

**“A STUDY ON MANUFACTURING PROCESS
AT NATIONAL PLASTICS”**

Dissertation submitted to
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In partial fulfilment of the requirement for the
Degree of Bachelor of Business Administration

Submitted by
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DEPARTMENT OF BACHELOR OF BUSINESS ADMINISTRATION
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BHARATA MATA COLLEGE

(AFFILIATED TO MAHATMA GANDHI UNIVERSITY, KOTTAYAM)

BONAFIDE CERTIFICATE

This is to certify that the study report entitled “**A STUDY ON MANUFACTURING PROCESS AT NATINAL PLASTICS**” is a record of original work done by **SHEBEERSHA K A** (Registration no.210021080032) in partial fulfilment of the requirement for the degree of Bachelor of Business Administration under the guidance of **DR SREEJA S., ASSISTANT PROFESSOR, DEPARTMENT OF BACHELOR OF BUSINESS ADMINISTRATION**. This work has not been submitted for the award of any other degree or titled of recognition earlier.

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DECLARATION

This is to declare that this Bonafide record of the project work done by me entitled “**A STUDY ON MANUFACTURING PROCESS AT NATIONAL PLASTICS**” in partial fulfilment of the BBA Programme of Mahatma Gandhi University under the guidance of **DR. SREEJA S., ASSISTANT PROFESSOR**, and that the report has not found the basis for the award of any Degree/Diploma or other similar titles to any candidate of any other university.

Place :

Date :

SHEBEERSHA K A

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Place :

Date :

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TABLE OF CONTENTS

SL. NO.	CHAPTERS	PAGE NO.
I	INTRODUCTION	
	1.1 Introduction	
	1.2 Problem Definition	
	1.3 Objectives of the Study	
	1.4 Scope of the Study	
	1.5 Limitations of the Study	
II	LITERATURE REVIEW	
III	INDUSTRY PROFILE	
	3.1 Brief History of the Industry	
	3.2 Industrial Performance- Global, National & Regional	
	3.3 Prospects & Challenges in the Industry	
IV	COMPANY PROFILE	
	4.1 Brief History of the Company	
	4.2 Vision	
	4.3 Mission	
	4.4 Objectives of the Company	
	4.5 Values of the Company	
V	RESEARCH METHODOLOGY	
	Research Methodology	
	5.1 Statement of the problem	
	5.2 Research Design	
	5.3 Sample Design	
	5.3.1 Population	
	5.3.2 Sampling Technique	
	5.3.3 Sample Size	
	5.4 Data Collection Design	
	5.4.1 Data Source	
	5.4.2 Data Collection Tools	
	5.4.3 Data Analysis Tool	
VI	DATA INTERPRETATION & ANALYSIS	
VII	FINDINGS, SUGGESTIONS & CONCLUSION	
	Findings	
	Suggestions	
	Conclusion	
	BIBLIOGRAPHY	
	APPENDIX	

LIST OF TABLES

SL. NO.	LIST OF TABLES	PAGE NO.
6.1	Distribution of employees approach regarding the satisfaction with the quality of products	
6.2	Distribution showing the factors affecting manufacturing	
6.3	Distribution showing the effect of internal and external audit program	
6.4	Distribution showing the employees expectancy with the kind of changes in products	
6.5	Distribution showing about the quality manual	
6.6	Distribution showing the factors which make a customer to purchase a product	
6.7	Distribution showing the employees opinion regarding the wear and tear of a machine	
6.8	Distribution showing the quality of the products at the different stages of manufacturing	
6.9	Distribution showing the quality of the products at the different stages of manufacturing	
6.10	Distribution showing the employees preference in type of plastics	
6.11	Distribution showing the employees opinion regarding the suppliers assessment and monitoring	
6.12	Distribution showing the point of sales when the company is on profit	
6.13	Distribution showing the effect of company process auditing	
6.14	Distribution showing the manufacturing process is out dated or not	
6.15	Distribution showing the opinion of the employees regarding whether rejected items identified and segregated	
6.16	Distribution showing the safety issues regarding the manufacturing process	
6.17	Distribution showing the employees view on inventory management of the company	
6.18	Distribution showing the control techniques used for control of processes	
6.19	Distribution showing the favorable impact of locality on productivity	
6.20	Distribution showing whether monitoring and measuring devices controlled and calibrated	

LIST OF CHARTS

SL. NO.	LIST OF CHARTS	PAGE NO.
6.1	Distribution of employees approach regarding the satisfaction with the quality of products	
6.2	Distribution showing the factors affecting manufacturing	
6.3	Distribution showing the effect of internal and external audit program	
6.4	Distribution showing the employees expectancy with the kind of changes in products	
6.5	Distribution showing about the quality manual	
6.6	Distribution showing the factors which make a customer to purchase a product	
6.7	Distribution showing the employees opinion regarding the wear and tear of a machine	
6.8	Distribution showing the quality of the products at the different stages of manufacturing	
6.9	Distribution showing the quality of the products at the different stages of manufacturing	
6.10	Distribution showing the employees preference in type of plastics	
6.11	Distribution showing the employees opinion regarding the suppliers assessment and monitoring	
6.12	Distribution showing the point of sales when the company is on profit	
6.13	Distribution showing the effect of company process auditing	
6.14	Distribution showing the manufacturing process is out dated or not	
6.15	Distribution showing the opinion of the employees regarding whether rejected items identified and segregated	
6.16	Distribution showing the safety issues regarding the manufacturing process	
6.17	Distribution showing the employees view on inventory management of the company	
6.18	Distribution showing the control techniques used for control of processes	
6.19	Distribution showing the favorable impact of locality on productivity	
6.20	Distribution showing whether monitoring and measuring devices controlled and calibrated	

CHAPTER – 1
INTRODUCTION

1.1 INTRODUCTION TO THE TOPIC

“A STUDY ON MANUFACTURING PROCESS AT NATIONAL PLASTICS” is the project’s official title, and National Plastic Industries is specifically mentioned in the project.

Manufacturing refers to the process of producing goods or products through various methods, techniques, and machinery. It involves transforming raw materials or components into finished goods that can be sold to consumers or used in other industries. Manufacturing encompasses a wide range of activities, including designing, engineering, assembling, and packaging products. It involves both manual labor and automated processes, depending on the complexity of the product and the available technology. Manufacturing plays a crucial role in economies worldwide, driving innovation, creating employment opportunities, and contributing to overall economic growth.

Manufacturing is the process of creating or producing items and turning raw materials into completed goods and specific products using manpower, machinery, tools, technical processing, chemical or biological processing, or formulation. It is the fundamental component of the economy's secondary sector. Although the phrase can be used to describe a variety of human endeavors, from high-tech manufacturing to handicrafts, it is most frequently associated with industrial design, which involves the large-scale conversion of raw materials from the primary sector into completed commodities. These products could be supplied to other producers in order to help them create more sophisticated things.

The manufacturing process encompasses a series of steps aimed at transforming raw materials into finished products ready for distribution and use. It typically begins with product design, where specifications are outlined and conceptualized by engineers and designers. Once the design is finalized, raw materials and components are procured from suppliers and prepared for fabrication. Techniques such as machining, molding, and assembly are then employed to shape and assemble the materials into the desired product. Throughout the process, rigorous quality control measures are implemented to ensure that products meet specified standards. After production, the finished goods are packaged, distributed, and supported, with ongoing efforts for continuous improvement driving efficiency and product quality. Each industry and product may have its own unique variations and requirements, but the core principles of manufacturing remain consistent across sectors.

The work material is changed during the processing operation from one advanced condition to another. By altering the beginning work material's geometry, shape, characteristics, appearance, etc., value is added to the material through this procedure. Processing procedures are often carried out on a single component. However, in other instances—such as the aerospace industry—processing activities are also carried out on assembled goods.

Plastic is a solid substance that is made of synthetic materials and is easily molded and elastic. Biopolymers, or plastics, are materials with a high molecular composition. Plastics are frequently completed, triggered by chemicals, or derived from renewable resources. Plastic is undoubtedly more affordable. One of the biggest benefits is that plastics are simple to make. Plastics are utilized in the production of enormous cargo ships as well as tiny things. Plastic is a very malleable and stretchable substance. Nowadays, plastic has mostly replaced the materials used in the past. In most developed and developing nations, it is mostly utilized for product packaging. Plastics are used to make jars and other containers.

In an assembly process, two or more parts are combined to form a new whole. Depending on where it is in the product, the new entity is referred to as an assembly or subassembly. Subassembly is the word used when the entity is a product's intermediate state. A few more phrases are also mentioned in relation to the joining procedure. Weld met refers to the assembly that results from a welding procedure. Many believe that the manufacturing sector is the foundation of both social and economic progress. They provide jobs in the secondary and tertiary sectors, which contributes to the modernization of agriculture and lessens people's heavy reliance on agricultural revenue.

1.2 STATEMENT OF THE PROBLEM

The processes in the manufacturing process are which convert raw resources into finished goods. The product design and the specifications for the materials used to make it are the first steps in the manufacturing process.

Production is the process of transforming raw materials into completed goods. Several kinds of machinery, tools, and equipment are employed in this production process to create the final product. Various manufacturing techniques are utilized in the production process, contingent on the type of work and final commodities that are needed.

Manufacturing processes are primarily designed to create products with a functional form. The manufacturing process is a crucial stage in the production process. It mostly relates to altering the material's form or the part's dimensions during production. The handling, transportation, and storage of parts are not considered phases in the manufacturing process since they do not entail changing the material's form or the part's dimensions while being manufactured. To be considered acceptable and functional, the final product's geometry must adhere to a set of tolerances. Creating the project's manufacturing cost statement was the goal. The project's cost will be ascertained using a manufacturing cost statement.

1.3 OBJECTIVES OF THE STUDY

- To identify the various factors affecting manufacturing.
- To identify the elements of efficiency and costs of manufacturing process.
- To identify the control techniques used for manufacturing process.
- To study the inventory management of the company

1.4 SCOPE OF THE STUDY

The scope of the study is to know and understand the various processes and activities involved in the manufacturing process in the company and also to find out the cost per unit of product. The other scope is to implement lean manufacturing principles and study the improvement in productivity.

1.5 LIMITATIONS OF THE STUDY

- Some of the respondents denied to answer the questionnaire.
- There was only limited time duration for the study. Hence time was also a constraint to undertake an extensive study.
- The study was confined only to National Plastics Industries. Hence, it might not be an accurate representation of the entire industry.
- It was not possible to collect all the data related to the study within a limited period of time.

- While taking surveys, the informants were very cautious when providing information.
- When collecting the secondary data it was difficult about the topic.
- Lack of previous research studies on the topic.
- Lack of co-operation

CHAPTER – 2
LITERATURE REVIEW

1. Yadav, A., & Jayswal, S. C. (2018) stated that a flexible manufacturing system (FMS) is concerned with the automatic manufacture of various parts in the medium range because of its inherent flexibility. It can be thought of as an automated production system, to put it briefly.

2. Efthymiou, K., Mourtzis, D., Pagoropoulos, A., Papakostas, N., & Chryssolouris, G. (2016) mentioned that manufacturing complexity may rise as a result of demand fluctuations in the more globalized and interconnected market, as well as the demands for high product quality, low cost, short lead times, and high customization. A number of techniques based on various ideas and methodologies have been put forth in recent years for the examination of industrial complexity

3. Stavropoulos, P., Chantzis, D., Doukas, C., Papacharalampopoulos, A., & Chryssolouris, G. (2013) declared that adaptive control in online processing optimization can lead to notable improvements in tool life, process efficiency, and product quality. It explains both traditional and improved techniques for manufacturing process monitoring and control. The distinctions among the accessible techniques, structures, and related apparatuses are recognized and assessed. With an emphasis on the integration of adaptive control systems into industrial processes, a thorough examination of both present and future systems and their constituent parts is conducted.

4. Efthymiou, K., Pagoropoulos, A., Papakostas, N., Mourtzis, D., & Chryssolouris, G. (2012) mentioned that competitiveness and human capital qualities are clearly correlated, according to recent studies. Simultaneously, reports of a shortage of skilled workers in industry have been common. A brief survey of contemporary industrial education methods is given. The need to educate the next generation about the fascinating nature of manufacturing, where cutting edge technologies and scientific methods are used to solve real-world issues in a corporate setting.

5. Huang, T. T. A., Stewart, R. A., & Chen, L. (2010) stated that New product development (NPD), knowledge sharing (KS), and integrated supplier management (ISM) are the three main business activities that are used to improve manufacturers' business performance (BP). The success of business operations and the production of business outcomes are significantly influenced by the ISM, NPD, and KS components. To be more precise, these structures' critical elements that affected BP are: open communication, information technology infrastructure and systems, modular and simplified design, supplier evaluation and selection

6. Klocke, F., & Kuchle, A. (2009) stated that it uses a useful distinction between sheet and bulk metal forming to present important information on metal forming. It looks at the cold, warm, and hot bulk forming procedures in addition to rolling and a recently added method called thixo-forming. About the field of sheet metal working, it deals with the operations of stretching, deep drawing, flange forming, metal spinning, and bending sheets of metal. The internal high-pressure forming and high rate forming chapters have been updated and improved in terms of special procedures. Conversely, the book describes and clarifies the current state of the art for sheet metal separation techniques.

7. Özcan and Toklu (2009) declared that single-model assembly lines are not suitable for producing a wide variety of items because they are specifically made to generate a large volume of uniform, standardized products. Because it allows workers with little training to assemble work items, this kind of assembly line is frequently used in high volume industrial environments (Cevikcan et al., 2009).

8. Brecher, C., Esser, M., & Witt, S. (2009) mentioned that to address the issues posed by both the machine tool and the machining process, an individual analysis of each is required. The interactions between the production process and the machine tool, however, also need to be examined in order to completely comprehend the manufacturing system, including vibrations, deflections, and thermal deformations. Some significant effects in cutting, grinding, and shaping are only explicable in terms of these interaction phenomena.

9. Boysen (2008) stated that in a manufacturing setting, transfer lines or fully automated lines are used primarily to complete tasks more precisely, safely, and affordably. The ability to create different goods on the same manufacturing line is one of the transfer lines' advantages. It makes it possible to satisfy customers' requests for a wider range of products. These lines are typically connected to machines that have the ability to automatically switch out the tools in order to complete various tasks at different speeds. Work components are successively passed through each workstation on a transfer line at a steady, regulated speed. These kinds of lines are made to produce a single product or a group of related products in large quantities.

10. Amoako-Gyampah and Acquah (2008) stated that a larger market share and increased sales growth can be attained by ensuring client satisfaction, and a quality strategy is essential to this. The authors also said that a company that develops a strategy to achieve mix and volume flexibility while keeping costs low and quality high will be able to react quickly to market demands and eventually achieve improved performance. A recent study by Karim

found that product quality and reliability are currently the main competitive factors in the global trend.

11. Miltenburg (2008) declared that a company's ability to compete is determined by its infrastructure and structural preparedness. The four structural components are sourcing, technology, facilities, and capacity. Workforce, quality, production planning, and organization are the aspects of infrastructure.

12. Chryssolouris, G., & Mourtzis, D. (2008) stated that manufacturing education has emerged as a critical requirement for fostering excellence and preserving competence in manufacturing in the current, rapidly evolving, and fiercely competitive global context. New manufacturing education paradigms must be developed in order to meet this challenge. These paradigms should include the integration of research and innovation with education and training activities, as well as collaboratively determined future curricula between academia and industry.

13. Chryssolouris, G., Papakostas, N., Mourtzis, D., & Makris, S. (2008) announced that the various methods used for knowledge management in manufacturing process modeling are illustrated through an analysis of a wide range of applications in various manufacturing domains. A case for knowledge-based process planning, an approach to knowledge management for materials processing, the automotive assembly process, information technology platforms for manufacturing knowledge management, knowledge management for aircraft engine cost estimation, and a brief demonstration of a rule-based quality control and maintenance system are among the topics covered in the discussion.

14. Ostwald, P. F., & Munoz, J. (2008) mentioned that the industrial process of manufacturing involves transforming raw materials into finished goods. An organization must create and maintain a manufacturing system that allows information to flow freely in order to coordinate inputs, processes, and outputs in order to be profitable. For example, the advancement of contemporary manufacturing depends on material science research, which may call for a range of novel production techniques. Implementing reliable manufacturing systems and procedures is essential for success.

15. Skinner (2007) proposed that "a manufacturing strategy is a set of manufacturing policies designed to maximize performance among trade-offs among success criteria to meet the manufacturing task determined by a corporate strategy". The company's top management bears the obligation of ensuring that the company's objective is supported by a well-

coordinated production strategy and policies that are generated from both internal and external sources of information.

16. Balakrishnan, J., Eliasson, J. B., & Sweet, T. R. (2007) stated that due to its diverse geography and lack of a sizable market, Canadian industry started off by creating basic goods in tiny quantities and didn't enter the mass manufacturing era until the 20th century. However, in the twenty-first century, Canada has returned to customized manufacturing, although in specialized sectors like biotech and aircraft manufacture, as a result of competition from nations with lower labor costs. Although there are positive aspects of Canadian manufacturing, new research indicates that more needs to be done to increase the production of value-added goods and maintain Canadian manufacturing's competitiveness in the global market.

17. Singh, R. (2006) declared that an industrialized nation's manufacturing sector is its foundation. In order to manufacture diverse components or products with an ideal process plan employing the right safeguards and stated safety regulations to prevent accidents, manufacturing and technical workers in the industry need to be knowledgeable about the numerous manufacturing processes, materials being processed, tools, and equipment. In addition to the aforementioned, all aspiring engineers must be aware of the fundamental needs of a workshop, including the availability of labor, equipment, materials, money, and other resources. These resources must also be positioned correctly to allow for the best shop or plant layouts as well as the efficient adjustment or location of other support services within the industry or plant within a well-planned manufacturing organization.

18. Partanen and Haapasalo (2004) stated that the high rate of demand for the specific product is the reason behind the usage of the phrase "mass manufacturing." Typically, a company that engages in high volume production produces a limited range of items. This kind of production is linked to lengthy assembly lines where machines or workers produce the same product on a monthly basis. Quantity production and flow line production are the two types of large volume production.

19. Gershwin (2000) mentioned that manufacturing system operation and design are crucial from an economic standpoint. Despite the extensive body of research on these subjects and the lengthy history of manufacturing, opinions on the optimal methods of execution are widely divided. Factory performance is still unpredictable despite a wide range of scholarly (queuing theory, dynamic programming, combination optimization, etc.) and

practitioner/consultant supported approaches. An method that unifies design and operation was put out by Gershwin (2000). Algorithms for choosing operational settings and buffer sizes will eventually be part of the procedure. The strategy is far from finished, and more work needs to be done before it can be put into practice completely.

20. Giachetti, R. E. (1998) mentioned that a multi-criteria decision-making dilemma involves the selection of materials and industrial techniques. During the early stages of design, these decisions are made in an environment where requirements, relationships, and parameters are hazy and unclear. Decisions about material and process choices must be made before manufacturing design can begin.

CHAPTER – 3
INDUSTRY PROFILE

3.1 BRIEF HISTORY OF THE INDUSTRY

The plastic industry has a relatively short but impactful history, characterized by significant advancements in materials science, technology, and manufacturing processes.

The plastic industry traces its origins back to the mid-19th century with the invention of the first synthetic plastic, celluloid, by John Wesley Hyatt in 1869. Initially used as a substitute for ivory in billiard balls, celluloid later found applications in photography and film, marking the beginning of the modern plastic era.

One of the most significant advancements in the early plastic industry came with Leo Baekeland's invention of Bakelite in 1907. Bakelite, the first synthetic polymer that could be molded into shapes under heat and pressure, revolutionized the industry by offering a durable, versatile material with applications in electrical appliances, automotive parts, and consumer goods.

Throughout the 20th century, the plastic industry experienced rapid expansion and diversification fueled by advancements in polymer chemistry and processing technologies. New plastics such as polyethylene, PVC, polystyrene, and nylon were developed, finding applications across various industries including packaging, construction, automotive, aerospace, and healthcare.

The post-World War II era witnessed a boom in plastic production and consumption driven by technological innovation, economic prosperity, and changing consumer lifestyles. Plastics became synonymous with modernity and convenience, leading to their widespread adoption in everyday products ranging from food packaging and household goods to toys and electronics.

Despite its many benefits, the plastic industry has also faced criticism and scrutiny over environmental concerns such as plastic pollution, waste management, and recycling challenges. Efforts to address these issues have led to increased awareness, regulations, and initiatives aimed at promoting sustainability, circular economy principles, and the development of biodegradable and recyclable plastics.

In recent decades, the plastic industry has continued to innovate and evolve, leveraging advancements in materials science, polymer engineering, and manufacturing technologies. Additive manufacturing (3D printing) has emerged as a disruptive technology, offering new possibilities for customized, on-demand production of plastic parts and products.

Today, the plastic industry is a global multi-billion-dollar industry with a pervasive presence in almost every aspect of modern life. While plastics have undoubtedly revolutionized various industries and contributed to human progress, the industry faces ongoing challenges related to sustainability, waste management, and environmental stewardship. Looking ahead, the future of the plastic industry will likely be shaped by innovations in bio-based materials, advanced recycling technologies, and circular economy models aimed at minimizing waste and maximizing resource efficiency.

NATURE OF THE INDUSTRY

The plastic industry is characterized by several key attributes that shape its nature and operation:

- 1. Versatility:** One of the most notable aspects of the plastic industry is its versatility. Plastics can be formulated and processed to exhibit a wide range of properties, including flexibility, durability, transparency, and heat resistance. This versatility allows plastics to be used in diverse applications across various industries, from packaging and construction to automotive and electronics.
- 2. Innovation-driven:** The plastic industry is highly innovation-driven, with continuous advancements in materials science, polymer chemistry, and manufacturing technologies driving the development of new types of plastics with enhanced properties and performance. Technological innovations such as additive manufacturing (3D printing) are also revolutionizing the way plastics are produced and utilized.
- 3. Global Presence:** The plastic industry is a global industry with a widespread presence in virtually every part of the world. Plastic materials, products, and manufacturing processes are traded internationally, and major multinational corporations dominate the market. Globalization has facilitated the exchange of knowledge, expertise, and resources within the industry, leading to increased collaboration and competition.
- 4. Environmental Challenges:** Despite its many benefits, the plastic industry faces significant environmental challenges, including plastic pollution, waste management issues, and concerns about the sustainability of plastic production and consumption. The industry is under increasing pressure to address these challenges through measures such as recycling, waste reduction, and the development of biodegradable and compostable plastics.

5. Regulatory Scrutiny: In response to environmental concerns and public pressure, the plastic industry is subject to regulatory scrutiny and oversight by governments and international organizations. Regulations may cover areas such as plastic waste management, product safety standards, and the use of hazardous chemicals in plastics manufacturing. Compliance with regulations is essential for companies operating in the industry to ensure legal and ethical business practices.

6. Consumer Demand and Trends: Consumer preferences and trends play a significant role in shaping the nature of the plastic industry. Increasing awareness of environmental issues has led to growing demand for eco-friendly and sustainable alternatives to conventional plastics. As a result, there is a growing market for biodegradable plastics, recycled plastics, and products designed for reuse and recycling.

7. Continuous Growth and Adaptation: Despite the challenges it faces, the plastic industry continues to experience growth and adaptation driven by factors such as population growth, urbanization, and technological innovation. The industry remains essential to modern life, providing materials and products that are integral to numerous industries and everyday activities.

Overall, the plastic industry is a dynamic and multifaceted sector that plays a crucial role in the global economy while facing complex challenges related to sustainability and environmental stewardship. Adaptation, innovation, and collaboration will be essential for the industry to navigate these challenges and continue to thrive in the future.

3.3 INDUSTRIAL PERFORMANCE – GLOBAL, NATIONAL AND REGIONAL

GLOBAL LEVEL

At the global level, the plastic industry has demonstrated significant industrial performance, characterized by substantial production volumes, economic contributions, and widespread utilization across various sectors.

1. Production Volume: Massive production volumes with billions of tons of plastic produced annually worldwide.

2. Economic Contribution: Significant contributions to the global economy through revenue generation and employment opportunities.

3. Market Size and Growth: Continual expansion driven by population growth, urbanization, and technological advancements.

4. Innovation and Technology: Continuous innovation in materials science, polymer chemistry, and manufacturing technologies.

5. Environmental Concerns: Increasing focus on addressing plastic pollution, waste management, and sustainability.

6. Regulatory Landscape: Complex regulatory frameworks covering product safety, environmental protection, and waste management.

7. Global Trade Dynamics: Extensive international trade of plastic materials, products, and technologies.

Hence the above mentioned are the performance of the plastic industry at global level.

NATIONAL LEVEL

At the national level, the performance of the plastic industry varies from country to country depending on factors such as economic development, industrial infrastructure, regulatory frameworks, and environmental policies.

1. Manufacturing Presence: Significant manufacturing presence with specialized production facilities across the country.

2. Economic Contribution: Substantial contribution to national economies through revenue generation and employment.

3. Market Dynamics: Varied demand patterns influenced by population demographics, industrial development, and consumer preferences.

4. Innovation and Research: Focus on innovation and research driving advancements in materials, processes, and applications.

5. Environmental Policies: Implementation of environmental policies and regulations to address plastic pollution and promote sustainability.

6. Domestic Consumption: Consumption patterns influenced by factors such as income levels, lifestyle choices, and industrial demand.

7. Government Support: Government support for the plastic industry through incentives, subsidies, and infrastructure development.

Hence the above mentioned are the performance of the plastic industry at national level.

REGIONAL LEVEL

At the regional level, the performance of the plastic industry reflects the unique economic, social, and environmental dynamics of specific geographic areas.

1. Manufacturing Hubs: Regional concentrations of plastic manufacturers and related industries form specialized manufacturing hubs.

2. Economic Impact: The plastic industry contributes to regional economies through revenue generation and job creation.

3. Market Dynamics: Regional markets for plastics exhibit unique demand patterns influenced by demographics, industrial development, and consumer preferences.

4. Supply Chain Networks: Regional supply chains involve the sourcing of raw materials and distribution of finished goods.

5. Innovation and Collaboration: Regional plastic industries foster innovation and collaboration through partnerships and research initiatives.

6. Environmental Sustainability: Regional governments and stakeholders implement sustainability initiatives to address plastic pollution and promote recycling.

7. Trade and Integration: Regional trade agreements and supply chain networks facilitate the movement of plastic materials and products across borders.

Hence the above explained are the performance of the plastic industry at the regional level.

3.3 PROSPECTS AND CHALLENGES IN THE INDUSTRY

The plastic industry has both prospects and challenges, influenced by factors ranging from technological advancements to environmental concerns.

PROSPECTS

The plastic industry presents promising prospects driven by several factors:

- **Technological Advancements:** Continuous innovation in plastic materials, such as biodegradable plastics, recyclable plastics, and lightweight composites, opens up new opportunities for applications across various industries.
- **Growing Demand:** The global demand for plastic products continues to rise, driven by sectors like packaging, automotive, construction, healthcare, and electronics. Emerging economies, particularly in Asia, are experiencing rapid industrialization and urbanization, further fueling demand.
- **Customization and Flexibility:** Plastics offer unparalleled flexibility in design and manufacturing, allowing for customization to meet specific product requirements. This adaptability makes plastics attractive for various applications, including prototyping and rapid production cycles.
- **Sustainability Initiatives:** Increasing awareness of environmental issues is driving the demand for sustainable plastic solutions. Companies are investing in research and development of eco-friendly alternatives, such as bio-based plastics, recyclable materials, and improved waste management practices.

While these prospects presents opportunities, challenges such as workforce shortages, and ethical considerations require careful navigation for sustainable growth in the healthcare industry.

CHALLENGES

The plastic industry faces several significant challenges:

- **Environmental Concerns:** Plastic pollution poses significant environmental challenges, including littering, marine pollution, and micro plastic contamination. Public and regulatory pressure to reduce plastic waste and mitigate environmental impacts are forcing the industry to adopt more sustainable practices.

- **Recycling Infrastructure:** Inadequate recycling infrastructure and low recycling rates hinder the effective management of plastic waste. Developing efficient collection, sorting, and recycling systems is crucial to maximize resource recovery and minimize environmental pollution.
- **Regulatory Compliance:** Stringent regulations aimed at reducing single-use plastics, banning certain plastic products, and imposing extended producer responsibility (EPR) schemes add compliance burdens and operational costs for plastic manufacturers. Adapting to evolving regulatory landscapes requires investment in research, innovation, and sustainable practices.
- **Perception and Consumer Behavior:** Negative perceptions surrounding plastics, fueled by environmental concerns and media coverage of pollution issues, influence consumer behavior and purchasing decisions. Brands are under pressure to demonstrate commitment to sustainability and offer environmentally friendly alternatives to traditional plastic products.
- **Material Innovation:** Developing cost-effective, sustainable alternatives to conventional plastics while maintaining desired material properties remains a challenge. Research into new materials, such as bio plastics and advanced recycling technologies, requires significant investment and collaboration across the industry.

Overall, while the plastic industry faces significant challenges related to environmental sustainability and regulatory compliance, ongoing innovation and shifts towards more sustainable practices offer opportunities for growth and adaptation. Balancing economic viability with environmental responsibility is key to the long-term success of the industry.

PLASTIC INDUSTRY IN INDIA

The plastic industry in India has burgeoned into a vital sector of the country's economy, showcasing remarkable growth driven by diverse segments and a burgeoning domestic market. With a wide array of applications spanning packaging, consumer goods, automotive, construction, and more, the industry has become a cornerstone of India's industrial landscape. Leveraging technological advancements and innovation, Indian plastic manufacturers have established themselves as competitive players both domestically and internationally, contributing significantly to GDP growth and employment generation. However, amidst this growth, challenges persist, particularly concerning environmental sustainability and waste

management. Efforts to address these challenges through initiatives promoting recycling, sustainable materials, and regulatory frameworks are underway, underscoring the industry's commitment to balancing economic growth with environmental responsibility.

Despite challenges, the plastic industry in India continues to exhibit resilience and potential for further expansion. Government initiatives aimed at promoting sustainable practices and reducing plastic pollution are driving industry players towards innovation and eco-friendly solutions. Collaborative efforts between government, industry, and civil society are essential to navigating the complexities of sustainability while maintaining the industry's growth trajectory. With a concerted focus on technological innovation, environmental stewardship, and regulatory compliance, the Indian plastic industry is poised to continue its upward trajectory, contributing to India's economic development while addressing pressing environmental concerns.

CHAPTER - 4
COMPANY PROFILE

4.1 BRIEF HISTORY OF THE COMPANY

The company was founded in 2005. National plastic company began their business venture by introducing 10000 quantity of plastic 300ml containers in Kerala. Over the years the company has derived into several plastic items like pedal bin, waste basket etc. The first factory was started near Vallam perumbavoor.

As a part of market expansion, they setup our 2nd factory at Kalady 2010 Napko plastics and Sapko plastics. They have also had markets in Tamil Nadu and Karnataka. Today with the help of state of the art machines and world class production techniques we produce 75 more products. They always ensure the use of quality raw materials as well as finished products. Another striking feature of the factory is cleanliness and hygiene.

National plastic gives importance to quality from sourcing raw materials to delivery of finished goods. An innovative company which tries to create trends in the plastic industry. The company which started with the vision of providing quality plastic 50ltr weld drum has grown from a factory which manufactured a day 350 in 2 factories.

A National Plastics have been established in response to the increasing demand for plastic products in its respective country or region. Typically, it have started as a small-scale operation, either manufacturing plastic products or specializing in a particular segment of the plastic industry, such as polymer production, packaging, or providing custom plastic solutions for various sectors.

The National Plastic have faced challenges and opportunities, including economic fluctuations, changes in consumer preferences, regulatory requirements, and advancements in technology. The company's ability to adapt to these changes, maintain product quality, and meet customer needs would have been critical to its growth and success.

4.2 MISSION, VISION STATEMENT AND QUALITY POLICY FOLLOWED

MISSION STATEMENT

"Our mission is to create innovative plastic solutions that meet the needs of our customers while minimizing our environmental footprint."

The Mission statement expresses the company's commitment to developing creative plastic products that fulfill customer requirements while also minimizing their impact on the environment. It signifies the company's dedication to balancing business objectives with environmental responsibility, highlighting a focus on sustainable practices and solutions within the plastics industry.

VISION STATEMENT

"Our vision: pioneering plastics with sustainability at our core."

"Pioneering plastics with sustainability at our core" conveys that the company aims to be a leader in the plastics industry by emphasizing innovation and sustainability as fundamental aspects of its operations and values. It suggests that the company is committed to advancing the field of plastics while prioritizing environmental responsibility and long-term sustainability.

QUALITY POLICY FOLLOWED

Quality policies in plastic companies typically revolve around ensuring that products meet stringent standards for performance, reliability, and safety while also adhering to regulatory requirements. One common quality policy is centered on implementing robust quality management systems (QMS) throughout the manufacturing process. This involves establishing clear procedures, protocols, and checkpoints to monitor and control every stage of production, from raw material sourcing to final product inspection.

Plastic companies often prioritize continuous improvement as part of their quality policy. This entails regularly assessing and refining manufacturing processes to enhance efficiency, reduce waste, and optimize product quality. Through techniques such as Six Sigma or Lean Manufacturing, companies aim to identify and eliminate defects, streamline operations, and enhance overall customer satisfaction.

Furthermore, a commitment to quality extends beyond production to encompass customer service and support. Plastic companies often emphasize responsiveness to customer feedback, prompt resolution of issues, and proactive communication to ensure that clients receive products that meet or exceed their expectations. By fostering a culture of quality

consciousness and accountability among employees, companies strive to uphold their reputation for delivering high-quality plastic products that meet the diverse needs of their customers while complying with industry standards and regulations.

In addition to implementing robust quality management systems and emphasizing continuous improvement, plastic companies often integrate quality assurance measures into their product development processes. This involves conducting thorough research and development to ensure that new products meet rigorous performance specifications and market demands. Prototyping, testing, and validation procedures are commonly employed to assess product durability, functionality, and compatibility with intended applications.

Another key component of quality policies in plastic companies is a focus on supplier management and material sourcing. By establishing partnerships with reputable suppliers and conducting thorough assessments of raw materials, companies aim to maintain consistency and reliability in product quality. This involves implementing strict quality control measures at the supplier level and conducting regular audits to verify compliance with quality standards and specifications.

Overall, the quality policy of a plastic company encompasses a comprehensive approach that encompasses every aspect of the business, from manufacturing processes to product development, customer service, regulatory compliance, and supplier management. By prioritizing quality at every stage of operations, companies aim to build trust, enhance competitiveness, and drive long-term success in the dynamic and demanding plastic industry.

4.4 OBJECTIVES OF THE COMPANY

- Quality
- Profit maximization
- Cost minimization
- More employment
- Time delivery
- Consistency in sales and services
- Proper utilisation of resources

4.5 VALUES OF THE COMPANY

- Higher quality products i
- Customer orientation C
- Good relation between Management, employees & workers G
- Manufacturer M

4.6 SWOT ANALYSIS OF THE COMPANY

SWOT (strengths, weaknesses, opportunities, and threats) analysis is a method for identifying and analysing internal strengths and weaknesses and external opportunities and threats that shape current and future operations and help develop strategic goals.

The SWOT Analysis of National Plastic Industries is given below:

STRENGTH

- Versatility
- Customisation
- Cost effectiveness
- Innovation

WEAKNESS

- Environmental Concerns
- Dependence on Raw Materials
- Regulatory Compliance
- Perceived Quality

OPPOURTUNITIES

- Sustainable Solutions
- Technological Advancements
- Emerging Markets

- Collaborative Partnerships

THREATS

- Regulatory Changes
- Market Competition
- Supply Chain Disruptions
- Shifting Consumer Preferences

CHAPTER – 5
RESEARCH METHODOLOGY

5.1 STATEMENT OF THE PROBLEM

This study is titled "A study in Manufacturing Process at National Plastics". This study was carried out at National Plastic Industries, Perumbavoor. The study aims at identifying various steps in manufacturing process at National Plastics Industries.

5.2 RESEARCH DESIGN

The research design refers to the overall strategy that you choose to integrate the different components of the study in coherent and logical way, thereby, ensuring you will effectively address the research problem. It constitutes the blueprint for the collection, measurement and analysis.

- The type of research design used in this study is diagnostic research design.

Diagnostic research design refers to investigations and studies conducted to identify, understand, or assess the presence of a particular condition, disease, or problem. It aims to gather information and data to make informed decisions about diagnosis, treatment, or further research.

5.3 SAMPLE DESIGN

- Simple Random Sampling method is used to select the sample.

It is a sample selected from a population in such a way that every member of the population has an equal chance of being selected and selection of any individual does not influence the selection of any other.

5.3.1 POPULATION

A population refers to the entire group of individuals, objects, events, or other elements that have a characteristics or attribute of interest.

The population is the target of study, and the goal of research is to make inferences about the population based on a sample.

The employees of National Plastic Industries is taken population.

5.3.2 SAMPLING TECHNIQUE

Sampling techniques refer to the methods used to select a sample from a population.

The choice of a sampling technique depends on the research question, the type of data being collected, the size of population, and the resources available for conducting the research.

- The sampling method used for the study is convenience sampling.

5.3.3 SAMPLE SIZE

The sample size refers to the number of elements that are selected from a population for the purpose of conducting research. The sample size is an important consideration in the research process, as it affects the precision and accuracy of the results obtained.

- The sample size is 50.

Under the given population, the sample size was selected for the study is 50 in the National Plastic Industries.

5.4 DATA COLLECTION DESIGN

Data collection design refers to the process of planning and implementing methods for gathering data for a particular research study or project.

The design process involves defining the research question or problem, determining the type of data needed to answer the question, selecting the most appropriate data collection methods, and planning how the data will be collected, stored, and analysed.

Close-ended questions ask respondents to choose from a predefined set of responses, typically one-word answers such as “yes/no”, “true/false”, or a set of multiple-choice questions.

A self-prepared questionnaire was prepared to collect data. The questions were closed ended questions and options were also provided with each questions.

5.4.1 DATA SOURCES

To achieve the goals of the study, both primary and secondary data were gathered.

Primary sources

Information are those that are gathered from scratch and for the first time, making them wholly unique in nature. A questionnaire has been used to obtain primary data.

Secondary sources

Information that has already been gathered and processed statistically by another party. The internet, organizational records, and other papers kept by the organisation were used to gather secondary data.

Source of data was collected by preparing a self-prepared questionnaire which was filled by the employees, participants of this survey.

5.4.2 DATA COLLECTION TOOLS

Surveys: Surveys can be conducted online, via email, or in person, and are used to gather Information from many people.

- Data collection tool used for research is questionnaire.
- Surveys: Surveys are a common data collection tool used to gather information on patient satisfaction. They can be administered online, by mail, or in person and can be designed to collect both quantitative and qualitative data.
- Interviews: Interviews can be conducted in person or over the phone, and can be used to collect detailed information on patient satisfaction.

A self-prepared questionnaire was prepared to collect data. The questions were closed ended questions and options was also provided with each questions.

5.4.3 DATA ANALYSIS TOOL

Tables are created from the collected data. The percentages were calculated, and the analysis was done using the straight forward percentage approach. There is analysis, as well as varied conclusions and recommendations. With the aid of several tools, including percentages, tabulation, and charts, the data is evaluated and interpreted.

CHAPTER – 6

DATA ANALYSIS AND INTERPRETATION

6.1 DISTRIBUTION OF EMPLOYEES APPROACH REGARDING THE SATISFACTION WITH THE QUALITY OF PRODUCTS.

Response	No. of respondents	Percentage
Very much satisfied	26	52%
Satisfied	24	48%
Not Satisfied	0	0%
Total	50	100%

TABLE 6.1

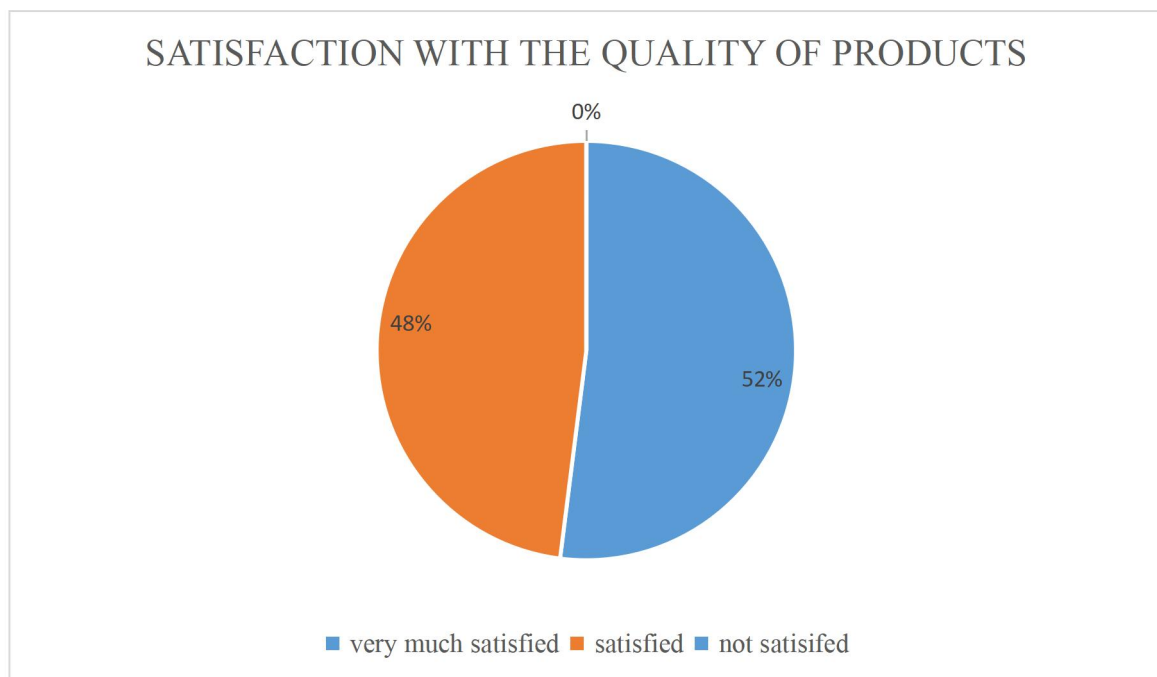


CHART 6.1

INTERPRETATION

The above table and graph shows that 52% of employees are very much satisfied with the quality of products provided by the company, 48% of employees are satisfied with this.

6.2 DISTRIBUTION SHOWING THE FACTORS AFFECTING MANUFACTURING

Response	No. of respondents	Percentage
Raw Materials	21	42%
Quality	23	46%
Lead Time	0	0%
Facilities and Equipment	6	12%
Total	50	100%

TABLE 6.2

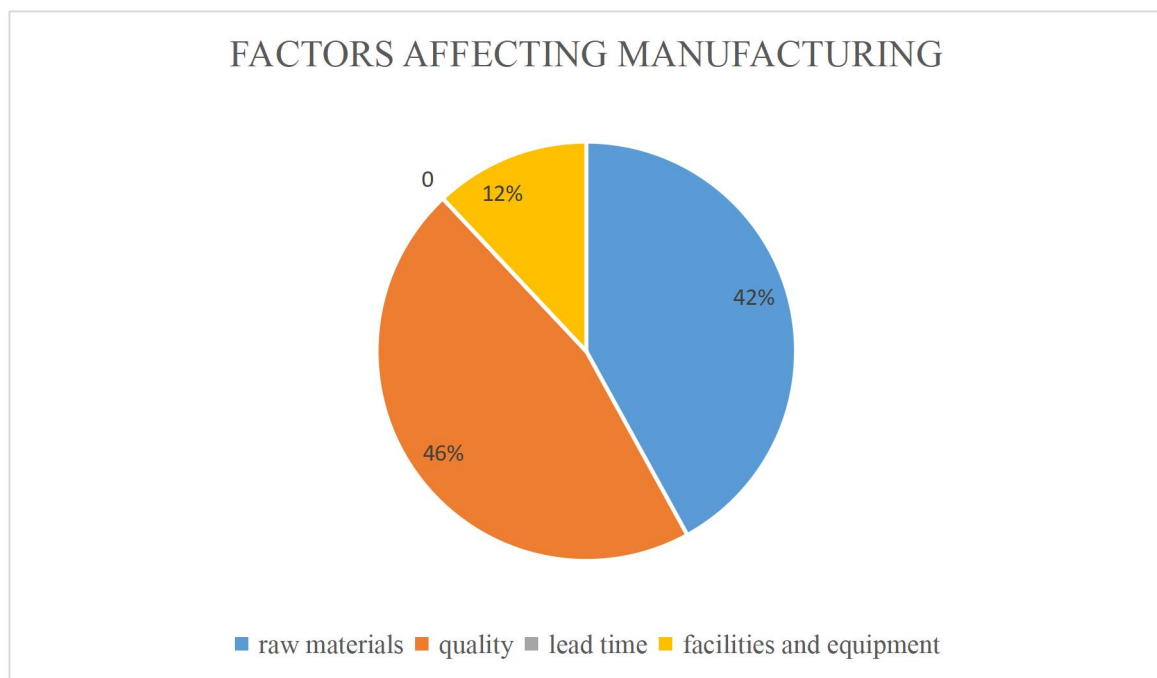


CHART 6.2

INTERPRETATION

The above table and graph shows that 42% of the raw materials affects manufacturing the most. 46% of the quality factor affects the manufacturing the most and 12% of the factor facilities and equipment affects manufacturing the most

6.3 DISTRIBUTION SHOWING THE EFFECT OF INTERNAL AND EXTERNAL AUDIT PROGRAM

Response	No. of respondents	Percentage
Good	22	44%
Fair	20	40%
Poor	8	16%
Total	50	100%

TABLE 6.3

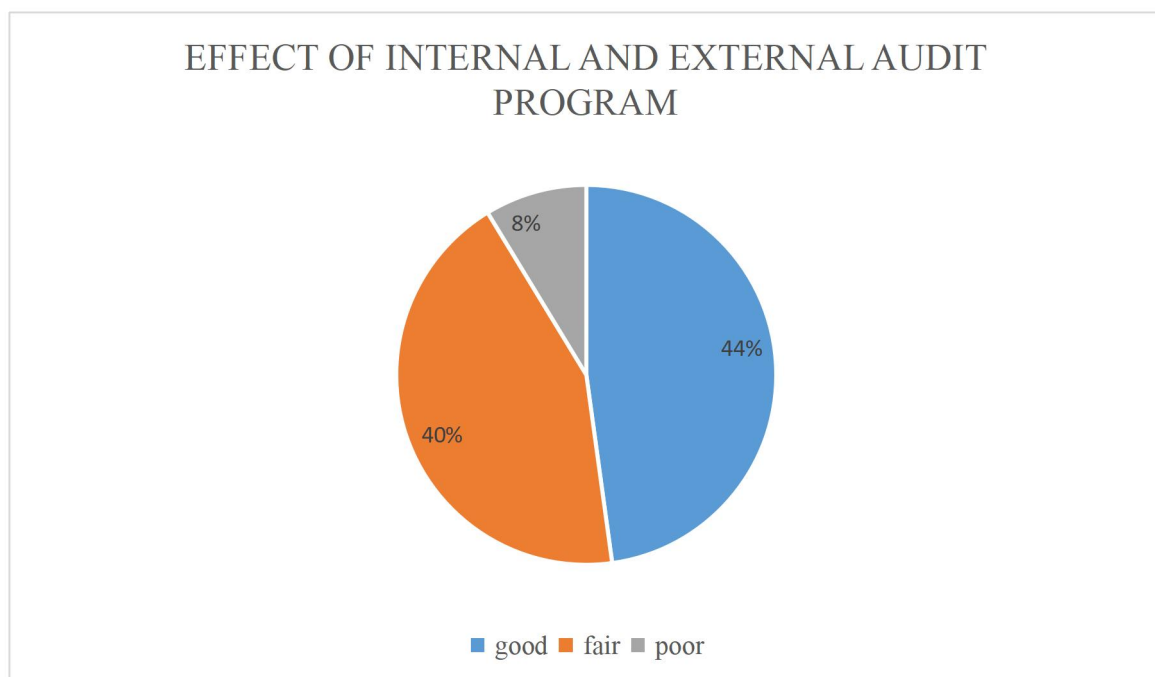


CHART 6.3

INTERPRETATION

The above table and graph shows that 44% of the employees feeling good with the internal and external audit program. 40% of the employees deal with a fair opinion and 16% feeling poor.

6.4 DISTRIBUTION SHOWING THE EMPLOYEES EXPECTANCY WITH THE KIND OF CHANGES IN PRODUCTS

Response	No. of respondents	Percentage
Quality	18	36%
Price	15	30%
Packaging	13	26%
Others	4	8%
None	0	0%
Total	50	100%

TABLE 6.4

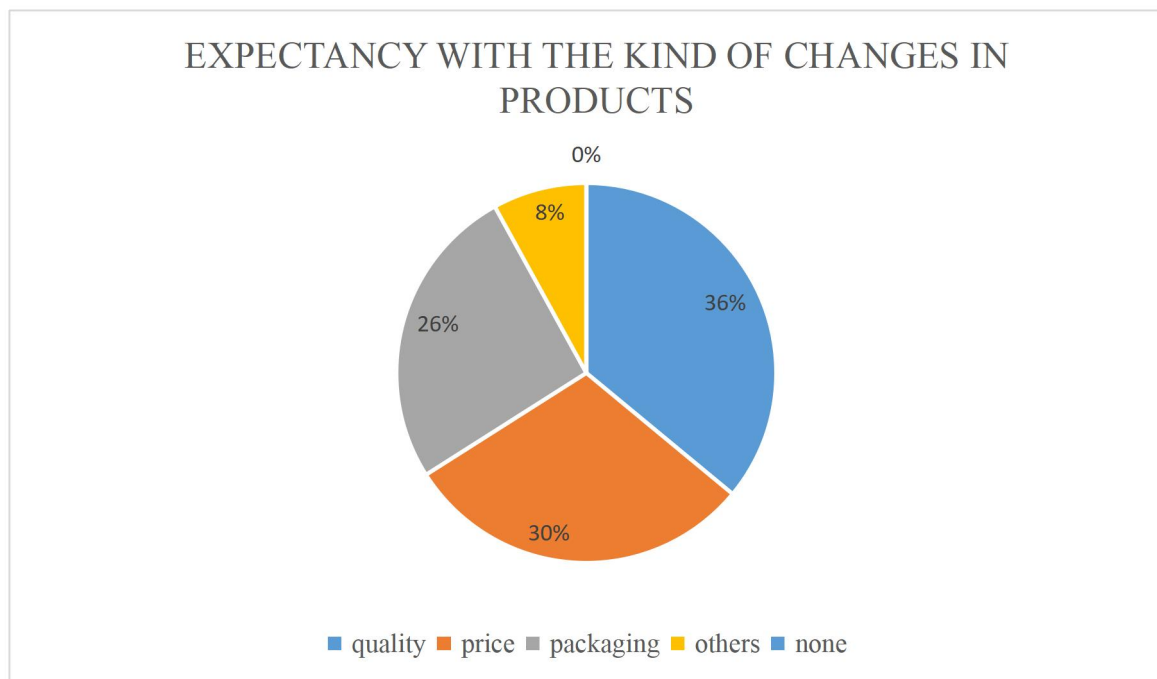


CHART 6.4

INTERPRETATION

In the above table 36% the employees says that changes in products are mainly focuses in quality.30% of the change expected in the price, 26% on the packaging and 8% on the others.

6.5 DISTRIBUTION SHOWING ABOUT THE QUALITY MANUAL

Response	No. of respondents	Percentage
Yes	35	70%
No	15	30%
Total	50	100%

TABLE 6.5

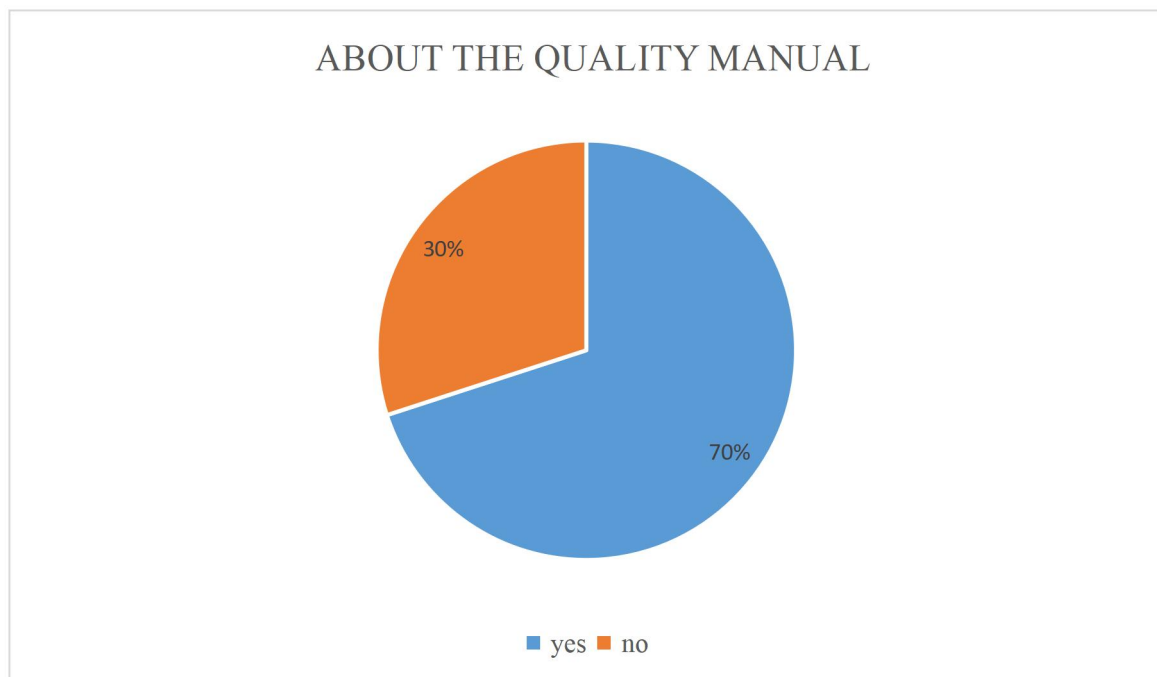


CHART 6.5

INTERPRETATION

In the above table 70% of the employees says that company is preparing the quality manual for the evaluation of variation in the quality plastics and 30% of the employees denies this opinion.

6.6 DISTRIBUTION SHOWING THE FACTORS WHICH MAKE A CUSTOMER TO PURCHASE A PRODUCT

Response	No. of respondents	Percentage
Advertising	8	16%
Price	16	32%
Quality	23	46%
Public Awareness	3	6%
Total	50	100%

TABLE 6.6

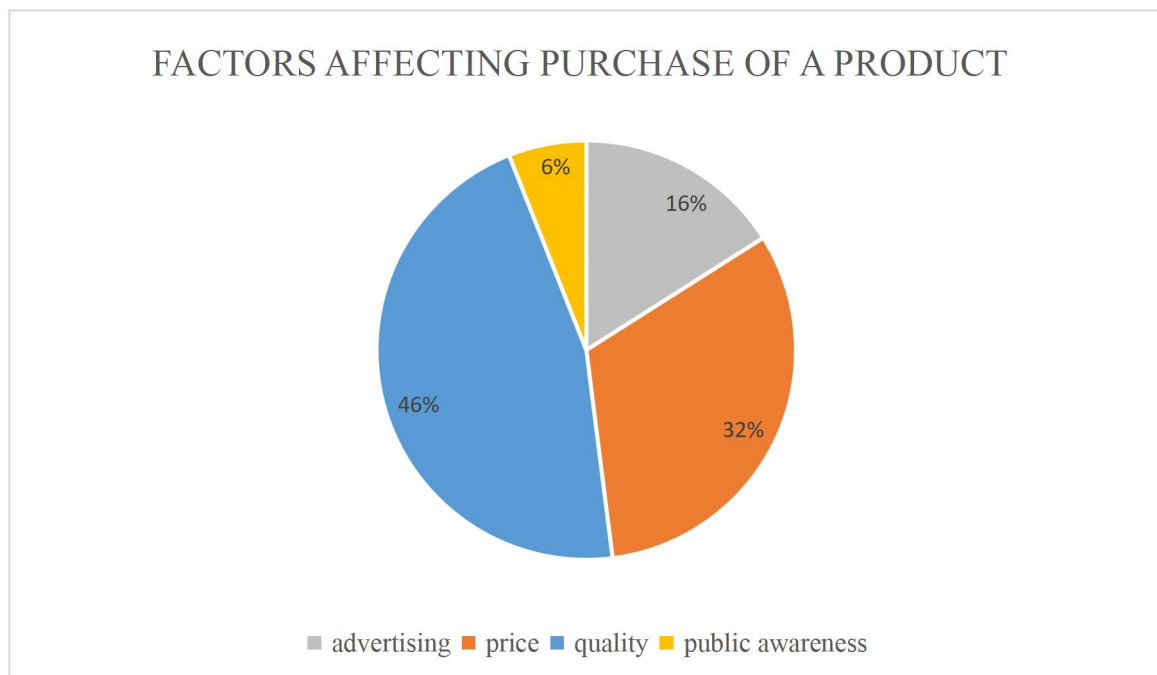


CHART 6.6

INTERPRETATION

From the above diagram it was clear that 16% of the respondents says that advertising is one of the factor that affect the purchase of product, 32% of respondents says price, 46% of the respondents says quality and rest 6% of the respondents says public awareness.

6.7 DISTRIBUTION SHOWING THE EMPLOYEES OPINION REGARDING THE WEAR AND TEAR OF A MACHINE

Response	No. of respondents	Percentage
Yes	18	36%
No	32	64%
Total	50	100%

TABLE 6.7

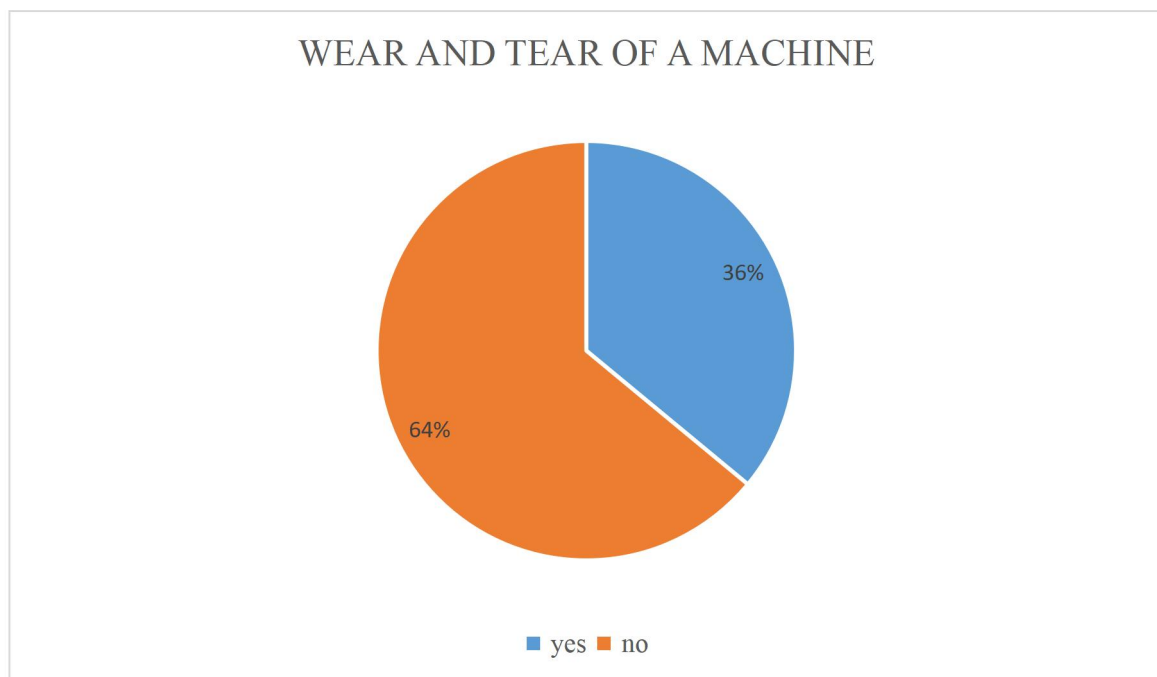


CHART 6.7

INTERPRETATION

From the above analysis it was clear that 64% of the respondents has the feeling that their machines cause wear and tear and 36% of the respondents has the feeling that their machines doesn't cause any wear and tear.

6.8 DISTRIBUTION SHOWING THE QUALITY OF THE PRODUCTS AT THE DIFFERENT STAGES OF MANUFACTURING

Response	No. of respondents	Percentage
Often	28	56%
Seldom	20	40%
Never	2	4%
Total	50	100%

TABLE 6.8



CHART 6.8

INTERPRETATION

From the above analysis 56% of the respondents opted that they often check the quality of products at the different stages of manufacturing, 40% of the respondents opted that they seldom check the quality of products at the different stages of manufacturing, 4% of the respondents opted that they never check the quality of products at the different stages of manufacturing.

6.9 DISTRIBUTION SHOWING THE FIELDS OF EFFICIENT UTILIZATION OF FLOOR SPACE, POWER AND ENERGY

Response	No. of respondents	Percentage
1-3 (Poor)	12	24%
4-7 (Fair)	18	36%
8-10 (Good)	20	40%
Total	50	100%

TABLE 6.9

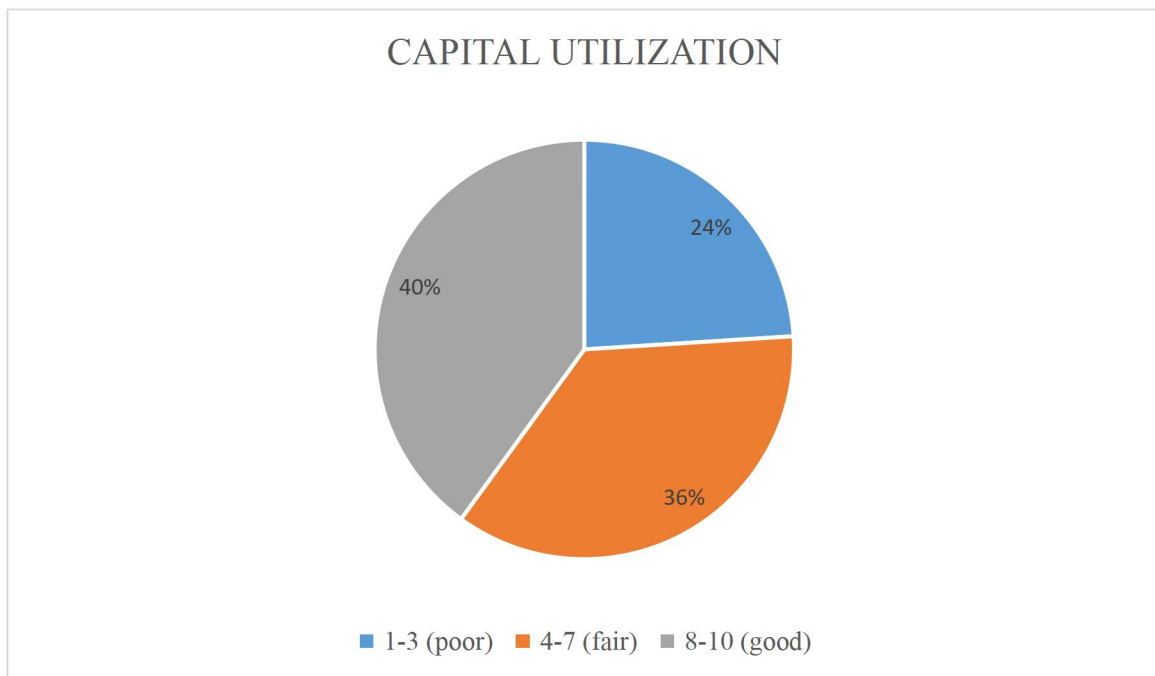


CHART 6.9

INTERPRETATION

From the above analysis 24% of the respondents has the opinion that utilization of floor and space and power and energy is poor, 36% of the respondents has the opinion that they use of floor and space and power and energy is fair, 40% of the respondents has the opinion that they effectively utilize the floor and space and power and energy.

6.10 DISTRIBUTION SHOWING THE EMPLOYEES PREFERENCE IN TYPE OF PLASTICS

Response	No. of respondents	Percentage
Chair	21	42%
Waste bin	20	40%
Table	9	18%
Total	50	100%

TABLE 6.10

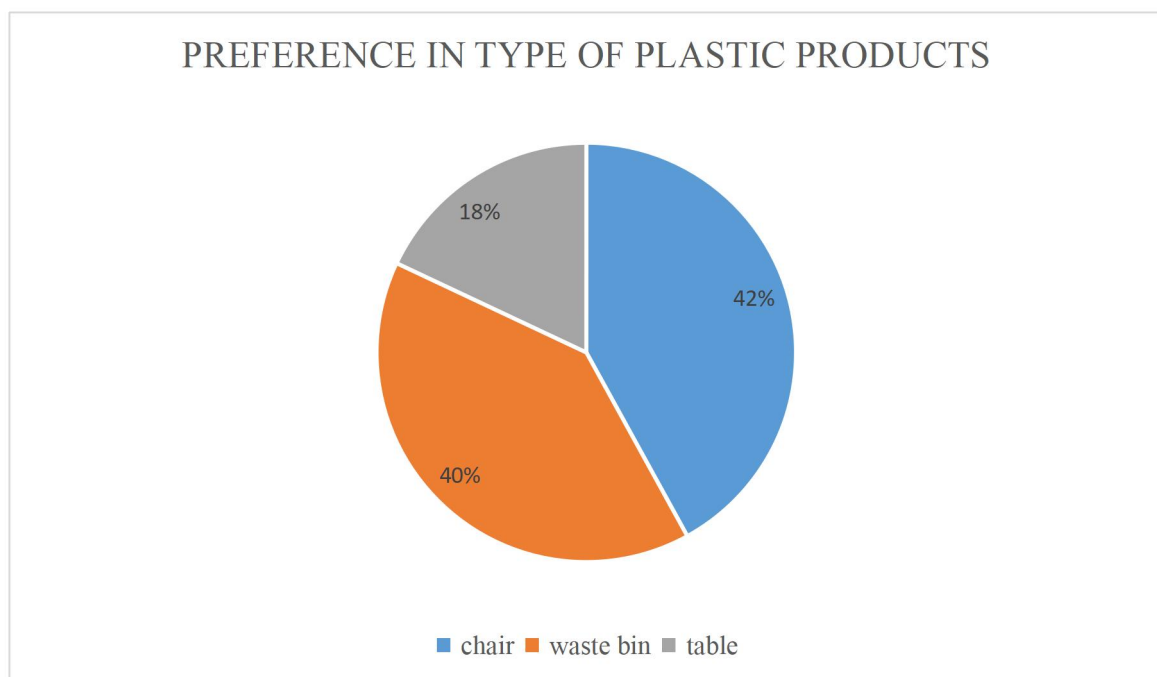


CHART 6.10

INTERPRETATION

From the above analysis 42% of the employees prefer chair, 40% of the employees prefer waste bin and 18% of the employees prefer table

6.11 DISTRIBUTION SHOWING THE EMPLOYEES OPINION REGARDING THE SUPPLIERS ASSESMENT AND MONITORING

Response	No. of respondents	Percentage
Yes	35	70%
No	15	30%
Total	50	100%

TABLE 6.11

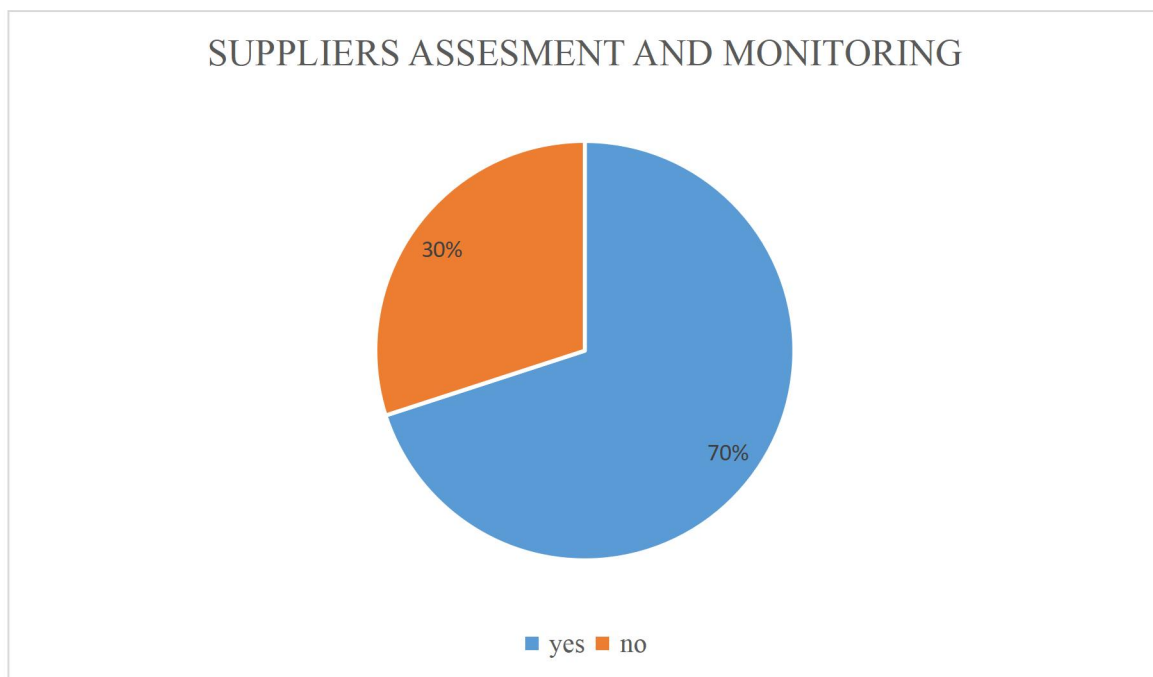


CHART 6.11

INTERPRETATION

From the above analysis it is clear that 70% of the respondents has the opinion that the company often assess and monitors the suppliers and 30% of the respondents has the opinion that the company doesn't assess and monitor the suppliers.

6.12 DISTRIBUTION SHOWING THE POINT OF SALES WHEN THE COMPANY IS ON PROFIT

Response	No. of respondents	Percentage
Multi	10	20%
Exclusive	8	16%
Hypermarkets	12	24%
Online	20	40%
Total	50	100%

TABLE 6.12

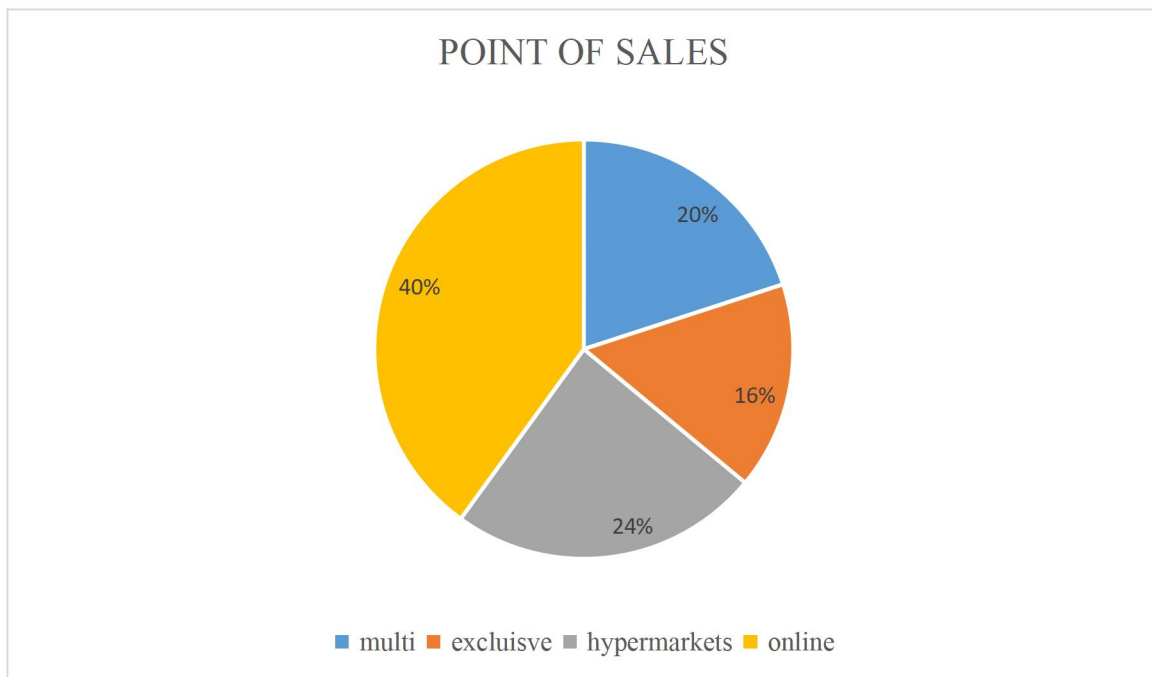


CHART 6.12

INTERPRETATION

From the above analysis it is clear that 20% of the respondents think that they get more sales through multi stores, 16% of the respondents think that they get more sales through exclusive, 24% of the respondents thin that they get more sales through hypermarkets, 40% of the respondents think that they get more sales through online.

6.13 DISTRIBUTION SHOWING THE CONDUCT OF COMPANY PROCESS AUDITING

Response	No. of respondents	Percentage
Very often	14	28%
Often	28	56%
Not often	8	16%
Total	50	100%

TABLE 6.13

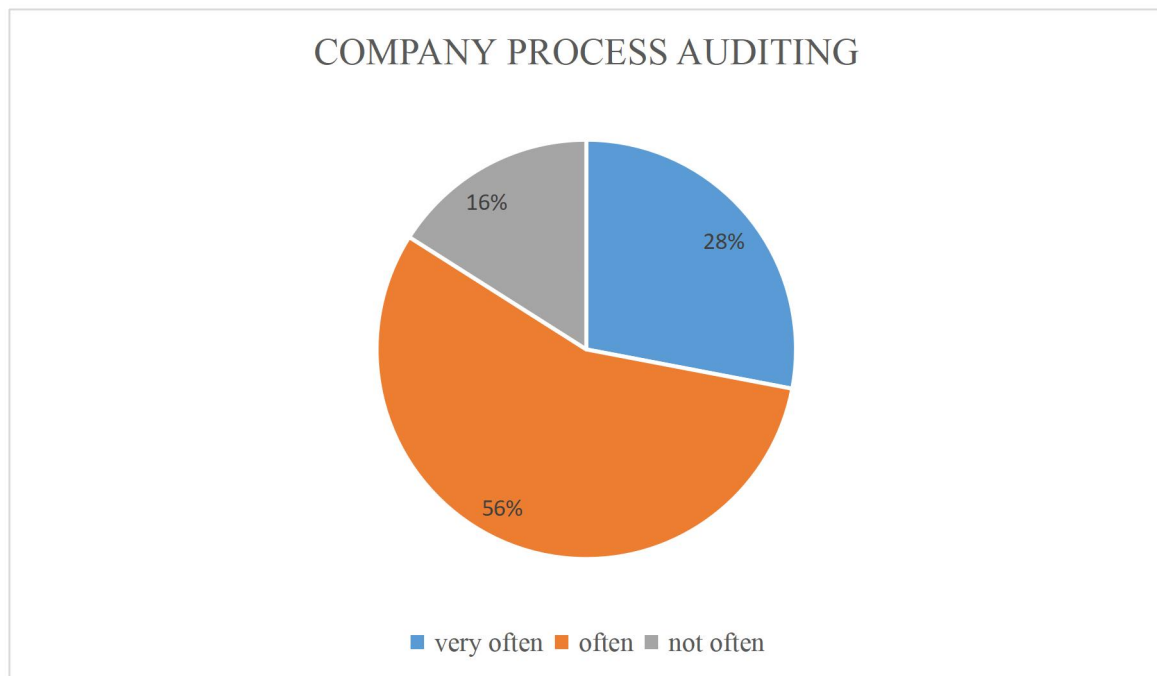


CHART 6.13

INTERPRETATION

From the above analysis 28% of the respondents say that the company conducts auditing very often, 56% of the respondents say that the company often conducts auditing and 16% of the respondents say that the company doesn't conduct auditing often.

6.14 DISTRIBUTION SHOWING THE MANUFACTURING PROCESS IS OUT DATED OR NOT

Response	No. of respondents	Percentage
Yes	22	44%
No	28	56%
Total	50	100%

TABLE 6.14

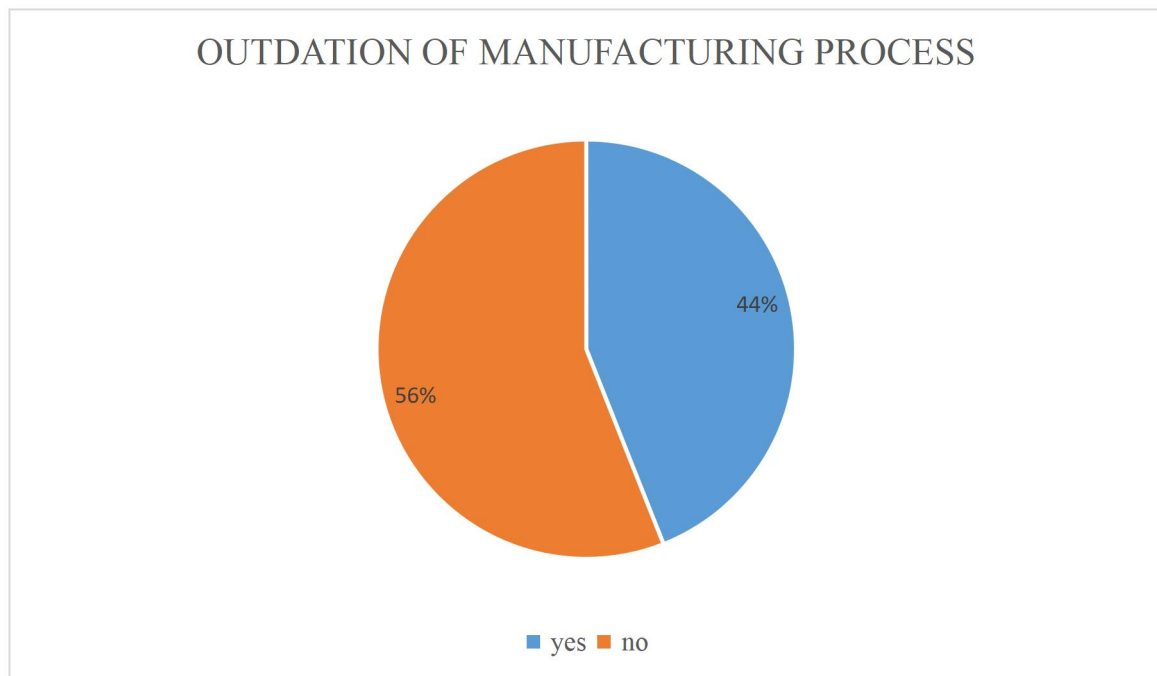


CHART 6.14

INTERPRETATION

From the above analysis it is clear that 44% of the employees feel that companies manufacturing process is outdated and 56% of the employees feel that company's process is not outdated

6.15 DISTRIBUTION SHOWING THE OPINION OF THE EMPLOYEES REGARDING WHETHER REJECTED ITEMS ARE IDENTIFIED AND SEGREGATED

Response	No. of respondents	Percentage
Yes	27	54%
No	23	46%
Total	50	100%

TABLE 6.15

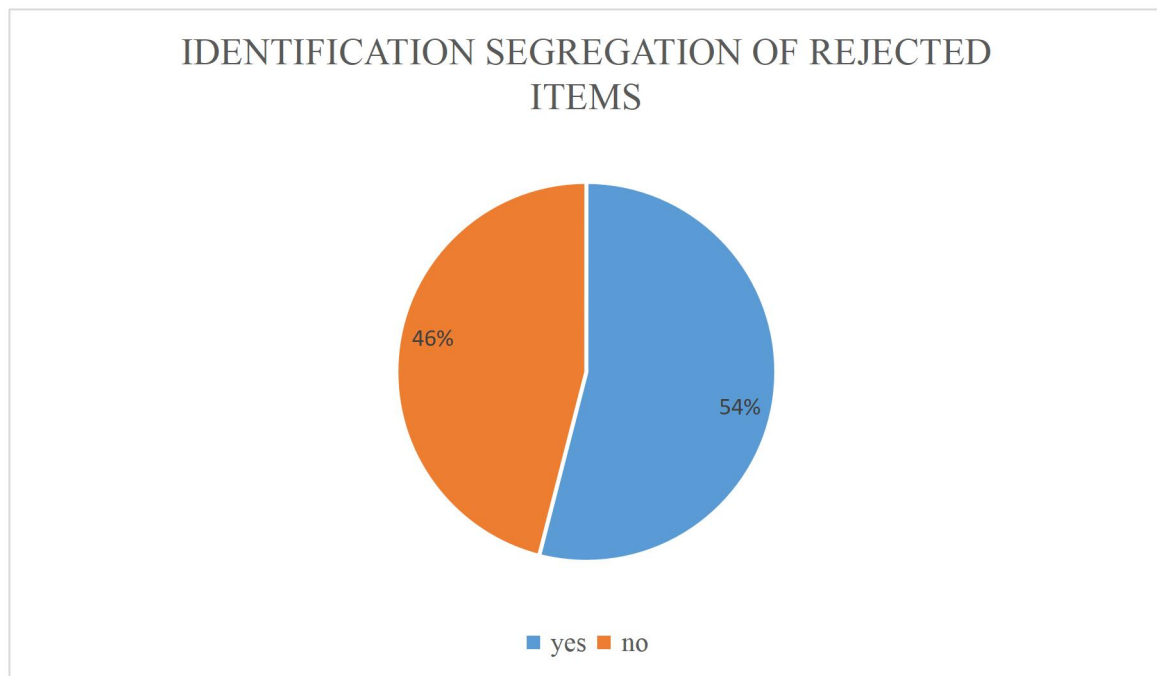


CHART 6.15

INTERPRETATION

From the above analysis it is clear that 54% of the employees support that the company identifies and segregate the rejected items and 46% of the employees doesn't support that the company identifies and segregates rejected items.

6.16 DISTRIBUTION SHOWING THE SAFETY ISSUES REGARDING THE MANUFACTURING PROCESS

Response	No. of respondents	Percentage
Yes	15	30%
No	35	70%
Total	50	100%

TABLE 6.16

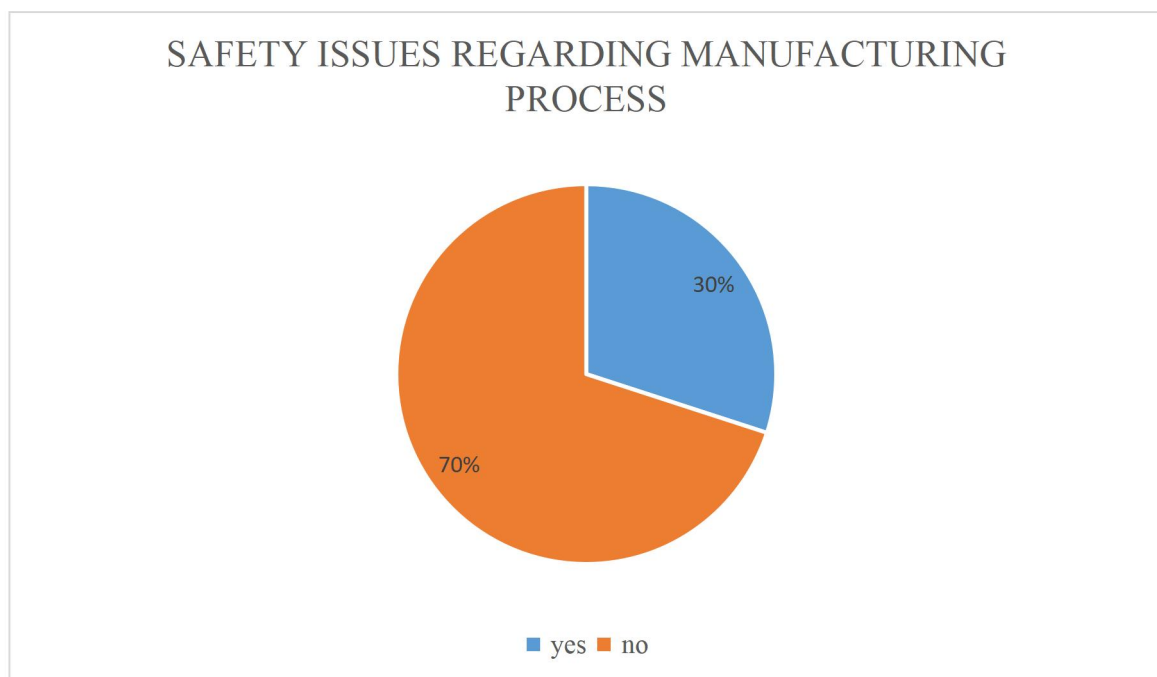


CHART 6.16

INTERPRETATION

From the above analysis it is clear that 30% of the employees believe that there are safety issues in their manufacturing processes and 70% of the employees believe that there is no safety issues in their manufacturing processes.

6.17 DISTRIBUTION SHOWING THE EMPLOYEES VIEW ON INVENTORY MANAGEMENT OF THE COMPANY

Response	No. of respondents	Percentage
Overstocking	10	20%
Accurate	30	60%
Understocking	10	20%
Total	50	100%

TABLE 6.17

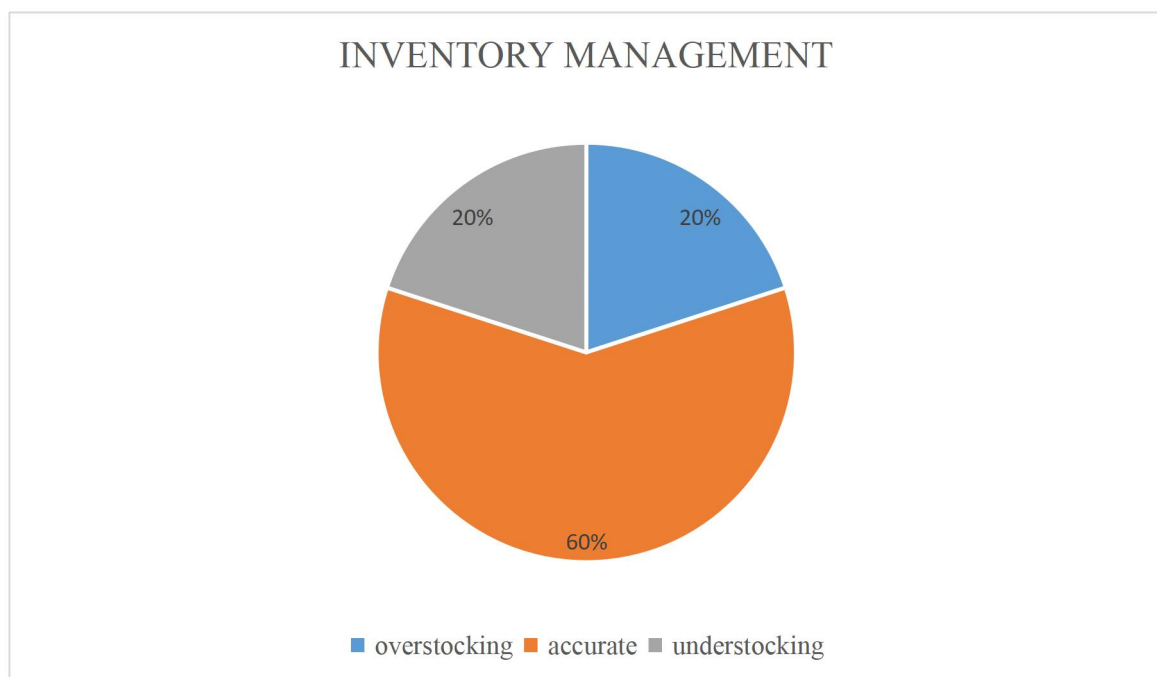


CHART 16.17

INTERPRETATION

From the above analysis it is clear that 20% of the employees believe that they are overstocking, 60% of the employees believe that their stocking is accurate and 20% of the employees feel that they have under stocks.

6.18 DISTRIBUTION SHOWING THE CONTROL TECHNIQUES USED FOR CONTROL OF PROCESSES

Response	No. of respondents	Percentage
Statistical process control	6	12%
Direct supervision and control	9	18%
Break even analysis	20	40%
Management by objectives	15	30%
Total	50	100%

TABLE 6.18

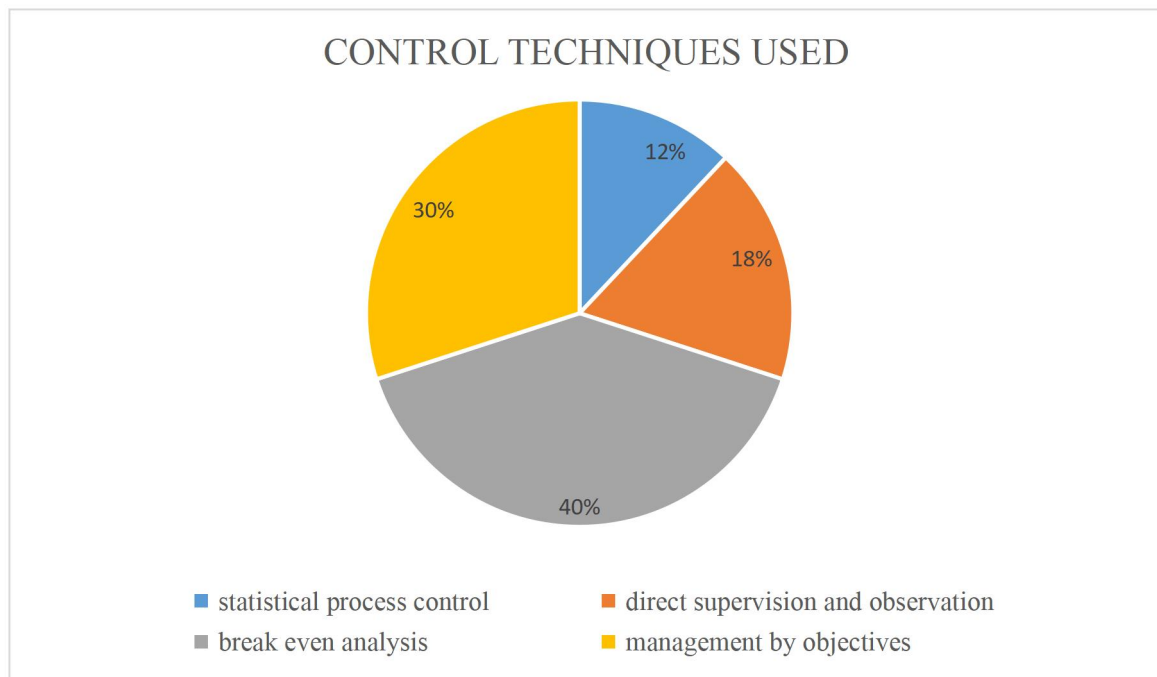


CHART 6.18

INTERPRETATION

From the above figure it was clear that 40% of the respondents say that break even analysis, 30% of the respondent say management by objectives, 18% of the respondent say direct supervision and observation, and rest 12% say statistical process control.

6.19 DISTRIBUTION SHOWING THE FAVOURABLE IMPACT OF LOCALITY ON PRODUCTIVITY

Response	No. of respondents	Percentage
Yes	33	66%
No	17	34%
Total	50	100%

TABLE 6.19

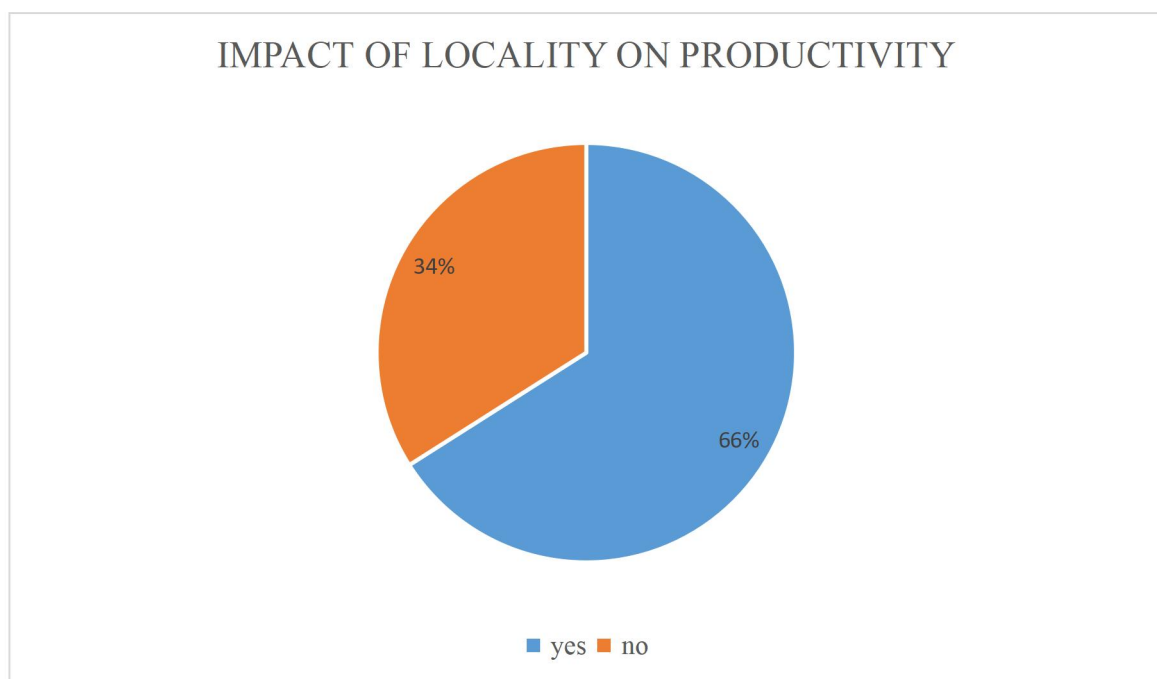


CHART 6.19

INTERPRETATION

From the above figure it was clear that 66% of the respondents believe that the locality has an impact on productivity and 34% of the respondents believe that the location doesn't have an impact on productivity

6.20 DISTRIBUTION SHOWING WHETHER MONITORING AND MEASURING DEVICES CONTROLLED AND CALIBRATED

Response	No. of respondents	Percentage
Always	24	48%
Seldom	26	56%
Never	0	0%
Total	50	100%

TABLE 6.20

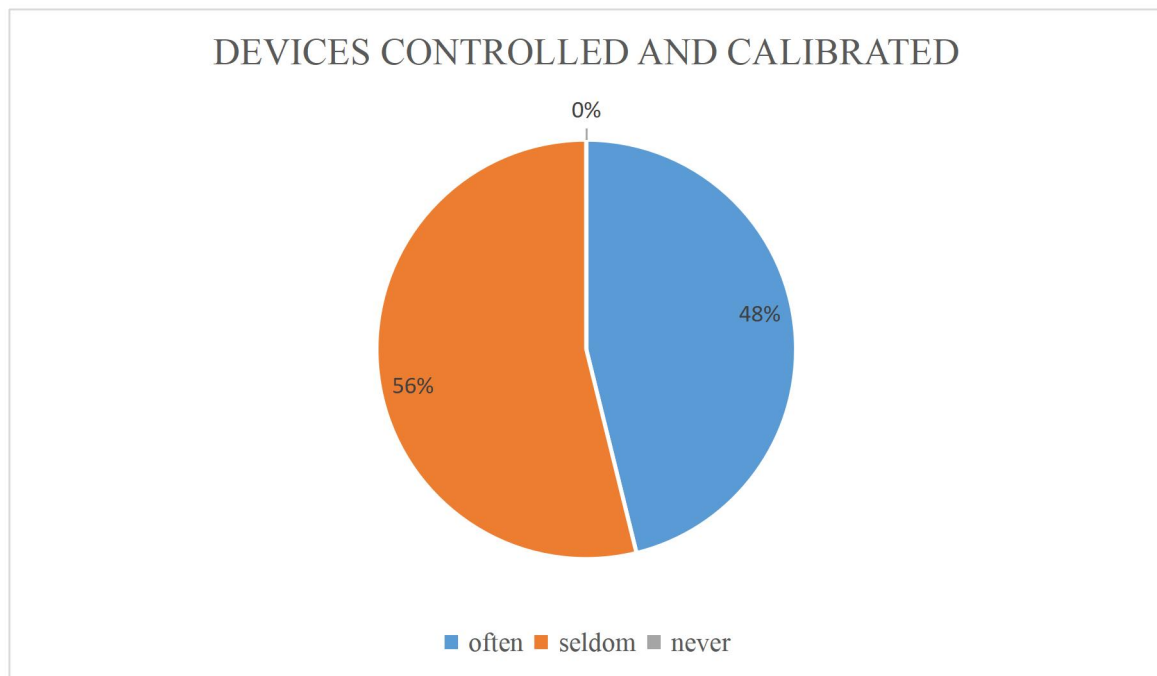


CHART 6.20

INTERPRETATION

From the above analysis it was clear that 52% of the respondents say that monitoring and measuring devices controlled and calibrated as seldom and rest 48% of the respondents say always.

CHAPTER – 7

FINDINGS, SUGGESTIONS AND CONCLUSIONS

FINDINGS

- 52% of employees are very much satisfied with the quality of products provided by the company, 48% of employees are satisfied with this.
- 42% of the raw materials affects manufacturing the most. 46% of the quality factor affects the manufacturing the most and 12% of the factor facilities and equipment affects manufacturing the most
- 44% of the employees feeling good with the internal and external audit program. 40% of the employees deal with a fair opinion and 16% feeling poor.
- 36% the employees says that changes in products are mainly focuses in quality.30% of the change expected in the price, 26% on the packaging and 8% on the others.
- 70% of the employees says that company is preparing the quality manual for the evaluation of variation in the quality plastics and 30% of the employees denies this opinion.
- 16% of the respondents says that advertising is one of the factor that affect the purchase of product, 32% of respondents says price, 46% of the respondents says quality and rest 6% of the respondents says public awareness.
- 64% of the respondents has the feeling that their machines cause wear and tear and 36% of the respondents has the feeling that their machines doesn't cause any wear and tear.
- 56% of the respondents opted that they often check the quality of products at the different stages of manufacturing, 40% of the respondents opted that they seldom check the quality of products at the different stages of manufacturing, 4% of the respondents opted that they never check the quality of products at the different stages of manufacturing.
- 70% of the respondents has the opinion that the company often assess and monitors the suppliers and 30% of the respondents has the opinion that the company doesn't assess and monitor the suppliers.
- 42% of the employees prefer chair, 40% of the employees prefer waste bin and 18% of the employees prefer table
- 70% of the respondents has the opinion that the company often assess and monitors the suppliers and 30% of the respondents has the opinion that the company doesn't assess and monitor the suppliers.

- 20% of the respondents think that they get more sales through multi stores, 16% of the respondents think that they get more sales through exclusive, 24% of the respondents think that they get more sales through hypermarkets, 40% of the respondents think that they get more sales through online.
- 28% of the respondents say that the company conducts auditing very often, 56% of the respondents say that the company often conducts auditing and 16% of the respondents say that the company doesn't conduct auditing often.
- 44% of the employees feel that companies manufacturing process is outdated and 56% of the employees feel that company's process is not outdated
- 54% of the employees support that the company identifies and segregate the rejected items and 46% of the employees doesn't support that the company identifies and segregates rejected items.
- 30% of the employees believe that there are safety issues in their manufacturing processes and 70% of the employees believe that there is no safety issues in their manufacturing processes.
- 20% of the employees believe that they are overstocking, 60% of the employees believe that their stocking is accurate and 20% of the employees feel that they have under stocks.
- 40% of the respondents say that break even analysis, 30% of the respondent say management by objectives, 18% of the respondent say direct supervision and observation, and rest 12% say statistical process control.
- 66% of the respondents believe that the locality has an impact on productivity and 34% of the respondents believe that the location doesn't have an impact on productivity
- 52% of the respondents say that monitoring and measuring devices controlled and calibrated as seldom and rest 48% of the respondents say always.

SUGGESTIONS

- The company should consider exporting products by collaborating with foreign companies in technology and marketing, in order to keep up with the competitors.
- The various departments should be supplied with more skilled work force so that efficiency can be increased.
- From the above analysis, the employees feel that companies manufacturing process is outdated. New methods of production can be introduced.
- Monitoring and measuring devices can be controlled and calibrated always to improve efficiency in production.

CONCLUSION

After the study on manufacturing process at National plastics could evaluate the interdependence of various departments on the manufacturing process contributing to manufacture the various plastic products. The employees have occupied maximum floor and space in order to maximize and ensure smooth functioning of the various steps involved. They could cope up with their competitors as they sale their products with adequate rate by reducing unnecessary costs and ensuring apt quality to their products.

This company have sales on all the point of sales including multi-stores, exclusive outlets, hypermarkets and the latest medium through online market. The employees working over there are satisfied with the working conditions and also are satisfied with their products.

The various steps of manufacturing are monitored and assessed in order to ensure proper quality at each stages of manufacturing. The company often conducts internal and audit programs

ANNEXURE

**TOPIC: A STUDY ON MANUFACTURING PROCESS IN NATIONAL
PLASTICS**

QUESTIONNAIRE

Please take a few minutes to answer the questions mentioned below.

01. Are you satisfied with the quality of your products?

- Very much satisfied
- Satisfied
- Not satisfied

02. According to you which factor affects manufacturing the most?

- Raw materials
- Quality
- Time
- Facilities and Equipment

03. What is your opinion about internal and external audit programme?

- Satisfied
- Not satisfied
- Neutral

04. What kind of change, if any do you expect in your products?

- Quality
- Price
- Package
- Others

06. Occupation

- Government Employee
- Self Employed
- Unemployed
- Pensioner/ Retired

05. Do you have quality manual?

- Yes
- No

06. According to you which factor makes a customer more satisfied while having the purchase of products?

- Advertising
- Price
- Quality
- Public awareness

07. Do your machineries often face any wear and tear?

- Yes
- No

08. How often you check the quality of products at the different stages of manufacturing?

- Weekly
- Once in a month
- Once in a year
- Never

09. On scale of 10, how much you rate your company in the field of efficient utilization of floor space, power and energy?

- Above 5
- Below 5
- 10

10. Which type of plastic products are marketing more?

- Waste basket
- Pedal bin
- Cycle basket
- Others

11. Do your suppliers are monitored?

- Yes
- No

12. Through which point of sales, do you think the company is more profitable?

- Wholesale
- Exclusive
- Hypermarket
- Online

13. How often does your company process auditing?

- Monthly
- Weekly
- Once in a year

14. Do you think that your manufacturing process is outdated?

- Yes
- No

15. Does rejected items identified and segregated?

- Yes
- No

16. According to you, is there is any safety issues regarding the manufacturing process?

- Yes
- No

17. What is your view on inventory management?

- Over stocking
- Accurate
- Under stocking

18. Which control technique do you prefer for control of manufacturing process?

- Satisfied Process Control
- Direct Supervision and Observation
- Break Even Analysis
- Management by Objectives

19. Do you think that your locality has a favourable impact on production?

- Yes
- No

20. Are your monitoring and measuring devices are controlled?

- Always
- Seldom
- Never

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