

A STUDY ON LEAN MANAGEMENT IN MANUFACTURING PLANT

Submitted in partial fulfillment of the requirements for the award of

MASTER OF BUSINESS ADMINISTRATION

By

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**DEPARTMENT 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**

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DECEMBER 2023



SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
CATEGORY - 1 UNIVERSITY BY UGC**

SCHOOL OF MANAGEMENT STUDIES

BONOFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **ABINAYA NS 42410001** who carried out the Project Training “**A STUDY ON LEAN MANAGEMENT IN MANUFACTURING PLANT**” under my supervision September-2023.

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DECLARATON

I **ABINAYA NS (42410001)** hereby declare that the Project Report entitled as **“A STUDY ON LEAN MANAGEMENT IN MANUFACTURING PLANT”** done by me under the guidance of **DR.R. JEYA RANI** is submitted in partial fulfillment of the requirements for the award of Master in Business Administration degree.

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ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to the 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, Dean – School of Management Studies** and **Dr. A. Palani, Head – School of Management Studies** 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 **DR. R. JEYA RANI** for her 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 Management Studies** who were helpful in many ways for the completion of the project.

ABINAYA NS

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CHAPTER 1

INTRODUCTION

Lean is a set of **management** practices that produces value for customers quickly through a focus on reducing delays and eliminating waste, which results in increased quality and lower cost. **Lean** is founded on two pillars: respect for people and continuous improvement. Just-in-time manufacturing tries to match production to demand by only supplying goods which have been ordered and focuses on efficiency, productivity, and reduction of "wastes" for the producer and supplier of goods. Lean manufacturing adopts the just-in-time approach and additionally focuses on reducing cycle, flow, and throughput times by further eliminating activities which do not add any value for the customer. Lean manufacturing also involves people who work outside of the manufacturing process, such as in marketing and customer service.

1. 1 What is Lean

Lean, also denoted to as Lean Management, Lean Manufacturing (LM), Lean Enterprise, or Lean Production, is a set of principles, tools and techniques that many industrial organizations or companies opt to implement, in order to enhance the efficiency of production and overall customer value while at the same time eliminating waste (Mwacharo, 2013).

Lean is generally used in manufacturing and supply chain management but it is a philosophy that can be applied to an entire industry organization (Mwacharo, 2013).

The primary idea of LM is to supply better quality commodities to more consumers at a lower price. In doing so, it eventually leads society to more prosperity (Melton, 2004). The importance of creating an organized production system based on LM is enormous. The main points of LM are (Melton, 2005; Womack and Jones, 2003):

- Eliminate waste in the production process
- Build quality into the production process
- Reduce costs.
- Create and formulate tools that will add value to the organization's functional performance.

The introduction of lean thinking in business is composed of five discrete phases that form a continuous process since lean embeds the notion of continuous improvement:

1. Analyzing and documenting the current process and measuring performance
2. Accurately defining value and the value stream network.
3. Identifying undesirable effects and suggesting changes to eliminate the source of these effects.
4. Applying recommended changes
5. Measure the achieved performance.

1.2 Origin of Lean

Lean manufacturing is the name under which the Toyota Production System (TPS) became widely known and later on adopted by many companies worldwide (Shimokawa et al., 2009). It is the fruit of the persistent and yearly research and efforts of Toyota Motor Company's chief production engineer Taiichi Ohno, under the supervision of the engineer and one of Toyota family owners, Eiji Toyoda, to increase productivity and efficiency of the corporation plant in Nagoya, Japan, in times of severe difficulties for the company. The trigger for these makeovers was a visit and subsequently a set of comparisons to Ford's Rouge automotive manufacturing facility in Detroit, USA. Ohno set off to bring some of the high-efficiency production characteristics he witnessed in Detroit, hoping to aid Toyota increase productivity and improve its economics; instead, he established a system that proved to be a breakthrough.

1.3 Lean principles

The three major lean thinking concepts are (Womack and Jones, 2003):

- Value identification
- Waste elimination
- Flow (of value to the customer) generation

1.4 Objectives of Lean Manufacturing

1. Reducing defects and unnecessary physical wastage, including excess use of raw material inputs.
2. Reduce production cycle time by reducing waiting times between processing stages.
3. Minimize inventory levels at all stages of production, particularly works-in-progress between production stages
4. Improve labor productivity by reducing the idle time of workers.
5. Effective utilization of equipment and space by eliminating bottlenecks and minimizing machine downtime
6. Flexibility in production with minimum changeover costs and changeover time.
7. Increasing output by achieving the above-mentioned objectives.

1.4 OBJECTIVE OF THE STUDY

- To enhance the level of morale of employees.
- To create a loyal, contented workforce in organization.
- To enable the workers to live comfortably and happily.
- To evaluate the level of employee safety
- To know the inter personnel relationship of the workers in Daimler India commercial vehicles

1.5 SCOPE OF THE STUDY

The research question can be reframed. If manufacturing can achieve such significant improvement through application of Lean in; quality, productivity, cost and lead-time, why not shipbuilding?

Optimistic indications are available through; case studies, opinion of experts, and observation of gradually improving shipyard all over the world. Evidence of improving shipbuilding efficiency through Lean Manufacturing application is available. Further studies will confirm the possibility. In any case, the purpose of lean manufacturing is to improve product cycle time, cost competitiveness, and quality by eliminating any waste in the manufacturing process through continuous improvement by a motivated work force. All these are required by shipbuilding industry as well.

Old shipyard can use relatively standardized layout to create modular workshop in which there is a constant flow of basic and intermediate products, assembled in most cases on moving lines. With the foregoing simple steps, the shipbuilding industry can move closer to lean application. Therefore, there appears to be wide scope of implementing lean principles and practices in shipbuilding.

1.6 LIMITATIONS OF THE STUDY

As regards limitations faced by shipbuilding in implementing lean, there are examples where shipyards have overcome hurdles and projected themselves as world class shipbuilders by implementing lean. Limitations can gradually improved with an effort to convert them as opportunities. Limitations in detail have been addressed in chapter under the heading ‘Definition of Research Problems’.

CHAPTER –II

REVIEW OF LITERATURE

Original lean thinking was closely associated with the Toyota Production System and the work of Ohno (1988), focusing on eliminating excess, waste and unevenness. The superior performance of LM systems has encouraged the idea of transferring LM to non-Japanese and non-automotive situations, with results proving the exemplary nature of this concept.

Lamming (2022), generalized the concept of lean to encompass other industries and extended its application from manufacturing firms to supply chain management. A lean supply chain as defined by Lamming was “... an arrangement [which] should provide a flow of goods, services and technology from supplier to customer (with associated flows of information and other communications in both directions) without waste”. Now, lean thinking not only has been applied in manufacturing industries, but also is being adopted by service industries (Pool et al., 2010). Gorane and Kant (2014) identified supply chain practices (SCPs) as the most important strategies for medium and large organisations and has become a prerequisite for success in the global market (Wisner and Stanley, 2008). SCPs act as important tools to achieve competitive advantage together with strengthening organisational competitiveness.

Pool et al. (2022) in their study consider how the principle of ‘flow’ and ‘pull’ production-suggesting a regular, demand-driven product flow may be implemented for the semi-process industry by introducing cycle schedules. The lean concept embraces a wide range of activities and tools within and beyond an organisation’s boundary. Loader (2010) makes a contribution to the research debate examining relationships between public and private sector procurement practices in UK local authorities (Hines et al., 2008). Salleh et al. (2012) developed a simulation model using Delmia Quest Software and used lean kaizen to improve flow by increasing productivity and reducing working in progress. Steinberg and De Tomi (2010) modelled a supply chain to identify and understand the points of value creation and places for possible improvement interventions.

Mothersell et al. (2021) argued that the change to lean also identifies and discusses culture and people systems in harmony with lean and parallel organisational structures.

According to Michael Gnanaraj et al. (2020), Lean Six Sigma is tailor-made to suit large size organisations. There has been little effort on implementing this paradigm in small and medium enterprises and this will help large organisations to achieve global competitiveness. The research by Dombrowski et al. (2012) showed that a multitude of different knowledge flows can occur during the implementation of lean production systems and that a decentralized, role-specific approach can help to identify adequate methods of knowledge management.

Gnoni et al. (2020) proposes innovative design of a near-miss management system (NMS) based on the integration of principles of lean management in occupational safety for a worldwide automotive supplier firm. Salleh et al. (2012) proposed a green lean total quality (GLTQ) information management system that comprises of information management (IM) in environmental management system (EMS) practices which is integrated to TQM with LM principles. This proposed green LTQM IM model can be conducted to access the status of IM in any company. Nivrithi et al. (2013) have improved process capability to increase productivity by reducing cycle time.

Mulrow (2020) suggests that literature review is search for whole truth, rather than just part of it, and therefore is a fundamentally scientific activity'. During the last 3 decades, lean research has reached a level of maturity. To take a stock of knowledge accumulated in these three decades, comprehensive literature survey has been adopted as the research methodology. It has been successfully applied in analyzing research on other manufacturing systems such as Total Quality Management (Ahire, Landeros & Gelhar, 1995), Six Sigma (Brady & Allen, 2006), Just-in-time philosophy (Gelhar & Stamm, 1991) as well.

Narayanamurthy and Gurumurthy (2020) reviewed literature on lean assessment to understand its evolution. The Article by Samuel, Found & Williams, 2015, attempted to cover the progression of lean from its origin as are presentation of Toyota Production System to a movement that has changed management systems in diverse sectors. Jasti and Kodali (2014) in their article conducted an extensive review of empirical research in lean. The extensive research though insightful is limited to empirical research in 178 articles in 24 journals. Another article by Jasti and Kodali (2019b) performed analysis of literature from 1918 to 2021. Bhamu and Singh-Sangwan (2018) reviewed 209 research papers with the purpose of reporting diverse definitions, scopes, objectives and tools.

Stone (2018) conducted systematic literature review to thematically organize lean literature till 2009 into phases. Negrão et al., 2017 conducted review of literature of 83 studies with a view to provide an understanding of the degree of adoption of lean and its relationship with organizational performance.

Hu, Mason, Williams and Found (2018) reviewed literature pertaining to implementation of lean in SMEs. Hines et al. (2018) reviewed lean thinking and its progression over time identifying four key stages in its development. Holweg (2017) and Moyano Fuentes

Sacristan Díaz (2018) focused on aspects on lean production. The present study extends efforts of previous - studies by including contemporary research till 2017 providing an overview of developments that have taken place in the field of lean management over past three decades. The study aims to analyses diffusion of lean globally, specifically in the context of emerging economies, which is considered prudent considering rising popularity of lean as an operational model as well as identifying prevalent themes along with the new themes that have emerged such as Industry 4.0 which have not been addressed in earlier works.

Pravin shaswat at, el. (2018) apply the value stream mapping on bearing industry and reduce the work in process and inventory and lead time. In this article gives the information about value stream mapping and gives the methodology for the implementation of VSM. In this case study paper to apply the 5s and kanban system for the reduction of work in process inventory and lead time.

According to Taho yang yiyo kag (2018) suggested and implement lean production system for fishing net manufacturing, use the various lean tools and Simulation method and make to order (MTO) process are apply for the regular shipment. And also use the VSM tool and produce future state map and increase service level and reduce lead time, also says that gives the guide line for the implement the value stream mapping. How to implement VSM and which factor to be consider, and after says that lean manufacturing is apply in any manufacturing industry successfully and reduce cost by elimination of waste.

Santosh kumar et, al. (2018) apply the lean tool by method time measurement and line balance efficiency and reduce the cycle time in a truck body assembly line and improve efficiency in that product line. Also says that lean manufacturing is a business philosophy that continuously improves the process involve in manufacturing.

According to K. Venkataraman (2017) says that various organizations are implement lean manufacturing in recent year for reducing and eliminate waste. In this article use the value stream mapping for reducing cycle time of crank shaft. Various type of tools are applied and get benefits, create a current state map of the crank shaft assembly line and also creates a future state map for improving process of crank shaft assembly, here is a three-assembly available for producing a crank shaft. And improve the process and reduce waste so that apply three type kaizens, and also used the analytical hierarchical process (AHP) for decision making which process are apply and after than get result of the crank shaft assembly to reduce the inventory, and apply the single piece flow for crank shaft manufacturing and give quick response to the customer demand.

P. Arunagiri et, al. (2017) identification of high impact lean tool in auto mobile industry using weighted average method and they study about 91 industry and using 30 or more lean tools used get a result by weighted average method to maximum useful tools in automobile industry, first one is 5s lean tool are preferred to elimination waste.

Also, Ratneshwar singh et, al. (2016). TPM implementation in machine shop and reduce break down time and improve performance efficiency. TPM depend on various paler, like 5s, jishu- hozen, planned maintenance, quality maintenance, kaizen office, and safety, health & environment are applied one by one and improve the quality of product with overall equipment effectiveness.

Boppana v. chaudhary et, al. (2016), implement the lean manufacturing in a pharmaceutical company, in this paper take a case study of the product line is creams and ointment. Also in industry problem was fixed operating cost and inability to supply products. In this paper improve the operation with help of lean manufacturing so detect the problem where is the waste are occurs, and use the lean tools is VSM. VSM is a mapping method, with the help of detecting value added and non-value-added process. Prepare a current state map and use the 5-why method for the collect information. And after create future state map for the improvement with the help of 5s tool. and also used cellular manufacturing and after get the result is reduce inventory, and customer satisfaction, and on time delivery, total cycle time reduced, non-value added time has been decreased. And reduced the floor space area.

Jennies angelis et, al.(2015) Lean is a globally competitive standard for product assembly of discreet parts. Successful Lean application is conditioned by an evolutionary problem-solving ability of the rank and file. This is in itself contingent on employee involvement in improvement programs and the implementation of appropriate practices.

Rachna shah et.al.(2015)Lean manufacturing is an integrated socio technical system whose main objective is to eliminate waste by concurrently reducing and minimizing supplier, customer, and internal variability. And according to Horacio Soriano-Meier et.al.2001 Lean manufacturing and lean production is a synonyms of lean management. Lean manufacturing can be achieved through time. that is not possible to use it as a panacea to solve short term competitive. And also lean manufacturing is applied in any industry. In this article applying lean management for the hospital and improve the quality of the service, and give customer satisfaction and service of the patient. All the improvement are success by lean tools, in this study apply the lean tool kaizen for the improving the service level and 5s are also apply for cleaning and systematic activities.

CHAPTER III

RESEARCH METHODOLOGY

3.1 RESEARCH METHODOLOGY

Research methodology is a way of explaining how a researcher intends to carry out their research. It's a logical, systematic plan to resolve a research problem. A methodology details a researcher's approach to the research to ensure reliable, valid results that address their aims and objectives.

3.2 METHOD OF DATA COLLECTION

Data is a collection of facts, figures, objects, symbols, and events gathered from different sources. Organizations collect data to make better decisions. Without data, it would be difficult for organizations to make appropriate decisions, and so data is collected at various points in time from different audiences. You can categorize data collection methods into primary methods of data collection and secondary methods of data collection.

3.2.1 Primary methods of data collection

Primary data is collected from the first-hand experience and is not used in the past. The data gathered by primary data collection methods are specific to the research's motive and highly accurate. Primary data collection methods can be divided into two categories: quantitative methods and qualitative methods.

Quantitative method

Quantitative techniques for market research and demand forecasting usually make use of statistical tools. In these techniques, demand is forecast based on historical data. These methods of primary data collection are generally used to make long-term forecasts. Statistical methods are highly reliable as the element of subjectivity is minimum in these methods.

1. Time Series Analysis - The term time series refers to a sequential order of values of a variable, known as a trend, at equal time intervals. Using patterns, an organization can predict the demand for its products and services for the projected time.

2. Smoothing Techniques - In cases where the time series lacks significant trends, smoothing techniques can be used. They eliminate a random variation from the historical demand. It helps in identifying patterns and demand levels to estimate future demand. The most common methods used in smoothing demand forecasting techniques are the simple moving average method and the weighted moving average method.

3. Barometric Method - Also known as the leading indicators approach, researchers use this method to speculate future trends based on current developments. When the past events are considered to predict future events, they act as leading indicators.

Qualitative Methods

Qualitative methods are especially useful in situations when historical data is not available. Or there is no need of numbers or mathematical calculations. Qualitative research is closely associated with words, sounds, feeling, emotions, colors, and other elements that are non-quantifiable. These techniques are based on experience, judgment, intuition, conjecture, emotion, etc. Quantitative methods do not provide the motive behind participants' responses, often don't reach underrepresented populations, and span long periods to collect the data. Hence, it is best to combine quantitative methods with qualitative methods.

1. Surveys - Surveys are used to collect data from the target audience and gather insights into their preferences, opinions, choices, and feedback related to their products and services. Most survey software often a wide range of question types to select. You can also use a ready-made survey template to save on time and effort. Online surveys can be customized as per the business's brand by changing the theme, logo, etc.

2. Polls - Polls comprise of one single or multiple-choice question. When it is required to have a quick pulse of the audience's sentiments, you can go for polls. Because they are short in length, it is easier to get responses from the people. Similar to surveys, online polls, too, can be embedded into various platforms. Once the respondents answer the question, they can also be shown how they stand compared to others' responses.

3. Interviews - In this method, the interviewer asks questions either face-to-face or through telephone to the respondents. In face-to-face interviews, the interviewer asks a series of questions to the interviewee in person and notes down responses. In case it is not feasible to meet the person, the interviewer can go for a telephonic interview. This form of data collection is suitable when there are only a few respondents. It is too time-consuming and tedious to repeat the same process if there are many participants.

4. Delphi Technique - In Delphi method, market experts are provided with the estimates and assumptions of forecasts made by other experts in the industry. Experts may reconsider and revise their estimates and assumptions based on the information provided by other experts. The consensus of all experts on demand forecasts constitutes the final demand forecast.

5. Focus Groups - In a focus group, a small group of people, around 8-10 members, discuss the common areas of the problem. Each individual provides his insights on the issue concerned. A moderator regulates the discussion among the group members. At the end of the discussion, the group reaches a consensus.

6. Questionnaire - A questionnaire is a printed set of questions, either open-ended or closed ended. The respondents are required to answer based on their knowledge and experience with the issue concerned. The questionnaire is a part of the survey, whereas the questionnaire's end goal may or may not be a survey.

3.2.2 Secondary Methods of Data Collection

Secondary data is the data that has been used in the past. The researcher can obtain data from the sources, both internal and external, to the organization.

Internal sources of secondary data:

- Organization's health and safety records
- Mission and vision statements
- Financial Statements
- Magazines
- Sales Report
- CRM Software
- Executive summaries

External sources of secondary data:

- Government reports
- Press releases
- Business journals
- Libraries
- Internet

The secondary data collection methods, too, can involve both quantitative and qualitative techniques. Secondary data is easily available and hence, less time-consuming and expensive as compared to the primary data. However, with the secondary data collection methods, the authenticity of the data gathered cannot be verified.

3.3 ANALYTICAL TOOLS FOR THE STUDY

The analytical tools used for this study is

- Percentage analysis
- Chi Square test
- Paired sample T test

3.4 SAMPLE SIZE

Sampling size refers to the number of respondents from the total population. The sample size of this project is 100.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

PERCENTAGE ANALYSIS

TABLE: 4.1

DISTRIBUTION OF RESPONDENTS BY THEIR AGE

AGE	NO. OF RESPONDENTS	PERCENTAGE
18 - 25	20	20
26-30	39	39
31-40	31	31
Above 40	10	10
TOTAL	100	100

Source Data: Primary Data

INTERPRETATION:

As per the above table it is clear that out of the 100 respondents, 20 percentages of the respondents have less than 18-25 years, 39 percentages of the respondents have 26-30 years age group. 31 Percentages of the respondent have 31-40 years age group. 10 Percentages of the respondent have above 40 years old age group.

CHART: 4.1

DISTRIBUTION OF RESPONDENTS BY THEIR AGE

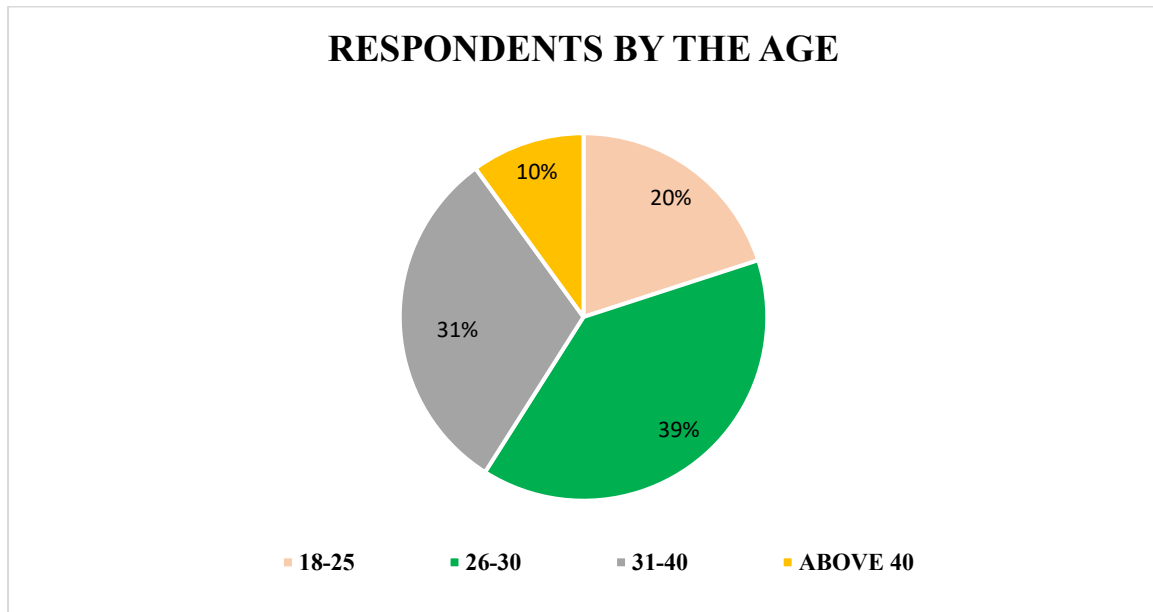


TABLE: 4.2

DISTRIBUTION OF RESPONDENTS BY THEIR GENDER

GENDER	NO.OF RESPONDENTS	PERCENTAGE
MALE	25	25
FEMALE	75	75
TOTAL	100	100

Source Data: Primary Data

INTERPRETATION:

The above data indicates that 75% of respondents were female and 25% were male.

CHART: 4.2

**CHART SHOWING DISTRIBUTION OF RESPONDENTS BY THEIR
GENDER**

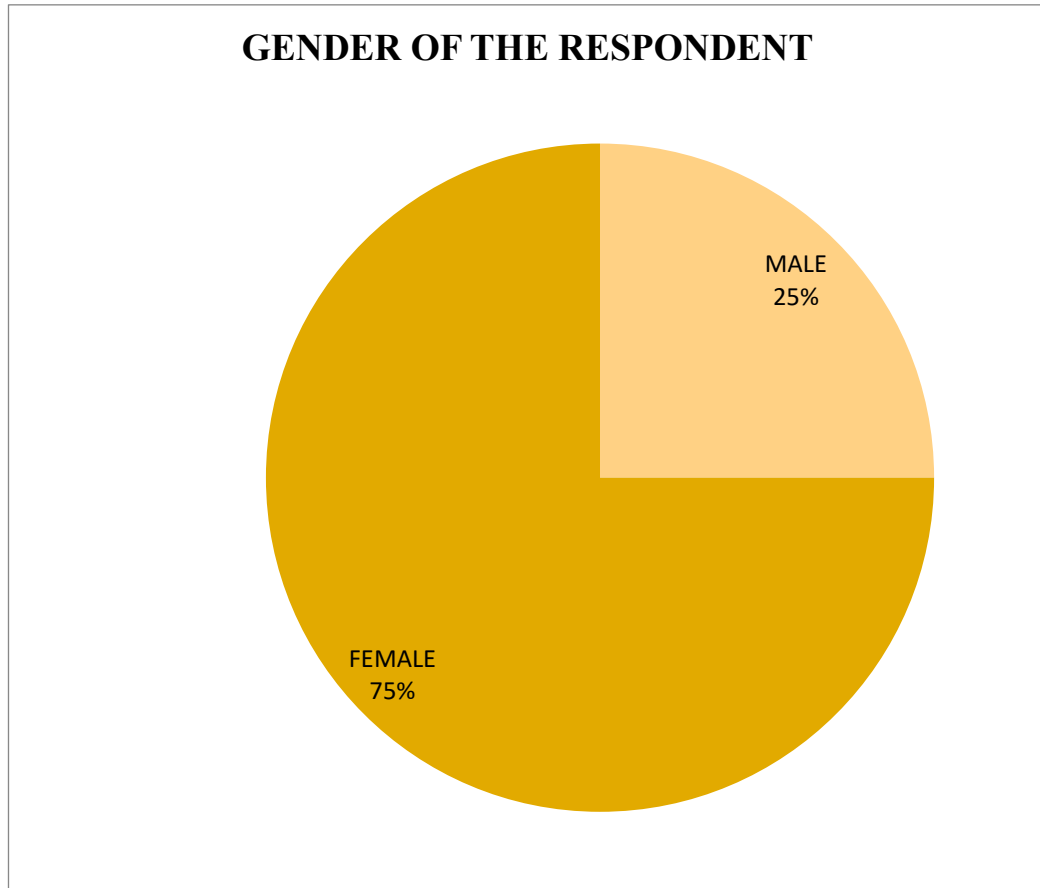


TABLE: 4.3

SHOWING EDUCATIONAL QUALIFICATIONS

QUALIFICATION	EMPLOYEES	PERCENTAGE
SSLC	28	28
HSC	22	22
UG	15	15
OTHERS	25	25
TOTAL	100	100

Source Data: Primary Data

INFERENCE:

As per the above table it is clear that out of the 100 respondents, 28 percentage of the respondents are SSLC, 22 percentage of the respondents are HSC, 15 percentage of the respondents are Under Graduate, 25 percentage of the respondents are others.

CHART 4.3

SHOWING EDUCATIONAL QUALIFICATIONS

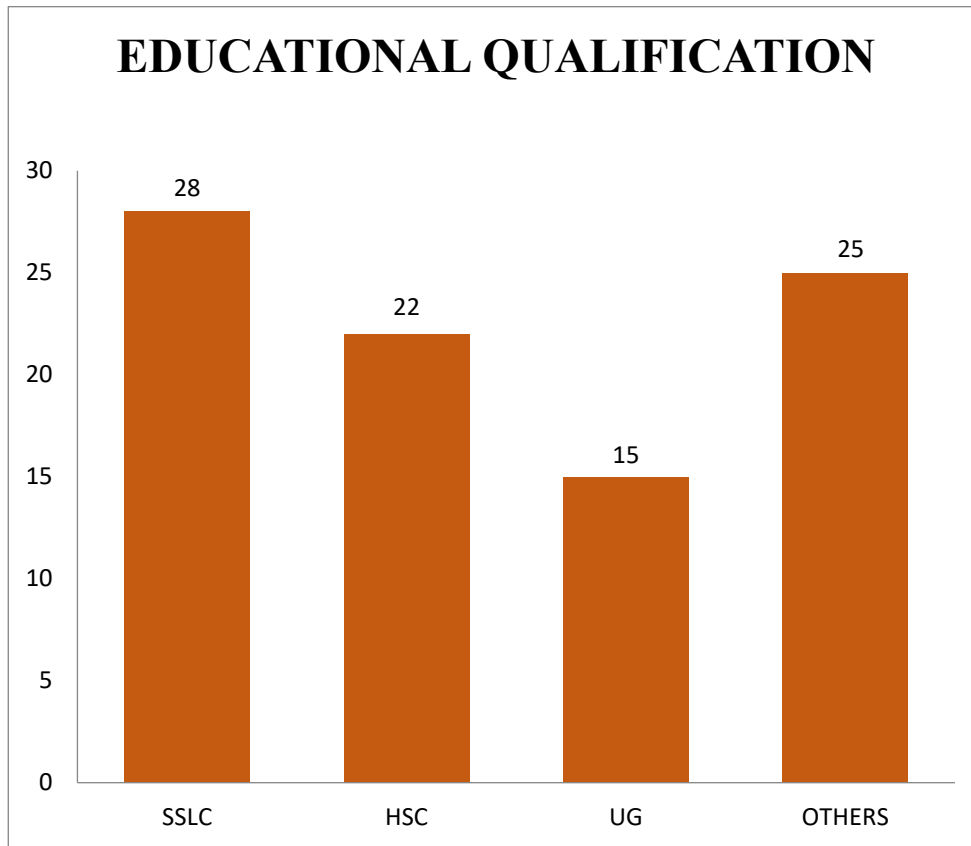


TABLE: 4.4
SHOWING WORKING EXPERIENCE

WORKING EXPERIENCE	NO OF RESPONDENT	PERCENTAGE
LESS THAN 1 YEAR	40	40
1-3 YEARS	22	22
4-7 YEARS	28	28
ABOVE 8 YEARS	10	10
TOTAL	100	100

Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 40 percentages of the respondents have less than 1 year of working experience, 22 percentages of the respondents have 1-3 years of working experience. 28 Percentages of the respondent have 4-7 years of working experience. 10 Percentages of the respondent have above 8 years of working experience.

CHART 4.4
SHOWING WORKING EXPERIENCE

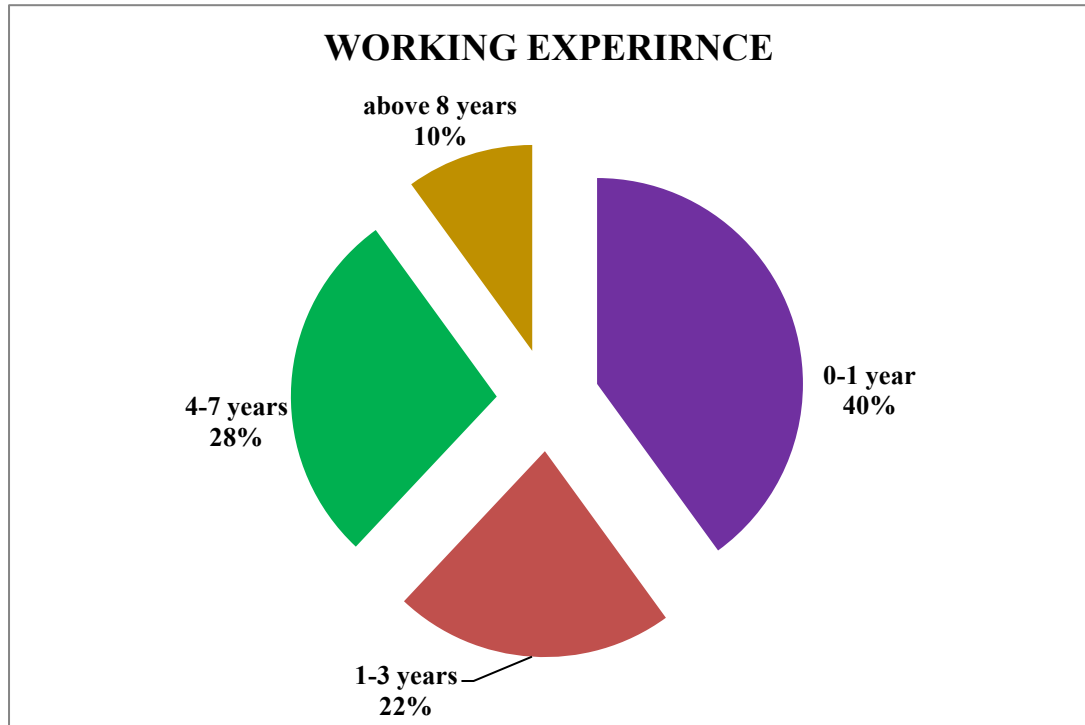


TABLE: 4.5

SHOWING SALARY BASED

SALARY	NO OF RESPONDENT	PERCENTAGE
BELOW 5000	24	24
5001-10000	28	28
10001-15000	18	18
ABOVE 15001	24	24
TOTAL	100	100

Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 24 percentages of the respondents have below 5000, 28 percentages of the respondents have 5001-10000. 18 Percentages of the respondent have 10001-15000. 24 Percentages of the respondent have above 15001.

CHART 4.5
SHOWING SALARY BASED

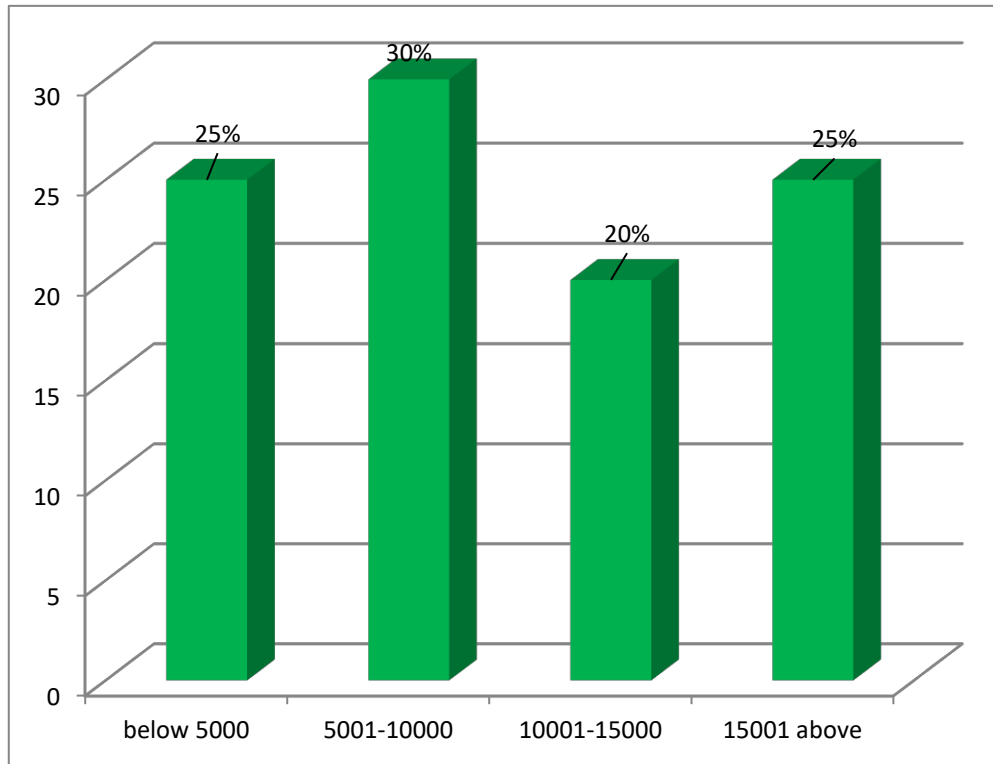


TABLE: 4.6

**SHOWING IDENTIFY & ELIMINATE WASTE IN YOUR
PRODUCTION PROCESS**

IDENTIFY & ELIMINATE WASTE IN YOUR PRODUCTION PROCESS	NO OF RESPONDENT	PERCENTAGE
SYSTEMATIC WASTE IDENTIFICATION	30	30
PERIODIC WASTE AUDITS	20	20
INFORMAL EMPLOYEE FEEDBACK	40	40
NO STRUCTURED APPROACH	10	10
TOTAL	100	100

Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 30 percentages of the respondent's systematic waste identification, 20 percentages of the respondents have periodic waste audits, 40 Percentages of the respondent have informal employee feedback. 10 Percentages of the respondent have no structured approach.

CHART: 4.6

**SHOWING IDENTIFY & ELIMINATE WASTE IN
YOUR PRODUCTION PROCESS**

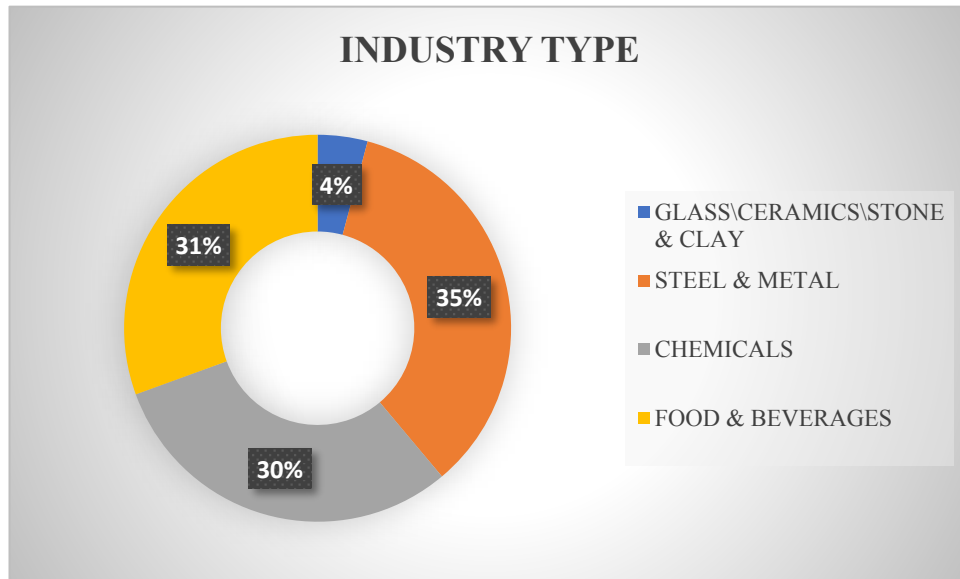


TABLE: 4.7

**SHOWING MEASURES ENSURE EFFICIENT FLOW &
PRODUCTION LEVELING IN YOUR PLANT**

MEASURES ENSURING EFFICIENT FLOW & PRODUCTION IN YOUR PLANT	NO OF RESPONDENT	PERCENTAGE
KANBAN SYSTEMS	8	8
HEIJINKA (PRODUCTION SMOOTHING)	70	70
BOTH A & B	20	20
NONE OF THE ABOVE	2	2
TOTAL	100	100

Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 8 percentages of the respondents said kanban systems, 70 percentages of the respondents said heijinka (production smoothing). 20 Percentages of the respondent said both A & B. 2 Percentages of the respondent said none of the above.

CHART: 4.7

**MEASURES ENSURE EFFICIENT FLOW & PRODUCTION
LEVELING IN YOUR PLANT**

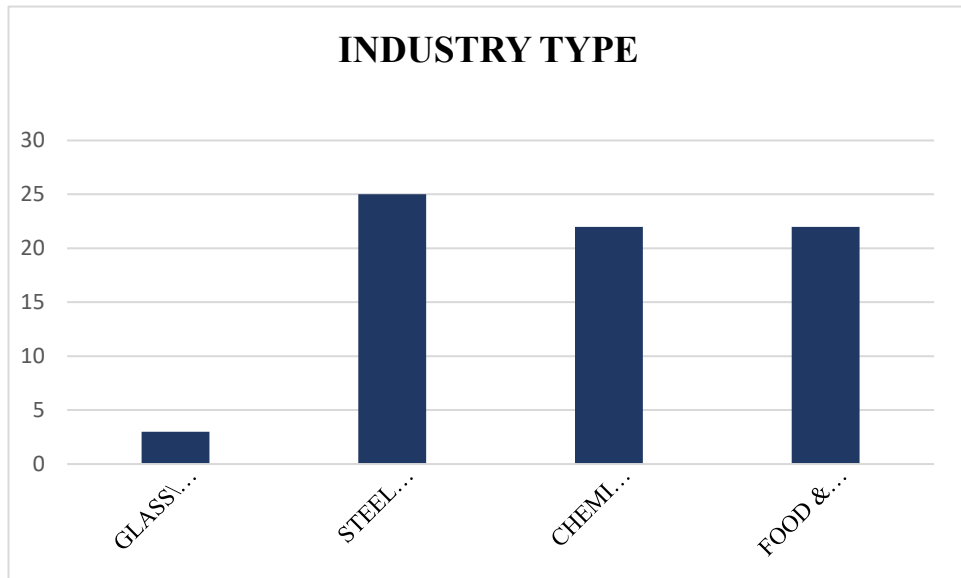


TABLE: 4.8

**SHOWING EXTENT ARE FRONTLINE WORKERS INVOLVED IN
PROBLEM SOLVING & IMPROVEMENT INITIATIVES**

EXTENT ARE FRONTLINE WORKERS INVOLVED IN PROBLEM SOLVING & IMPROVEMENT INITIATIVES	NO OF RESPONDENT	PERCENTAGE
ACTIVELY INVOLVED	3	3
OCCATIONALLY INVOLVED	40	40
RARELY INVOLVED	30	30
NOT INVOLVED	27	27
TOTAL	100	100

Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 3 percentages of the respondents said actively involved, 40 percentages of the respondents said occasionally involved. 30 Percentages of the respondent said rarely involved. 27 Percentages of the respondent said not involved.

CHART: 4.8

EXTENT ARE FRONTLINE WORKERS INVOLVED IN PROBLEM SOLVING & IMPROVEMENT INITIATIVES

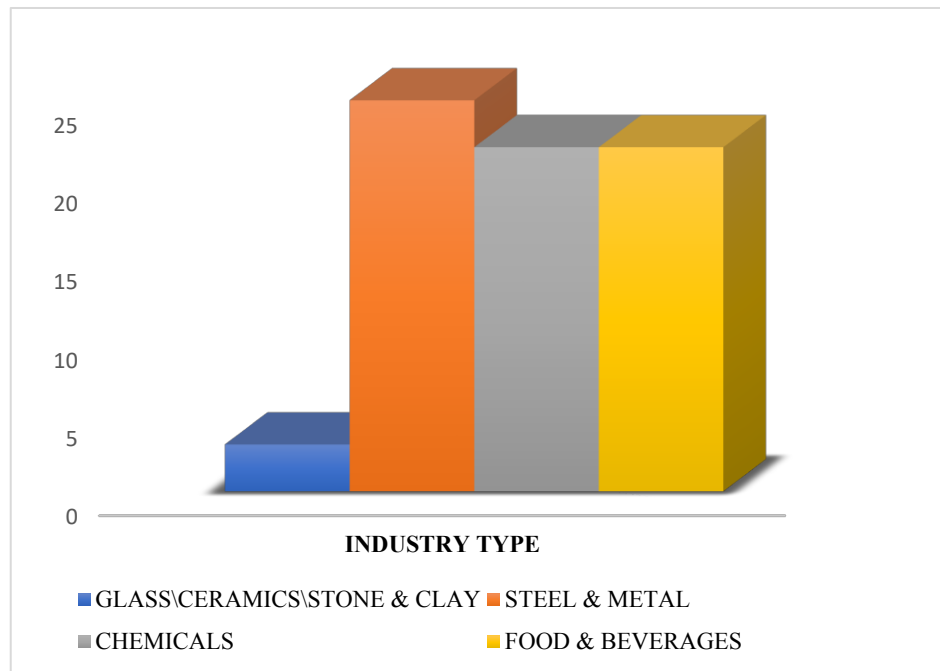


TABLE: 4.9

SHOWING INDUSTRY TYPE

INDUSTRY TYE	NO OF RESPONDENT	PERCENTAGE
GLASS\CERAMICS\STONE\&CLAY	3	3
STEEL & METAL	25	25
CHEMICALS	22	22
FOOD & BEVERAGES	22	22
TEXTILES	20	20
LUMBER & WOOD	7	7
PAPER & PULP	1	1
TOTAL	100	100

Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 3 percentages of the respondents said glass\ceramics\stone\&clay, 25 percentages of the respondents said steel & metal. 22 Percentages of the respondent said chemicals. 22 Percentages of the respondent said food & beverages. 20 percentages of the respondent said textiles. 7 percentages of the respondent said lumber & wood. 1 percentage of the respondent said paper & pulp.

CHART: 4.9

SHOWING INDUSTRY TYPE

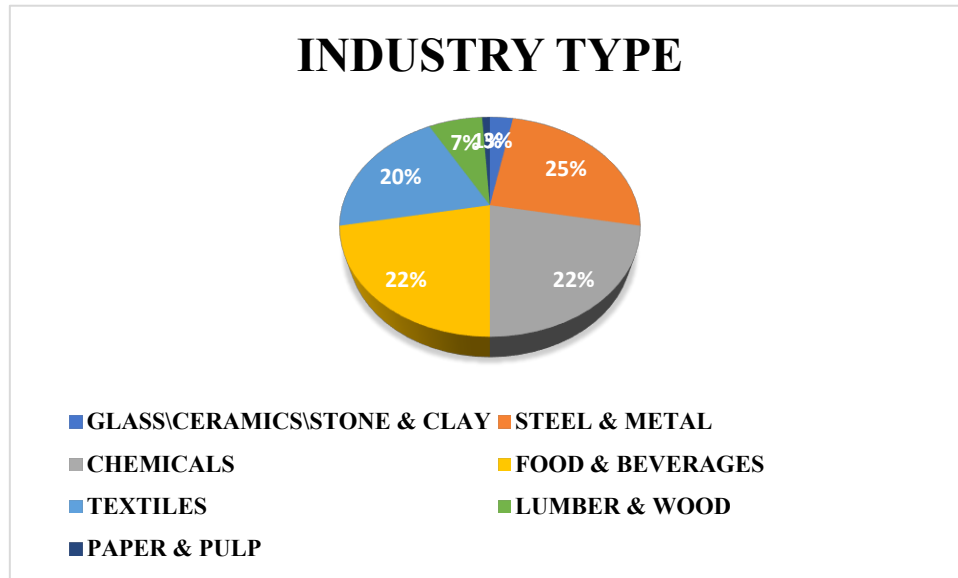


TABLE: 4.10

SHOWING TRAINING OF WORKERS

TRAINING OF WORKERS	NO OF RESPONDENT	PERCENTAGE
WORKERS ARE TRAINED TO PERFORM MANY DIFFERENT TASKS WITH IN A CLASSIFICATION	80	80
WORKERS ARE TRAINED TO PERFORM MANY DIFFERENT TASKS OUTSIDE A CLASSIFICATION	15	15
WORKERS ARE TRAINED TO PERFORM INSPECTION ON TASKS	3	3
WORKERS ARE TRAINED TO PERFORM MAINTENANCE TASKS	2	2
TOTAL	100	100

Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 80 percentages of the respondents said workers are trained to perform many different tasks with in a classification, 15 percentages of the respondents said workers are trained to perform many different tasks outside a classification. 3 Percentages of the respondent said workers are trained to perform inspection on tasks. 2 Percentages of the respondent said workers are trained to perform maintenance tasks.

CHART: 4.10

SHOWING TRAINING OF WORKERS

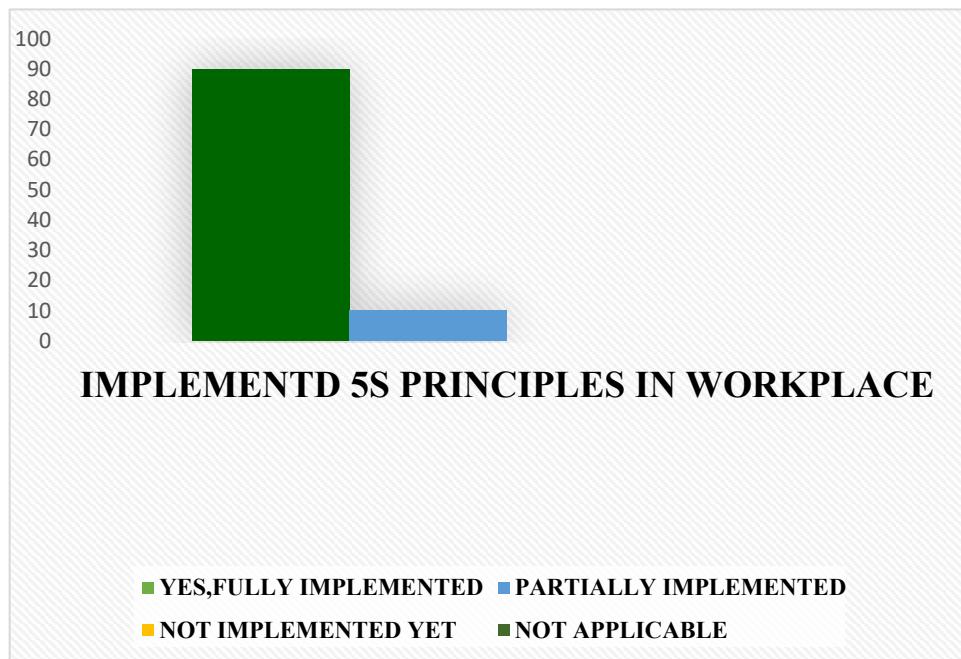


TABLE: 4.11

SHOWING MANAGEMENT INFORMATION SYSTEM USUALLY

MANAGEMENT INFORMATION SYSTEM	NO OF RESPONDENT	PERCENTAGE
SERVER MANAGERS INTERESTED IN WEEKLY,MONTHLY & YEARLY RESULTS	10	10
PROVIDES MANAGERS WITH GENERAL COMPETING & TELECOMMUNICATION	40	40
HELPS MANAGERS TASK DECISION THAT ARE UNIQUE & NOT EASILY SPECIFIED	18	18
PERFORM & RECORD THE DAILY ROUTINE TRANSACTION	32	32
TOTAL	100	100

Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 10 percentages of the respondents said server managers interested in weekly, monthly & yearly results, 40 percentages of the respondents said provides managers with general competing & telecommunication. 18 Percentages of the respondent said helps managers task decision that are unique & not easily specified. 32 Percentages of the respondent said perform & record the daily routine transaction.

CHART: 4.11

SHOWING MANAGEMENT INFORMATION SYSTEM USUALLY

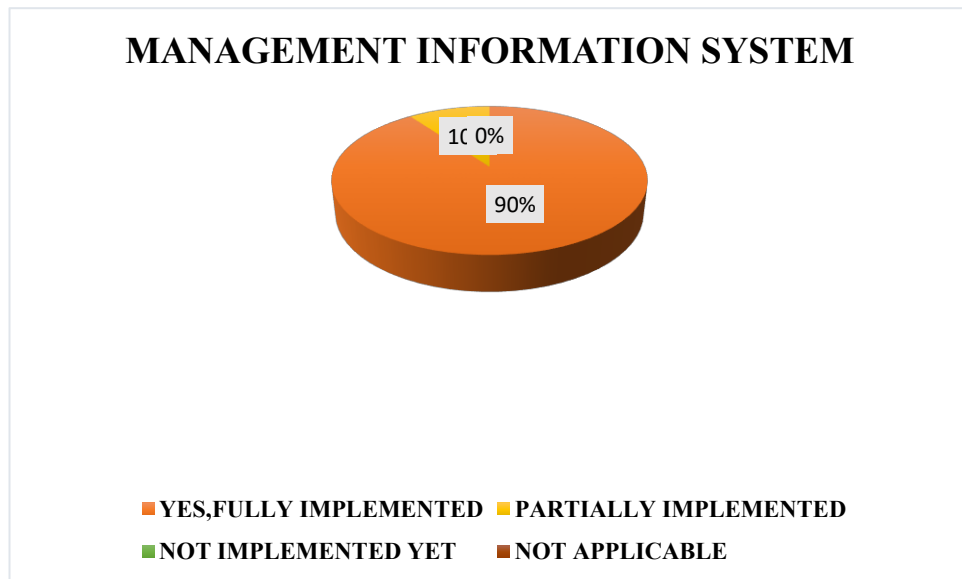


TABLE: 4.12

**SHOWING HAVE YOU IMPLEMENTED 5S PRINCIPLES IN YOUR
WORKPLACE**

IMPLEMENTD 5S PRINCIPLES IN WORKPLACE	NO OF RESPONDENT	PERCENTAGE
YES,FULLY IMPLEMENTED	90	90
PARTIALLY IMPLEMENTED	10	10
NOT IMPLEMENTED YET	0	0
NOT APPLICABLE	0	0
TOTAL	100	100

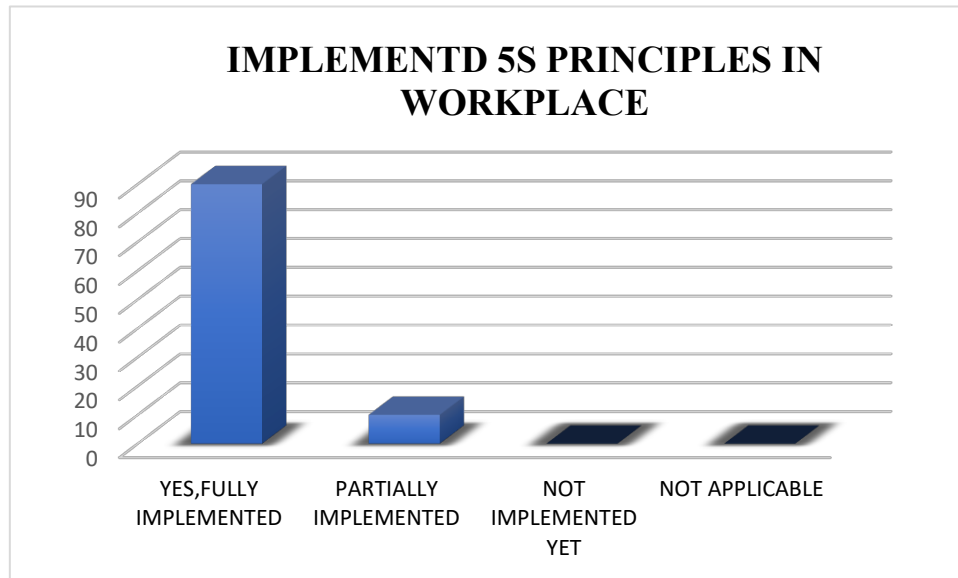
Source Data: Primary Data

INFERENCE

As per the above table it is clear that out of the 100 respondents, 90 percentages of the respondents said yes, fully Implemented, 10 percentages of the respondents said partially implemented. 0 Percentages of the respondent said not implemented yet. 0 Percentages of the respondent said not applicable.

CHART: 4.12

**SHOWING HAVE YOU IMPLEMENTED 5S PRINCIPLES IN YOUR
WORKPLACE**



CHAPTER 5

SUMMARY OF FINDINGS, SUGGESIONS AND CONCLUSION

5.1 INTRODUCTION

This chapter consists of findings, suggestion and conclusion. A finding which represents results determines through statistical tools and helps to know respondents' response. Suggestion is which researcher gives an idea to improvement on the particular study. Conclusion is part final part of study which the organization whether they to improve they welfare activities in their organization.

5.2 FINDINGS

- It is analysed that 39% of respondents are 26-30 years by their age.
- It is analysed 75% of respondents are female by their gender.
- It is understood that 28% of respondents are SSLC by their educational qualification.
- It is understood that 40% of respondents are less Than 1 year by their working year experience.
- Most of the majority 28% of respondents says for the salary is 5001-10000.
- Most of the majority 40% of respondent's says mostly collected from informal employee feedback.
- Based on my study 70% of respondent's says measures ensure efficient flow & production levelling in your plant are heijinka (production smoothing).
- Based on my study 40% of respondent's says extent are frontline workers involved in problem solving & improvement initiatives is occasionally involved.
- Based on my study 25% of respondents says industry type is steel & metal.
- It is analysed that 80% of respondent's says training of workers in the workers are trained to perform many different tasks with in a classification.
- It analysed that 40% of respondent's says management information system usually provides managers with general competing & telecommunication.
- Most of the majority 90% of respondents said yes, fully implemented.

5.3 SUGGESTIONS

Start with action in the technical system;

follow quickly with cultural change In order to make a strategic Lean approach work, process operators have to work in process related teams, rather than their current functional ones. Teams need to become truly self-directed, allowing problems to pick the people required to solve them from within the teams rather than management picking the problems and assigning them to people to solve. This means starting with the tools but quickly realizing that Lean requires a change in thinking and managing. Most lean implementation failures are not due to failure to grasp the tools and techniques but a failure of change management.

Ensure that all members of staff are correctly coached

In the early stages of lean transformation there should be at least 80% doing and 20% training and informing. Use Kaizen workshops to teach and make rapid changes Use a talented and experienced facilitator who has a deep understanding of lean tools and philosophy but keep training focused on a specific problem. This helps to keep the training relevant to real-world situations and ensures that there are tangible outcomes from training activity. The kaizen might have an objective to reduce setup time from 80 minutes to 60 minutes in four days, for instance.

Organize around value streams

In most organizations, management is organized by process or function. In other words, managers own certain steps in a process but nobody is responsible for the entire value stream. In the second edition of Lean Thinking (2003), the authors recommend a matrix organization where there are still heads of departments but also value stream managers, similar to Toyota's chief engineer system. Someone with real leadership skills and a deep understanding of the product and process must be responsible for the process of creating value for customers and must be accountable to the customer.

Develop communication and feedback channels for everyone

This will aid in get support through involvement of people at various level by sharing their ideas to build synergy to move positively ahead in the lean journey.

Make it mandatory

If a company looks at Lean transformation as a "nice to do" in spare time or as a voluntary activity, it will simply not happen. It needs to be mandatory and people need to be given the space to think about improvements they can make.

Keep leadership focused on long-term learning

A crisis may prompt a lean movement, but may not be enough to turn a company around. Once the crisis has passed it can be all too tempting to go back to business as usual. Company leadership has to stay focused on Lean for the long term – not just to solve one problem.

5.4 CONCLUSION

Lean production is all about working more effectively with time (the time available to produce each product). The teamwork approach is recognition that the best way to achieve this is for all members of the workforce to be involved to achieve a quick response. Lean production has enabled to cut out waste in the production. Ford is now seeking to spread the message about lean production by incorporating a total of 400 of its Hale wood employees into work. The successful implementation of lean production at will form the benchmark for the systems introduction at Hale wood. Lean produces an operational and cultural environment that is highly conducive to waste minimization and pollution prevention. It significantly improves overall productivity, increase market share, improve speed-to-market with new products and also reduce manufacturing and engineering labor costs. It eliminates the non-value-added operations. After study about lean manufacturing and its implementation we analyze important factors to achieve our goals. Benefits through Lean time and money has seen dramatic cuts and allowed company to expand for more regional coverage. It reduces time taken to accomplish certain tasks and add more responsibilities. At last, we can say that lean manufacturing and its implementation in important topic.

WEBSIDES

- 1) www.trafico.com
- 2) www.mouthshut.com
- 3) www.Lean management.co.in
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- 5) www.managementparadise.com

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APPENDIX

A STUDY ON LEAN MANAGEMENT IN MANUFACTURING PLANT

- 1) Age:
 - (A) 18-25 years
 - (B) 26-35 years
 - (C) 36-40 years
 - (D) Above 40
- 2) Gender
 - (A) Male
 - (B) Female
- 3) Educational qualification:
 - (A) SSL
 - (B) HSC
 - (C) UG
 - (D) others
- 4) work experience (In year)
 - (A) Less than 1 year
 - (B) 1-3 years
 - (C) 4-7 years
 - (D) above 8 years
- 5) What is your monthly salary\gross pay?
 - (A) Below 5000
 - (B) 5001-10000
 - (C) 10001-15000
 - (D) 15001 above
- 6) Have you implemented 5S principles in your workplace?
 - (A) Yes, fully implemented
 - (B) Partially implemented
 - (C) Not implemented yet
 - (D) Not applicable
- 7) How do you identify and eliminate waste in your production processes?
 - (A) Systematic waste identification
 - (B) Periodic waste audits
 - (C) Informal employee feedback
 - (D) No structured approach
- 8) What measures ensure efficient flow and production leveling in your plant?
 - (A) Kanban systems
 - (B) Heijunka (production smoothing)
 - (C) Both A and B
 - (D) None of the above

9) To what extent are frontline workers involved in problem-solving and improvement initiatives?

- A) Actively involved B) Occasionally involved
- C) Rarely involved D) Not involved

10) Training of workers

- A) Workers are trained to perform many different tasks within a classification
- B) Workers are trained to perform many different tasks outside a classification
- C) Workers are trained to perform inspection on tasks
- D) Workers are trained to perform maintenance tasks

11) Management information system usually:

- A) Server managers interested in weekly, monthly & yearly results
- B) Provides managers with general computing & telecommunication
- C) Helps managers take decisions that are unique & not easily specified
- D) Perform & record the daily routine transactions

12) Industry type

- A) Glass, ceramics, stone, and clay/ B) Steel and metal/
- C) Chemicals/ D) Food and beverages/
- E) Textiles/ F) Lumber and wood/
- G) Paper and pulp