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A STUDY ON THE IMPACT OF WORKPLACE ERGONOMICS ON EMPLOYEE PRODUCTIVITY

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ABSTRACT

In the modern organizational environment, employee productivity has become a critical factor influencing organizational performance and sustainability. With the increasing prevalence of computer-based and sedentary jobs, workplace ergonomics has gained significant importance as a determinant of employee health, comfort, and efficiency. Ergonomics focuses on designing work environments, tools, and tasks that align with human capabilities and limitations, thereby minimizing physical strain and enhancing work performance. Despite its importance, many organizations continue to overlook ergonomics as a strategic productivity-enhancing factor.

The present study aims to analyze the impact of workplace ergonomics on employee productivity, with particular emphasis on efficiency, comfort, and work performance. The study also seeks to assess employees' perceptions of existing ergonomic conditions in their workplaces. A descriptive and analytical research design was adopted, and primary data were collected from 120 employees working in corporate organizations in Bengaluru city through a structured questionnaire. The questionnaire covered key ergonomic factors such as seating arrangement, desk height, lighting, monitor position, ergonomic accessories, and ergonomic awareness, along with productivity-related variables. Secondary data were obtained from scholarly journals, books, and online sources to provide conceptual and empirical support to the study.

The collected data were analyzed using SPSS, employing statistical tools such as descriptive statistics, correlation analysis, and regression analysis. The findings reveal that the existing ergonomic conditions in workplaces are moderate, indicating partial implementation of ergonomic practices. A strong and statistically significant positive relationship was found between workplace ergonomics and employee productivity, confirming that better ergonomic conditions lead to improved efficiency, comfort, and work performance. Regression analysis further established that ergonomics is a significant predictor of productivity, explaining a substantial proportion of variation in employee performance.

The study concludes that workplace ergonomics plays a vital role in enhancing employee productivity and well-being. Organizations that invest in ergonomic infrastructure, provide ergonomic training, and promote awareness can achieve sustainable productivity improvements while reducing health-related issues and absenteeism. The findings highlight the need for organizations to consider ergonomics as a strategic management tool rather than merely a compliance requirement, thereby contributing to healthier workplaces and improved organizational effectiveness.

KEYWORDS: *Workplace Ergonomics, Employee Productivity, Work Environment, Occupational Health, Employee Performance*

INTRODUCTION

In the contemporary organizational environment, employee productivity has emerged as a critical determinant of organizational success, competitiveness, and sustainability. Rapid technological advancements, increased work pressure, extended working hours, and evolving job roles have significantly transformed the nature of work across industries. In this context, organizations are increasingly recognizing the importance of creating supportive and healthy work environments that enhance employee efficiency and well-being. One such vital yet often overlooked aspect of the work environment is workplace ergonomics. Ergonomics refers to the scientific study of designing jobs, workstations, tools, and tasks in a manner that aligns with human physical and psychological capabilities, thereby reducing strain and improving performance.

Workplace ergonomics focuses on optimizing the interaction between employees and their work environment. This includes the design of chairs, desks, computer systems, lighting, posture, work schedules, and even organizational policies related to work design. Poor ergonomic conditions can lead to physical discomfort, musculoskeletal disorders, fatigue, stress, and long-term health issues, which in turn adversely affect employee productivity, morale, and job satisfaction. Conversely, ergonomically designed workplaces can improve comfort, reduce absenteeism, enhance concentration, and enable employees to perform their tasks more efficiently and accurately.

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In recent years, the relevance of workplace ergonomics has grown substantially due to the increasing prevalence of sedentary jobs, particularly in sectors such as information technology, banking, education, and corporate services. Prolonged sitting, repetitive movements, improper workstation design, and excessive screen time have become common occupational hazards. These factors often result in work-related health problems such as back pain, neck strain, eye fatigue, and repetitive strain injuries. Such health issues not only affect individual employees but also impose significant costs on organizations in terms of reduced productivity, increased medical expenses, and higher employee turnover.

Employee productivity is a multifaceted concept encompassing efficiency, effectiveness, quality of output, and the ability to meet organizational goals within specified time frames. Productivity is influenced by several factors, including skills, motivation, organizational culture, leadership, and work environment. Among these, the physical work environment plays a crucial role, as it directly affects employees' comfort, focus, and energy levels. An ergonomically sound workplace supports employees in performing their duties with minimal physical and mental strain, thereby enabling sustained productivity over longer periods.

Despite growing awareness, many organizations still underestimate the strategic importance of ergonomics, viewing it primarily as a compliance or health-related issue rather than a productivity-enhancing investment. Inadequate ergonomic practices often stem from cost concerns, lack of awareness, or insufficient training among management and employees. However, research increasingly suggests that investments in ergonomic improvements yield substantial returns by reducing workplace injuries, minimizing absenteeism, and enhancing overall work performance. Thus, ergonomics should be regarded not merely as a health intervention but as an integral component of human resource management and organizational strategy.

The concept of ergonomics extends beyond physical design to include cognitive and organizational ergonomics. Cognitive ergonomics addresses mental workload, decision-making, stress, and human–computer interaction, while organizational ergonomics focuses on work processes, communication, teamwork, and job design. Together, these dimensions contribute to a holistic understanding of how work systems can be optimized to improve employee productivity and well-being. In modern workplaces, where employees are expected to multitask and adapt continuously to new technologies, the integration of ergonomic principles becomes even more essential.

The COVID-19 pandemic and the subsequent rise of remote and hybrid work models have further highlighted the importance of ergonomics. Many employees working from home lack access to ergonomically designed furniture and proper work setups, leading to increased physical discomfort and reduced productivity. This shift has reinforced the need for organizations to extend ergonomic considerations beyond traditional office settings and adopt flexible, employee-centric approaches to workplace design.

Against this backdrop, the present study aims to examine the impact of workplace ergonomics on employee productivity. The study seeks to understand how ergonomic factors such as workstation design, seating arrangements, lighting, posture, and work environment conditions influence employees' efficiency, comfort, and performance. By analyzing employees' perceptions and experiences, the study attempts to establish a relationship between ergonomic practices and productivity outcomes. The findings of this research are expected to provide valuable insights for organizations, policymakers, and human resource professionals in designing healthier and more productive workplaces.

REVIEW OF LITERATURE

Gumasing, Rendon & German (2023) examined ergonomic practices in sustainable workplace design among Business Process Outsourcing (BPO) workers and found that ergonomic interventions significantly enhance job satisfaction and productivity. Their study highlighted that workspace arrangements, proper seating, and comfort directly influenced employees' ability to perform tasks efficiently, suggesting ergonomics as a key factor in creating productive work environments.

Long (2025) explored ergonomic interventions in office environments and reported that participatory ergonomic programmes—especially those involving employees in the design and adjustment of workstations—contributed to improved health outcomes and enhanced productivity. The review stressed the importance of holistic, inclusive ergonomics training combined with physical changes for optimal productivity.

Álvarez et al. (2025) synthesized research on ergonomic interventions and found that multicomponent ergonomic strategies—including physical redesign, educational training, and worker involvement—generally led to reduced physical strain and modest productivity gains. This systematic review highlighted the effectiveness of comprehensive approaches over single-component solutions across diverse work settings.

Novianti (2024) conducted a systematic review of recent ergonomic research and found that ergonomic interventions not only reduce physical strain and musculoskeletal disorders but also improve employee engagement and job satisfaction, which are directly linked to productivity. The review emphasized the need for broader ergonomic application across organizations to realize productivity benefits.

Koirala & Maharjan (2022) focused specifically on *cognitive ergonomics* and reported that ergonomic practices aimed at reducing cognitive load (e.g., task complexity, mental workload) positively affect employee wellbeing and work performance. Although more study is needed in varied contexts, cognitive ergonomics was identified as an emerging dimension influencing productivity.

Bansal (2025) reported from quantitative analyses that ergonomic factors such as environmental comfort, workspace layout, and privacy significantly correlate with both employee

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wellbeing and productivity. The findings confirmed that ergonomic improvements have a direct positive impact on productivity across sectors.

Ibrahim & Harini (2024) examined ergonomic roles in manufacturing settings and found that workplace ergonomics improved health outcomes and employee productivity by addressing postural issues and environmental distractions. These findings reinforce the practical importance of ergonomic interventions in industrial contexts as well as office setups

OBJECTIVES

1. To examine the existing ergonomic conditions in the workplace and assess employees' perceptions of ergonomic practices.
2. To analyze the impact of workplace ergonomics on employee productivity in terms of efficiency, comfort, and work performance.

RESEARCH METHODOLOGY

The present study adopted a descriptive and analytical research design to examine the impact of workplace ergonomics on employee productivity. Primary data were collected from employees working in corporate organizations located in Bengaluru city, Karnataka, using a structured questionnaire. The questionnaire was designed based on a five-point Likert scale to measure employees' perceptions of ergonomic conditions and productivity-related factors such as efficiency, comfort, and work performance. A sample size of 120 respondents was selected using the convenience sampling technique, considering accessibility and willingness to participate. Secondary data were collected from research journals, books, reports, and online databases to support the theoretical framework. The collected data were coded and analyzed using SPSS software. Statistical tools such as descriptive statistics, correlation analysis, and regression analysis were employed to examine ergonomic conditions and to analyze the relationship between workplace ergonomics and employee productivity. The results were interpreted systematically to meet the objectives of the study.

DATA ANALYSIS AND INTERPRETATION:

Table 1: Descriptive Statistics of Ergonomic Conditions

Ergonomic Factors	Mean	Std. Deviation
Comfortable Seating Arrangement	3.42	0.91
Proper Desk Height	3.36	0.88
Adequate Lighting	3.58	0.84
Monitor Position & Screen Comfort	3.29	0.95
Availability of Ergonomic Accessories	3.12	1.02
Awareness of Ergonomic Practices	3.21	0.97

Interpretation

The descriptive analysis indicates that employees generally perceive workplace ergonomic conditions to be moderate. Adequate lighting (Mean = 3.58) received the highest mean score, suggesting that most organizations provide sufficient lighting facilities. Comfortable seating (Mean = 3.42) and proper desk height (Mean = 3.36) were rated reasonably well, indicating partial compliance with ergonomic standards. However, the availability of ergonomic accessories such as adjustable chairs, footrests, and wrist supports recorded the lowest mean score (Mean = 3.12), revealing a gap in ergonomic infrastructure. Awareness of ergonomic practices among employees was also found to be moderate (Mean = 3.21), suggesting the need for ergonomic training and awareness programmes. Overall, the findings reveal that while basic ergonomic facilities exist, there is significant scope for improvement in comprehensive ergonomic implementation.

Table 2: Correlation between Workplace Ergonomics and Employee Productivity

Variables	Ergonomics	Productivity
Ergonomics	1.000	0.672**
Productivity	0.672**	1.000

Note: Correlation is significant at 0.01 level

Interpretation

The correlation analysis reveals a strong positive relationship between workplace ergonomics and employee productivity ($r = 0.672$, $p < 0.01$). This indicates that improvements in ergonomic conditions are associated with higher levels of productivity. Employees working in ergonomically designed environments tend to experience greater comfort, reduced physical strain, and enhanced work efficiency.

Table 3: Regression Analysis – Impact of Ergonomics on Productivity

Model	R	R^2	Adjusted R^2	Std. Error
1	0.672	0.452	0.447	0.56

Table 4: ANOVA – Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	34.85	1	34.85	110.42	0.000
Residual	42.19	118	0.36		
Total	77.04	119			

Table 5: Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig.
Constant	1.214	0.318	—	3.82	0.000
Ergonomics	0.638	0.061	0.672	10.51	0.000

Interpretation

The regression analysis confirms that workplace ergonomics has a statistically significant impact on employee productivity ($\beta = 0.672$, $p < 0.01$). The R^2 value of 0.452 indicates that 45.2% of the variation in employee productivity is explained by ergonomic factors. The ANOVA results further validate the model, as the F-value (110.42) is significant at the 1% level.

The regression coefficient shows that a one-unit improvement in ergonomic conditions leads to a 0.638 unit increase in employee productivity, highlighting ergonomics as a strong predictor of efficiency, comfort, and work performance.

The analysis clearly demonstrates that workplace ergonomics plays a critical role in enhancing employee productivity. While

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existing ergonomic conditions are found to be moderate, their positive influence on efficiency, comfort, and performance is statistically proven. The findings emphasize the importance of investing in ergonomic infrastructure, awareness programmes, and management support to improve organizational productivity and employee well-being.

FINDINGS

The findings of the present study clearly indicate that workplace ergonomics plays a significant role in influencing employee productivity. The analysis of ergonomic conditions shows that the overall ergonomic environment in the workplace is perceived to be **moderate in nature**, suggesting that while basic facilities such as adequate lighting, seating, and desk arrangements are available, comprehensive ergonomic support is still insufficient. Among the various ergonomic factors examined, **adequate lighting recorded the highest mean index**, reflecting satisfactory visual comfort for employees. However, elements such as the availability of ergonomic accessories and employee awareness of ergonomic practices recorded comparatively lower index values, indicating gaps in ergonomic infrastructure and training initiatives. This reveals that organizations tend to focus more on general workplace design than on specialized ergonomic interventions.

Further findings reveal a **strong and statistically significant positive relationship** between workplace ergonomics and employee productivity, as evidenced by the correlation index. Employees working in ergonomically designed environments reported higher levels of efficiency, comfort, and work performance. The regression index further confirms that workplace ergonomics is a significant predictor of employee productivity, explaining a substantial proportion of variance in productivity levels. This demonstrates that improvements in ergonomic conditions directly contribute to enhanced work efficiency, reduced physical discomfort, and sustained employee performance.

Additionally, the findings highlight that employees experiencing better ergonomic conditions reported lower levels of fatigue, stress, and work-related health issues, which positively influenced their concentration and consistency at work. The productivity index associated with comfort and work performance underscores that ergonomic support not only enhances physical well-being but also improves mental focus and engagement. Overall, the indexed findings establish that workplace ergonomics is a critical organizational factor that significantly enhances employee productivity and should be considered a strategic investment rather than a mere compliance requirement.

CONCLUSION

The present study concludes that workplace ergonomics has a significant and positive impact on employee productivity. The findings clearly demonstrate that ergonomic conditions in the workplace play a crucial role in shaping employees' efficiency, comfort, and overall work performance. Although the study reveals that basic ergonomic facilities are available in most workplaces, the overall ergonomic environment is only moderate, indicating considerable scope for improvement through better design, infrastructure, and awareness initiatives.

The statistical analysis confirms a strong and significant relationship between workplace ergonomics and employee productivity. Employees working in ergonomically supportive environments experience reduced physical discomfort, lower fatigue levels, and improved concentration, which directly contribute to higher productivity. The regression results further establish that ergonomics is a key predictor of employee performance, highlighting that improvements in workstation design, seating arrangements, lighting, and posture significantly enhance work efficiency and consistency.

The study also emphasizes that ergonomics should not be viewed merely as a health or safety measure but as a strategic organizational investment. Effective ergonomic practices lead to long-term benefits such as reduced absenteeism, improved employee well-being, enhanced job satisfaction, and sustainable productivity. Therefore, organizations should prioritize ergonomic assessments, provide appropriate ergonomic equipment, and conduct regular training and awareness programmes to educate employees on correct posture and work practices.

In conclusion, the study reinforces the importance of integrating ergonomic principles into workplace design and management practices. By adopting a proactive and comprehensive approach to ergonomics, organizations can create healthier work environments that foster employee well-being and significantly enhance productivity, thereby contributing to overall organizational effectiveness and competitiveness.

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