



A STUDY ON MINIMIZING DEFECTIVE PRODUCT THROUGH EFFECTIVE PRODUCTION PLANNING AND CONTROL

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ABSTRACT

This research work examine production planning and control as a tool for minimizing defective products through effective production planning and control in R.R LATEX gloves manufacturing company. Hence the scope of the research cover every activity which has to do with production planning and control. The work covers statement of the general problems, research objectives, scope of the study, significance of the study and limitation of the study. Also diverse view of authors on production planning and control and other related areas in review. The research work employs the descriptive method for the purpose of an in-depth investigation. A sample size of 100 respondents was selected from the total population of 180 staff, questionnaire were administered to them, oral and verbal interview as well as obtaining information.

Hypothesis H₀ and H₁ formulated on using effective production planning and control to minimize defective product in production performance. Data collected were presented and daily analysed in tabular format using percentages, other findings of the studying centered on the required raw materials used by the organization but sourced outside the country, government policies such as hinge tax payments, customers and excise charges contributes to high production cost with locally sourced raw materials not maintaining a stable price from time to time with future plans having limitation due to some government regulations, economic downs turn, environmental factors technological changes, competitors actions.

The study also brought to the fore the importance of production planning and control in the role of forecasting in production and operation management. Finally based on the findings a number of quality recommendation were offered to the organization to embrace in raw materials sourcing using alternative means i.e. research and development department, the complete computerization of the control system and other key system should be pursued effectively.

INTRODUCTION

A manufacturing company is an organization that transforms raw materials or components into finished goods through various processes. These goods can range from simple consumer products to complex machinery, catering to diverse industries such as automotive, electronics, pharmaceuticals, and more. The primary goal of a manufacturing company is to efficiently produce high-quality products that meet customer demands while maintaining profitability.

This study aims to delve into the operational dynamics of RR Latex Ltd., focusing on the critical areas of production, inventory control, procurement, distribution, and their interrelationships. By examining these aspects in detail, we seek to gain insights into the company's operational strategies, challenges, and opportunities for improvement. Furthermore, by analysing the interdependencies among these functions, we aim to uncover potential synergies and areas for optimization that can enhance overall operational efficiency and performance.

Through this study, we aspire to contribute valuable insights to the field of operations management, particularly within the context of surgical gloves manufacturing. By shedding light on the operational intricacies of RR Latex Ltd. and offering actionable recommendations, we aim to assist the company in furthering its mission of delivering exceptional healthcare products while maintaining operational excellence.

In today's fiercely competitive business environment, organizations across industries are continually seeking ways to improve operational efficiency, reduce costs, and enhance customer satisfaction. This quest for excellence is particularly critical in sectors like healthcare, where product quality, reliability, and timeliness are paramount. Within this context, the study of production, inventory control, procurement, distribution, and their interrelationships emerges as a focal point for organizational success. By optimizing these core operational processes, companies can streamline workflows, minimize waste, and maximize value delivery to customers.

REVIEW OF LITERATURE

Xu, W. and Song, D.P., 2022. Integrated optimisation for production capacity, raw material ordering and production planning under time and quantity uncertainties based on two case studies. *Operational Research*. This paper develops a supply chain (SC) model by integrating raw material ordering and production planning, and production capacity decisions based upon two case studies in manufacturing firms.

Manufacturing 29 (2018): This study presents an uncertain mathematical model for maximizing profit of the defective goods supply chain during uncertain situations by using selection of appropriate suppliers, just-in-time (JIT) logistic philosophy and minimizing total costs including costs of production, shipping, holding, defective goods, scrap goods, shortage in retailers.

Ji, Q., Wang, Y. and Hu, X., 2016. Optimal production planning for assembly systems with uncertain capacities and random demand. We study the optimal production planning for an assembly system consisting of n components in a single period setting. Demand for the end-product is random and production and assembly capacities are uncertain due to unexpected breakdowns, repairs and reworks.

Assid, Morad, Ali Gharbi, and Adnène Hajji., 2017 "Integrated control policies of production, returns' replenishment and inspection for unreliable hybrid manufacturing-remanufacturing systems with a quality constraint." This paper deals with the production planning and control problem within unreliable Hybrid Manufacturing-Remanufacturing Systems (HMRSs) evolving in a stochastic and dynamic environment.

OBJECTIVES

- Identify factors causing defective products in manufacturing.
- Evaluate current production planning methods' impact on defect rates.
- Validate proposed strategies through empirical testing.
- Develop improved PPC strategies to minimize defects and enhance efficiency.
- Offer practical recommendations for implementing effective PPC practices to reduce defects and improve quality.

RESEARCH METHODOLOGY

Sampling Technique: A purposive sampling technique will be utilized to select participants who possess relevant knowledge and experience in the operational processes under investigation.

Research Design: This research uses descriptive research.

Sample Design: It is a particular definite plan formulation before collecting the data from population. The research should select a particular sample. In sampling, there are 2 types- probability sampling and non-probability sampling. In this research, only non-probability sampling is used.

Population: The targeted people are the employees working In RR LATEX LTD. NAGERCOIL, TAMILNADU.

Source of Data: There are two types of data collection:

Primary Data: Direct communication or personal interviews of 110 respondent's customers. Questionnaire is used for conducting personal interviews and for collecting the data.

Secondary Data: It is collected from standard books, internal sources, magazines and newspapers and also collecting data from external and internal sources from the company annual reports, company additional profile and company internal website.

Tools used for analysis:

- Simple percentage method
- ANOVA
- Correlation

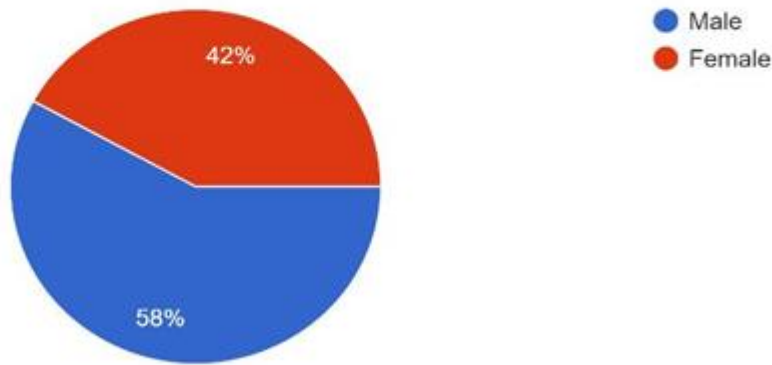
DATA ANALYSIS AND INTERPRETATION

Gender:

S.no	Gender	No. of Respondents	Percentage Analysis
1	Male	87	58%
2	Female	63	42%
Total		150	100%

GENDER

150 responses



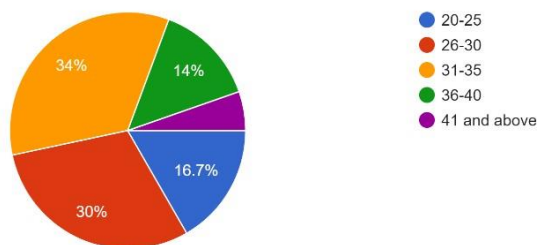
- From the above table it is interpreted that the gender of the respondents is male 58% and number of respondents in female are 42 %.

Age:

S.no	Age	No of Respondents	Percentage analysis
1	20-25	25	16.7%
2	26-30	45	30%
3	31-35	51	34%
4	36-40	21	14%
5	41 and above	8	5.3%
Total		150	100%

AGE

150 responses

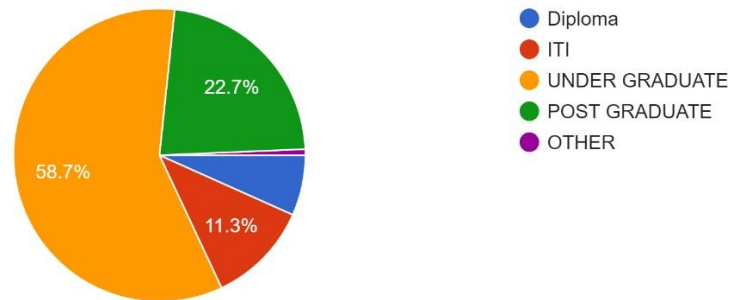


- The number of respondents 20-25 age are 16.7%.
- The number of respondents between 26-30 age are 30%.
- The number of respondents between 31- 35 age are 34%.
- The number of respondents between 36-40 age are 14%.
- The number of respondents above 41 ages of respondents are 5.3%.

Educational Qualification:

Education qualification	No of Respondents	Percentage analysis
Diploma	10	6.7%
ITI	17	11.3%
Under graduate	88	58.7%
Post graduate	34	22.7%
other	1	0.7%
Total	150	100%

EDUCATION QUALIFICATION
150 responses



- The number of respondents ITI of respondents are 11.3%
- The number of respondents diploma of respondents are 6.7%,
- and under graduate of respondents 58.7 %,
- post graduate of respondents are 22.7%, other of respondents is 0.7%.

ANOVA**Research Hypothesis:****HYPOTHESIS-1**

- Null Hypothesis (H0): There is no significant difference between the age of the employees and their career growth and opportunities.
- Alternate Hypothesis (H1): There is a significant difference between the age of the employees and their career growth and opportunities.

Source of Variation	Sum Squares	df	Mean Square	F	Sig.
Between Groups	3.659	4	.915	.939	.443
Within Groups	141.301	145	.974		
Total	144.960	150			

INTERPRETATION

The p value is 0.443 which is greater than the significance value (0.05) hence null hypothesis (H0) is accepted. And H1 is rejected.

INFERENCE

Therefore, there is a no significant difference between the age and career opportunities.

CORRELATION

Research Hypothesis:

HYPOTHESIS-2

- Null Hypothesis (H0): Regular quality inspections have no significant effect on reducing defective products.
- Alternate Hypothesis (H1): Products subjected to regular quality inspections exhibit significantly lower defect rates compared to those without such inspections.

Correlations

		Are regular quality inspection check is done?	Do you feel that level of stress is manageable?
Are regular quality inspection check is done?	Pearson Correlation	1	.049
	Sig. (2-tailed)		.549
	N	150	150
Do you feel that level of stress is manageable?	Pearson Correlation	.049	1
	Sig. (2-tailed)	.549	
	N	150	150

Interpretation

The p value is 0.49 which is greater than the significance value (0.05) hence null hypothesis (H0) is accepted. Therefore, there is a significant difference between the role and job satisfaction.

FINDINGS

- Majority 58% of the respondents are male.
- Majority 34 % of the respondents belong to the age group of 31-35 category.
- Majority 58.7 % of the respondents belongs to UG educational qualification.
- The p value is 0.443 which is greater than the significance value (0.05) hence null hypothesis (H0) is accepted. And H1 is rejected.
- As a result, we find that there is a statistically significant difference in the respondents' assessments of the efficiency of the production process, rejecting the null hypothesis.

SUGGESTIONS

- Gender Representation:
 - Ensure equal opportunities for career advancement and promotion regardless of gender.
- Age Group:
 - Provide training and development programs tailored to the needs and preferences of different age cohorts.
- Education Level and Experience:
 - Offer opportunities for continuous learning and professional development for employees with Bachelor's and Master's degrees.
 - Recognize and reward employees for their contributions and expertise

CONCLUSION

Conclusion for Age Group, Education Level, and Gender:

The demographic study of the participants provides important information about the makeup of the workforce of RR Latex Ltd. in Kanyakumari, Tamil Nadu. Most participants are between the ages of 18 and 25, and a sizable portion of them have master's and bachelor's degrees. Moreover, men make up the majority of the workforce. The significance of promoting diversity and inclusion activities inside the organization to establish a fair and impartial organizational culture is highlighted by these demographic trends. Notable results are obtained from the ANOVA study that was performed on different operational factors at RR Latex Ltd. There are notable variations in the respondents' assessments of the effectiveness of the production process according to age, gender, and educational attainment. These variations highlight the necessity of customized approaches to deal with various workforce demographic groups.

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