

Impact of Effective Ergonomic Practices on IT Employees - with Reference to Bangalore City

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ABSTRACT

From decades, employees are considered as an asset of any organization and taking care of them to be highly productive is the primary concern for themselves and the employer. This study focuses on how an employees can be taken care by offering and making them adopt to ergonomic practices in the organization. The primary aim of this study is to analyze the impact of effective ergonomic practices on IT employees in Bangalore city. The study is based on conclusive research design and it is descriptive in nature, wherein, primary data is been gathered with the help of structured questionnaire consisting 20 items that includes all major factors of the variables and also the demographics of the individual respondents. Totally 100 individual employees of IT sector working Bangalore city were selected by using the convenient sampling technique. Implementing effective ergonomic practices has proven to be instrumental in improving the workplace comfort and satisfaction of IT employees. This approach not only enhances employee engagement but also contributes to a notable reduction in musculoskeletal disorders within the workforce. Thus, effective ergonomics practices have a significant impact on performance level and productivity of the employees working in IT companies in Bangalore.

Key Words: Ergonomic Practices, Workplace Comfort, Employee Engagement, Satisfaction, Musculoskeletal Disorders and Productivity

How To Cite This Article: Rashmi R, Vikas B. Impact Of Effective Ergonomic Practices On It Employees - With Reference To Bangalore City. Int J Drug Deliv Technol. 2026;16(27s):519-522. Doi: 10.25258/ijddt.16.27s.62.

1. Introduction

In today's fiercely competitive environment, the aspiration to excel is widespread. To thrive in the professional realm and achieve enhanced growth in terms of both income and performance, individuals find themselves investing increasingly more time in the workplace [1]. However, this dedication to work often leads to the onset of physical ailments, typically disregarded during the prime years of one's 20s and 30s, ranging from headaches to backaches. In the contemporary landscape, the amalgamation of product attributes serves as a pivotal competitive determinant. Technological prowess, once the sole paramount quality, has now been overshadowed by the rising significance of other aspects like comfort, satisfaction, and usability [2]. Consequently, emerging branches of ergonomics, such as contentment, ease, and cognitive engineering, are being tentatively explored within the context of this competitive landscape. This exploration aims to augment the value of products by addressing user-related considerations [3].

Furthermore, additional concepts such as macro ergonomics, participatory ergonomics, and the enhancement of corporate images are also under consideration. These diverse elements contribute to a holistic approach in navigating the complexities of competitiveness in the contemporary professional arena [4].

Ergonomics involves the application of information regarding human behavior, abilities, and limitations to the design of systems, machinery, tools, tasks, or

environments, aiming for productive, safe, and efficient human utilization. It revolves around achieving a proper fit and encompasses the development of behavioral strategies that align with human physical and mental health to enhance human-work relationships [5]. Derived from the Greek words 'ergon,' meaning "work," and 'nomos,' signifying 'laws,' ergonomics literally translates to the laws of work [6]. Numerous research studies have demonstrated the positive outcomes of implementing ergonomic principles in various aspects such as workplaces, occupational health and safety, machine design, job design, and the design of environments and facilities [7].

Ergonomics is concerned with creating a system that optimally aligns employees with their work environment, equipment, tasks, and workspace to enhance their comfort, safety, productivity, and efficiency [8]. It encompasses various disciplines, including psychology, physiology, engineering, biomechanics, anthropometry, and industrial design, all contributing to the field of ergonomics. In essence, it is the exploration of how to design technology that harmonizes with the human body and its psychological capabilities [9]. Consequently, the terms 'human factor' and 'ergonomics' have become interchangeable, both referring to the concept of achieving a harmonious 'human-machine fit' [10].

Various methods exist to assess the correlation between human factors and ergonomics in the IT sector, ranging from straightforward approaches to more intricate ones. Evaluation can be conducted through observation,

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interviews, simple questionnaires, or more sophisticated techniques [11]. At times, experts and organizations delve into in-depth studies by scrutinizing individual construction units or production units to thoroughly assess the impact of implementing ergonomic practices within the organization [12]. Hence, this study helps to understand the importance of ergonomic practices and its impact on IT employees in Bangalore city.

2. Literature Review

Iyer et al. (2025), conducted a study on ergonomic assessment methods and highlighted that poor posture and repetitive movements significantly contribute to musculoskeletal disorders, while technology-based ergonomic interventions improve workplace efficiency. **Bansal (2025)**, in this study examined the role of ergonomics in employee well-being and found that proper workstation design and ergonomic practices enhance productivity and reduce fatigue among employees. **Thomas et al. (2025)**, analyzed ergonomic interventions in modern workplaces and concluded that organizations adopting ergonomic strategies experienced improved employee comfort and higher work performance. **Mouhib et al. (2025)**, emphasized the importance of human-centric ergonomics in Industry 5.0 and stated that ergonomics plays a vital role in improving both employee safety and productivity. **Sharma et al. (2024)**, focused on employee satisfaction in the IT sector and identified that a well-designed work environment, including ergonomic factors, significantly influences employee performance and job satisfaction. **Kamarudin et al. (2024)**, conducted a review on workplace ergonomics and reported that improper sitting posture and poor furniture design are major causes of physical discomfort among employees. **Khan**

et al. (2024), studied ergonomics awareness among IT professionals and found that although awareness exists, the practical implementation of ergonomic practices remains limited. **Bolis et al. (2023)**, carried out a systematic review and concluded that ergonomic practices contribute significantly to employee well-being and organizational productivity. **Wang et al. (2023)** conducted an exploratory study on office workers using sit-stand desks and reported that posture changes significantly influenced productivity; employees who switched between sitting and standing postures showed approximately 6.5% higher productivity measured through effective computer interactions, indicating ergonomic design’s immediate impact on work performance. **Gumasing et al. (2023)** examined ergonomic domains among business process outsourcing (BPO) workers and found that physical and macro-ergonomic factors significantly affected overall productivity and job satisfaction, demonstrating that ergonomic workplace design plays a key role in enhancing employee output and well-being in office settings. **Haqi et al. (2023)** analyzed ergonomic risks and musculoskeletal complaints among office workers and revealed that non-ergonomic conditions correlate with higher prevalence of physical discomfort and reduced work productivity, emphasizing the need for ergonomic improvements in workstation setup to reduce health issues.

3. Objectives of the Study

The primary objectives of the study are as follows:

1. To examine the outcomes of effective ergonomic practices in workplace.
2. To analyze the impact of ergonomic practices on IT employees.

3.1 Conceptual Model of the Study

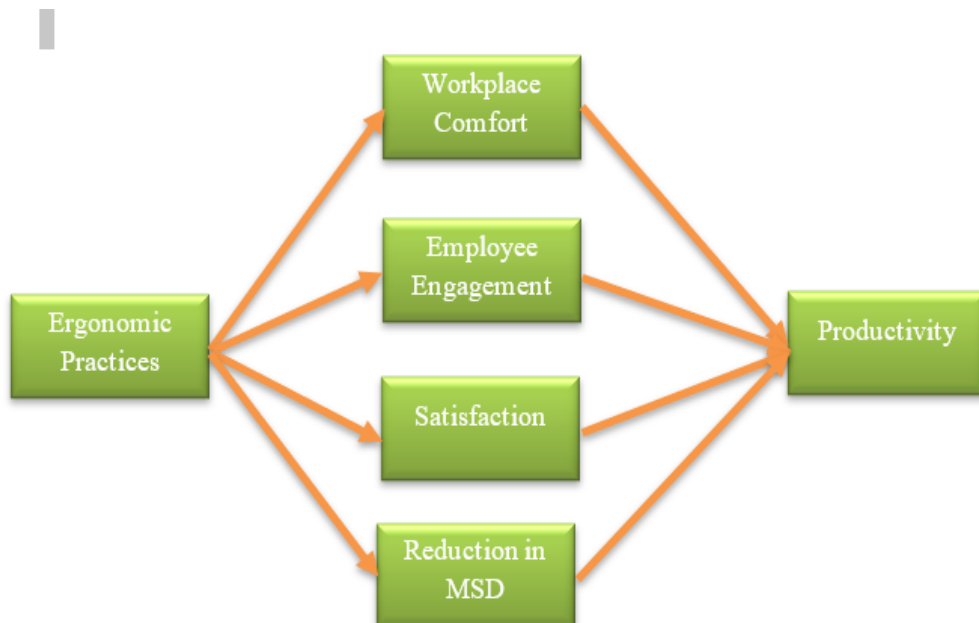


Fig 1: Conceptual Model of the Study

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3.2 Hypotheses of the Study

Hypothesis 1 (H0): Effective Ergonomic Practices has no influence on Workplace Comfort.

Hypothesis 2 (H0): Effective Ergonomic Practices has no influence on Employee Engagement.

Hypothesis 3 (H0): Effective Ergonomic Practices has no influence on Employee Satisfaction.

Hypothesis 4 (H0): Effective Ergonomic Practices has no influence on reduction in MSD.

Hypothesis 5 (H0): Outcomes of Ergonomic Practices has no influence on Employee's Productivity.

4. Research Design and Methodology

A. Research Design: This study employs a quantitative research approach with an explanatory method as the

predominant research practice, utilizing a conclusive research design. Descriptive statistics are employed to identify and examine relationships within and among variables, facilitating generalizations and providing explanations closely aligned with the object of inquiry.

B. Data Collection: This research involves primary data collected through structured questionnaires, utilizing a five-point Likert scale. A sample size of 100 IT employees distributed across Bangalore city, is selected as respondents using non-probability sampling techniques, specifically convenient sampling.

C. Statistical Tools: The analysis of the study is conducted using SPSS software, employing tools such as factor analysis, reliability assessment, and regression.

5. Analysis and Interpretation

A. Factor Analysis

Table 1: KMO- Bartlett's Test Source: Field Survey and Primary Data from IT employees of Bangalore City, Karnataka in the Study Area January 2025

Sl.No	Variables	KMO Value	Significance	DF
1	Ergonomic Practices	0.712	0.000	4
2	Key Variables	0.844	0.000	13
3	Productivity	0.694	0.000	3

Factor analysis is carried out to determine the KMO value of dependent and independent variable 0.712, 0.844 and 0.694 respectively, showing the grouping of variable is valid enough to carry out the further analysis with the significance value of 0.000 with Df 4, 13 and 3 respectively for the variable Ergonomic Practices, key Variables and Productivity.

B. Reliability Results

Table 2: Reliability Results of Variables Source: Field Survey and Primary Data from IT employees of Bangalore City, Karnataka in the Study Area January 2025

Factors	Cronbach's constant	Number of Items
Ergonomic Practices	.811	4
Workplace comforts	.933	5
Employee Engagement	.856	5
Satisfaction	.877	3
Reduction in MSD	.812	4
Productivity	.783	5

The above table 2, describe the reliability analysis states the value of 'Cronbach's Alpha' helps in checking internal consistency of factor grouping and it shows that all the factors that are grouped in rotated component matrix is greater than 0.7 i.e., 70%, hence the homogenous grouping formed in rotated component matrix by overcoming or eliminating the underlying factors is valid and useful for the further analysis.

C. Results of Regression Analysis

Table 3: Regression Result of Variables Source: Field Survey and Primary Data from IT employees of Bangalore City, Karnataka in the Study Area January 2025

Key Variables	Independent Variable	Std coefficients(Beta)	Sig
Workplace Comforts	Ergonomic Practices	.847	.010
Employee Engagement		.803	.003
Satisfaction		.788	.048
Reduction in MSD		.644	.000

D. Results of Regression Analysis

Table 4: Regression Result of Variables Source: Field Survey and Primary Data from IT employees of Bangalore City, Karnataka in the Study Area January 2025

Key Variables	Dependent Variable	Std coefficients(Beta)	Sig
Workplace Comforts	Employee Productivity	.797	.002
Employee Engagement		.716	.000
Satisfaction		.698	.003
Reduction in MSD		.893	.000

a. The above value of .010 states that the variable effective ergonomics practices have an influence on variable Workplace Comforts. Hence the null hypothesis 1 is rejected.

b. The above value of .003 states that the variable effective ergonomics practices have an influence on variable employee engagement. Hence the null hypothesis 2 is rejected.

c. The above value of .048 states that the variable effective ergonomics practices have an influence on variable satisfaction. Hence the null hypothesis 3 is rejected.

d. The above value of .000 states that the variable effective ergonomics practices have an influence on variable reduction in MSD. Hence the null hypothesis 4 is rejected.

e. The values of significance in Table 4, signifies that the outcomes of ergonomics practices have an influence on employee productivity.

6. Discussion

Following effective ergonomic practices can have several positive results, especially in a work or office environment. Ergonomics is the science of designing and arranging things to enhance efficiency and reduce discomfort or risk of injury. This study has helped to understand that incorporating ergonomic practices will result in, making the workspace more comfortable. Properly designed chairs, desks, and equipment can reduce discomfort and fatigue, leading to a more pleasant work experience. Employees who feel that their well-being is prioritized by their employer are likely to be more engaged in their work. Ergonomic practices demonstrate a commitment to employee health and can contribute to a positive work culture. Providing employees with ergonomically designed workspaces can contribute to overall job satisfaction. When employees feel their needs are considered and addressed, they are more likely to be satisfied with their jobs. Ergonomic practices help prevent and alleviate musculoskeletal disorders such as back pain, neck strain, and carpal tunnel syndrome. By promoting proper posture and providing ergonomic furniture and tools, the risk of developing these disorders can be minimized. Comfortable and well-designed workspaces can contribute to increased productivity. When employees are not distracted by discomfort or pain, they can focus more on their tasks and work more efficiently.

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