክተር ☐

ሐ) የመንግስት ስራ ☐

መ) ሌሎች ☐

6. የእርስዎ የእርሻ መሳሪያ አይነት

ሀ) ትራክተር ☐ ለ) ኮምባይን ሀርቨስተር ☐ ሐ) ተቀጥላ መሳሪያዎች ☐

7. በዓመት የድህረሽያጭ ዲፓርትመንት የጎበኙበት ድግግሞሽ

ሀ) ለመጀመሪያ ጊዜ ☐ ለ) 4-10 ጊዜያት☐ ሐ) 2-3 ☐

ጊዜያት መ) ከ 10 ጊዜ በላይ ☐

ክፍል 2

የግል ምልከታ መግለጫዎች

መመሪያ፡ እባክዎ ለእያንዳንዱ ጥያቄ ተገቢው ምላሽ በቀረበበት ቁጥር ትይዩ (√) ምልክት ያኑሩ

1=በጣም አልስማማበትም፣ 2=አልስማማበትም፣

3=አቋም አልያዝኩም፣ 4=እስማማለሁ፣

5=በጣም እስማማበታለሁ)

ተ.ቁ	***መግለጫዎች***	በጣም አ ልስማማ በትም	አልስ ማማበ ትም	አቋም አልያዝ ኩም	እስማ ማለሁ	በጣም እስ ማማበታለሁ
	በቁስ አካላዊ መገለጫዎች	1	2	3	4	5
1	ይህ ሰርቪስ ማእከል ምቹ የሆነ መግቢያ መውጪያ እና ፓርኪንግ አለው					
2	በሰርቪስ ማእከሉ አገልግሎት የሚሰጥባቸው መሳሪያዎች በቴክኖሎጂ የታገዙ ናቸው					

3	በሰርቪስ ማእከሉ የአገሌግሎት የጥራት ደረጃ ሰርተፊኬት ይሰጣል					
4	በሰርቪስ ማእከሉ የእንግዶች መጠበቂያ ላውንጅ ስፍራው ለእይታ ማራኪ ነው					
የአገልግሎት አሰተማማኝነት						
5	በሰርቪስ ማእከሉ የቀጠሮ ሰዓት ይከበራል					
6	በሰርቪስ ማእከሉ ስለመሳሪያው ትክክለኛ መረጃ ይቀመጣል					
7	በዚህ ሰርቪስ ማእከል ውስጥ የተሸከርካሪ ብልሽቶች በአግባቡ ይጠናሉ					
8	ይህ ሰርቪስ ማእከል ኦሪጅናል እቃዎችን ይጠቀማል					
9	ይህ ሰርቪስ ማእከል የሚሰጠው የጥገና አገሌግሎት አስተማማኝ ነው					
10	በዚህ ሰርቪስ ማእከል ውስጥ የግል መረጃዎች በጥንቃቄ ይያዛሉ					
	ምላሽ አሰጣጥ					
11	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች አገልግሎት የሚሰጥበትን ሰዓት ያሳውቃሉ					
12	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ተገልጋዮችን ለመርዳት ፈቃደኛ ናቸው					
13	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ለተገልጋዮች ምላሽ ለመስጠት ቅድሚያ ይጣሉ					
14	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ለተገልጋዮች ምቹ ናቸው					
15	ወደ ድህረ-ሽያጭ ሰርቪስ ማእከሉ የሚያደርስ ተገቢ ትራንስፖርት ፋሲሊቲ ይገኛል					
16	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ለስራው ብቁ ናቸው					
17	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ሁሉንም ተገልጋይ በእኩል ደረጃ ያስተናግዳሉ					
18	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ለስራው በቂ ትኩረት ይሰጣሉ					
	ማረጋገጫ					
19	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች የሁሉንም ተገልጋይ ጥያቄ ለመረዳት በቂ እውቀት አላቸው					
20	በድህረ-ሽያጭ አገልግሎቱ ስለ እርሻ መሳሪያዎች እርግጠኝነት ይሰማዎታል					

21	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ትሁት እና ሰው አክባሪ ናቸው					
22	በዚህ ሰርቪስ ማእከሉ ያሉ ሰራተኞች ለተገልጋዮች በቂ የሆነ ማብራሪያ እና ገለጻ ይሰጣሉ					
23	የድህረ-ሽያጭ አገልግሎት ዋጋው ተመጣጣኝ ነው					
	ፍላጎትን መረዳት					
24	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ለተገልጋዮች ፍላጎት በቂ የሆነ ትኩረት ይሰጣሉ					
25	በዚህ ሰርቪስ ማእከል ያሉ ሰራተኞች ለተገልጋዮች ጥራት ያለው አገልግሎት ይሰጣ ሉ					
26	በዚህ ሰርቪስ ማእከል ክፍያ ልመፈጸም ሌዩ ሌዩ አማራጮች አሉ					
27	በዚህ ሰርቪስ ማእከል ስጦታዎች እና የማስታወቂያ ቅናሾች ይደረጋሉ					
28	በድህረ-ሽያጭ አገልግሎት ማእከል ያሉ ሰራተኞች ስለተገልጋዮች ፍላጎት በቂ ግንዛቤ አላቸው					
	ስለአገልግሎት እርካታ					
29	በአጠቃላይ በኩባንያው በሚሰጠው ድህረ-ሽያጭ አገልግሎት ደስተኛ ነኝ					
30	ይህን ያእርሻ መሳሪያጥገና ማእከል ለመገልገል የወሰንኩት ውሳኔ ትክክል መሆኑ ይሰማኛል					
31	በኩባንያው የሚሰጠው ድህረ-ሽያጭ አገልግሎት እንደጠበቅኩት ሆኖ አግኝቼዋለሁ					