

A Study on Operational Strategies for Footwear manufacturing Systems

Submitted in partial fulfilment of the requirement for the reward of

MASTER OF BUSINESS ADMINISTRATION

By

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MASTER OF BUSINESS ADMINISTRATION

SCHOOL OF MANAGEMENT STUDIES

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade “A++” by NAAC | 12B Status by UGC | Approved by AICTE

Jeppiaar Nagar, RAJIV GANDHI SALAI, CHENNAI - 600119

December-2023



SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the Bonafide work of **KRISHNA.A (42410104)** who has done the Project work entitled **A Study on Operational Strategies for Footwear Manufacturing Systems** under my supervision from **September - October 2023**

Internal Guide

External Guide

Dr. BHUVANESWARI .G, MBA, Ph.D.

Dean, School of Business Administration

Submitted for Viva voice Examination held on _____.

CERTIFICATE OF COMPLETION:



MALANG FOOTWEAR INDUSTRIES

Date : 12/10/2023

TO WHOMSOEVER IT MAY CONCERN

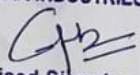
Sub : Academic Project Completion Certificate

We like to confirm that Mr.Krishna A (Reg No : 42410104), who is Doing MBA in Sathyabama Institute of Science and Technology, Chennai Has successfully completed the project in operations specialization in our concern titled **"A Study on Operational Strategies for Footwear Manufacturing System"** From 05/09/2023 to 05/10/2023.

During this period, her conduct and behavior was observed to be good.

We wish success in all the future endeavors,

For MALANG FOOTWEAR INDUSTRIES,
Sincerely


Authorised Signatory

For MALANG FOOTWEAR INDUSTRIES.

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DECLARATION

I **KRISHNA.A (42410104)**. Hereby declare that the Project Report entitled **“A Study on Operational Strategies for Footwear Manufacturing Systems”** done by me under the guidance of **MS.S.SHANTHINI.M.COM,MBA,,NET Assistant Professor**, School of Business Administration is submitted in partial fulfilment of the requirements for the award of **MASTER OF BUSINESS ADMINISTRATION** degree.

DATE:

PLACE:

KRISHNA.A

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my sincere thanks to **Dr. BHUVANESWARI G, MBA., Ph.D.**, Dean, School of Business Administration and **Dr. PALANI A, M.COM., M.Phil., MBA., Ph.D.**, Head of Department, School of Business Administration for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Project Guide **MS.S.SHANTHINI.M.com.NET, Assistant Professor of the Department, School of Management** for his valuable guidance, suggestions and constant encouragement paved way for the successful completion of my project work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the School of Business Administration who were helpful in many ways for the completion of the project.

KRISHNA.A

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO
	ABSTRACT	XII
	LIST OF TABLES	VIII
	LIST OF CHARTS	X
1	INTRODUCTION	
	1.1 Introduction	1-3
	1.2 Industry Profile	3-4
	1.3 Company Profile	4-5
	1.4 Statement of the problem	5-7
	1.5 Objectives of the Study	7
	1.6 Need for the study	7
	1.7 Scope and Significance of Study	8
2	REVIEW OF LITERATURE	
	2.1 Review of Literature	9-18
3	RESEARCH METHODOLOGY	
	3.1 Methodology	19
	3.2 Research Design	19
	3.3 Sampling Technique	20
	3.4 Sources of Data	20-21
	3.5 Structure of Questionnaire	21-22
	3.6 Sample Size	22
	3.7 Period of Study	22
	3.8 Profile area of the study	23
	3.9 Hypothesis/ Analytical Tools	23

4	DATA ANALYSIS AND INTERPRETATION	
	4.1 Percentage analysis	24-55
	4.2 Chi square test	55-61
	4.3 correlation	62-66
5	FINDINGS, SUGGESTIONS AND CONCLUSION	
	5.1 Findings of the Study	66-68
	5.2 Suggestions	68-69
	Limitation of study	69-70
	5.4 Conclusion	70
	REFERENCES	70-75
	APPENDIX – I (Questionnaire)	75-79
	SHIPMENT DETAILS	79-81

LIST OF TABLES

TABLE NO	PARTICULARS	PAGE NO.
4.1	Showing The Gender	24
4.2	Showing The Marital Status	25
4.3	Showing The How Old Are You?	26
4.4	Showing The Monthly income	27
4.5	Showing The Comfortable Discussing Work Concerns With Supervisor And Top Management	28
4.6	Showing The That Safety Measures And Regulations Are Effectively Enforced In The Workplace	29
4.7	Showing The Experience On Footwear Industry ?	30
4.8	Showing The Mention Working Department.	31
4.9	Showing The Frequently Work On Products Per Day	32
4.10	Showing The Department Is Mostly Working On Malang Footwear Industry	33
4.11	Showing The Malang Footwear Company Utilizes Technology And Tools Effectively In Its Operations	35
4.12	Showing The Machines And Equipment Used In Manufacturing Process Up-to-date And Well Maintained	36
4.13	Showing The Believe Our Current Manufacturing Process Is Efficient	38
4.14	Showing The Operation Strategy Executed Within Organization	40
4.15	Showing The Malang Footwear Company Provides Sufficient Opportunities To Employees Involved In Footwear Operations	41
4.16	Showing The Average Products That Are Damaged Per Day	42
4.17	Showing The Most Common Causes Of Rework In Your Manufacturing Process	43
4.18	Showing The Rework Product Identified In Your Manufacturing Process	45
4.19	Showing The Rework Products Occur In Department Area	46

4.20	Showing The Rework Incidents Documented And Reported In Department Or Area	47
4.21	Showing The Damaged Products Affect Your Salary	48
4.22	Showing The Possible To Control The Rework	49
4.23	Showing The Organization Actively Pursuing Sustainability Initiatives In Footwear Rework Manufacturing (Waste Reduction) A) yes, extensive efforts are in place	51
4.24	Showing The Rework On The Product Whether It's Selling Or Not	52
4.25	Showing The Based On Experience, Suggestions For Further Reducing Rework Products In Our Manufacturing Process	53

List of charts

TABLE NO	PARTICULARS	PAGE NO.
4.1	Showing The Gender	25
4.2	Showing The Marital Status	26
4.3	Showing The How Old Are You?	27
4.4	Showing The Monthly income	28
4.5	Showing The Comfortable Discussing Work Concerns With Supervisor And Top Management	29
4.6	Showing The That Safety Measures And Regulations Are Effectively Enforced In The Workplace	30
4.7	Showing The Experience On Footwear Industry ?	31
4.8	Showing The Mention Working Department.	32
4.9	Showing The Frequently Work On Products Per Day	33
4.10	Showing The Department Is Mostly Working On Malang Footwear Industry	34
4.11	Showing The Malang Footwear Company Utilizes Technology And Tools Effectively In Its Operations	36
4.12	Showing The Machines And Equipment Used In Manufacturing Process Up-to-date And Well Maintained	37
4.13	Showing The Believe Our Current Manufacturing Process Is Efficient	40
4.14	Showing The Operation Strategy Executed Within Organization	41
4.15	Showing The Malang Footwear Company Provides Sufficient Opportunities To Employees Involved In Footwear Operations	42
4.16	Showing The Average Products That Are Damaged Per Day	43
4.17	Showing The Most Common Causes Of Rework In Your Manufacturing Process	44
4.18	Showing The Rework Product Identified In Your Manufacturing Process	45
4.19	Showing The Rework Products Occur In Department Area	46

4.20	Showing The Rework Incidents Documented And Reported In Department Or Area	47
4.21	Showing The Damaged Products Affect Your Salary	48
4.22	Showing The Possible To Control The Rework	50
4.23	Showing The Organization Actively Pursuing Sustainability Initiatives In Footwear Rework Manufacturing (Waste Reduction) A) yes, extensive efforts are in place	52
4.24	Showing The Rework On The Product Whether It's Selling Or Not	53
4.25	Showing The Based On Experience, Suggestions For Further Reducing Rework Products In Our Manufacturing Process	54
4.26	Showing The Based On Experience, Suggestions For Further Reducing Rework Products In Our Manufacturing Process	55

ABSTRACT

This paper presents the initial results achieved by the MALANG FOOTWEAR INDUSTRIES project aimed at contributing to the introduction of Malang in the Footwear Manufacturing Industry. In particular, user requirements, operations selected and technical achievements reached so far are described. Visual serving solution developed for shoe pose identification is described with deeper detail. The introduction of this technology allows the coexistence of current working practices and Malang solutions, with minor changes in the production means already existing in most companies. This has been identified as one of the requirements by the end-users taking part in the project.

Keywords

Footwear, Force Control, Visual Serving, Programming

This study about the perception of rework on footwear increase is done on descriptive research method with sampling done by convenient sampling under non probability sampling. The study is focused on public numbering up to, AMBUR public around MALANG FOOTWEAR INDUSTRIES who was affected due to rework on footwear increase.

KRISHNA .A

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION:

India is the 2nd largest producer and consumer of footwear in the world.

The Indian footwear industry has developed substantial links in the global production network. But this industry is still dominated by firms that cater largely to the domestic market through the artisanal production system. Specific footwear centers and sections of firms in traditional footwear cluster have established strong relations with export market. The leather industry is one of the oldest traditional industries.

A part of the clothing and apparel industry, the footwear market is comprised of shoes, sneakers, luxury footwear, athletic footwear, and sporting shoes, as well as other related goods.

Modern leather industry began with British governments direct encouragement. First modern tanning was established in 1857. The first modern footwear industry was started in 1887.

However, the footwear industry was largely based on traditional artisan mode. In the industrial policy of 1967, the leather industry including footwear was reserved for small scale sector.

Spanish cave drawings from more than 15,000 years ago show humans with animal skins or furs wrapped around their feet. Footwear, in some form or another, have been around for a very long time. In recent years, there has been a temperament for the footwear sector in the developing world to become successful in exporting to industrially advanced countries.

Local markets in developing countries for domestically produced footwear have also grown. These latest trends have resulted in the entrenchment of relatively large scale and capital intensive plants. Domestic enterprises with less access to technical information have thus tended to adopt manufacturing methods similar to those in 'turn-key' factories, at the expense of technologies more suitable to local conditions, especially at low scales of production. In western countries especially in Europe, the footwear industry has declined in the last few years. While in 2005, there were about 27.000 firms engaged in footwear industry; in 2008 there were only 24.000. Along with the number of firms, the direct employment has also decreased. The only factors that remained almost steady were production value and the value added at factor cost.

In the United States, the annual shoe industry revenue recorded in 2012 was \$48 billion. There are around 29.000 shoe stores in the United States and the footwear industry employs about 189.000 people. Due to increasing imports, these figures are also declining. The only way of staying alive in the shoe market is to establish a presence in niche markets.

➤ **Why:**

The cost of increasing rework has directly affected the money, time, making the situation miserable for company Due to increase in the rework there has been rapid increase in work force, salary and other essential commodities.

AREA OF INDUSTRY:

An online questionnaire was developed to collect that required data in the most efficient manner possible. The questionnaire was distributed via electronic mail and interview method to the potential participants. The unit of analysis was Malang footwear industry.

➤ **SAMPLE SIZE:**

It comprises of 204 respondents from MALANG Footwear Industries, spread across various socio demographic profiles.

➤ **SAMPLING DESIGN:**

A random sampling method was adopted to draw the sample respondents for the study. Random sampling means each individual element in the universe has an equal chance of being chosen.

➤ **POPULAATION:**

My survey is among both men and women at the age group of [18-60]

➤ **LOCATION:**

My survey location is MALANG Footwear Industries.

➤ **TYPE OF INDUSTRY:**

Leather Footwear Industry.

1.2 INDUSTRY PROFILE:

The footwear sector is a very significant segment of the leather industry in India; rather it is the engine of growth for the entire Indian leather industry.

India produces 2065 million pairs of different categories of footwear (leather footwear - 909 million pairs, leather shoe uppers - 100 million pairs and non-leather footwear - 1056 million pairs). India exports about 115 million pairs. Thus, nearly 95% of its production goes to meet its own domestic demand.

The major production centers in India are Chennai, Ranipet, Ambur in Tamil Nadu, Mumbai in Maharashtra, Kanpur in U.P., Jalandhar in Punjab, Agra, Delhi, Karnal, Ludhiana, Sonapat, Faridabad, Pune, Kolkata, Calicut and Ernakulum. About 1.10 million are engaged in the footwear manufacturing industry.

The Footwear sector is now de-licensed and de-reserved, paving the way for expansion of capacities on modern lines with state-of-the-art machinery. To further assist this process, the Government has permitted 100% Foreign Direct Investment through the automatic route for the footwear sector.

Conducive Investment climate towards attracting overseas investments and increasing cost competitiveness. The Government of India is setting up dedicated Footwear Complex and Footwear Components Park where footwear clusters are located.

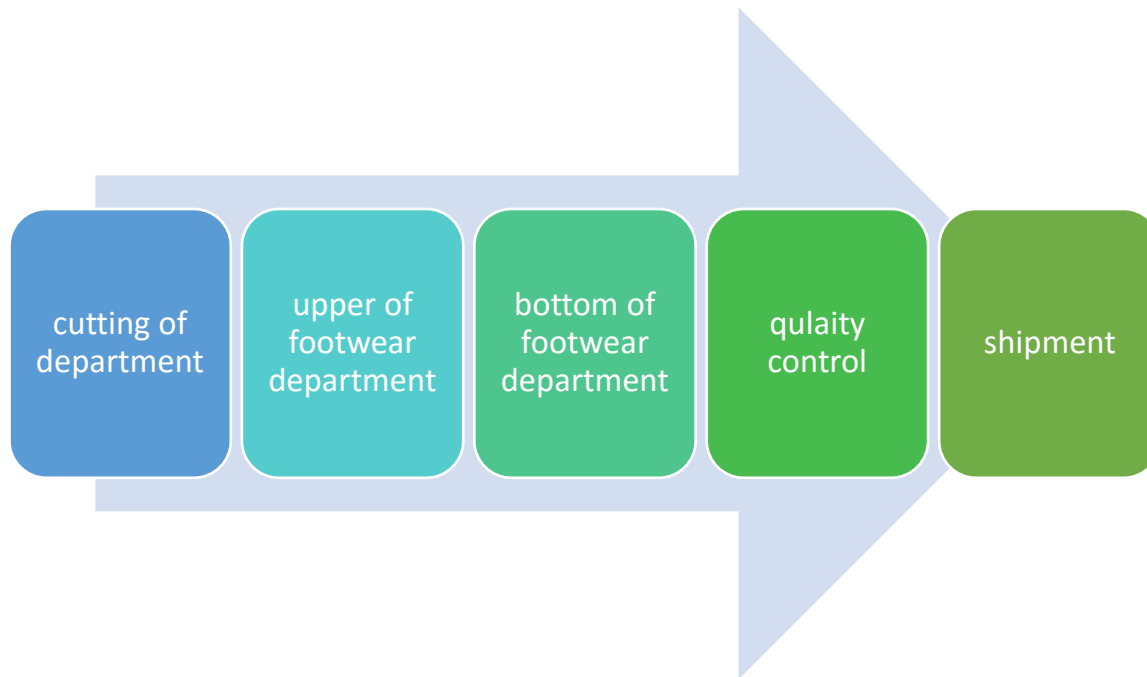
Nearly 90% of India's export of footwear goes to European Countries and the USA. Future growth of Indian footwear in India will continue to be market driven. The European countries and the US are major consumers for the Indian footwear.

1.3 COMPANY PROFILE:

MALANG Footwear Industries Ltd.... Location At Ambur, Working on More than 237 employees in the organization, in the company producing in leather footwear. with a production capacity of 1500 pairs, a day. They will be selling on domestic and international market. The company strongly believes that its greatest strength is its staff and its distributors. The company's distribution of footwear is networked through 18 depots across India. Retail shopkeepers are serviced by more than 450 distributors, delivering stocks to every corner of the country in the shortest possible time.

The first department of the company is sample and design, this department only the key part of the company because increase the production and selling of the company, the good quality sample and well look design impressed they will customer giving the order. In department well 15 members working.

Frist will be receiving on order to customer, next buying the raw material of the leather. The operation process well leather to footwear they will 5 department of the process



1.4 STATEMENT OF THE PROBLEM:

A REWORK ON DAMAGED PRODUCTS (FOOTWEAR) DUE TO HUMAN AND MACHINE ERRORS;

The cost of increasing rework has directly affects the money, time, making the situation miserable for him. Due to increase in the rework there has been rapid increase in work force , salary and other essential commodities.

Material defects

Material defects are responsible for many issues in footwear manufacturing, affecting natural or synthetic leather and textiles, for example. We often encounter visible defects, such as scars, holes, scratches, stains and discoloration, which can significantly affect the final product's aesthetics and quality, and in most cases are regarded as major defects.

Adhesive or cementing failure

Footwear manufacturing frequently uses adhesives to bond components, such as soles, uppers, insoles and accessories. Adhesive and cementing failure can result in structural issues, causing the shoe to fall apart and posing a significant quality problem.

Overflowing of glues, glue marks and inadequate cementing are common visual symptoms of this issue. While the first two are usually considered minor defects, cementing failure is considered to be major.

Poor finishing

Footwear finishing impacts the final product's appearance and sometimes the shoe's fit, reducing the sellable value of the goods. Poor finishing includes rough edges, asymmetric properties, and uneven trimming, often considered major defects.

Metal and sharp points

Metal and sharp points are relatively uncommon footwear issues that pose a significant risk to consumers. Exposed metal wares due to poor assembly, or loosened metal components, could lead to sharp edges. In extreme cases, metal components are accidentally left inside of shoes.

Inconsistent sizing and fit

Inconsistent sizing and fit can stem from various factors, such as inaccurate moulds or patterns, machine calibration errors, or assembly inconsistencies and errors. Shoes that do not comply with standard sizes and fits will no doubt lead to customer dissatisfaction and increased return rates.

In today's ever-changing customer driven market, industries are needed to improve their products and processes to satisfy customer requirements.

Equilibrium of brake shoe contacting with a moving body in two different points is considered. Brake shoe is pressed to body by direction that is perpendicular to the body

velocity. Compliance of shoe is modelled in points of contacts by means of massless elastic springs.

The friction force is determined by Coulomb's law. A nonlinear problem statement is proposed. Stability in the first approximation of equilibrium of the brake shoe is considered.

Basing on the assumption that the brake shoe shows different stiffness in points of contact, it is shown that there exist ranges of mechanical parameters by which the equilibrium of the brake shoe is unstable. Disturbed motion may be of the form of self-excited oscillations with growing amplitude.

1.5 OBJECTIVE OF THE STUDY

- **To Study The Operational Strategy Of Footwear Manufacturing System.**
- **To Study The Impact Of The Reworking On The Footwear Products.**
- **To Find The Effect Of Just-in –Time Progress In Footwear Manufacturing**

1.6 NEED FOR STUDY

- Understanding different operational strategies helps in streamlining processes, reducing production time, and minimizing waste, ultimately improving overall efficiency.
- Analyzing various strategies allows for identifying cost-effective methods, optimizing resource utilization, and lowering production expenses, which is vital for maintaining competitiveness in the market.
- Understanding the causes of damage due to human, material, or machine errors helps in devising strategies to minimize these issues. It directly impacts the cost associated with rework, reducing financial losses for the company.
- Minimizing errors and rework leads to higher-quality products reaching customers. This, in turn, enhances customer satisfaction, fosters brand loyalty, and generates positive word-of-mouth referrals.

1.7 scope and significance of study

- Analyzing strategies to streamline production processes, from material sourcing to final product assembly, ensuring efficiency at each stage.
- Researching eco-friendly manufacturing methods, recycling initiatives, and sustainable material sourcing to align with environmental goals.
- Implementing effective operational strategies offers a competitive advantage by reducing costs, improving quality, and increasing production efficiency, leading to higher market share.
- Consistently delivering high-quality footwear products on time meets customer expectations, leading to increased satisfaction and loyalty.

CHAPTER 2

REVIEW OF LITERATURE

2.1 REVIEW OF LITERATURE:

1. **Rodriguez, M.2014** "Just-In-Time Practices in Footwear Manufacturing: Enhancing Operational Agility."
Rodriguez explores the implementation of Just-In-Time (JIT) practices in footwear manufacturing to enhance operational agility and reduce waste.
2. **Morales, E. 2015** "Strategic Outsourcing in Footwear Manufacturing: An Operational Framework for Decision Making."
Morales presents an operational framework for decision-making in strategic outsourcing within footwear manufacturing, addressing key considerations for successful implementation.
3. **Kumar, A. 2015** "Optimizing Operational Efficiency in Footwear Manufacturing: A Case Study."
This study explores the implementation of lean manufacturing principles in the footwear industry, focusing on improving operational efficiency.
4. **Yang, H. et al. 2016**"Collaborative Supply Chain Practices in the Footwear Industry: An Operational Framework."
Yang and collaborators present an operational framework for understanding and implementing collaborative supply chain practices in the footwear industry, emphasizing partnerships and coordination among stakeholders
5. **Garcia, E. 2016**"Operational Competitiveness in Footwear Manufacturing: A Framework for Assessing Key Success Factors."
Garcia proposes a framework for assessing key success factors contributing to operational competitiveness in the footwear manufacturing sector.
6. **Ramirez, G. 2016**"Total Productive Maintenance (TPM) in Footwear Manufacturing: Improving Operational Reliability."

Ramirez investigates the application of Total Productive Maintenance (TPM) to enhance operational reliability and reduce downtime in footwear manufacturing processes.

7. **Park, S. 2016**"Risk Management in Footwear Manufacturing: An Operational Perspective."

Park investigates risk management strategies in footwear manufacturing operations, addressing potential disruptions and uncertainties in the production process.

8. **Patel, S. 2016**"Quality Management in Footwear Manufacturing: An Operational Framework."

Patel's study focuses on developing a comprehensive quality management framework for footwear manufacturing, emphasizing the importance of meeting and exceeding customer expectations.

9. **Huang, J. et al. 2017**"Operational Effectiveness of Lean Supply Chains in Footwear Manufacturing: A Comparative Analysis."

Huang and team conduct a comparative analysis to assess the operational effectiveness of lean supply chains in the context of footwear manufacturing.

10. **Zhang, H. et al. 2017**"Robotics and Automation in Footwear Assembly: Operational Challenges and Future Directions."

Zhang and collaborators analyze the operational challenges and future directions associated with the integration of robotics and automation in footwear manufacturing.

11. **Zhang, Y. 2017**"Smart Factory Implementation in Footwear Manufacturing: A Case Study on Operational Benefits."

Zhang's case study investigates the operational benefits of implementing smart factory concepts in footwear manufacturing, emphasizing automation and connectivity.

12. **Wang, L. et al. 2017** "Digital Transformation in Footwear Manufacturing: A Case Study of Industry 4.0 Implementation."

Wang and collaborators examine the implementation of Industry 4.0 technologies, including IoT and data analytics, in optimizing operational processes within the footwear manufacturing domain.

13. **Ramirez, A. 2017**"Operational Performance Metrics in Footwear Manufacturing: A Comparative Analysis."

Ramirez conducts a comparative analysis of operational performance metrics in footwear manufacturing, offering insights into benchmarking and performance improvement strategies.

14. **Li, Y. et al. 2017**"Operational Performance Measurement in Footwear Manufacturing: An Integrated Balanced Scorecard Approach."

Li and collaborators propose an integrated Balanced Scorecard approach for operational performance measurement in footwear manufacturing, providing a comprehensive evaluation framework.

15. **Chen, L. et al. 2017**"Operational Flexibility in Footwear Manufacturing: A Dynamic Capability Perspective."

Chen and colleagues explore operational flexibility in footwear manufacturing, examining it through the lens of dynamic capabilities and adaptability to market changes.

16. **Garcia, R. 2017**"Environmental Sustainability in Footwear Manufacturing Operations: A Review of Practices and Challenges."

Garcia reviews practices and challenges related to environmental sustainability in footwear manufacturing operations, addressing the industry's impact on the environment.

17. **Lee, J. 2018**"Operational Adaptation to Digital Marketplaces: A Case Study of E-commerce Integration in Footwear Manufacturing."

Lee conducts a case study on the operational adaptation of footwear manufacturing to digital marketplaces, focusing on the integration of e-commerce strategies.

18. **Wu, Z. et al. 2018**"Operational Optimization through Advanced Forecasting Models in Footwear Supply Chain."

Wu and collaborators explore the application of advanced forecasting models in the footwear supply chain, aiming for operational optimization and improved demand forecasting.

19. **Wong, E. 2018** "Operational Analytics in Footwear Manufacturing: Leveraging Data for Decision Support."

Wong explores the application of operational analytics in footwear manufacturing, highlighting how data analytics can be leveraged for decision support and process optimization.

20. **Nguyen, T. 2018** "Lean Six Sigma Applications in Footwear Manufacturing: A Comprehensive Analysis."

Nguyen provides a comprehensive analysis of the application of Lean Six Sigma methodologies in footwear manufacturing, focusing on process improvement and waste reduction.

21. **Chen, P. et al. 2018** "Operational Robustness in Footwear Supply Chains: An Optimization Model for Risk Mitigation."

Chen and team present an optimization model for mitigating risks and enhancing operational robustness within footwear supply chains, addressing uncertainties in the production process.

22. **Chen, J. 2018** "Technology Integration in Footwear Manufacturing Systems: A Review."

Chen discusses the impact of technology integration, including automation and smart manufacturing, on operational processes in the footwear industry.

23. **Santos, P. 2018** "Integration of Additive Manufacturing in Footwear Production: Operational Implications and Future Directions."

Santos explores the integration of additive manufacturing (3D printing) in footwear production, discussing operational implications and potential future developments.

24. **Lopez, E. 2018** "Ergonomics and Human-Centric Design in Footwear Manufacturing: Operational Improvements and Worker Well-being."

Lopez explores the integration of ergonomic principles and human-centric design in footwear manufacturing, focusing on both operational improvements and worker well-being.

25. **Yang, Q. 2018** "Human Factors in Footwear Manufacturing: An Operational Analysis."

Yang's research focuses on the role of human factors in operational efficiency within footwear manufacturing, addressing aspects such as training, ergonomics, and workforce management.

26. **Wang, J. 2019** "Blockchain Applications in Footwear Supply Chain: Operational Transparency and Traceability."

Wang investigates the operational benefits of implementing blockchain technology in the footwear supply chain, emphasizing transparency and traceability.

27. **Chen, Y. 2019** "Operational Simulation for Capacity Planning in Footwear Manufacturing: A Case Study Approach."

Chen utilizes operational simulation techniques for capacity planning in footwear manufacturing, providing insights through a practical case study approach.

28. **Chang, H. et al. 2019** "Customization Trends in Footwear Manufacturing: An Operational Analysis of Mass Customization Strategies."

Chang and team conduct an operational analysis of mass customization strategies in the footwear industry, exploring trends and challenges associated with personalized product offerings.

29. **Wu, X. 2019** "Data-Driven Decision Making in Footwear Manufacturing: A Case Study on Operational Intelligence."

Wu's case study explores the integration of data-driven decision-making processes in footwear manufacturing operations to enhance overall efficiency.

30. **Wang, Q. et al. 2019** "Operational Challenges and Innovations in Footwear Manufacturing: A Global Perspective."

Wang and collaborators offer a global perspective on operational challenges and innovations within the footwear manufacturing industry, considering regional variations and trends.

31. **Smith, M. et al. 2019** "Supply Chain Optimization in Footwear Manufacturing: A Comprehensive Analysis."

Smith and team delve into supply chain strategies to optimize production processes in the footwear sector, emphasizing the importance of a streamlined supply network.

32. **Kim, N. 2019** "Operational Integration of Augmented Reality in Footwear Manufacturing: Enhancing Assembly Processes."

Kim investigates the operational integration of augmented reality in footwear manufacturing, focusing on its application to enhance assembly processes and worker efficiency.

33. **Chen, G. 2019** "Operational Risk Management in Footwear Production: A Systematic Framework."

Chen develops a systematic framework for operational risk management in footwear production, addressing potential disruptions and uncertainties in the operational process.

34. **Chen, X. 2019** "Operational Resilience in Footwear Manufacturing: Coping with Disruptions through Adaptive Strategies."

Chen explores operational resilience strategies in footwear manufacturing, focusing on adaptive approaches to cope with disruptions such as supply chain interruptions and market fluctuations.

35. **Kim, Y. 2019** "Globalization Challenges in Footwear Manufacturing: An Operational Analysis."

Kim explores the operational challenges and opportunities associated with globalization in the footwear industry, considering factors such as outsourcing and international supply chains.

36. **Wu, Y. et al. 2020** "Green Operations in Footwear Manufacturing: An Integrated Approach for Environmental Sustainability."

Wu and team propose an integrated approach to green operations in footwear manufacturing, addressing environmental sustainability through various operational strategies.

37. **Xie, L. 2020** "Circular Economy Practices in Footwear Manufacturing: A Framework for Sustainable Operations."

Xie proposes a framework for incorporating circular economy practices into footwear manufacturing operations, emphasizing sustainable and eco-friendly practices.

38. **Zhang, L. 2020**"Operational Alignment with Industry 4.0 Principles: A Case Study in Footwear Manufacturing."

Zhang conducts a case study on operational alignment with Industry 4.0 principles in the context of footwear manufacturing, examining the implementation of smart technologies.

39. **Liang, Q. et al. 2020**"Operational Cybersecurity in Footwear Manufacturing: Protecting Digital Infrastructures."

Liang and team delve into the realm of operational cybersecurity in footwear manufacturing, addressing the protection of digital infrastructures from potential threats.

40. **Li, w. et al. 2020** "Optimal Scheduling Models for Footwear Manufacturing: A Computational Approach."

Li and collaborators present computational models for optimizing production scheduling in footwear manufacturing, aiming to improve operational efficiency.

41. **Kim, D. 2020**"Operational Implications of Circular Design Principles in Footwear Production: A Case Study Approach."

Kim explores the operational implications of circular design principles in footwear production, utilizing a case study approach to highlight practical applications.

42. **Gupta, R. 2020** "Sustainable Practices in Footwear Manufacturing: An Operational Perspective."

Gupta's study focuses on sustainable operational practices in the footwear industry, addressing environmental concerns and ethical manufacturing.

43. **Park, Y. 2020**"Digital Transformation of Inventory Management in Footwear Manufacturing: Operational Efficiency and Cost Reduction."

Park explores the digital transformation of inventory management in footwear manufacturing, emphasizing its impact on operational efficiency and cost reduction.

44. **Kim, C. 2021**"Agile Supply Chain Management in the Footwear Industry: Operational Resilience in a Dynamic Market."

Kim examines the application of agile supply chain management in the footwear industry, focusing on operational resilience amid dynamic market conditions.

45. **Guo, Q. et al. 2021** "Smart Materials in Footwear Manufacturing: Operational Advantages and Product Innovation."
Guo and team investigate the operational advantages and product innovation potential associated with the use of smart materials in footwear manufacturing.
46. **Rodriguez, S. 2021** "Operational Integration of Sustainability Standards in Footwear Manufacturing: Challenges and Opportunities."
Rodriguez examines the challenges and opportunities associated with the operational integration of sustainability standards in footwear manufacturing.
47. **Chen, W. et al. 2021** "Operational Impacts of 3D Printing in Customized Footwear Manufacturing: A Comparative Analysis."
Chen and team present a comparative analysis of the operational impacts of 3D printing in customized footwear manufacturing, examining efficiency gains and customization capabilities.
48. **Wang, X. 2021** "Operational Implications of Sustainable Packaging in Footwear Distribution: A Life Cycle Analysis."
Wang conducts a life cycle analysis to explore the operational implications of sustainable packaging in footwear distribution, emphasizing environmental considerations.
49. **Li, Z. et al. 2021** "Supply Chain Digitalization in the Footwear Industry: An Operational Perspective."
Li and collaborators analyze the operational impact of supply chain digitalization in the footwear industry, focusing on advancements in digital technologies for improved efficiency.
50. **Tan, H. et al. 2021** "Robotic Applications in Footwear Manufacturing: A Systematic Review."
Tan and team conduct a systematic review of robotic applications in footwear production, highlighting advancements, challenges, and the impact on operational efficiency.
51. **Chen, Q. et al. 2021** "Supply Chain Resilience in Footwear Manufacturing: A Multi-tiered Approach."

Chen and collaborators explore a multi-tiered approach to enhance supply chain resilience in the footwear manufacturing industry, considering factors such as supplier relationships and risk mitigation.

52. **Park, H. 2022** "Operational Resilience and Sustainability in Footwear Supply Chains: An Integrated Approach."

Park explores an integrated approach to operational resilience and sustainability within footwear supply chains, addressing the intersection of resilience and environmental considerations.

53. **Kim, S. 2022** "Operational Aspects of Sustainable Materials in Footwear Production: A Comprehensive Review."

Kim provides a comprehensive review of the operational aspects related to the use of sustainable materials in footwear production, considering both environmental and operational implications.

54. **Author: Kim, J. 2022** "Digital Twin Technology in Footwear Production: A Review of Operational Implications."

Kim reviews the operational implications of digital twin technology in footwear production, examining how virtual replicas can enhance efficiency and decision-making.

55. **Lee, H. 2022** "Agile Manufacturing in Footwear: Adapting to Market Trends."

Lee's research investigates the application of agile manufacturing principles in the footwear sector, highlighting the importance of flexibility in response to changing market demands.

CHAPTER – 3

RESEARCH METHODOLOGY

THE RESEARCH QUESTION IS – A REWORK ON DAMAGED PRODUCTS (FOOTWEAR) DUE TO HUMAN, RAW MATERIALS AND MACHINE ERRORS.

3.1 METHODOLOGY

Research methods are the techniques and tools by which you research a subject or a topic. Research methodology involves the learning of various techniques to conduct research and acquiring knowledge to perform tests, experiments, surveys, and critical analysis.

Research methodology simply refers to the practical “how” of any given piece of research. It’s about how a researcher systematically designs a study to ensure valid and reliable results that address the research aims and objectives.

They use to Non-probability sampling

3.2 Descriptive research design:

Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, where, when and how questions, but not why questions. A descriptive research design can use a wide variety of research methods to investigate one or more variables.

3.3 SAMPLING TECHNIQUE

Sampling techniques in the footwear industry involve creating prototypes or sample products to test designs, materials, and manufacturing processes before mass production. These techniques are crucial for ensuring quality, functionality, and market acceptance of the final product. Here are some common sampling techniques used in the footwear industry:

Non-probability sampling:

Non-probability sampling is defined as a sampling technique in which the researcher selects samples based on the subjective judgment of the researcher rather than random selection.

Percentage analysis method

3.4 SOURCES OF DATA

In the footwear industry, various sources of data play pivotal roles in decision-making, design, production, marketing, and understanding consumer preferences, and Sources of Data begins with figuring out what sort of data is needed, followed by the collection of a sample from a certain section of the population. Next, you have to utilize a certain tool to gather the data from the chosen sample. The two types of sources of data are:

3.4.1 Primary data:

The primary data for this study was collected through questionnaire.

3.4.2 Secondary data:

Secondary data was collected from external sources like websites, journals etc.

3.5 STRUCTURE OF THE QUESTIONNAIRE:

Creating a comprehensive questionnaire for the footwear industry involves understanding the specific objectives of the research or data collection. However, here's a structured approach to designing a questionnaire that can be used to gather insights related to footwear.

The structure of questionnaire used in this project is as follows.

3.5.1 Basic introduction:

The questionnaire begins with small and simplifies description regarding the questionnaire – Title and description of the topic.

3.5.2 Personal details:

The actual questionnaire begins here where the participants are asked about their personal details such as their name, age, gender and occupation.

3.5.3 Research related questions:

The next set of questions in the questionnaire consists of the questions related to A REWORK ON DAMAGED PRODUCTS (FOOTWEAR).

]3.5.4 Perception questions:

The next set of questions in the questionnaire focus on increase in REWORK PRODUCTS related question on whether the participants are affecting due to REWORK PRODUCTS.

3.5.5 Likert scalling questions:

The likert scalling questions include moderate options in its scale.

3.5.6 Suggestion questions:

The last and final questions in the questionnaire focus on the suggestion questions of the participants regarding the questionnaire.

3.6 SAMPLE SIZE

The sample size for the project had a target of 150-250 participants. The fixed target of the sampling size has been achieved as the total number of respondents for the survey questionnaire was 204. Total of 204 responses helped the project to analyze more response and it helped to derive a conclusion recording people's perception towards a study of satisfaction of employees how they consider it.

3.7 PERIOD OF STUDY:

This is one-time research where the research is conducted only for one-time and that the project is based on the responses derived from a definite period of time. The period of study for the project of about 30 days project is based on the responses collected from the 204 participants in the 7 days' time period.

3.8 PROFILE AREA OF THE STUDY:

- My survey location is AMBUR (TIRUPATHUR DISTRICT)
- My survey targeted people 0is both Men and Women at the age group of (18-60)

3.9 HYPOTHESIS / ANAYTICAL TOOLS:

CHI-SQUARE TEST:

A Chi-square Statistic Is One Way To Show A Relationship Between Two Categorical Variables. In Statistics, There Are Two Types Of Variables: Numerical (Countable) Variables And Non-numerical (Categorical) Variables.

- Null Hypothesis (H0): there is no significant difference between the experience of employees and damaged products affect your credit score.
- Alternative Hypothesis (H1): there is a significant difference between the experience of employees and damaged products affect your credit score.

CORRELATION TEST:

- Null Hypothesis (H0): there is no significant difference between the experience of employees and damaged products affect your credit score.
- Alternative Hypothesis (H1): there is a significant difference between the experience of employees and damaged products affect your credit score.

CHAPTER-4

DATA ANALYSIS AND INTERPRETATION

The following consist of the data analysis and interpretation of my questionnaire:

4.1 PERCENTAGE ANALYSIS:

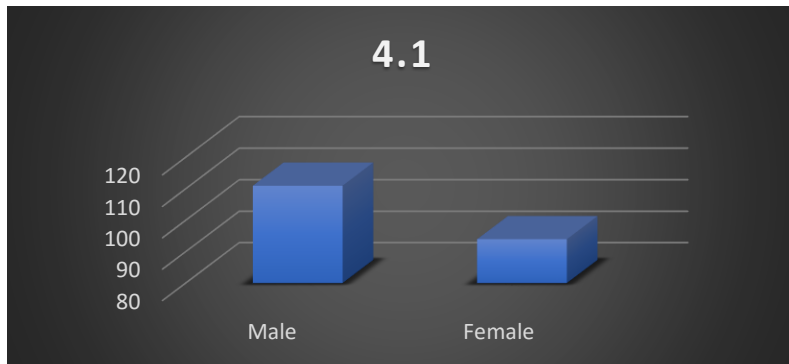
Table No. 4.1: Gender Of The Candidate

Options	No of respondent	Percentage
Male	111	54.4%
Female	94	45.6%
Total	204	100%

Interpretation:

From the above table, it is interpreted that 54.4% of respondents are of Male category and 45.6% of them belong to Female category. It is also to be noted that none of them have opted for the option prefer not to say.

Chart No. 4.1



Inference: Majority (54.4%) of respondents are male.

Table no 4.2

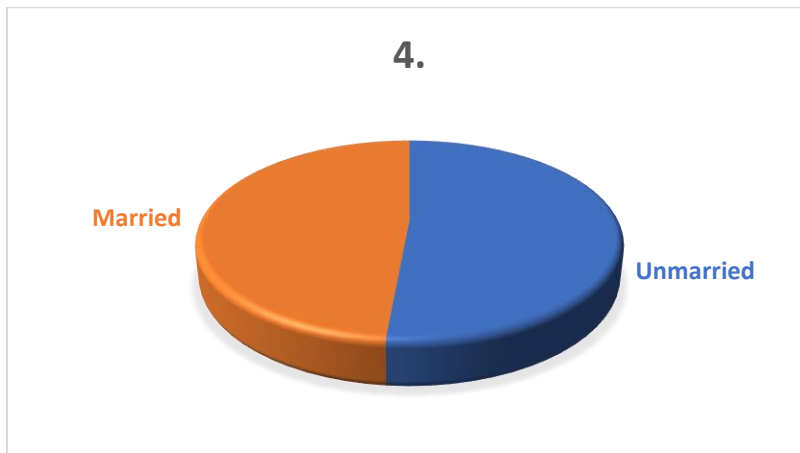
Marital Status

Options	No.of respondent	Percentage
Unmarried	99	48.5%
Married	105	51.5%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 51.5%% of respondents are married, 51.5 % of respondents are unmarried.

Chart no 4.2



Inference: Majority (51%) of respondents are rarely.

Table no 4.3

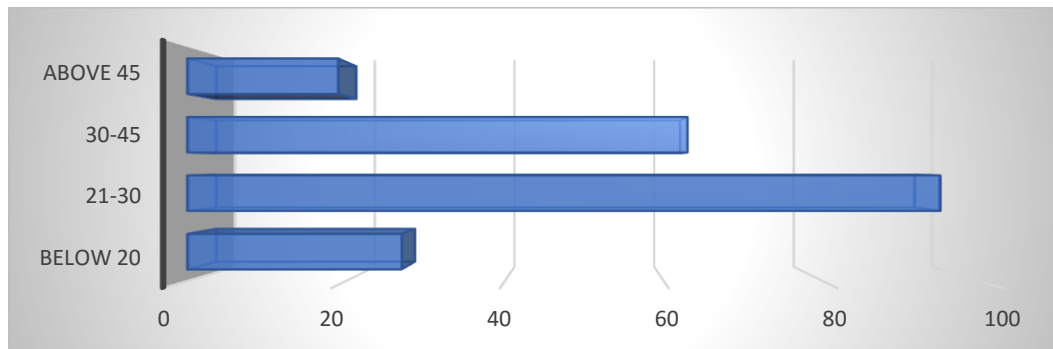
How Old Are You?

Options	No of responses	Percentage
Below 20	27	13.2%
21-30	95	46.6%
30-45	63	30.9%
Above 45	19	9.3%
Total	204	100%

Interpretation:

From the above table, it is interpreted that 13.2% of respondents are of age group of below 20 , 46.6% of them belong to age group 21-30 and 30.9% belong to the age group 33-45 and 9.3% belong to age group more then 45.

Chart no 4.3



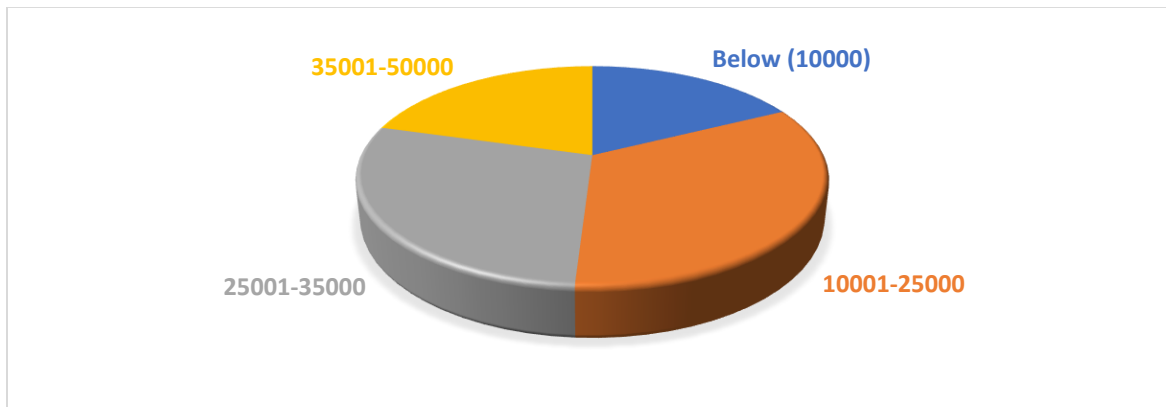
Inference: Majority (46.6%) of respondents are 21-30.

Table no. 4.4 Monthly income:

Options	No of responses	Percentage
Below (10000)	36	17.6%
10001-25000	68	33.3%
25001-35000	58	28.4%
35001-50000	42	20.7%
Total	205	100%

Interpretation: From the above table, it can be interpreted that out of the option given 17.6% of respondents are below (10000), 33.3% of respondents are 10001-25000, 28.4% of respondents are 25001-35000, 20.7% of the respondents are 35001-50000.

Chart no:4.4



Inference: Majority (33%) of respondents are 10001_25000.

Table no. 4.5

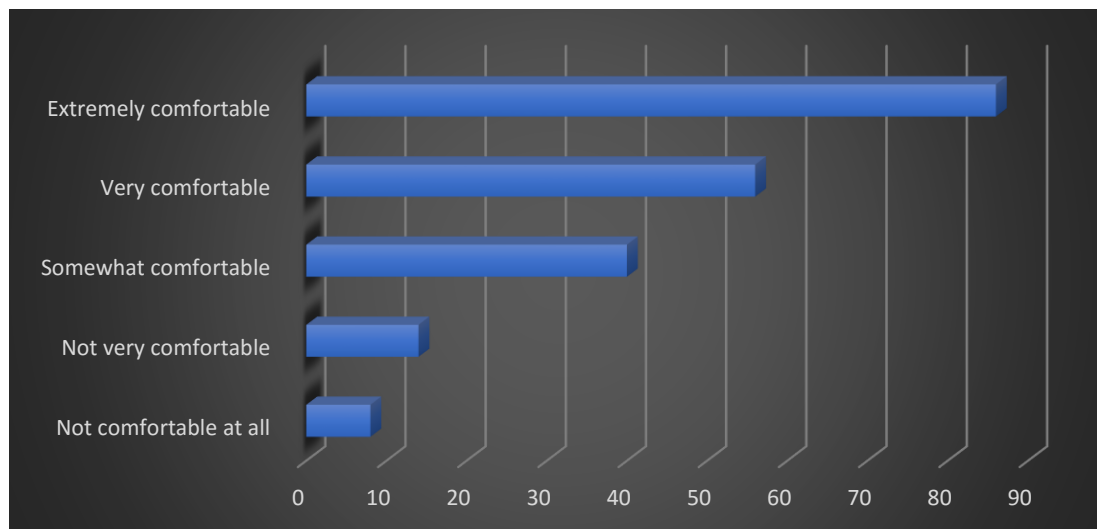
Do You Fell Comfortable Discussing Work Concerns With You Supervisor And Top Management

Options	No of responses	Percentage
Not comfortable at all	8	4.9%
Not very comfortable	14	7.9%
Somewhat comfortable	40	20.6%
Very comfortable	56	25.4%
Extremely comfortable	86	42.1%
Total	205	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 4.9% of respondents are Not comfortable at all, 7.9% of respondents are Not very comfortable , 20.6% of respondents are Somewhat comfortable , 25.4% of the respondents are Very comfortable. 42.1% of respondents are Extremely comfortable.

Chart no.4.5



Inference: Majority (42.1%) of respondents are extremely comfortable.

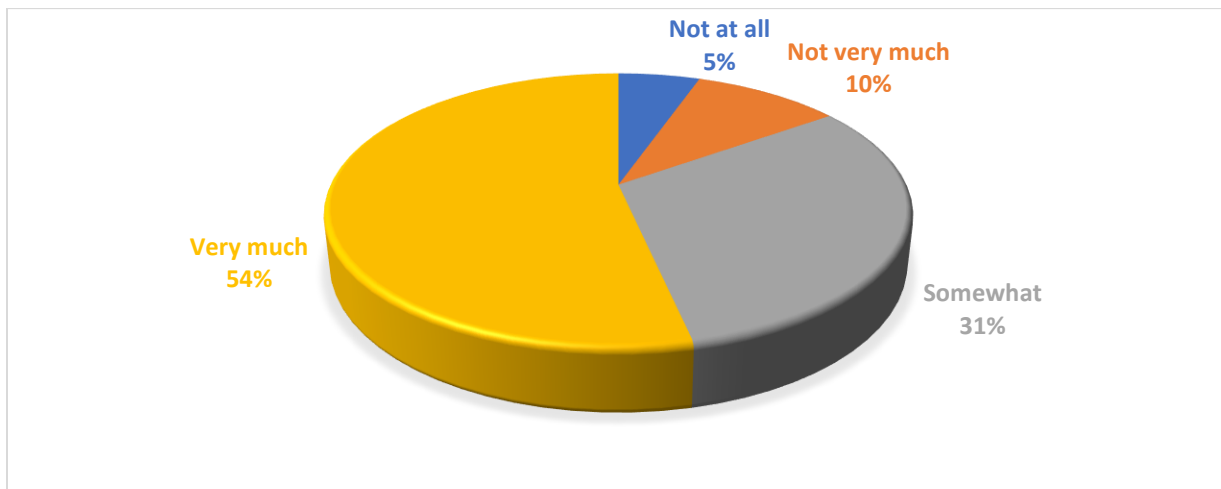
Table no.4.6 Do You Feel That Safety Measures And Regulations Are Effectively Enforced In The Workplace

Options	No of responses	Percentage
Not at all	11	5.4
Not very much	20	9.8
Somewhat	64	31.4
Very much	109	53.5
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 5.4% of respondents are not at all, 9.8% of respondents are not very much, 31.4% of respondents are somewhat, 53.5% of the respondents are very much.

Chart 4.6



Inference:

Majority (54%) of respondents are very much.

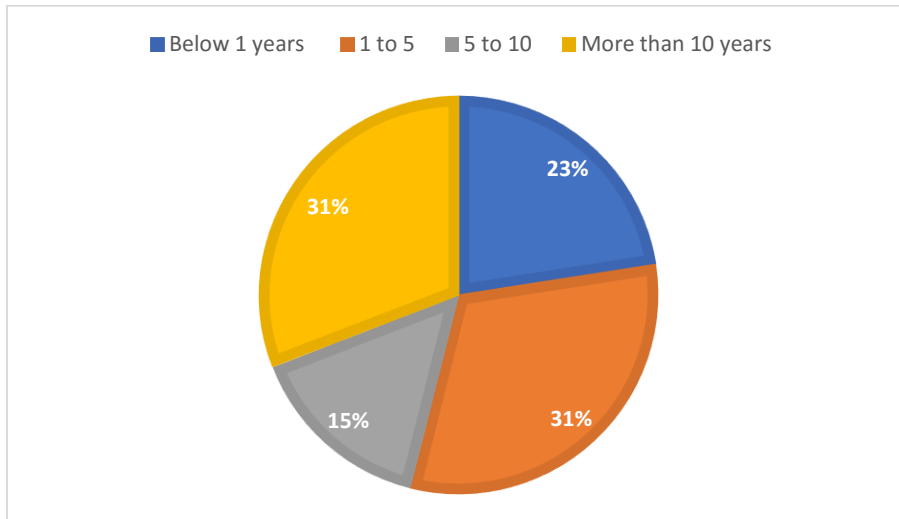
Table 4.7 How Much Experience Do You Have On Footwear Industry ?

Options	No of responses	Percentage
Below 1 years	46	22.5%
1-5	64	31.4%
5-10	31	15.2%
More than 10 years	63	30.9%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 22.5% of respondents are Below 1 years, 31.4% of respondents are 1-5, 15.2% of respondents are 5-10, 30.9% of the respondents are more than 10 years.

Chart no.4.7



Inference:

Majority (31.9%) of respondents are 1-5.

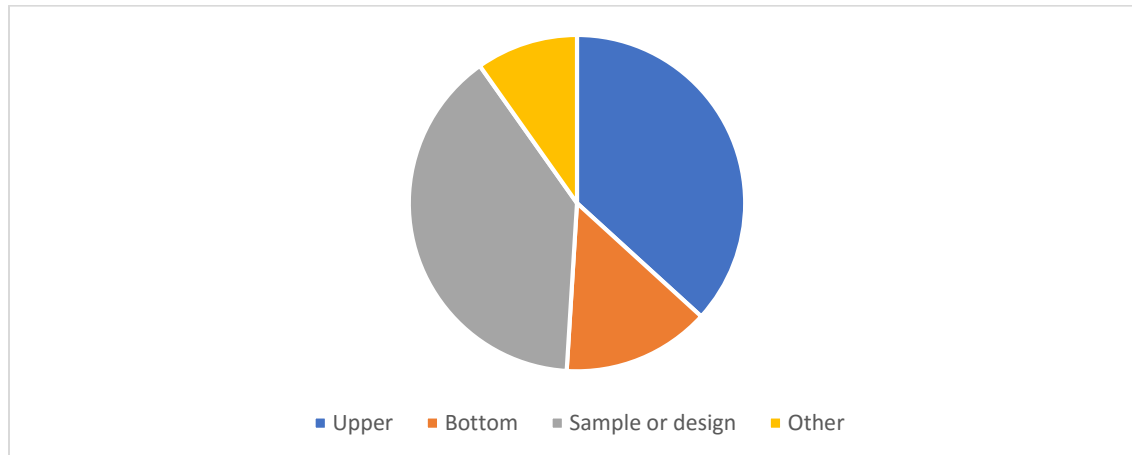
Table no.4.8 Mention Your Working Department.

Options	No of responses	Percentage
Upper	75	36.8%
Bottom	29	14.2%
Sample or design	80	39.2%
Other	20	9.8%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 36.8% of respondents are upper, 14.2% of respondents are bottom, 39.2% of respondents are sample or design, 9.8% of the respondents are other.

Chart no.4.8



Inference:

Majority (39.2%) of respondents are upper.

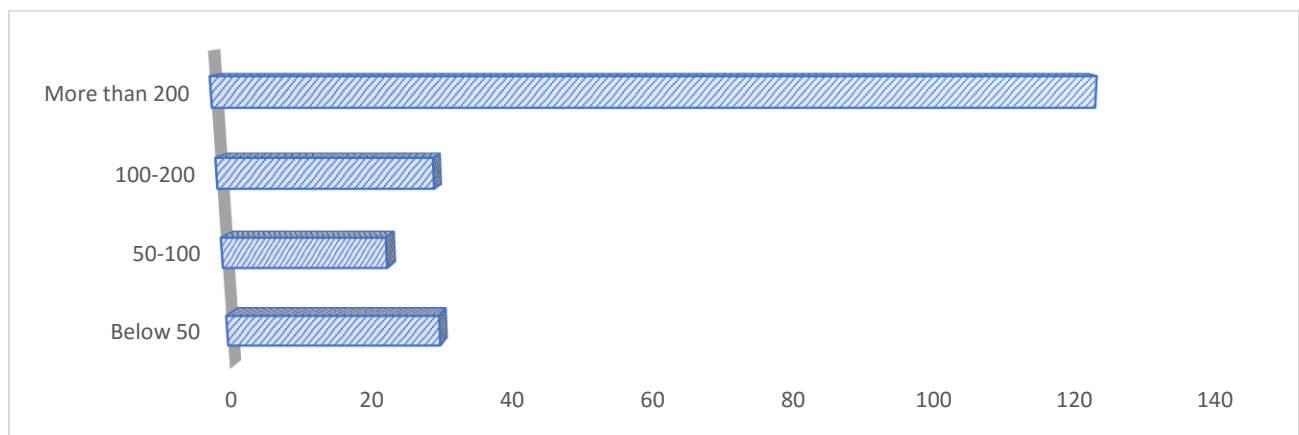
Table no.4.9. Tell Us How Frequently You Work On Products Per Day?

Options	No of responses	Percentage
Below 50	30	14.7%
50-100	23	11.3%
100-200	30	14.7%
More than 200	121	59.3%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 14.7% of respondents are below 50, 11.3% of respondents are 50-100, 14.7% of respondents are 100-200, 59.3% of the respondents are more than 200.

Chart no 4.9



Inference:

Majority (59.3%) of respondents are more than 200.

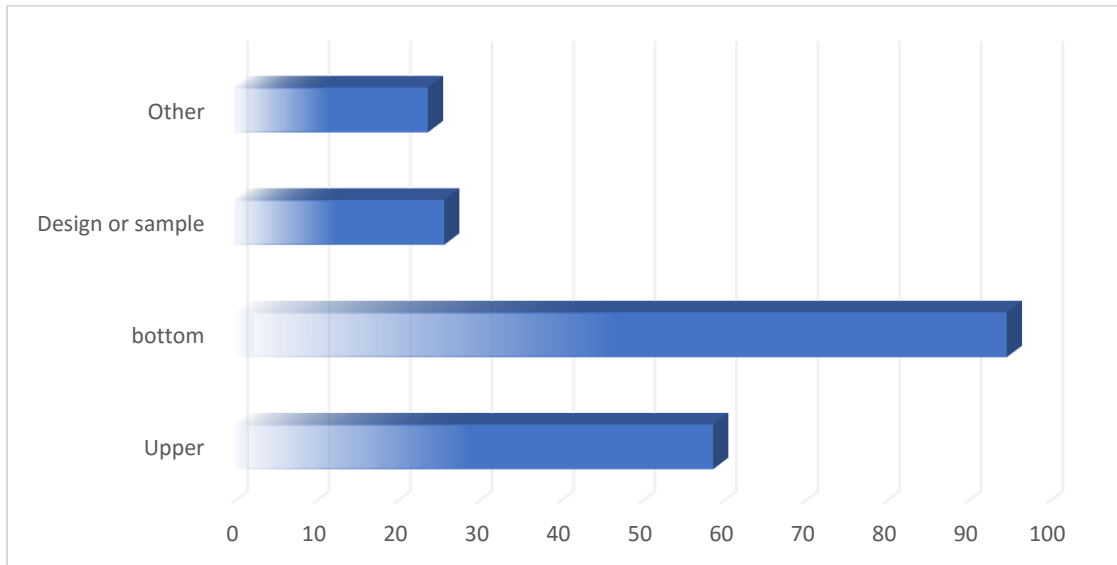
Table no.4.10, Which Department Is Mostly Working On Malang Footwear Industry?

Options	No of responses	Percentage
Upper	59	28.9%
bottom	95	46.6%
Design or sample	26	12.7%
Other	24	11.8%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 28.9% of respondents are upper, 46.6% of respondents are bottom, 12.7% of respondents are design or sample, 11.8% of the respondents are other.

Chart no.4.10



Inference:

Majority (46.6%) of respondents are bottom.

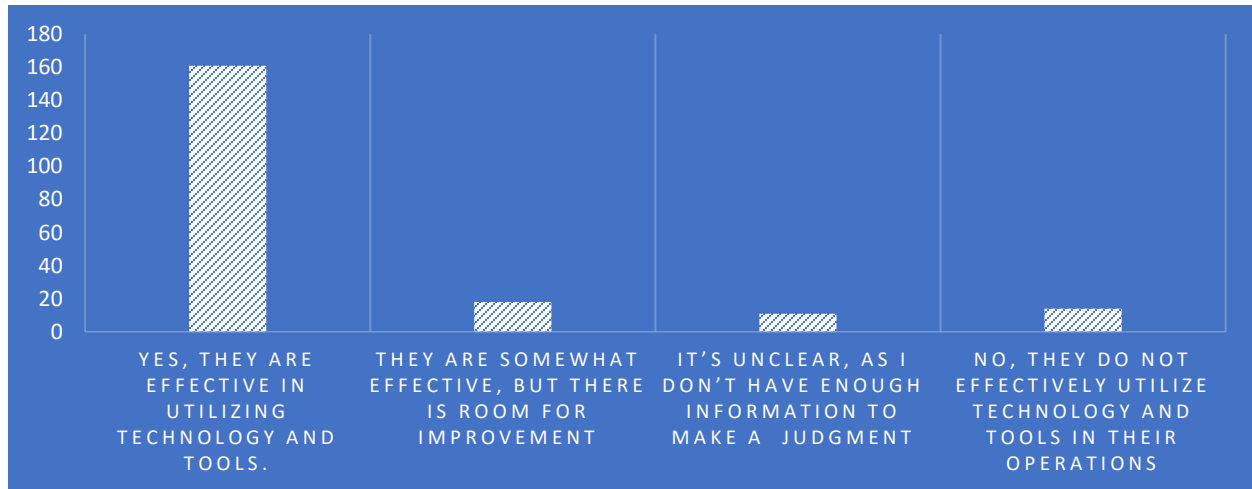
Table no. 4.11, Do You Think Our Malang Footwear Company Utilizes Technology And Tools Effectively In Its Operations?

Options	No of responses	Percentage
Yes, they are effective in utilizing technology and tools.	161	78.9%
They are somewhat effective, but there is room for improvement	18	8.8%
It's unclear, as I don't have enough information to make a judgment	11	5.4%
No, they do not effectively utilize technology and tools in their operations	14	6.9%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 78.9% of respondents are Yes , they are effective in utilizing technology and tools, 8.8% of respondents are They are somewhat effective, but there is room for improvement, 5.4% of respondents are It's unclear, as I don't have enough information to make a judgment, 6.9% of the respondents are No, they do not effectively utilize technology and tools in their operations.

Chart no.4.11



Inference:

Majority (78.9%) of respondents are Yes , they are effective in utilizing technology and tools .

Table no.4.12, Are The Machines And Equipment Used In Manufacturing Process Up-to-date And Well Maintained?

				Percentage
	Up-to-date	Well-maintained	Poor-maintained	
Upper machines	107	79	18	52.5%, 38.7%,8.8%
Bottom machines	42	138	24	41.2%, 67.6%,11.8%
Store room material	63	98	43	30.9%,48.0%, 21.0%

Interpretation: Upper machines

From the above table, it can be interpreted that out of the option given 52.5% of respondents are up-to-date, 38.7% of respondents are well maintained, 8.8% of respondents are poor-maintained.

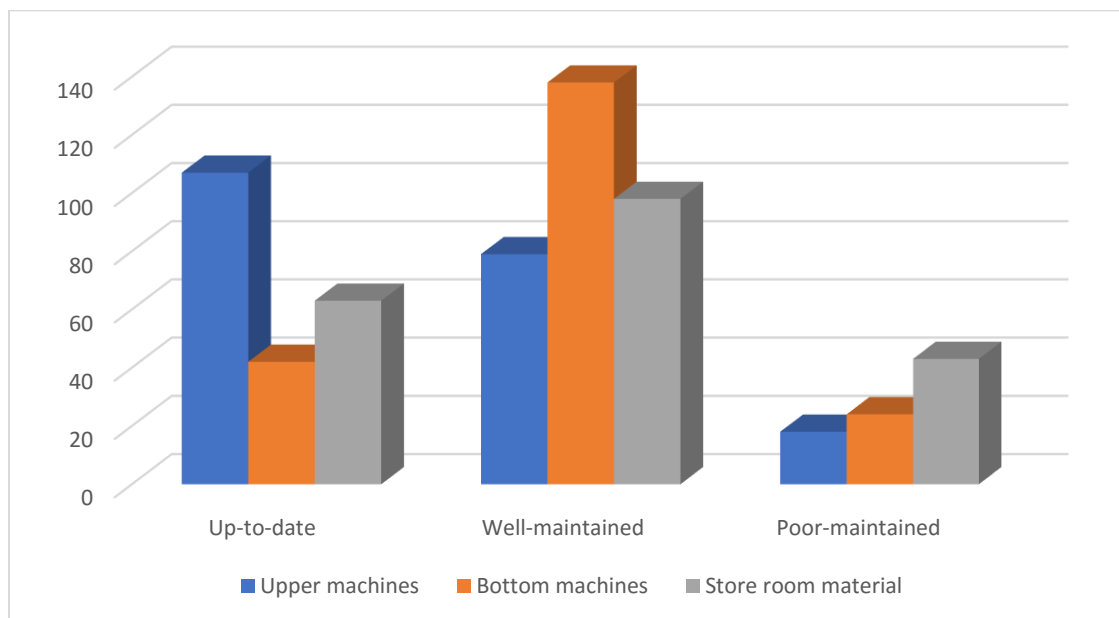
Bottom machines

From the above table, it can be interpreted that out of the option given 41.2% of respondents are up-to-date, 67.6% of respondents are well maintained, 11.8% of respondents are poor-maintained.

Store room material

From the above table, it can be interpreted that out of the option given 30.9% of respondents are up-to-date, 48.0% of respondents are well maintained, 21.0% of respondents are poor-maintained.

Chart 4.12



Inference: upper machines

Majority (52.5%) of respondents are up-to-date.

Bottom machines

Majority (67.6%) of respondents are well-maintained.

Store room material

Majority (48.0%) of respondents are well-maintained.

Table no.4.13 Do You Believe Our Current Manufacturing Process Is Efficient?

	Yes	No	Partially	Not applicable	Percentage
Production output	130	27	35	12	63.7%,13.2%,17.2%,5.9%
Lead times	72	63	62	7	35.3%,30.9%,30.4%,3.4%
Waste reduction	98	36	55	15	48.0%,17.6%,26.9%,7.3%
Quality control	90	52	53	9	44.1%,25.5%,25.9%,4.4%
Cost management	94	46	56	8	46.0%,22.5%,27.5%,3.9%
Resource utilization	98	45	49	12	48.0%,22.1%,24.0%,5.9%

Interpretation: production output

From the above table, it can be interpreted that out of the option given 63.7% of respondents are yes, 13.2% of respondents are no, 17.2% of respondents are partially, 5.9% of respondents are not applicable.

Lead times

From the above table, it can be interpreted that out of the option given 35.3% of respondents are yes, 30.9% of respondents are no, 30.4% of respondents are partially, 3.4% of respondents are not applicable.

Waste reduction

From the above table, it can be interpreted that out of the option given 48.0% of respondents are yes, 17.6% of respondents are no, 26.9% of respondents are partially, 7.3% of respondents are not applicable.

Quality control

From the above table, it can be interpreted that out of the option given 44.1% of respondents are yes, 25.5% of respondents are no, 25.9% of respondents are partially, 4.4% of respondents are not applicable.

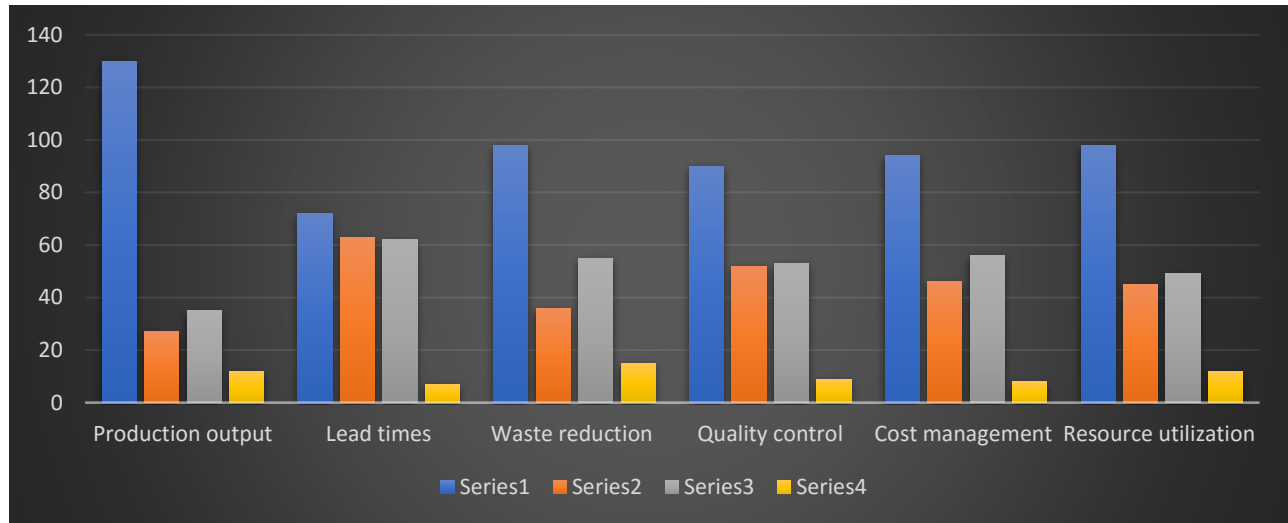
Cost management

From the above table, it can be interpreted that out of the option given 46.0% of respondents are yes, 22.5% of respondents are no, 27.5% of respondents are partially, 3.9% of respondents are not applicable.

Resource utilization

From the above table, it can be interpreted that out of the option given 48.0% of respondents are yes, 22.1% of respondents are no, 24.0% of respondents are partially, 5.9% of respondents are not applicable.

Chart no.4.13



Inference: production output: Majority (63.7%) of respondents are yes.

Lead times: Majority (35.3%) of respondents are yes.

Waste reduction: Majority (48.0%) of respondents are yes.

Quality control: Majority (44.1%) of respondents are yes.

Cost management: Majority (46.0%) of respondents are yes.

Resource utilization: Majority (48.0%) of respondents are yes.

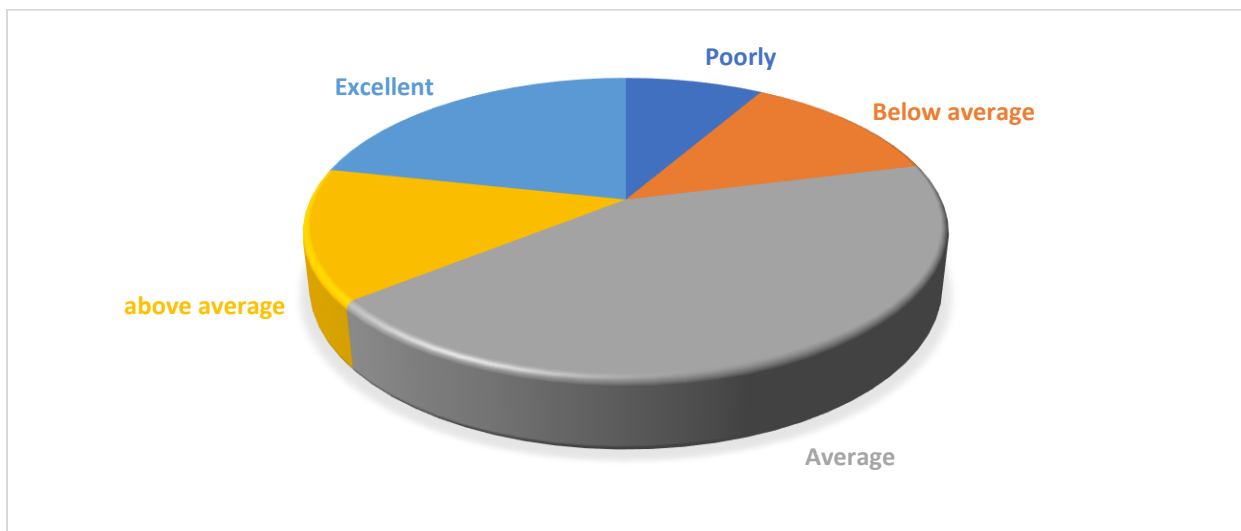
Table no.4.14 How Well Is Your Operation Strategy Executed Within Your Organization?

Options	No of responses	Percentage
Poorly	17	8.3%
Below average	26	12.7%
Average	88	43.1%
above average	29	14.2%
Excellent	44	21.6%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 8.3% of respondents are poorly, 12.7% of respondents are below average, 43.1% of respondents are average, 14.2% of respondents are above average. 21.6% of respondents are excellent.

Chart no.4.14



Inference:

Majority (43.1%) of respondents are average.

Table no.4.15

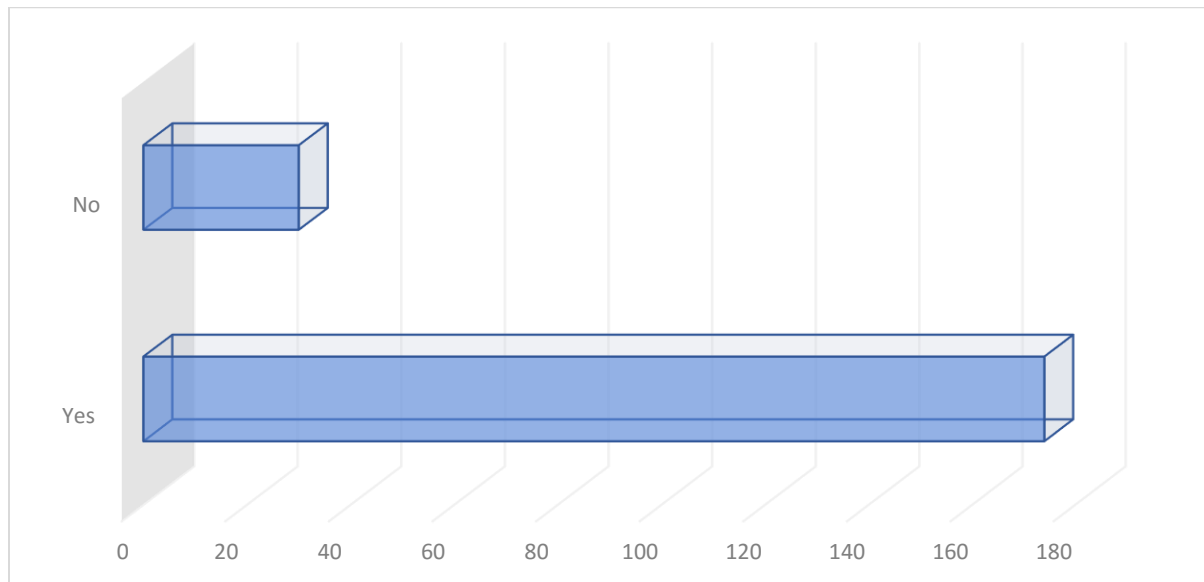
Malang Footwear Company Provides Sufficient Opportunities To Employees Involved In Footwear Operations?

Options	No of responses	Percentage
Yes	174	85.3%
No	30	14.7%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 85.3% of respondents are yes, 14.7% of respondents are below no.

Chart no.4.15



Inference: Majority (85.3%) of respondents are yes.

Table no.4.16 Tell Us The Average Products That Are Damaged Per Day ?

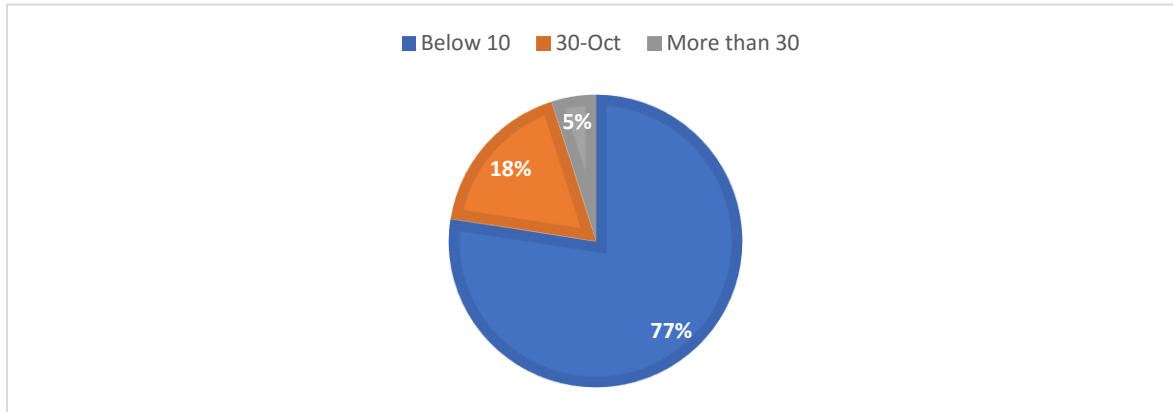
Options	No of responses	Percentage
Below 10	158	77.5%
10-30	36	17.6
More than 30	10	4.9%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 77.5% of respondents are below 10, 17.6% of respondents are below 10-30, 4.9% of respondents are more than 30.

Chart

no.4.16



Inference: Majority (77%) of respondents are below 10.

Table no.4.17

What Are The Most Common Causes Of Rework In Your Manufacturing Process?

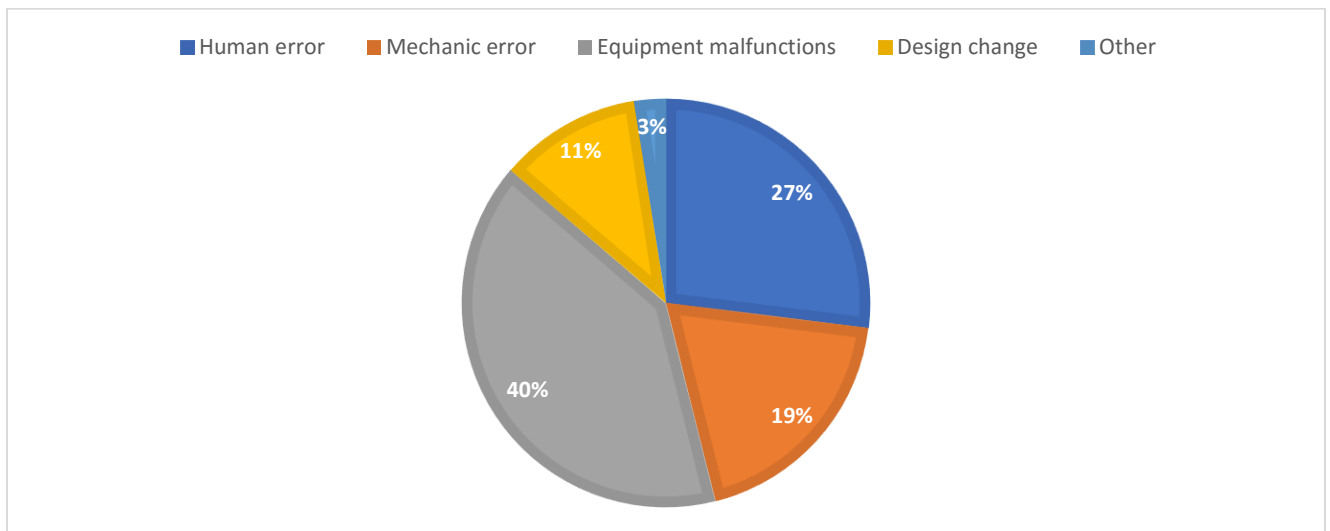
Options	No of responses	Percentage
Human error	55	26.9%
Mechanic error	39	19.1%
Equipment malfunctions	82	40.2%
Design change	23	11.3%

Other	5	2.5%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 25.9% of respondents are human error, 19.1% of respondents are mechanic error, 40.2% of respondents are equipment malfunctions, 11.3 % of respondents are design change, 2.5% of respondents are other.

Chart no.4.17



Inference:

Majority (40.2%) of respondents are equipment malfunctions.

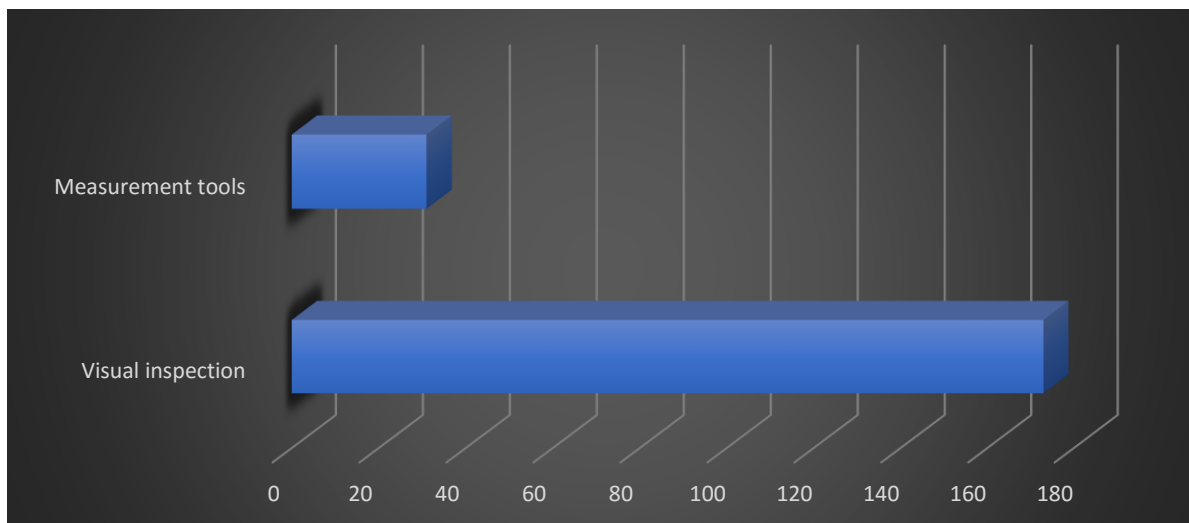
Table no.4.18 How Are Rework Product Identified In Your Manufacturing Process?

Options	No of responses	Percentage
Visual inspection	173	84.8%
Measurement tools	31	15.2%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 84.8% of respondents are visual inspection, 15.2% of respondents are measurement tools.

Chart no.4.18



Inference: Majority (84.8%) of respondents are visual inspection.

Table no.4.19

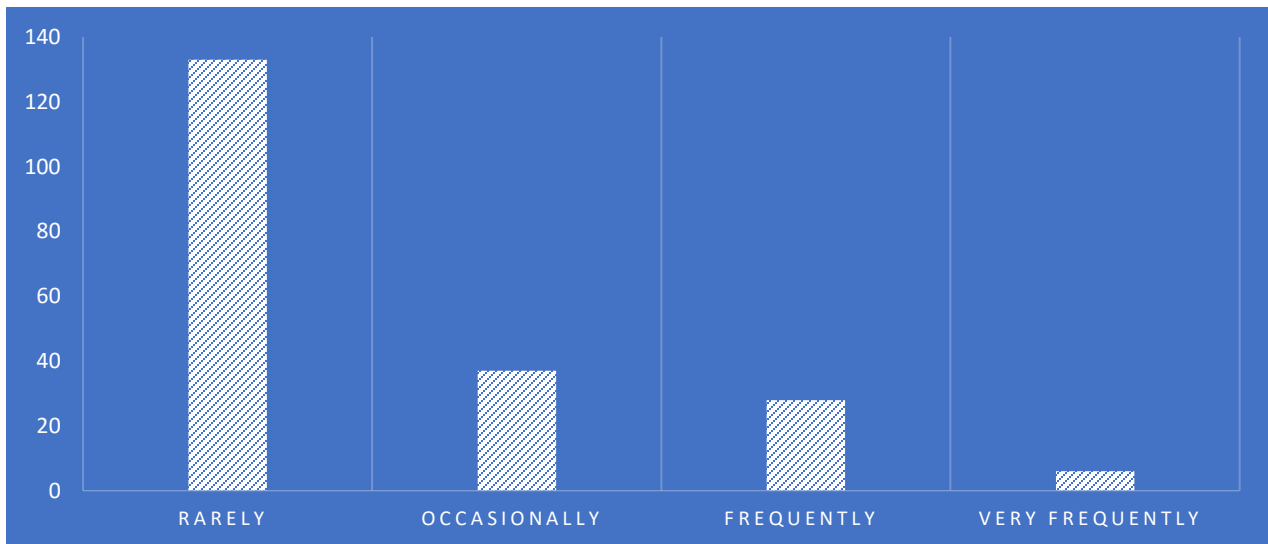
How Often Do Rework Products Occur In Your Department Area?

Options	No of responses	Percentage
Rarely	133	65.2%
Occasionally	37	18.2%
Frequently	28	13.7%
Very frequently	6	2.9%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 65.2% of respondents are rarely, 18.2% of respondents are occasionally, 13.7% of respondents are frequently, 2.9% of respondents are very frequently.

Chart no.4.19



Inference: Majority (65.2%) of respondents are rarely.

Table no.4.20

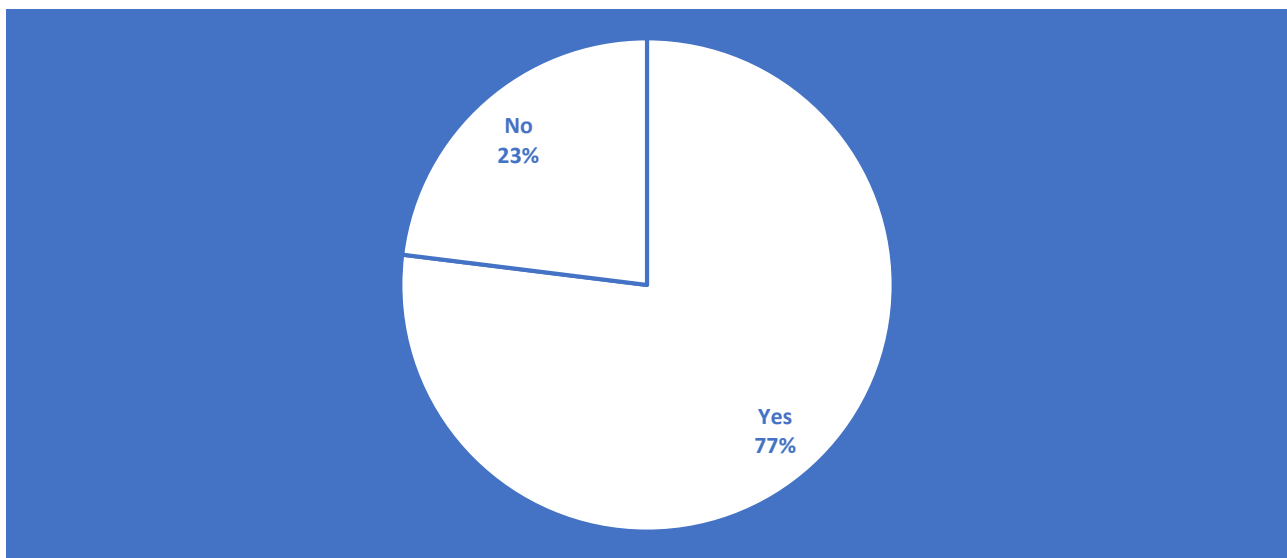
How Are Rework Incidents Documented And Reported In Your Department Or Area?

Options	No of responses	Percentage
Yes	157	76.9%
No	47	23.1%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 76.9% of respondents are yes, 23.1% of respondents are no.

Chart no.4.20



Inference:

Majority (77.9%) of respondents are yes.

Table no. 4.21

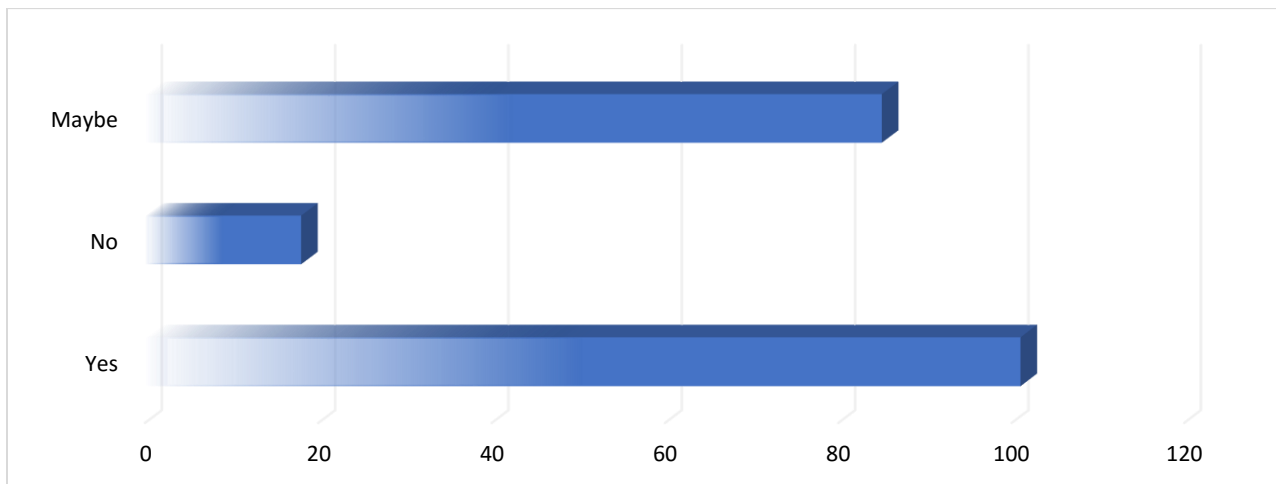
Is It Possible To Control The Rework

Options	No of responses	Percentage
Yes	101	49.5%
No	18	8.8%
Maybe	85	41.7%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 49.5% of respondents are yes, 8.8% of respondents are no, 41.7% of respondents are maybe.

Chart no.4.21



Inference:

Majority (49.5%) of respondents are yes.

Table no.4.22 Does Damaged Products Affect Your Salary?

OPTIONS	Yes	No	Partially	Not applicable	Percentages
Salary impact	119	29	50	6	58.3%,14.2%,24.5%,2.9%
Job position	53	89	60	2	25.9%,43.6%,29.4%,0.9%
Company policies	85	42	68	9	41.7%,20.6%,33.3%,4.4%
Performance matrices	66	58	53	27	32.4%,28.4,25.9%,13.2%
Bonus structure	95	41	62	6	46.6%,20.1%,30.4%,2.9%

Interpretation: salary impact

From the above table, it can be interpreted that out of the option given 58.3% of respondents are yes, 14.2% of respondents are no, 25.5% of respondents are partially, 2.9% of respondents are not applicable.

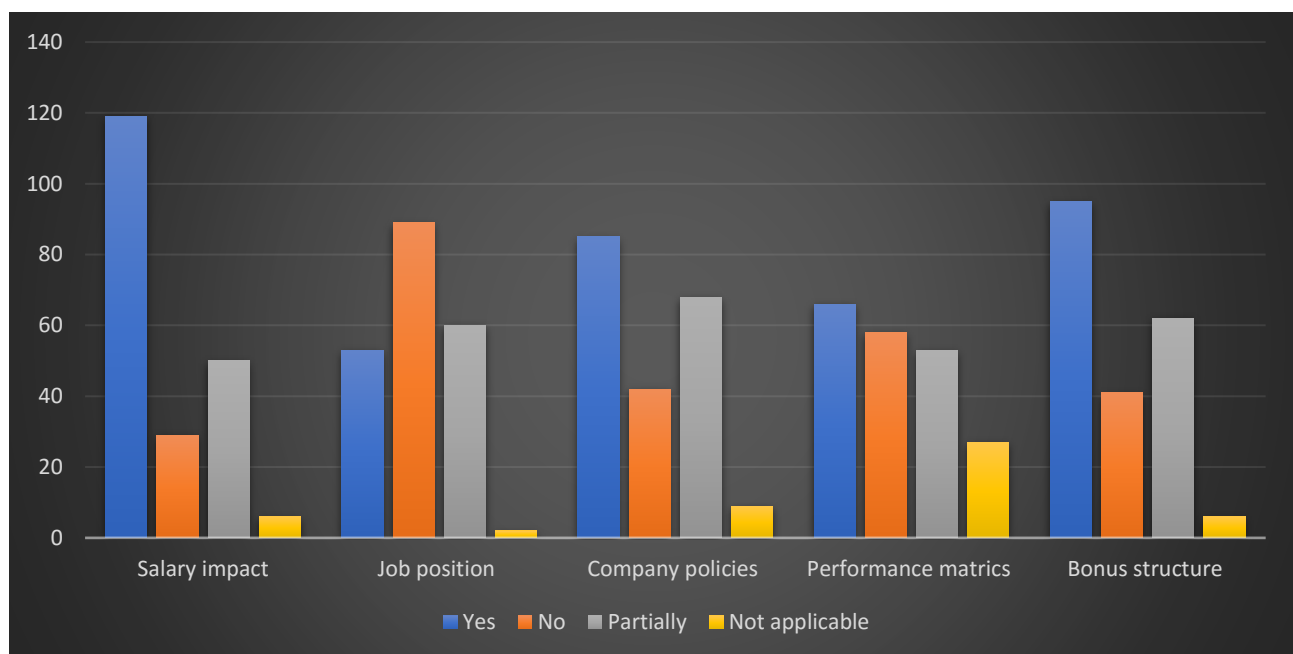
Job position: From the above table, it can be interpreted that out of the option given 25.9% of respondents are yes, 43.6% of respondents are no, 29.4% of respondents are partially, 0.9% of respondents are not applicable.

Company policies: From the above table, it can be interpreted that out of the option given 41.7% of respondents are yes, 20.6% of respondents are no, 33.3% of respondents are partially, 4.4% of respondents are not applicable.

Performance metrics: From the above table, it can be interpreted that out of the option given 32.4% of respondents are yes, 28.4% of respondents are no, 25.9% of respondents are partially, 13.2% of respondents are not applicable.

Bonus structure: From the above table, it can be interpreted that out of the option given 46.6% of respondents are yes, 20.1% of respondents are no, 30.4% of respondents are partially, 2.9% of respondents are not applicable.

Chart no.4.22



Inference:

Salary impact:

Majority (58.3%) of respondents are yes.

Job position:

Majority (43.6%) of respondents are no.

Company policies:

Majority (41.7%) of respondents are yes.

Performance metrics:

Majority (32.4%) of respondents are yes.

Bonus structure:

Majority (46.6%) of respondents are yes.

Table no.4.23 Is The Organization Actively Pursuing Sustainability Initiatives In Footwear Rework Manufacturing (Waste Reduction)

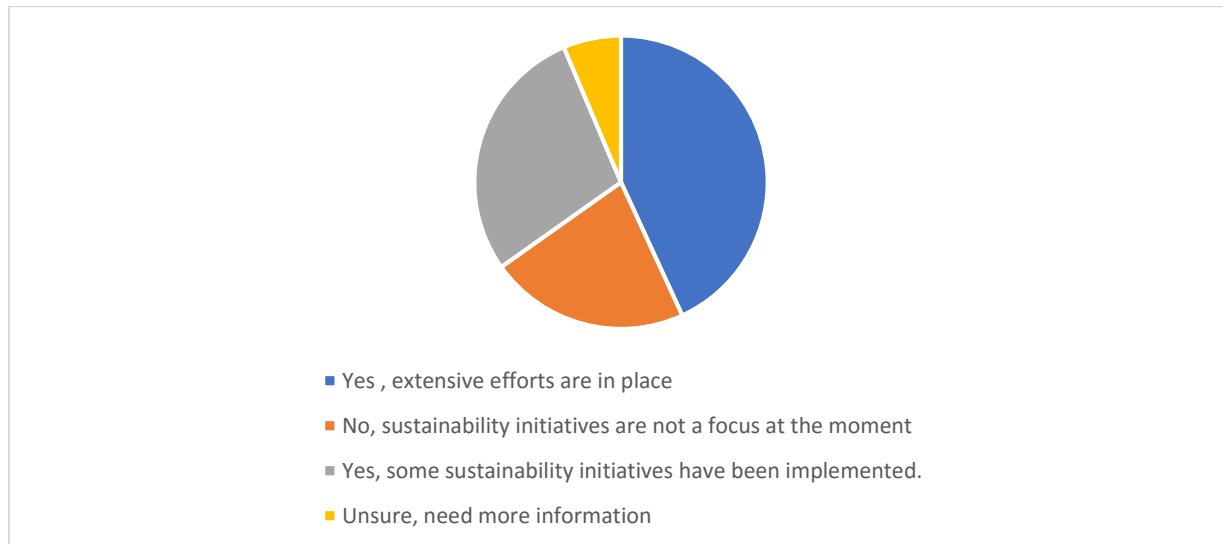
Options	No of responses	Percentage
Yes , extensive efforts are in place	88	43.1%
No, sustainability initiatives are not a focus at the moment	45	22.1%
Yes, some sustainability initiatives have been implemented.	58	28.4%
Unsure, need more information	13	6.4%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 43.1% of respondents are Yes , extensive efforts are in place, 22.1% of respondents are No, sustainability initiatives are not a focus at the moment, 28.4% of respondents are Yes,

some sustainability initiatives have been implemented, 6.4% of respondents are Unsure, need more information.

Chart no.4.23



Inference: Majority (43.1%) of respondents are yes, extensive efforts are in place.

Table no.4.24

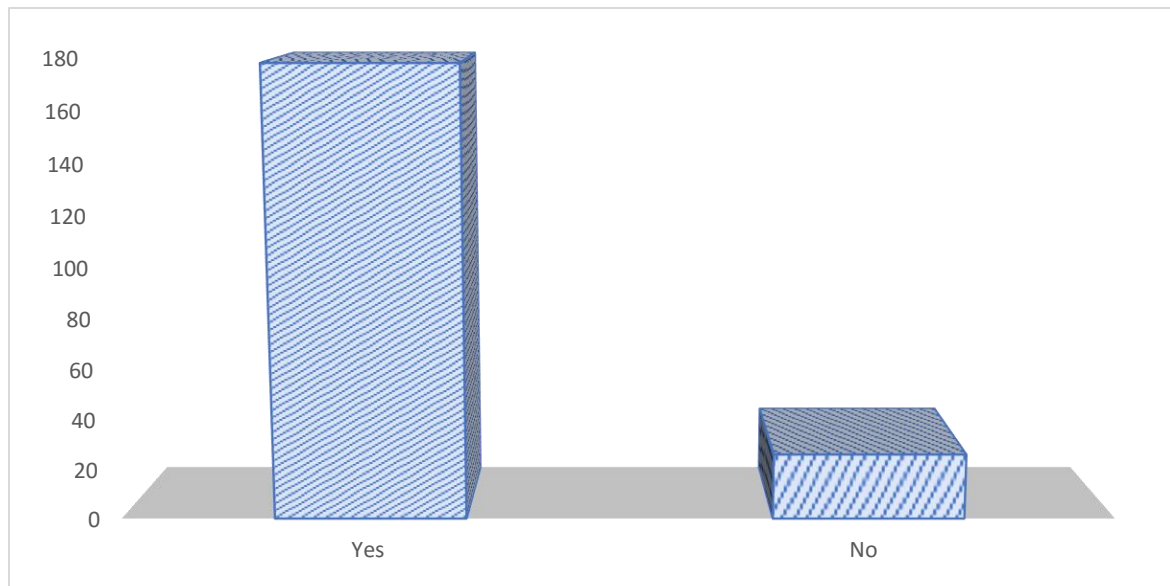
Rework On The Product Whether It's Selling Or Not?

Options	No of responses	Percentage
Yes	178	87.3%
No	26	12.7%
Total	205	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 87.3% of respondents are yes, 12.7% of respondents are no.

Chart no.4.24



Inference: Majority (87.3%) of respondents are yes.

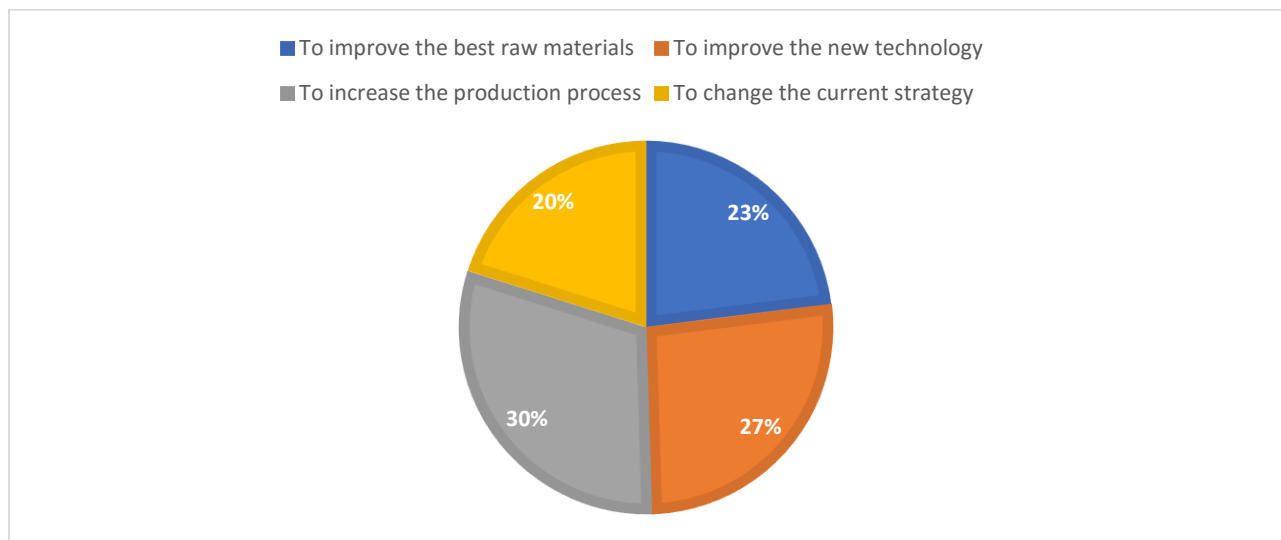
Table no.4.25 Based On Your Experience, What Suggestions Do You Have For Further Reducing Rework Products In Our Manufacturing Process?

Options	No of responses	Percentage
To improve the best raw materials	47	23.2%
To improve the new technology	54	26.5%
To increase the production process	62	30.4%
To change the current strategy	41	20.0%
Total	204	100%

Interpretation:

From the above table, it can be interpreted that out of the option given 23.2% of respondents are To improve the best raw materials, 26.5% of respondents are To improve the new technology, 30.4% of respondents are To increase the production process, 30.4% of respondents are To change the current strategy.

Chart no.4.25

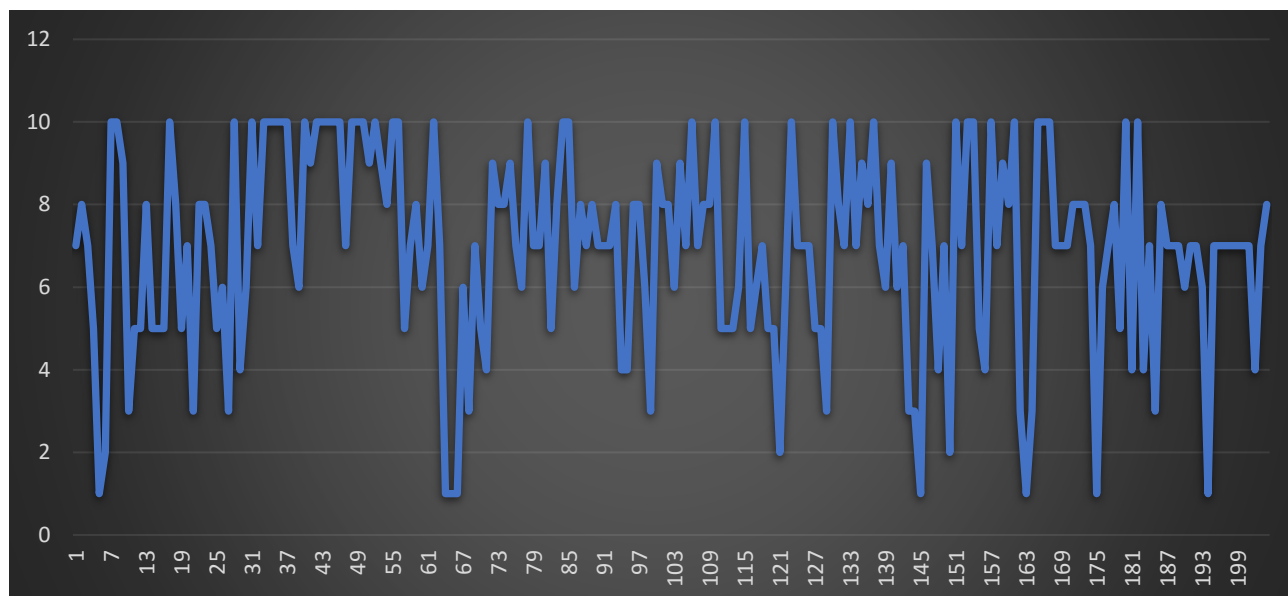


Inference: Majority (30.0%) of respondents are To increase the production process.

Table no.4.26

How Would You Rate The Comfort Of The Work In The Company.

Chart no.4.26.



Average rateing : 6.9%

4.2 STATISTICAL ANALYSIS:

HYPOTHESIS 1 (chi-square)

H0: there is no significant difference between the experience of employees and damaged products affect your credit score.

H1: there is a significant difference between the experience of employees and damaged products affect your credit score.

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
How much experience do you have on footwear industry * Does damaged products affect your credit score? [salary impact]	204	100.0%	0	0.0%	204	100.0%
How much experience do you have on footwear industry * Does damaged products affect your credit score? [job position]	204	100.0%	0	0.0%	204	100.0%
→ How much experience do you have on footwear industry * Does damaged products affect your credit score? [company policies]	204	100.0%	0	0.0%	204	100.0%
How much experience do you have on footwear industry * Does damaged products affect your credit score? [performance metrics]	204	100.0%	0	0.0%	204	100.0%
How much experience do you have on footwear industry * Does damaged products affect your credit score? [bonus structure]	204	100.0%	0	0.0%	204	100.0%

1

How much experience do you have on footwear industry ^ Does damaged products affect your credit score? [salary impact] Crosstabulation

			Does damaged products affect your credit score? [salary impact]				Total
			No	not applicable	partially	Yess	
How much experience do you have on footwear industry	1 to 5	Count	5	1	14	44	64
		Expected Count	8.2	1.9	15.7	38.3	64.0
	5 to 10	Count	3	2	8	18	31
		Expected Count	4.0	.9	7.6	18.5	31.0
	Below 1 years	Count	6	1	12	27	46
		Expected Count	5.9	1.4	11.3	27.5	46.0
	More than 10 years	Count	12	2	16	33	63
		Expected Count	8.0	1.9	15.4	37.7	63.0
	Total	Count	26	6	50	122	204
		Expected Count	26.0	6.0	50.0	122.0	204.0

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.965 ^a	9	.641
Likelihood Ratio	6.675	9	.671
N of Valid Cases	204		

a. 5 cells (31.3%) have expected count less than 5. The minimum expected count is .91.

Interpretation

The p value is 0.641 is higher than the chosen significance level (0.05) hence null hypothesis (H0) is accepted, it suggests that there isn't to reject the alternative hypothesis (H1).

Inference

There is no significant difference between the experience of employees and damaged products affect your credit score(salary impact).

2.

How much experience do you have on footwear industry * Does damaged products affect your credit score? [job position] Crosstabulation

			Does damaged products affect your credit score? [job position]				Total
			No	not applicable	partially	Yess	
How much experience do you have on footwear industry	1 to 5	Count	33	0	16	15	64
		Expected Count	27.9	.6	18.8	16.6	64.0
	5 to 10	Count	12	1	11	7	31
		Expected Count	13.5	.3	9.1	8.1	31.0
	Below 1 years	Count	16	1	13	16	46
		Expected Count	20.1	.5	13.5	12.0	46.0
	More than 10 years	Count	28	0	20	15	63
		Expected Count	27.5	.6	18.5	16.4	63.0
Total	Count	89	2	60	53	204	
	Expected Count	89.0	2.0	60.0	53.0	204.0	

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.171 ^a	9	.517
Likelihood Ratio	8.533	9	.481
N of Valid Cases	204		

a. 4 cells (25.0%) have expected count less than 5. The minimum expected count is .30.

Interpretation

The p value is 0.517 is higher than the chosen significance level (0.05) hence null hypothesis (H0) is accepted, it suggests that there isn't to reject the alternative hypothesis (H1).

Inference

There is no significant difference between the experience of employees and damaged products affect your credit score (job position).

3.

How much experience do you have on footwear industry * Does damaged products affect your credit score? [company policies] Crosstabulation

			Does damaged products affect your credit score? [company policies]				Total
			No	not applicable	partially	Yess	
How much experience do you have on footwear industry	1 to 5	Count	15	0	21	28	64
		Expected Count	13.2	.9	22.3	27.6	64.0
	5 to 10	Count	4	2	9	16	31
		Expected Count	6.4	.5	10.8	13.4	31.0
	Below 1 years	Count	7	1	15	23	46
		Expected Count	9.5	.7	16.0	19.8	46.0
	More than 10 years	Count	16	0	26	21	63
		Expected Count	13.0	.9	21.9	27.2	63.0
Total	Count	42	3	71	88	204	
	Expected Count	42.0	3.0	71.0	88.0	204.0	

Chi-Square Tests

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.364 ^a	9	.147
Likelihood Ratio	12.992	9	.163
N of Valid Cases	204		

a. 4 cells (25.0%) have expected count less than 5. The minimum expected count is .46.

Interpretation

The p value is 0.147 is higher than the chosen significance level (0.05) hence null hypothesis (H0) is accepted, it suggests that there isn't to reject the alternative hypothesis (H1).

Inference

There is no significant difference between the experience of employees and damaged products affect your credit score (company policies).

4.

**How much experience do you have on footwear industry * Does damaged products affect your credit score? [performance metrics]
Crosstabulation**

			Does damaged products affect your credit score? [performance metrics]				Total
			No	not applicable	partially	Yess	
How much experience do you have on footwear industry	1 to 5	Count	18	11	13	22	64
		Expected Count	18.2	8.5	16.6	20.7	64.0
	5 to 10	Count	8	4	9	10	31
		Expected Count	8.8	4.1	8.1	10.0	31.0
	Below 1 years	Count	16	5	13	12	46
		Expected Count	13.1	6.1	12.0	14.9	46.0
	More than 10 years	Count	16	7	18	22	63
		Expected Count	17.9	8.3	16.4	20.4	63.0
Total	Count	58	27	53	66	204	
	Expected Count	58.0	27.0	53.0	66.0	204.0	

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.026 ^a	9	.910
Likelihood Ratio	4.040	9	.909
N of Valid Cases	204		

a. 1 cells (6.3%) have expected count less than 5. The minimum expected count is 4.10.

Interpretation

The p value is 0.910 is higher than the chosen significance level (0.05) hence null hypothesis (H0) is accepted, it suggests that there isn't to reject the alternative hypothesis (H1).

Inference

There is no significant difference between the experience of employees and damaged products affect your credit score (performance metrics).

5.

How much experience do you have on footwear industry * Does damaged products affect your credit score? [bonus structure] Crosstabulation

			Does damaged products affect your credit score? [bonus structure]				Total
			No	not applicable	partially	Yess	
How much experience do you have on footwear industry	1 to 5	Count	13	1	15	35	64
		Expected Count	12.9	1.9	19.5	29.8	64.0
	5 to 10	Count	4	3	12	12	31
		Expected Count	6.2	.9	9.4	14.4	31.0
	Below 1 years	Count	5	1	15	25	46
		Expected Count	9.2	1.4	14.0	21.4	46.0
	More than 10 years	Count	19	1	20	23	63
		Expected Count	12.7	1.9	19.1	29.3	63.0
Total	Count	41	6	62	95	204	
	Expected Count	41.0	6.0	62.0	95.0	204.0	

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.724 ^a	9	.053
Likelihood Ratio	15.256	9	.084
N of Valid Cases	204		

a. 4 cells (25.0%) have expected count less than 5. The minimum expected count is .91.

Interpretation

The p value is 0.053 is higher than the chosen significance level (0.05) hence null hypothesis (H0) is accepted, it suggests that there isn't to reject the alternative hypothesis (H1).

Inference

There is no significant difference between the experience of employees and damaged products affect your credit score (bonus structure).

TEST 2 (CORRELATION)

H0: there is no significant difference between the experience of employees and damaged products affect your credit score.

H1: there is a significant difference between the experience of employees and damaged products affect your credit score.

1. Salary impact

Correlations

	How much experience do you have on footwear industry	Does damaged products affect your credit score? [salary impact]
How much experience do you have on footwear industry	Pearson Correlation Sig. (2-tailed) N	1 -.153* .029 204
Does damaged products affect your credit score? [salary impact]	Pearson Correlation Sig. (2-tailed) N	1 -.153* .029 204

*. Correlation is significant at the 0.05 level (2-tailed).

Interpretation

The p value is -0.153 is less than the chosen significance level (0.05) hence alternative hypothesis (H1) is accepted, it suggests that there isn't to reject the null hypothesis (H0).

Inference

There is a significant difference between the experience of employees and damaged products affect your credit score.

2. Job position

Correlations

	How much experience do you have on footwear industry	Does damaged products affect your credit score? [job position]
How much experience do you have on footwear industry	1	.060
		.390
N	204	204
Does damaged products affect your credit score? [job position]	.060	1
	.390	
N	204	204

Interpretation

The p value is 0.060 is higher than the chosen significance level (0.05) hence null hypothesis (H0) is accepted, it suggests that there isn't to reject the alternative hypothesis (H1).

Inference

There is no significant difference between the experience of employees and damaged products affect your credit score.

3. Company policies

Correlations

	How much experience do you have on footwear industry	Does damaged products affect your credit score? [company policies]
How much experience do you have on footwear industry	Pearson Correlation Sig. (2-tailed) N	1 -.045 204
Does damaged products affect your credit score? [company policies]	Pearson Correlation Sig. (2-tailed) N	1 -.045 204

Interpretation

The p value is -0.045 is less than the chosen significance level (0.05) hence alternative hypothesis (H1) is accepted, it suggests that there isn't to reject the null hypothesis (H0).

Inference

There is a significant difference between the experience of employees and damaged products affect your credit score.

4. Performance

Correlations

	How much experience do you have on footwear industry	Does damaged products affect your credit score? [performance metrics]
How much experience do you have on footwear industry	1	.023
		.749
N	204	204
Does damaged products affect your credit score? [performance metrics]	.023	1
	.749	
N	204	204

Interpretation

The p value is 0.023 is less than the chosen significance level (0.05) hence alternative hypothesis (H1) is accepted, it suggests that there isn't to reject the null hypothesis (H0).

Inference

There is a significant difference between the experience of employees and damaged products affect your credit score.

5.bonus structure

Correlations

	How much experience do you have on footwear industry	Does damaged products affect your credit score? [bonus structure]
How much experience do you have on footwear industry	Pearson Correlation Sig. (2-tailed) N	1 -.105 .137 204
Does damaged products affect your credit score? [bonus structure]	Pearson Correlation Sig. (2-tailed) N	1 -.105 .137 204

Interpretation

The p value is -0.105 is less than the chosen significance level (0.05) hence alternative hypothesis (H1) is accepted, it suggests that there isn't to reject the null hypothesis (H0).

Inference

There is a significant difference between the experience of employees and damaged products affect your credit score.

CHAPTER 5

FINDING AND SUGGESTIONS CONCLUSIONS

Based on the analysis and discussion on primary data in the previous chapter.

Finding, Suggestions, and Conclusion of the study in logical manner.

5.1 FINDING

From the questionnaire, the following points are found and noted:

- Majority (54.4%) of the respondents of my questionnaire belong to male.
- Majority (51.5%) of the respondents of my questionnaire belong to the married.
- Majority (46.6%) of the respondents of my questionnaire belong to the 21-30.
- Majority (33.3%) of the respondents of my questionnaire belong to the 10001-35000.
- Majority (42.1%) of the respondents of my questionnaire belong to the extremely comfortable.
- Majority (53.5%) of the respondents of my questionnaire belong to the very much.
- Majority (31.4%) of the respondents of my questionnaire belong to the 1-5.
- Majority (39.2%) of the respondents of my questionnaire belong to the sample or design.
- Majority (59.3%) of the respondents of my questionnaire belong to the more than 200.
- Majority (46.6%) of the respondents of my questionnaire belong to the bottom.
- Majority (78.9%) of the respondents of my questionnaire belong to the yes, they are effective in utilizing technology and tools.

- Majority of upper machines (52.5%) of the respondents of my questionnaire belong to the up-to date.
- Majority of bottom machines (67.6%) of the respondents of my questionnaire belong to the well-maintained.
- Majority of store room material (48.0%) of the respondents of my questionnaire belong to the well-maintained.
- Majority of production output (63.7%) of the respondents of my questionnaire belong to the yes.
- Majority of lead times (35.3%) of the respondents of my questionnaire belong to the yes.
- Majority of waste reduction (48.0%) of the respondents of my questionnaire belong to the yes.
- Majority of quality control (44.1%) of the respondents of my questionnaire belong to the yes.
- Majority of cost management (46.0%) of the respondents of my questionnaire belong to the yes.
- Majority of resource utilization (48.0%) of the respondents of my questionnaire belong to the yes.
- Majority (43.1%) of the respondents of my questionnaire belong to the average.
- Majority (85.3%) of the respondents of my questionnaire belong to the yes.
- Majority (77.5%) of the respondents of my questionnaire belong to the below 10.
- Majority (40.2%) of the respondents of my questionnaire belong to the equipment malfunctions.
- Majority (84.8%) of the respondents of my questionnaire belong to the visual inspection.
- Majority (65.2%) of the respondents of my questionnaire belong to the rarely.
- Majority (76.9%) of the respondents of my questionnaire belong to the

yes.

- Majority (49.5%) of the respondents of my questionnaire belong to the yes.
- Majority of salary impact (58.3%) of the respondents of my questionnaire belong to the yes.
- Majority of job position (43.6%) of the respondents of my questionnaire belong to the no.
- Majority of company policies (41.7%) of the respondents of my questionnaire belong to the yes.
- Majority of performance metrics (32.4%) of the respondents of my questionnaire belong to the yes.
- Majority of bonus structure (46.6%) of the respondents of my questionnaire belong to the yes.
- Majority (43.1%) of the respondents of my questionnaire belong to the yes, extensive efforts are in place.
- Majority (87.3%) of the respondents of my questionnaire belong to the yes.
- Majority (30.4%) of the respondents of my questionnaire belong to the to increase the production process.
- Majority of given the MALANG FOOTWEAR INDUSTRY average rating:(6.9) of the respondents of my questionnaire.

5.2 SUGGESTIONS:

- Offer specialized training for footwear assembly and manufacturing processes.
- Focus on error prevention techniques and quality standards to minimize rework.
- Work closely with trusted suppliers to ensure high-quality raw materials.
- Conduct stringent quality checks on incoming materials to reduce defects.
- Implement checkpoints at critical production stages to detect errors early.
- Utilize quality control tools like visual inspections, measurement gauges, and standardized checklists.
- Invest in modern machinery equipped with precision features to reduce errors.
- Implement automation for repetitive tasks to ensure consistency and accuracy.

- Develop a feedback loop system involving workers and supervisors to address recurring issues promptly.
- Encourage workers to report potential defects and suggest improvements in real-time.
- Conduct thorough analysis of rework instances to identify root causes.
- Implement corrective actions based on findings to prevent similar issues in the future.
- Optimize production workflows to minimize handling and assembly errors.
- Utilize lean manufacturing principles to eliminate waste and improve efficiency.
- Collaborate closely with suppliers to understand material characteristics and mitigate compatibility issues.
- Establish quality agreements and conduct regular audits to maintain standards.
- Foster a culture that encourages innovation and continuous improvement.
- Regularly review and update processes based on data and feedback.
- Gather feedback from customers regarding product defects and design flaws.
- Use customer insights to refine product designs and manufacturing processes.

By implementing these targeted strategies, footwear manufacturers can effectively reduce rework processes, improve product quality, and enhance overall operational efficiency. Constant vigilance, learning from mistakes, and adapting to changes in technology and customer demands are vital for sustained improvement in the footwear manufacturing industry.

5.3 LIMITATION OF THE STUDY:

- Due to the time constraint the sample size was restricted to 204 respondents only.
- Since the study is based on the primary data collected through questionnaire, the result of the study are subject to all the limitations of the primary data.
- The analysis based on some statistical tools which as it is own limitation.
- The finding and suggestions are based on the information given by the respondents.

5.4 CONCLUSION:

The MALANG FOOTWEAR INDUSTRIES project has marked a significant milestone by successfully integrating Malang technology into footwear manufacturing. This integration addresses user requirements and streamlines operations, promising minimized disruptions and increased efficiency. The study underlines the critical role of streamlined processes, resource efficiency, and technology in optimizing production. Lean principles and automation have notably improved productivity and reduced operational costs, highlighting their importance. Additionally, the focus on minimizing rework through quality control measures is pivotal in maintaining product quality and reducing unnecessary expenses. Ultimately, a holistic approach balancing efficiency, quality, and responsiveness, coupled with JIT principles, stands as the key to competitiveness and sustainability in the dynamic footwear industry. The project's strides in advancing Malang technology signify a promising trajectory toward enhanced production processes and decreased rework in the footwear manufacturing sector.

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APPENDIX:

A STUDY ON OPERATIONAL STRATEGICS FOR FOOTWEAR MANUFACTURING SYSTEMS IN Malang footwear industry

1. Name Of The Candidate

2. Gender Of The Candidate

- Male
- Female
- Rather Not To Say

3. Email Or Phone Number

4. Marital Status

- Unmarried
- Married

5. How Old Are You?

- Below 20
- 20-30
- 30-45
- Above 45

6.Monthly income:

A. below(10000) B.10001-25000 C.25001-35000 D. 35001-50000 E. other____

7. Do You Fell Comfortable Discussing Work Concerns With You Supervisor And Top Management

- Not Comfortable At All

- Not Very Comfortable
- Very Comfortable
- Extremely Comfortable

8. Do You Feel That Safety Measures And Regulations Are Effectively Enforced In The Workplace

- A) Not All (B) Not Very Much (C) Somewhat D) Very Much

9. How Much Experience Do You Have On Footwear Industry ? A) Below 1 Year B) 1-5 C) 5-10 D) MORE THAN 10 YEARS

10. Mention Your Working Department. A) Upper B) Bottom C) Sample Or Design D) Other__

11. Tell Us How Frequently You Work On Products Per Day? A) below 50 B) 50-100 C) 100-200 D) More Than 200

12. Which Department Is Mostly Working On Malang Footwear Industry? A) Upper B) Bottom C) Design Or Sample D) Other_____

13. Do You Think Our Malang Footwear Company Utilizes Technology And Tools Effectively In Its Operations?

A) yes, they are very effective in utilizing technology and tools. B) they are somewhat effective, but there is room for improvement. C) it's unclear, as I don't have enough information to make a judgment. D) no, they do not effectively utilize technology and tools in their operations.

14. Are The Machines And Equipment Used In Manufacturing Process Up-to-date And Well Maintained?

	Up-to-date	Well-maintained	Poor-maintained
Upper machines	0	0	0
Bottom machines	0	0	0
Store room material	0	0	0

15. Do You Believe Our Current Manufacturing Process Is Efficient?

	Yes	No	Partially	Not applicable
Production output	0	0	0	0
Lead times	0	0	0	0
Waste reduction	0	0	0	0
Quality control	0	0	0	0
Cost management	0	0	0	0
Resource utilization	0	0	0	0

16. How Well Is Your Operation Strategy Executed Within Your Organization? A) Poorly
B) Below Average C) Average D) Above Average E) Excellent.

17. Malang Footwear Company Provides Sufficient Opportunities To Employees Involved In Footwear Operations? A) Yes B) No

18. Tell Us The Average Products That Are Damaged Per Day ? A) Below10 B) 10-30 C) More Than 30

19. What Are The Most Common Causes Of Rework In Your Manufacturing Process?
A) Human Error B) Mechanic Error C) Equipment Malfunctions
D) Design Change

20. How Are Rework Product Identified In Your Manufacturing Process? A) Visual Inspection B) Measurement Tools

21. How Often Do Rework Products Occur In Your Department Area? A) Rarely B) Occasionally C) Frequently D) Very Frequently

22. How Are Rework Incidents Documented And Reported In Your Department Or Area? A) Yes B) No

23. Does Damaged Products Affect Your Salary?

	Yes	No	Partially	not applicab;le
Salary impact	0	0	0	0
Job position	0	0	0	0
Company policies	0	0	0	0
Performance matrices	0	0	0	0

Bonus structure	0	0	0	0
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24. Is It Possible To Control The Rework

A) Yes B) No C) Maybe

25. Is The Organization Actively Pursuing Sustainability Initiatives In Footwear Rework Manufacturing (Waste Reduction) A) yes, extensive efforts are in place. B) no, sustainability initiatives are not a focus at the moment. C) yes, sustainability initiatives have been implemented. D) unsure, need more information.

26. Rework On The Product Whether It's Selling Or Not

A) Yes B) No

27. Based On Your Experience, What Suggestions Do You Have For Further Reducing Rework Products In Our Manufacturing Process?

A) To Improve The Best Raw Materials

B) To Improve The New Technology

C) To Increase The Production Process

D) To Change The Current Strategy

28. How Would You Rate The Comfort Of The Work In The Company

1,2,3,4,5,6,7,8,9,10.

Shipment details

this shipment details in my internship period

						TOTAL
DAY/SIZE	7	8	9	10	11	PAIRS
Monday	120	150	116	215	56	657
Tuesday	125	180	136	110	80	631
Wednesday	86	154	125	130	65	560
Thursday	95	145	187	190	75	692
Friday	107	216	86	218	45	672
Saturday	80	175	186	130	35	606
SIZE WISE						
TOTAL	613	1020	836	993	356	3818

WEEEEK

2

						total
DAY/SIZE	7	8	9	10	11	pairs
Monday	104	96	84	145	58	487
Tuesday	116	138	130	125	40	549
Wednesday	100	95	90	139	20	444
Thursday	110	126	189	178	27	630
Friday	128	95	156	205	34	618
Saturday	115	148	190	190	58	701
size wise						
total	673	698	839	982	237	3429

WEEK3						total
DAY/SIZE	7	8	9	10	11	pairs
Monday	84	106	145	126	90	551
Tuesday	100	148	135	145	60	588
Wednesday	96	85	100	115	70	466
Thursday	110	90	85	105	50	440
Friday	125	135	142	60	20	482
Saturday	60	130	83	245	40	558
size wise						
total	575	694	690	796	330	3085

WEEK 4						
DAY/SIZE	7	8	9	10	11	total pairs
Monday	100	195	156	285	81	817
Tuesday	125	198	164	200	55	742
Wednesday	95	137	146	220	68	666
Thursday	83	143	186	195	26	633
Friday	118	124	92	200	37	571
Saturday	94	83	100	145	143	565