



# A STUDY ON OPTIMIZING EMPLOYEE MOVEMENT TO ENHANCE PRODUCTIVITY WITHIN THE RANIPET MANUFACTURING SECTOR

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## ABSTRACT

This paper presents a study on optimization of employee movement to amplify productivity within the Ranipet manufacturing sector. The goal of every organization is to focus about the productivity. In this study, focus about the intricate relationship between ergonomic considerations, time management, and productivity enhancement within contemporary work environments, as well as the factors influence overall productivity and the effective utilization of time. Enhancing productivity is dependent variable and optimizing employee movement is independent variable in this study. Through quantitative analysis involving sample of 104 participants, correlation and regression analyses were employed to assess the research hypotheses. The study validated these hypotheses through statistical techniques of correlation and regression. The outcomes of the result shows that all the variables are positively correlated and employee movement can disturb the productivity of the employees.

Key words: Employee Movement, Time Management, Productivity

## 1. INTRODUCTION

In the dynamic realm of modern manufacturing, operational efficiency and productivity plays a vital role in sustaining competitive advantage and for the economic growth and development. Within this context, the intricate of employee movement in the floor/environment and physical comfort emerges as a crucial determinant of overall performance. Productivity says that the measurement of efficiency by using various resources converting into desired outputs. Therefore, this paper embarks on an empirical journey within the Ranipet manufacturing sector, aimed at

focusing on what productivity is and how to create a work environment in an ergonomic setup to improve the employee performance with the help of time management.

## 2. STATEMENT OF THE PROBLEM

A study on the Ranipet manufacturing sector presents a scenario where employee movement and productivity stand as a multifaceted challenge. The operational landscape often training on employees to practice specific machines, followed by their assignment to different heavy machines poses disruptions and ergonomic concerns that hinders productivity. Also, the considerable distance between production areas and restrooms amplifies the employee movement, potentially affecting overall productivity levels. As the manufacturing sector seeks to streamline operations, and understanding how these factors impact productivity. Therefore, this study aims to address the problem of employee movement within the Ranipet manufacturing sector and intends to propose strategies for optimizing employee movement and manage the time to enhance overall productivity.

## 3. NEED FOR THE STUDY

**The process of my study on the Ranipet manufacturing sector has got great significance:**

1. This study provides me with practical understanding of enhancement of productivity is a cornerstone of success and understanding the role of employee movement in this context is essential.
2. This study helps to address the potential ergonomic issues stemming from suboptimal movement patterns is vital for ensuring comfort and minimizing health concerns for the employees.
3. The current research gap in the specific area of optimizing employee movement within the Ranipet manufacturing sector highlights the timeliness and pertinence, which seeks to provide valuable insights for industry progress.

## 4. OBJECTIVES OF THE STUDY

**The objectives of the study on optimizing of employee movement to enhance productivity within the Ranipet manufacturing sector are:**

1. To study the impact of ergonomic considerations and productivity enhancement.
2. To analyze the relationship between ergonomic considerations and time management.
3. To analyze the association between time management and productivity enhancement.

## 5. REVIEW OF LITERATURE

**Khawar Nadeem et al (2017)** in their research study is conducted to examine the impact of workplace environment are physical work environment, supervisor support, employee willingness and also job aid that affects employee performance at manufacturing industry of Lahore. Through quantitative analysis, involving with a sample of 352 respondents in order to test the research hypotheses. The finding provides that Pakistan employee prefer the support of supervisor more the physical work environment. So, results show physical work environment can disturb the employee's performance.

**Malashree P et al (2018)** in this paper present a study on productivity improvement by using work study technique and ergonomic setup for motion study in the metal section industry. To analyze the data, work pro software is used to assess the body posture by RULA and REBA tools. The research findings result that, implementing work study technique help to improve the work layout, reduce the cycle time and worker's fatigue. Also, analysis says that majority of the workers are working in uncomfortable and painful postures.

**Barnes Sookdeo (2019)** in this research paper aims to improve the productivity based on measuring the performance of the employee. The objective is to demonstrate the necessity for a performance measurement system to ensure that operations and employees are managed and this study consist of a mixed method approach. The research findings indicates that performance measurement systems are designed and it is based on the work measurement technique. The results indicates that the implementation of this system will ensure the organizational performance is measured and the productivity of the employees is enhanced.

**Dr Veena Christy et al (2020)** in this research aims to enhance the psychological well-being of the employee by using different aspects of physical, organizational and cognitive ergonomics. The qualitative research has done and found that, cognitive ergonomics plays a vital role in enhancing the psychological well-being of the employees and also it is crucial to employee satisfaction and making profits to the organization.

**Diwas KC (2020)** have studied the systematic measurement, observation and analysis of work has a strong tradition in operations management. The framework showcase some of the relevant papers that fall into a few key themes. The research findings are to explore various operational factors like behavioral micro foundations, effect of peers and workplace dynamics, the design of the organization and managing the task at work improve the capital and will continue to make worker productivity of the future.

**Ahmad Baleshzar et al (2022)** in this paper have examined the relationship between the individuals and other elements of a system that investigate the effects of ergonomic features and anxiety on the productivity of office workers. The study utilizes a comprehensive dataset comprising 176 office workers of a university with 3 years of work experience were randomly selected. The research of the study results that 70% of workstations need to be changed through ergonomic interventions and changes to boost the productivity in the organizations.

**Julio Alfonso Gonzalez-Mendoza et al (2023)** in their research study is conducted to examine the workplace habits that influence labor productivity in some public and governmental economic sectors of Norte de Santander (Colombia). The methodology involved with a sample of 25 executives of small and medium-sized companies from various sectors are used as key informants in this research. The findings indicates that work habits with the greatest positive and negative influence impact the productivity. The research allows the organization managers to adjust the hiring and training strategies to enhance the productivity by positive habits and minimize the negative effects.

**Godwin Demaki et al (2023)** have connection between the variants of organizational stress due to role ambiguity and work-family interaction and quality of work and product measures the employee's productivity. The study utilizes a comprehensive dataset comprising 127 respondents from 6 manufacturing companies in south-south, Nigeria. The research findings of the study indicates that organizational stress negatively and significantly affect the employee's productivity. The study outcomes recommended the management should encourage the employees to

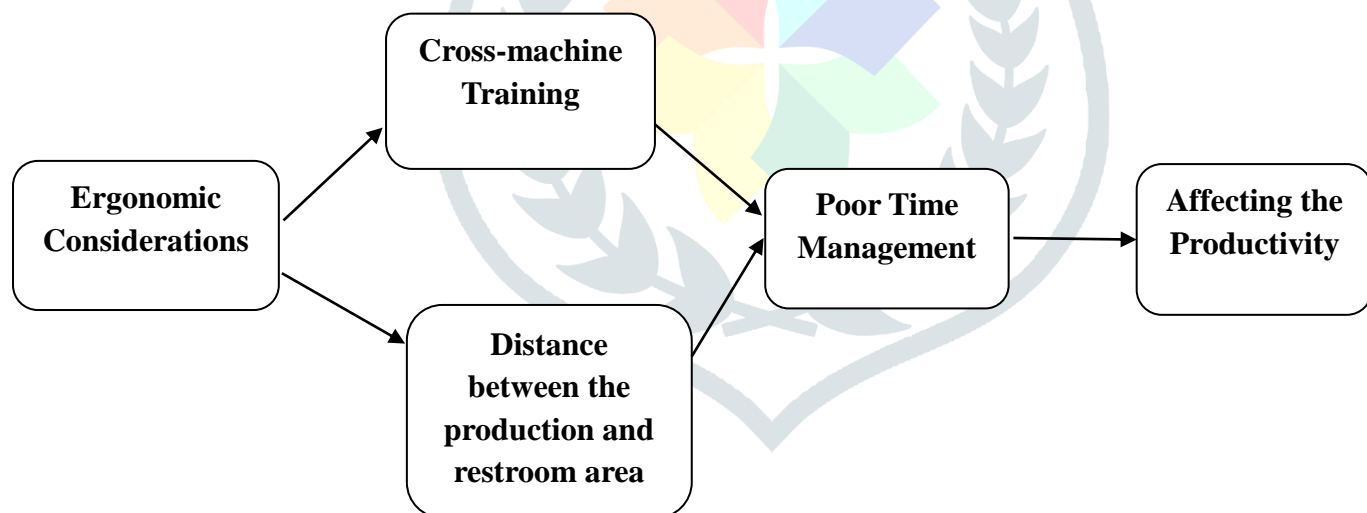
spend time with the family members also carry out the stress audits to reduce the stress level of the employees based on the roles assigned to increase the productivity.

Therefore, the above literature review investigates the various factors impacting employee performance and productivity in different industries. Studies emphasize the significance of supervisor support, ergonomic interventions, performance measurement systems, and work habits. Results highlight the influence of cognitive ergonomics, role ambiguity, and organizational stress on psychological well-being and productivity. The research underlines the need for interventions like ergonomic changes, stress reduction, and positive habit cultivation to enhance employee performance and overall organizational productivity. The modifications were made in this paper regarding the movement of employees in the floor/environment leads to poor time management that affects the productivity of the employees.

## 6. METHODOLOGY AND SAMPLE DESIGN

Research methodology of this paper shows that the structured and theoretical analysis within a relative field. The main purpose of the study is to enhance the productivity of the employees by reducing the employee movement. The research findings provide the insights into the survey and interpreted the facts and along with the recommendations for enhancing the productivity in the future years.

### Conceptual Framework:



### Sampling Techniques & Data Collection Methods:

In this study random sampling technique was used to collect the data. The individuals that are randomly selected from a population. The two sources where the information is collected namely,

#### 1. Primary Data

The questionnaire was prepared and the employees have limited formal education, a word-of-mouth approach will be employed to administer a questionnaire and gather responses from 104 employees within the Ranipet manufacturing sector, ensuring inclusivity and effective communication.

## 2. Secondary Data

The secondary data was used by going through the various documents like journals, websites and publications which are relevant to the theme of the study for gathering the information.

## 7. RESEARCH HYPOTHESIS

This study seeks to examine the impact of ergonomic considerations into the workplace environment and its subsequent influence on productivity enhancement within the Ranipet manufacturing sector. To test the hypothesis, gathered data to see if the relationship holds true.

## STATISTICAL TECHNIQUES

This study explores the interplay between ergonomic considerations and time management by using the techniques such as Pearsons's correlation coefficient to evaluate the relationship between these factors. Also, linear regression analysis will be employed to establish an association between the time management and productivity enhancement by using IBM SPSS Statistics 26.

## 8. RESULTS

### ANALYSIS USING CORRELATION:

#### Hypothesis:

#### Null hypothesis (H0)

“There is no relationship between ergonomic considerations and time management.”

#### Alternative hypothesis (H1)

“There is relationship between ergonomic considerations and time management.”

**Table. 1 Using Correlation**

Correlations			
		Ergonomic Setup	Time Management
Ergonomic Setup	Pearson Correlation	1	-.130
	Sig. (2-tailed)		.188
	N	104	104
Time Management	Pearson Correlation	-.130	1
	Sig. (2-tailed)	.188	
	N	104	104

### RESULTS:

Table. 1 show that with the negative correlation values (P) of -0.130 and the significance value of 0.05 at a 5% level of significance, the null hypothesis (H0) is Rejected and (H1) is Accepted. Therefore, there is relationship between the ergonomic considerations and time management.

**ANALYSIS USING REGRESSION:****Hypothesis:****Null hypothesis (H0)**

“There is no significant impact of time management on productivity enhancement.”

**Alternative hypothesis (H1)**

“There is significant impact of time management on productivity enhancement.”

**Table. 2 Using Regression**

Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	Time Management <sup>b</sup>	.	Enter
a. Dependent Variable: Productivity Enhancement			
b. All requested variables entered.			

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.084 <sup>a</sup>	.007	-.003	.545	.007	.718	1	102	.399
a. Predictors: (Constant), Time Management									

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.213	1	.213	.718	.399 <sup>b</sup>
	Residual	30.249	102	.297		
	Total	30.462	103			
a. Dependent Variable: Productivity Enhancement						
b. Predictors: (Constant), Time Management						

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.865	.435		8.882	.000
	Time Management	.086	.102	.084	.847	.399
a. Dependent Variable: Productivity Enhancement						

**RESULTS:**

Table. 2 shows the consequence of the influence of time management upon productivity enhancement. The consequence analyzed that based on R square, 0.7% of the total variation in productivity enhancement (dependent

variable) was described by time management (independent variable). The P value of 0.399 and the significance value of 0.05 at a 5% level of significance, the null hypothesis (H0) is Accepted and (H1) is rejected. Therefore, there is no significant impact of time management on productivity enhancement.

## 8. DISCUSSION

By doing this research through a survey on how optimizing the employee movement will enhance productivity within the Ranipet manufacturing sector. It is observed that several important insights into the relationship between the ergonomic considerations, time management, and productivity enhancement. A lot of research studies have highlighted the various ergonomic interventions affects employee performance. Unlike previous studies, the slight modifications were made in this paper regarding the movement of employees in the floor/environment due to distance between production area and restroom facilities, and cross-machine training leads to poor time management that affects the productivity of the employees. The negative correlation between ergonomic considerations and time management suggests that variation between the machines they are trained on and those they encounter during production poses a significant hurdle. The need to transition between different machines disrupts the efficiency of work. Also, another factor influencing the employee movement is the distance between the production areas and restroom facilities. The reality that restroom is not conveniently located near the production zones leads to employees spending excessive time and employees themselves recognizing that they are taking advantage and wasting the time. So, the regression analysis revealed that while there is no statistically significant impact of time management on productivity enhancement, the explained variation in productivity enhancement due to time management is relatively normal as it does not impact employee production. This shows that time management alone can't play a role in enhancing productivity where as other factors can also be taken into consideration for future research.

## 9. CONCLUSION AND RECOMMENDATIONS

In this study, we examined the impact of employee movement to enhance productivity with the Ranipet manufacturing sector. Through statistical techniques, the study established the ergonomic considerations negatively and significantly leads to poor time management that might impact the productivity of the employees. In view of the results, the study recommends the management should create workstations that cater to specific task or machine types. This design can reduce the need for employees to navigate between diverse machines, enhancing both workflow and time management.

Also, management should strategically plan the ergonomic considerations as to support the production environment. This proximity can significantly reduce the employees time spent in movements, allowing them to manage their time more efficiently. Besides, the study contributes to knowledge by showing that employee movement will have the impact on the productivity due to poor time management. Also, it determines that time management alone can't play a mediating role in enhancing productivity where as other factors too, where those can be taken into consideration for future research.

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