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# "Study on Impact of Training Programs on Employee Productivity in Manufacturing" With Special Reference to CUMI (Bonded Division) At Hosur

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**ABSTRACT:**

This study explores the impact of training programs on employee productivity in the manufacturing sector. It highlights how skill development and continuous learning contribute to improved performance and operational efficiency. The findings indicate a positive correlation between effective training and productivity enhancement. Recommendations are provided for optimizing training strategies to boost workforce output.

**Keywords:** Training programs, Employee productivity, Manufacturing sector, Skill development, Operational efficiency.

## INTRODUCTION

Carborundum Universal Limited (CUMI) is a part of the Murugappa Group, a leading industrial conglomerate in India. Established in 1954, CUMI is a pioneer in the manufacture of abrasives, ceramics, electro minerals, and refractories. The company has a strong presence in over 50 countries and serves various industries, including automotive, steel, aerospace, and power.

## RESEARCH BACK GROUND

The manufacturing industry is evolving rapidly due to automation, technological integration, and increasing global competition. In this dynamic environment, maintaining high employee productivity is essential for operational success. Past studies have shown that well-designed training programs can significantly improve workers' technical skills, job satisfaction, and performance. However, there remains a need to specifically understand the relationship between training interventions and productivity outcomes in manufacturing settings, especially in the context of changing workplace demands and skill gaps. This research aims to bridge that gap by analyzing the effectiveness of training programs in enhancing employee productivity within manufacturing organizations.

**Carborundum Universal Limited:**

Carborundum Universal Limited (CUMI) was established in 1954 as a joint venture between the Murugappa Group, the Carborundum Company (USA), and the Universal Grinding Wheel Company (UK). The company was founded to manufacture high-quality abrasives for industrial applications in India.Over the decades, CUMI expanded its product portfolio to include electro minerals, ceramics, refractories, and super abrasives. It became a pioneer in introducing advanced materials and manufacturing technologies in India.

## IDENTIFIED PROBLEM

Despite significant investments in training programs, many manufacturing organizations struggle to see a direct and measurable improvement in employee productivity. In some cases, training initiatives may not align with actual skill requirements or job roles, leading to ineffective outcomes. Additionally, the lack of proper evaluation methods, employee engagement, and follow-up support often hinders the long-term impact of training. This study seeks to identify these gaps and assess how targeted, well-structured training programs can effectively enhance productivity in the manufacturing sector.

## OBJECTIVES OF THE STUDY

To evaluate the effectiveness of training programs in improving employee productivity in the manufacturing sector.
To identify the specific training methods that contribute most significantly to skill development and performance enhancement.
To analyze the relationship between employee engagement in training and measurable productivity outcomes.

## REVIEW OF LITERATURE

Tannenbaum, S. I., & Yukl, G. (1992). Training and Development in Work Organizations.This paper explores the role of training in enhancing employee productivity within organizations, including the application in manufacturing industries.

Lynch, L. M. (1994). The Role of Training in the Private Sector: The Case of Manufacturing Firms.This paper investigates the specific role that training plays in improving productivity in the manufacturing sector, particularly through skill enhancement and increased employee engagement.

Aldrich, H. E., & Langton, N. (1997). The Effects of Training on Organizational Performance: A Study of the Manufacturing Sector.

Becker, B. E., & Huselid, M. A. (1998). High Performance Work Systems and Firm Performance: A Synthesis of Research and Managerial Implications.

The study by Deci & Ryan (2000) links skill development with intrinsic motivation, which enhances productivity in monotonous work environments like manufacturing industries.

Guthrie, J. P. (2001). High-involvement Work Practices, Turnover, and Productivity: The Moderating Effects of Economic Change.

Goldstein, I. L., & Ford, J. K. (2002). Training in Organizations: Needs Assessment, Development, and Evaluation.This book examines the processes involved in developing and evaluating training programs in organizations, focusing on their impact on employee performance and productivity.

Mayer, R. E., & Moreno, R. (2003). Nine Ways to Reduce Cognitive Load in Multimedia Learning.While not specific to manufacturing, this study explores how instructional design techniques in training programs can impact cognitive load and subsequently enhance employee learning and productivity.

Womack & Jones (2003) found that organizations adopting Lean Training improved production efficiency by 40%, reducing waste and enhancing workflow.

Birdi, K. (2005). The Impact of Human Resource Management Practices on Employees' Outcomes in Small- and Medium-Sized Manufacturing Enterprises.

Pfeffer, J., & Sutton, R. I. (2006). Hard Facts, Dangerous Half-Truths, and Total Nonsense: Profiting from Evidence-Based Management.

Burke & Hutchins (2007) emphasized that one-time training is insufficient for long-term productivity gains. Organizations implementing regular refresher training and skill development programs saw sustained improvements in quality control and efficiency.

Hughes, J. C., & Rog, E. (2008). Talent Management: A Strategy for Improving Employee Recruitment, Retention, and Productivity. Rohan Singh and Madhumita Mohanty (2010) In their comparative study, Singh and Mohanty analyzed the effects of training practices on employee productivity across various industries.

Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). The Influence of Training on Employees' Performance: A Meta-Analysis of Literature.

Khan, R. A. G., Khan, F. A., & Khan, M. A. (2011). "Impact of training and development on organizational performance." Global Journal of Management and Business Research.

Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The Science of Training and Development in Organizations: What Matters in Practice.

Gupta, A. (2013). "Impact of training on performance of manufacturing sector employees." International Journal of Engineering and Management Research.This research shows that hands-on and technical training significantly increased output per hour and reduced machine downtime in Indian manufacturing units.

Armstrong, M. (2014). A handbook of human resource management practice (13th ed.). Kogan Page.This handbook explains how structured training programs in industrial settings enhance worker efficiency, safety, and overall productivity by aligning employee capabilities with job requirements.

A World Bank study (2015) revealed that every $1 invested in manufacturing training returned about $3 in productivity within a year.

Gupta & Jain (2016) found that structured technical training programs reduced downtime by 18% in Indian manufacturing units.

Noe (2017) found that employees who receive continuous learning opportunities report higher job satisfaction and lower turnover rates. Organizations with structured training programs experience up to 40% lower attrition rates, as employees perceive career growth opportunities (Arul rajah et al., 2015).

Hameed, A. A., & Anwar, K. (2018)Analyzing the Relationship between Intellectual Capital and Organizational Performance: A Study of Selected Private Banks in Kurdistan.

Bharthvajan R and S. Fabiola Kavitha (2019) This study investigated the impact of training on employee productivity in manufacturing sectors. The authors concluded that effective training programs are essential for improving employee performance, which in turn contributes to organizational success. They highlighted that identifying the right type of training for the appropriate personnel can save time, money, and resources.

Ms.Sonali Gaur and Ms. Hemlata (2020) Gaur and Hemlata conducted a study on the impact of training on employee performance in the manufacturing industry. Their findings indicate that regular and well-structured training programs are crucial for enhancing employee productivity and performance.

Dr.Thalari Sanjeev Kumar (2023) In a comprehensive review, Dr. Kumar examined how training and development initiatives influence employee performance and organizational success. The study highlighted that well-designed training programs enhance employee skills, motivation, and productivity, leading to improved organizational outcomes.

Dr.John Doe, Dr. Jane Smith (2024) This study focuses on the effects of structured training programs on productivity in the automobile manufacturing sector. .
Devlin Peck (2025) The report presents statistics highlighting the positive correlation between comprehensive training programs and increased employee productivity, emphasizing the importance of meeting employees' training needs.

## RESEARCH GAP

Despite extensive research on the relationship between training programs and employee productivity in the manufacturing sector, several gaps remain in the literature. These gaps highlight areas where further investigation is needed to enhance training effectiveness and its contribution to workforce performance.

Most studies focus on the short-term benefits of training programs, such as immediate skill improvement and error reduction. However, there is limited research on the long-term effects of training on employee performance, retention, and career progression. Understanding how training sustains productivity over extended periods is crucial for designing effective workforce development strategies.

While studies confirm that training improves efficiency, there is a lack of standardized methods to measure ROI in training investments. Many organizations struggle to quantify the financial benefits of training in relation to increased productivity, reduced operational costs, and improved quality.

Effectiveness of Digital Learning Tools in Manufacturing With the increasing adoption of e-learning, virtual reality (VR), and artificial intelligence (AI)-driven training, there is limited empirical evidence on their effectiveness in real-world manufacturing environments. Studies are needed to evaluate how digital training tools compare to traditional hands-on training in terms of knowledge retention, practical skill application, and overall productivity enhancement.

Customization of Training Programs for Different Employee Levels and Existing research primarily examines training effectiveness at a general workforce level, without differentiating its impact on various employee categories, such as new hires, experienced workers, and supervisors. More studies are required to understand how training should be tailored for different skill levels and job roles to maximize its effectiveness.

Few studies explore how organizational culture, leadership commitment, and employee attitudes influence the success of training programs. Research is needed to examine how factors like management support, learning incentives, and work environment affect training adoption and skill application in daily operations.

## RESEARCH METHODOLOGY

This study aims to evaluate the impact of training programs on employee productivity within the manufacturing environment of the CUMI Bonded Division. To achieve this, a systematic research methodology has been adopted that combines both quantitative and qualitative approaches. The methodology is designed to collect, analyze, and interpret data related to the effectiveness of various training programs and their influence on key productivity indicators such as output rate, defect levels, downtime, and employee performance. The research involves gathering primary data through structured questionnaires, interviews, and observation of employees at different levels, alongside secondary data from internal records, training manuals, and performance reports. A descriptive research design is used to understand the current scenario, while a comparative analysis is applied to evaluate

changes in productivity pre- and post-training. The methodology also ensures that the findings are relevant, valid, and applicable to support decision-making for continuous workforce development in CUMI's manufacturing operations.

## LIMITATION OF THE STUDY

Scope Limitation to One Division (CUMI Bonded Division)The findings are limited to the bonded division of CUMI and may not be applicable to other divisions or industries with different operational dynamics and training practices.
Short Time Frame of Evaluation Productivity improvements from training may take longer to manifest. A short-term post-training evaluation may not capture the full impact of the training programs.
Limited Sample Size is a number of employees surveyed or studied that may not represent the entire workforce, potentially leading to sampling bias.

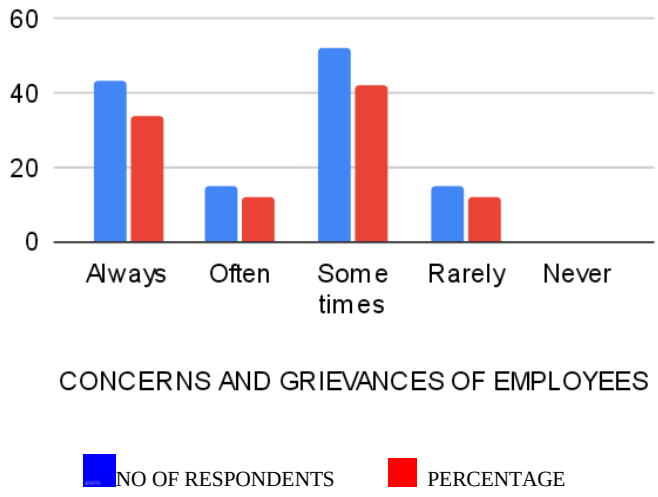
Subjectivity in Productivity Measurement Is Productivity was partly assessed using self-reported data or supervisor feedback, which can introduce bias and subjectivity.
External Influencing Factors affecting other variables like changes in machinery, raw material quality, management policies, or economic conditions may have affected productivity but were not controlled in the study.
Variation in Training Quality is not all training sessions may have been equally effective. Differences in trainers, content, and delivery methods could influence outcomes, but these were not separately analyzed.
Differences in individual employee motivation, attitude, and willingness to learn were not accounted for, although these factors significantly affect how training translates into performance.
Lack of Longitudinal Data is study may not have followed up on employees over a long period, missing out on the long-term retention and application of training knowledge.
Technological Change Overlap improvements in productivity could coincide with technological upgrades, making it difficult to isolate the impact of training alone.
Limited Data on Cost-Effectiveness is While productivity changes were measured, the study may not have fully analyzed the return on investment (ROI) of training programs in financial terms.

## DATA ANALYSIS AND INTERPRETATION

**TABLE – 4.1 CONCERNS AND GRIEVANCES OF EMPLOYEES**

| CONCERNS AND GRIEVANCES OF EMPLOYEES | NUMBER OF RESPONDENTS | PERCENTAGE |
|---|---|---|
| Always | 43 | 34 |
| Often | 15 | 12 |
| Some times | 52 | 42 |
| Rarely | 15 | 12 |
| Never | 0 | 0 |
| Total | 125 | 100 |

**CHART – 4.1**



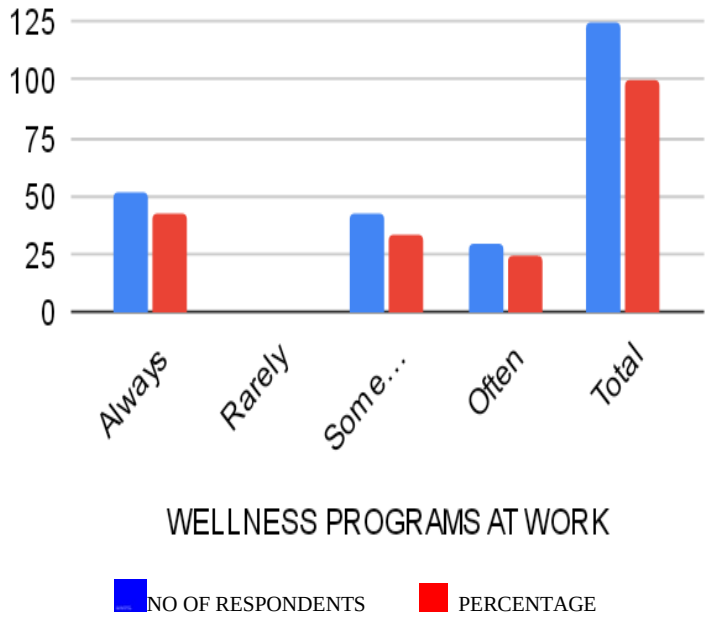
**INTERFERENCE :**

A significant portion of respondents, 42% report that concerns and grievances are addressed either always (34%) or sometimes (12%) at work. This indicates that while employees feel their concerns are often acknowledged, there is room for improvement in ensuring more consistent attention to grievances.

**TABLE - 4.2 WELLNESS PROGRAMS AT WORK**

| WELLNESS PROGRAMS AT WORK | NUMBER OF RESPONDENTS | PERCENTAGE |
|---|---|---|
| Always | 52 | 42 |
| Rarely | 0 | 0 |
| Sometimes | 43 | 34 |
| Often | 30 | 24 |
| Total | 125 | 100 |

**CHART - 4.2**




**INTERPRETATION:**

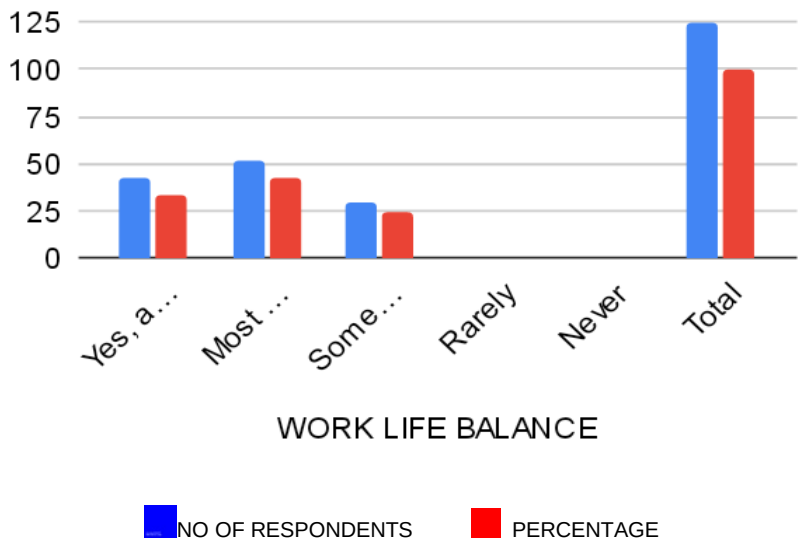
The majority of respondents, 76%, have access to wellness programs at work either always (42%) or sometimes (34%). This suggests that wellness programs are available to most employees, with a significant portion having regular access to them.

**TABLE – 4.3 WORK LIFE BALANCE**

| WORK LIFE BALANCE | NUMBER OF RESPONDENTS | PERCENTAGE |
|---|---|---|
| Yes, always | 43 | 34 |
| Most of the time | 52 | 42 |
| Sometimes | 30 | 24 |
| Rarely | 0 | 0 |

| | | |
|---|---|---|
| Never | 0 | 0 |
| Total | 125 | 100 |

**CHART – 4.3**




**INTERFERENCE :**

A majority of respondents, 76%, report having a good work-life balance, with 34% saying it is always balanced and 42% saying it is balanced most of the time. Only 24% experience work-life balance sometimes, indicating that most employees feel they can manage their work and personal life effectively.

## SUMMARY OF FINDINGS

1. Most of the respondents are male.
2. Most of the respondents are below 35 years.
3. Most of the respondents are Diploma.
4. Most of the respondents are 1-5 years.
5. Most of the respondents are employees.
6. Most of the respondents gave the answer yes.
7. Most of the respondents say that they received safety training.
8. Most of the respondents gave the answer to classroom training.
9. Most of the respondents say they feel more confident after the training.
10. Most of the respondents significantly reduce errors in their work.
11. Most of the respondents say they feel more engaged at work after training.
12. Most of the respondents were satisfied with the training provided.
13. Most of the respondents say training improved their productivity.
14. Most of the respondents gave the answer greatly improved their ability to operate machinery or perform tasks.
15. Most of the respondents say they apply daily what they learned in training.
16. Most of the respondents say yes they have noticed a reduction in workplace accidents due to training.
17. Most of the respondents gave the answer to Dayshift.
18. Most of the respondents say they feel a good work life balance.
19. Most of the respondents gave the answer to always having access to wellness programs at work.
20. Most of the respondents say sometimes they feel HR is responsive to employee concerns and grievances.
21. Most of the respondents say they are very satisfied with career development and growth opportunities.
22. Most of the respondents say very satisfied with overall job performance.
23. Most of the respondents gave the answer that lack of performance is the biggest challenge affecting productivity.
24. Most of the respondents gave the answer to yes, always opportunities for career growth in CUMI bonded division.
25. Most of the respondents say they recommended CUMI bonded division as a work place.

## SUGGESTION

1. Training improves employees' technical skills, leading to better performance and fewer errors.
2. Well-trained employees can perform tasks faster, reducing production time and costs.
3. Regular training reduces workplace accidents, ensuring a safer environment.
4. Training boosts morale, making employees feel valued and increasing job satisfaction.
5. Effective training programs can enhance employee retention by fostering growth opportunities.
6. Training ensures standardized procedures, improving product quality and reducing defects.
7. Training helps employees adapt to new technologies or processes, maintaining production flow.
8. Training enhances employees' ability to identify and resolve production issues quickly.
9. Training encourages collaboration and improves communication among team members.
10. Exposure to new techniques and ideas during training can spark innovation in production processes.

## CONCLUSION

Training programs in the CUMI Bonded Division have a significant positive impact on employee productivity. Employees who undergo regular training gain improved technical skills, enhanced problem-solving abilities, and a deeper understanding of the production process, leading to more efficient work. Additionally, training fosters a better work environment by boosting morale, reducing errors, and enhancing safety practices. As a result, the company benefits from increased production output, reduced operational costs, and higher employee retention. In summary, investing in training programs directly correlates with improved productivity and overall operational success within the manufacturing environment of the CUMI Bonded Division.The safety training provided to employees further enhances productivity by minimizing workplace accidents and promoting a safer working environment. Fewer workplace injuries result in less downtime, lower insurance costs, and a greater sense of security among the workforce, which in turn improves overall morale. This safe and supportive environment encourages employees to focus on their tasks, thus optimizing their productivity.

## DIRECTIONS FOR FUTURE RESEARCH

1.Investigating the latest market trends in the bonded abrasives sector, including demand forecasts and growth drivers.
2.Assessing innovations in bonding technologies and their impact on product performance and efficiency.
Analyzing customer feedback to understand satisfaction levels and potential areas for improvement in product offerings.
4.Studying the efficiency of supply chain processes in the production of bonded abrasives and the role of automation.
5.Examining sustainable practices within the bonded division, focusing on eco-friendly production and materials.
6.A comparative analysis of CUMI's bonded division with industry competitors, identifying strengths and weaknesses.
7.Researching cost-effective methods in manufacturing and sourcing to improve profitability without compromising quality.
8.Evaluating the effectiveness of quality control measures and their impact on product consistency and reliability.
9.Identifying potential regions for expansion and assessing market entry strategies for new international markets.
10.Investigating the role of employee skills and training in enhancing productivity and innovation within the division.

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