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Ergonomic factors and performance of academics in public universities in Nigeria

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Abstract
Purpose: This study investigated the effects of physical ergonomic factors on the performance of lecturers in public Universities in Anambra State, Nigeria.
Research Methodology: This study adopted a descriptive survey design. The population of the study was 200; 187 questionnaires were returned and used in the analysis, and the census method was adopted. The source of the data was a questionnaire, which was tested for reliability using the split-half technique, and the value obtained was .998. Correlation analysis was carried out, and the hypothesis was tested at a 5% level of significance.
Results: The findings indicated that there is a positive correlation between ergonomic factors and the performance of academics in the universities under study, and it was established that the coefficient level between ergonomic factors and the performance of academics is very high, and that the correlation coefficient is significant at the 0.01 levels (.000<0.01). Therefore, the null hypothesis was rejected and alternately accepted, which states that there is a significant relationship between physical ergonomic factors and the performance of academics in public Universities in Anambra State, Nigeria.
Limitations: The narrowing of the scope of the study to only public Universities in Anambra State limits the generalizability of the study.
Contribution: The Nigerian government will, by this study, know how to properly apply the physical ergonomic factors and its principles strictly adhered to, which will help reduce stress and work-related hazards in the workplace, leading to increased efficiency and stellar performance of public universities.
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1. Introduction

Productivity does not necessarily come through working hard and putting more hours and energy in one's place of work. Employee inefficiency in the organization can be attributed to many factors other than dawdling. One of the things of great value for every organization is its employees (Fernando & Surjandari, 2021). Many organizations have failed to operate optimally or successfully because of negligence in some areas, which were calculated to be irrelevant in achieving the core objectives of these organizations. Financial and other motivational inducements do not bring out the best in employees when ergonomic factors are neglected or lacking. The success of an organization is largely dependent on the quality of its employees (Arimie, 2019). Recently, increasing employees' productivity has become a major concern for managers. Equally, it is not an easy task for management to attract the

right employees and keep them satisfied to get the best out of them to achieve the objective in the organization (Panchali & Seneviratne, 2019).

In this era, marked by rapid technological advancements and evolving work environments, the well-being and performance of employees are pivotal to the success of organizations across the globe. One critical factor that plays a profound role in shaping both the physical and cognitive aspects of employee performance is ergonomic. The discipline of ergonomics, often described as the science of designing workspaces, equipment, and systems to optimize human well-being and performance, has garnered increasing attention from researchers, policymakers, and organizations. Businesses, organizations, and academic institutions continually seek innovative strategies to improve efficiency, reduce costs, and foster a healthier and more productive workforce. The relationship between ergonomics and employee performance has emerged as a central area of research. Understanding how the design and arrangement of workspaces, tools, and tasks impact employees' physical health, cognitive function, and overall job satisfaction is paramount. The productivity level of most organizations, which has proven to be successful, is largely dependent on how well employees are able to complete tasks given to them (L. I. O. Darko, Bans-Akutey, Ugoh, Ankomah, & Afriyie, 2022). It not only promotes the well-being of the workforce, but also has the potential to drive organizational excellence and competitiveness. Productivity can be achieved by ensuring that employees have their workplace planned, the organization's objectives spelled out, their environment organized, and office machines, furniture, and equipment designed and arranged to suit the employee and environment.

Employee (Labor) is one of the most important factors of production because other factors of production and the quality of output of an organization depend largely on the caliber of the people working therein. With a good work-life balance in place and a work environment that fits the people instead of the other way around, improved quality, productivity, and attainment of the organizational objective are assured (Koirala & Nepal, 2022). An organization's leadership should strive to create a work-friendly environment, creating an effective, harmless, and convenient workplace with a relaxed and productive atmosphere. These could amplify human force, vitality, increased work quality, and ultimately, desired productivity (Maballaghi, Salimi, & Nasirnejad, 2016). Ergonomics or human factor engineering can be used to design workplaces, equipment, products, environments, and staff policies that consider the health needs of employees (Makhbul et al., 2022). This enhances the effectiveness and productivity of the work environment and equally ensures employees' safety and happiness while carrying out their assigned duties. This adds value to the business and makes workers put more effort into their jobs. A healthy and employee-friendly organization helps breed a culture of innovation, harmony, increased productivity, and creativity (Sabir, Maqsood, Tariq, & Devkota, 2019). According toChangxian (2011), one of the ergonomic trends in the business world in recent times is "green design" or "People-oriented" or "ergonomic design". It has replaced "traditional product design" in most countries, especially in Asia, because the needs and psychological well-being of employees are key to whatever objective the organization is set to achieve.

An organization that is devoid of ergonomic inputs tends to house health-related disorders among the employees (Olabode, Adesanya, & Bakare, 2017). When a workplace is not well-designed to suit employees, it may lead to low productivity, low job satisfaction, low morale, and several health problems (Koirala & Nepal, 2022). The most prevalent health safety issues in the Nigerian working environment can be traced to the absence of human factor designs, which are ergonomic (Obi, 2015).
This study was narrowed to only public universities in Anambra State. The public universities are Nnamdi Azikiwe University (UNIZIK) and Chukwuemeka Odumegwu Ojukwu University (COOU), both located in Anambra State, Nigeria. The narrowing down was necessary because they are the only government-owned universities in the State, and preliminary investigation and available evidence show that ergonomic designs are alien to public universities in the State understudy. Lecture halls, furniture, office cabinets and fittings, libraries, and engineering workshops that are in place are designed with little or no regard for the demographic data of employees of the universities. This may have adverse effects on some lecturers, who sometimes must adjust and re-adjust their sitting position and office fittings to reduce stress. No human being will put his/her best when physically uncomfortable with the settings of his/her workplace. However, due to the relatively high level of safety risk exposure among

these public university Lecturers in Anambra State and their unfamiliarity with ergonomic designs and inputs in the system, this study investigated the effect of ergonomic factors on the performance of lecturers in these public Universities in Anambra State, Nigeria.

The conceptual and theoretical issues discussed below are comprehensive journeys through the existing body of research that delves into the multifaceted connections between ergonomics and employee performance. By embarking on a conceptual and empirical review, we aimed to shed light on ergonomics as an important tool for enhancing productivity, reducing workplace injuries, and bolstering the overall quality of work life.

2. Literature Review

2.1 Ergonomics as a concept

Ergonomics involves the design and organization of workplaces, products, and systems to suit users (Consulting, 2014). Ergonomics is an applied science that centers on the design and arrangement of things people use to achieve efficient and safe interaction between people and these things (Pawar & Khedkar, 2016). It is a holistic approach that primarily centers on the overall process of arranging a workplace, system, and equipment in a way that makes it easy for people to use them. Ergonomics can be defined as the study of how people operate in work environments (online, 2023). The Health and Safety Executive (HSE) in the UK defines ergonomics as the scientific examination of human labor, considering both physical and mental capacities, enhancing health, safety, and productivity (HSE 2003 publication "understanding ergonomics at work).

The International Ergonomics Association Executive Council provides the following definition: " ergonomics (or human factors) is a scientific field focused on comprehending the interactions between humans and other elements within a system. It is also a profession that employs theory, principles, data, and methods to optimize human well-being and overall system performance through design. The organization emphasizes that ergonomics significantly influences employee productivity. Aligning the physical ergonomics of the workplace with employees' posture fosters a conducive environment, ultimately enhancing performance".

While many are familiar with ergonomics regarding seating or the design of vehicle controls and instruments, its scope extends beyond these aspects. Ergonomics encompasses the design of anything involving human interaction, including workplace, sports, leisure activities, and health and safety considerations (Consulting, 2014). The main goal of ergonomics is to improve the design of workspaces and environments to minimize the risk of injury or harm. Consequently, with the evolution of technology, it is crucial to ensure that the tools used for work, relaxation, and recreation are tailored to meet the body's needs (Consulting 2014).

According to the International Ergonomics Council, three major types of ergonomics exist. These include Physical, Cognitive or Psychological, and Organizational Ergonomics.

i. Physical ergonomics, also known as musculoskeletal ergonomics, involve designing work environments, tools, and tasks to fit the physical capabilities and shortcomings of human beings in workplaces. Its purpose is to prevent or minimize musculoskeletal disorders and strains by optimizing the interaction between workers and their work environment.

Physical ergonomics emphasizes anatomical, anthropometric, physiological, and biomechanical characteristics as they relate to physical activity (Karwowski & Marras, 1998). The key points include working postures, material handling, repetitive movements, work-related musculoskeletal disorders, workplace layout, safety, health, and personal protective equipment. This definition equally highlights the multidisciplinary nature of physical ergonomics and its focus on numerous aspects of human physical performance and well-being in the workplace.

It is a widely studied field owing to its emphasis on understanding the physical strain exerted on the body during specific activities, making it essential for ensuring workplace safety. This discipline evaluates various factors, such as sitting posture, manual handling, repetitive motions, and the overall

design of workspaces. Failure to address these elements can result in musculoskeletal issues, especially in physically demanding occupations. Even in sedentary roles, such as computer work, ergonomics remains pivotal. This aids designers in determining optimal workstation heights based on factors such as an individual's weight, desk height, and the distance between a person's eyes and the computer screen (Consulting, 2014).

Therefore, physical ergonomics can significantly influence lecturers and other staff in universities by influencing their comfort, health, and overall performance by providing a comfortable work environment for lecturers who spend extended periods of standing or sitting during lectures, grading papers, and conducting research. Ergonomically designed lecture halls and office spaces with proper seating, lighting, and ventilation contribute to lecturer comfort and well-being, reducing fatigue and discomfort during the long hours of lectures.

Lecturers may be at risk of developing musculoskeletal disorders due to poor posture, repetitive movements, and prolonged sitting or standing in their workplace. Physical ergonomic interventions, such as ergonomic chairs, adjustable desks, and proper workstation setups, can help prevent musculoskeletal disorders, such as back pain, neck strain, and diseases. A comfortable and ergonomically structured work environment promotes better focus and concentration among the lecturers. By minimizing distractions and discomfort, lecturers can focus their attention on teaching, research, and administrative tasks, leading to improved performance and greater output. Ergonomic design considerations, such as proper task organization and workflow, can help reduce fatigue and stress among employees. The designed workstations and ergonomic equipment reduce physical strain, allowing staff to work more efficiently and effectively without experiencing excessive fatigue or stress. Physical ergonomic interventions, such as restraining strain injuries and muscular disorders, can help prevent work-related injuries among lecturers in Nigerian universities. By addressing ergonomic risk factors in offices and lecture halls, universities can promote lecturer health and safety, reducing the likelihood of injuries and the absence of students from lectures. This is because lecturers who are comfortable and free of physical discomfort are better able to engage with students and deliver high-quality lectures. Physical ergonomic interventions that enhance lecturer comfort and well-being contribute to improving teaching performance, student satisfaction, and overall educational outcomes.

Similarly, providing lecturers with an ergonomically sound work environment demonstrates the university's commitment to their health and well-being. Lecturers who feel supported and valued are more likely to experience job satisfaction and retention, thereby contributing to a positive work culture and academic environment. Therefore, physical ergonomics plays a crucial role in promoting lecturer comfort, health, and performance in universities. By implementing ergonomic interventions and designing workspaces that consider lecturer well-being, universities can create environments that support effective teaching, research, and administrative activities.

ii. Cognitive ergonomics is concerned with the understanding of mental processes and the appraisal of cognitive capabilities to improve performance and reduce mistakes (Wickens, Gordon, Liu, & Lee, 2004). This definition stresses the significance of understanding how humans perceive, process, and react to information to design systems that support optimal performance and reduce the likelihood of mistakes.

According to Parasuraman and Riley (1997), cognitive ergonomics is a scientific discipline that realizes the fundamental capacities and imperfections of humans in dealing with cognitive tasks, and with the use of such understanding in the design and operation of human-machine systems and organizations. This definition highlights the interdisciplinary nature of cognitive ergonomics and its relevance to the design of both technological systems and organizational processes.

Cognitive ergonomics is the study of mental processes, especially with respect to the interface between the human operator and the machine or system, to improve system performance (Salvendy & Karwowski, 2021). This definition emphasizes cognitive ergonomics and optimizes the interaction between humans and technology to enhance overall system performance. Cognitive ergonomics is a

field of study that focuses on optimizing human cognitive processes and mental workloads in various tasks and environments. It encompasses principles from psychology, human factor engineering, and cognitive science to design systems and interfaces that are compatible with human cognition. It focuses on designing systems and products to prevent sensory overload and cognitive strain, and addresses aspects such as memory, perception, emotion, and logical reasoning. It also considers motor response, particularly in high-alert industrial settings. In essence, written instructions can increase cognitive load, whereas video instructions simplify tasks through step-by-step demonstrations. Additionally, cognitive ergonomics seeks to establish inclusive workplaces, particularly for individuals with cognitive disabilities who face challenges in typical tasks (Consulting, 2014).

iii. Organizational Ergonomics: Organizational ergonomics, also known as macro ergonomics, deals with optimizing the entire organizational system to promote productivity, safety, and well-being, and considers how various factors such as organizational structure, policies, and culture influence employees' performance and satisfaction (Koirala & Nepal, 2022). **According to** Al-Atwi, Al-Habib, and Al-Harbi (2018), organizational ergonomics is a part of ergonomics that concerns itself with the design and management of work systems and the improvement of organizational performance through the integration of people, technology, and the work environment. This can be achieved by synergizing human factors, technology, and organizational processes to achieve performance goals.

Organizational ergonomics concentrates on refining an organization's policies, systems, and processes to elevate safety and enhance performance efficiency. It aims to synchronize cognitive and physical ergonomics, as illustrated by the potential benefits of standardized training methods, which can improve worker posture and mitigate the risk of long-term injuries or illnesses (Consulting 2014). When it comes to lecturers in universities, organizational ergonomics plays a crucial role in shaping their work environment and experience by managing lecturers' workloads to reduce burnout and increase productivity. This includes the proper distribution of teaching, research, and administrative responsibilities, as well as realistic expectations for performance. Organizational ergonomics also considers how lecturers' tasks are structured and designed within the university. This includes clarifying job responsibilities, providing opportunities for professional development and advancement, and ensuring that roles align with lecturers' skills and expertise. Universities also need to have supportive policies and procedures to manage the needs of lecturers. This includes policies related to workload allocation, promotion, tenure criteria, sabbatical opportunities, parental leave, and flexible work arrangements. The physical environment in which lecturers work can significantly impact their well-being and performance.

As technology becomes increasingly important in universities and higher institutions in general, the management of higher institutions needs to integrate technology in a way that supports lecturers' work, rather than adding unnecessary complexity or burden. This includes providing training and support for using technology effectively, and ensuring that digital tools are user-friendly and accessible. This is because organizational ergonomics play a critical role in shaping the work environment and experiences of lecturers in universities. By considering factors such as workload management, job design, communication, support policies, physical environment, technology integration, and work-life balance, universities are advised to create an organizational culture that supports lecturers' well-being, productivity, and professional growth.

2.2 The Concept of Employee Performance

Employee performance refers to how effectively an individual performs his/her job tasks and obligations. The effectiveness, productivity, and contribution of employees towards achieving the goals and objectives of the organization include various aspects, such as job knowledge, skills, competencies, attitude, behavior, and results achieved (Anoke, Okafor, & Onu, 2023). Some organizations often use performance management systems to monitor, evaluate, and improve employee performance. These systems typically involve setting clear performance expectations, providing feedback, conducting performance appraisals, identifying training and development needs, and rewarding high-performance.

Numerous businesses evaluate their employees' performance either annually or quarterly to pinpoint areas requiring enhancement and to motivate continued excellence in areas that meet or surpass standards. Performance plays a vital role in a company's triumph by enhancing productivity, profitability, and employee satisfaction. Regular performance assessments enable firms to identify improvement areas, offer assistance and training to staff, and guarantee alignment toward shared objectives. According to Donohoe (2019), the success or failure of a business is directly influenced by employees' daily performance. Employee performance encompasses aspects such as the quality, quantity, and efficiency of employees' work, along with their conduct in the workplace. As the business owner, you have the authority to establish and consistently assess these standards. Comprehending performance indicators, methods for conducting employee performance evaluations, and strategies for enhancing performance are vital to ensure that the workforce can meet both business requirements and those of customers. Therefore, Employee performance pertains to the conduct and effectiveness of the workforce in carrying out their assigned responsibilities within the workplace. Therefore, effective management of employee performance is crucial for organizational success, as it helps identify high performers, address performance issues, and ensure that the workforce is aligned with the organization's core objectives.

The factors that influence employee performance are as follows.

1. **Clear Goals and Expectations**: When employees understand what is expected of them and how the assigned work contributes to the overall goals of the organization, they are more likely to perform well.
2. **Feedback and Recognition**: Constant feedback on performance, both positive, negative, and constructive, helps employees understand how they are doing, and areas of improvement are needed. Recognition of a job well is encouraged.
3. **Skills and Training**: Equipping employees with the required training and development opportunities helps them acquire the expertise and knowledge needed to perform their jobs effectively.
4. **Motivation**: Factors such as job satisfaction, recognition, opportunities for advancement, and a positive work environment (physical ergonomic factors) contribute to employee motivation, which in turn encourages performance.
5. **Effective Leadership**: A leadership style that provides guidance, support, and inspiration can significantly impact employee performance. A Leader who leads, for example, communicates effectively and provides a culture of trust and collaboration tends to have higher-performing employees.
6. **Resources and support**: Employees need access to the right tools, resources, and support to perform their jobs effectively. This includes things such as technology, equipment, information, conducive offices, and assistance from colleagues or managers.
7. **Alignment with Organizational Values**: When employees' values align with those of the organization, they are more likely to be committed, which can improve organizational output.

2.3 Ergonomic Factors and Lecturer's Performance in Nigerian Universities

Brent Kruel's article (2021) "How Ergonomics Affect Employee's Productivity" delves into the repercussions of inadequate ergonomic conditions on worker performance, contrasting them with the advantages of good ergonomics in enhancing productivity. According to guidelines from the states of Oregon and OSHA, there are both direct and indirect expenses linked to subpar ergonomics. Direct costs are easily quantifiable, encompassing medical treatment, prescriptions, and insurance premiums. When employees sustain injuries, their efficiency decreases, necessitating time-off work for medical attention. Consequently, this gives rise to indirect costs, including overtime compensation for colleagues covering injured coworkers, heightened absenteeism, diminished overall morale, potential legal and investigative expenditures, the return of an injured employee to work prematurely, resulting in reduced effectiveness, and the financial outlay of recruiting a replacement if an employee resigns due to injury.

Brent Kruel in his article also explained that good ergonomics increases employees' performance by reducing Musculoskeletal Disorders (MSDs), improving productivity, and boosting workers' mood and

energy. In 2015, the Bureau of Labor Statistics reported that musculoskeletal disorders (MSDs) accounted for 31% of all workplace injuries. MSDs affect muscles, tendons, nerves, blood flow, and ligaments, causing sprains or muscle strains. Employees with MSDs typically require approximately 12 days of work to recover. These injuries often result from poor posture and repetitive movement. However, there's a positive side—affordable ergonomic accessories like posture-supporting chairs, wrist supports for typing, standing desks, and foot support, along with proper training on movement habits, can significantly reduce MSD cases. This helps employees work comfortably and is injury-free, while also reducing the stress associated with working in pain. Brent kruel noted that the foundation of a thriving company lies in the well-being of its workforce. Employees free from pain and injuries are more capable of exerting greater effort and working more efficiently. It is crucial to understand that comfort does not equate to laziness; instead, comfortable employees tend to perform at a higher level and are generally more content with their job. This increased job satisfaction boosts productivity and fosters loyalty. Furthermore, when a company acknowledges and addresses its employees' pain issues through proper ergonomics, it can significantly improve morale within the organization. While the decision to promote ergonomic practices may initially be driven by the desire to reduce injury-related costs, it also sends a powerful message that the company cares about employees' well-being. In summary, pain-free employees take fewer sick days, are both physically and emotionally better equipped to excel in their roles, and ultimately contribute to increased profitability.

Boost Worker's Mood and Energy: He also explained that ergonomics fosters a more positive office environment by harnessing the increased feelings of well-being and vitality associated with practicing and endorsing proper ergonomics at work. When employees maintain poor posture or use equipment that strains their bodies, it inevitably results in stress, fatigue, and discomfort, which can dampen their spirit. However, when a company consistently promotes ergonomics, starting from the top, it cultivates an atmosphere that encourages employee success. This in turn leads to greater self-assurance, improved performance, and heightened energy levels, enabling employees to accomplish more and excel in their tasks. A supportive workplace culture provides a sense of belonging and enthusiasm among employees, which can also lead to the retention of a high caliber of employees (I. L. O. Darko, Bans-Akutey, Amoako, & Affum, 2024).

Ergonomics plays a significant role in enhancing lecturer performance in Nigerian universities, just as it does in other workplaces. Ergonomically designed lecture halls, office spaces, and furniture contribute to the comfort and increase of University Lecturers. Comfortable seating, proper lighting, and adequate ventilation can help reduce fatigue and discomfort, allowing lecturers to focus on their teaching and research responsibilities. Ergonomically designed teaching aids and technologically advanced classrooms and workshops, such as adjustable podiums, computer monitors at the eye level, and ergonomic keyboards, can help lecturers deliver lectures more effectively and with ease. This minimizes the risk of recurrent strain injuries and boosts overall productivity. Ergonomic principles promote healthy posture and movement, which are essential for lecturers who spend long hours standing or sitting during lectures, grading papers, and conducting research. A proper laboratory setup, including ergonomically designed chairs and office tables, encourages neutral body positioning and reduces the risk of muscle and skeletal disorders.

Equally, Ergonomic design considerations, such as suitable task organization and workflow, can help minimize stress and fatigue among lecturers. For instance, well-organized lecture materials and ergonomic office setups can streamline tasks and minimize cognitive and physical strain. A comfortable and ergonomically encapsulated work environment promotes better focus and concentration among the lecturers. Through distraction and discomfort reduction, lecturers can focus their attention on teaching, research, and administrative tasks, leading to improved performance and productivity. Prevention of workplace injuries and health issues associated with prolonged sitting, repetitive movements, and poor posture are some advantages of ergonomics. Therefore, by implementing ergonomic solutions, universities can curtail the risk of injuries among lecturers, ensure their health and well-being, and prevent disruptions in teaching and research activities.

Every university should provide lecturers and administrative staff with an ergonomically sound work environment that will demonstrate the university's commitment to their health and well-being. This could lead to increased job satisfaction, higher morale, and reduced turnover intention among lecturers, thereby contributing to the overall performance and reputation of the university.

Therefore, incorporating ergonomic principles into the design of workspaces, teaching facilities, and teaching tools can positively impact lecturer performance in Nigerian universities by promoting comfort, health, productivity, and job satisfaction.

2.4 Theoretical framework

This study adopted The Human Factors Theory, also known as the Human Factors Engineering theory. This theory has been developed and studied by various researchers over the past few years. Some notable contributors to this theory are Russell and Frederick. Taylor, Elton Mayo, and Frederick Herzberg, among others. Human factor theory centers on examining human performance and interactions with equipment, systems, and organizational processes. The objective is to boost performance, increase safety, and enhance user satisfaction (Milligan 2007). Creating a conducive work environment, offering appropriate equipment, implementing effective policies, and optimizing organizational processes contribute to increased efficiency and safety among the staff.

The theory provides the foundational principles and scientific understanding necessary to explain how ergonomics influences employee performance. By applying these principles in the design of workspaces, tools, and tasks, organizations can create environments that promote employee well-being, reduce health issues, enhance cognitive performance, and ultimately improve job performance and productivity.

2.5 Empirical Review

Ergonomics is seen as a way to enhance both the well-being of individuals, which is a social objective, and the overall performance of a system, which is an economic objective (as stated by Neumann in 2006). Previous research indicates that implementing certain aspects of organizational ergonomics can lead to improved employee performance within organizations (as seen in studies by Taiwo in 2010 and Saklani and Jha in 2014). Taiwo (2010) conducted research examining how the work environment influences employee performance. This study focuses on specific oil and gas companies in Lagos State, Nigeria, and employs a cross-sectional survey method. The findings demonstrated a significant connection between various aspects of the workplace environment and the organization's performance. The study concluded that the work environment within an organization accurately reflects the importance that management assigns to its employees. Saklani and Jha also found that the use of organizational ergonomics is recognized for its ability to boost job satisfaction and morale.

Gensler (2006) highlighted the significant role of well-planned office spaces in enhancing the performance of 2,013 randomly selected office workers across various positions in the United States. The results of the study indicated that companies that neglect the design and arrangement of their workplaces struggle to maximize the potential of their workforce. Furthermore, the survey's findings illustrated a connection between the physical office environment and key work aspects, such as innovation, teamwork, and imaginative thinking. These outcomes underscored the vital importance of effective workplace design in ensuring employee contentment.

In a related research conducted by Saleem, Shah, Zaman, Arif, Shehzad, and Ullah in 2012, they examined how the interior physical environment affects the productivity of educators in Pakistani higher education institutions. The study's findings confirm that the layout of office spaces plays a crucial role in improving employee efficiency.

Effective job design can lead to improved employee performance, but it is important to note that this relationship can vary among workers. The concept of "psychological perception" seeks to elucidate its impact on the nexus between job design and employee performance. Job design is a valuable instrument for optimizing employee performance within business organizations. The premise posits that employees

excel when they possess a lucid grasp of their roles, can exchange experiences and receive support, and perceive alignment with their job expectations (Ebito & Umana, 2019). In this context, Oyekan (2014) emphasized the pivotal role of effective communication in bolstering the performance of academic staff. Establishing a conducive communication environment is imperative for academic staff members to attain collective institutional goals. Conversely, Afolakemi and Joshua (2013) contended that both formal and informal scholarly communication among academic staff in Nigeria is experiencing a downward trajectory, requiring urgent attention to effectively achieve communication goals.

3. Methodology

This study used a descriptive survey design to permit the collection of primary data, which were analyzed, and the results were generalized for the entire population of interest. The survey method was adopted because it is the most appropriate means of gathering data to measure ergonomic factors and academic lecturer performance in public universities. This study was conducted at two public universities in Anambra State. Data were collated through a questionnaire that was tested for validity using the face and content method, while its reliability was assessed using Cronbach's alpha reliability test for internal consistency, where an alpha level of .873 was obtained, signaling a good consistency level. The target population comprised senior cadre lecturers from universities. A random selection of 200 senior academics (100 lecturers from each university and 25 from each cadre) was selected. 25 Professors, 25 Senior Lecturers, 25 lecturers 1, and 25 lecturers 11 cadres from each of the universities used. A total of 187 questionnaires were retrieved and certified as fit for the study. The entire population was studied because of the limited number of patients. The analysis of data was carried out using correlation analysis, and the hypothesis was tested at a 5% level of significance

4. Result and discussions

The research question sought to determine whether ergonomic factors influence the performance of academics at public universities in Anambra State. Accordingly, the respondents' opinions are presented below on a Likert scale format.

Table 1. Ergonomic Factors and Performance of Academics in the Public Universities

S/N	Items of the Questionnaire	Likert Scale Options					Total
		SA	A	D	SD	UND	
1.	Poor or inadequate ergonomic conditions could lead to both direct and indirect costs to an organization as well as the employee thereby negatively affecting the overall performance.	79 (42.2)	89 (47.6)	10 (5.3)	5 (2.3)	4 (2.1)	187 (100)
2.	Good office ergonomics increases employees' performance by reducing musculoskeletal disorders (MSDs), improving productivity and boosting their mood and energy.	77 (41.2)	80 (42.8)	15 (8.0)	10 (5.3)	5 (2.3)	187 (100)
3.	Employees who are free from pain and injuries as a result of good office ergonomics are more capable of putting in greater effort and working more efficiently for the organization.	68 (36.4)	90 (48.1)	15 (8.0)	10 (5.3)	4 (2.1)	187 (100)
4.	Such a conducive workplace environment is very crucial for employees' job satisfaction which is a	70 (37.4)	92 (49.2)	11 (5.9)	8 (4.3)	6 (3.2)	187 (100)

	necessary condition for enhanced performance in the organization.						
5.	Bringing ergonomic principles into the workplace design, including teaching and learning facilities, can positively impact lecturers' performance in public universities by promoting comfort, productivity and job satisfaction.	80 (42.8)	90 (48.1)	10 (5.3)	4 (2.1)	3 (1.6)	187 (100)
	Total	374	441	61	37	22	935
	Percentage of Total	(40.0)	(47.2)	(6.5)	(4.0)	(2.4)	(100)

Note: (SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree, UND = Undecided).
: (Figures in parentheses are percentages)

The opinion of the respondents presented in Table 4.1 shows that, on average, 40 percent of the respondents strongly agreed with all the statements of the items, 47.2 percent of them also agreed but not strongly, 6.5 percent disagreed, 4 percent of them strongly disagreed, and 2.4 percent of them were undecided on all the issues raised in the section. However, apart from the averages, there were variations in opinions across items. For instance, whereas 42.2 percent and 47.6 percent strongly agreed with Item 1, 36.4 percent and 48.1 percent of the respondents did so for Item 3, respectively.

Table 2. Dependent Variable: Performance of Academic

S/N	Items of the Questionnaire	Alternative Responses					Total
		VGE	GE	ME	LE	VLE	
1.	To what extent do you believe that poor or inadequate ergonomic conditions could lead to direct and indirect costs to both the organization and the employee?	71 (38.0)	90 (48.1)	15 (8.0)	6 (3.2)	5 (2.8)	187 (100)
2.	To what extent do you think good office ergonomics can lead to increase in employees' performance?	68 (36.4)	92 (49.2)	20 (10.7)	4 (2.1)	3 (1.6)	187 (100)
3.	To what extent do you believe that employees who are free from pain and injuries as a result of good office ergonomics can be more productive?	77 (41.2)	80 (42.8)	15 (8.0)	10 (5.3)	5 (2.8)	187 (100)
4.	To what extent do you think that conduce workplace in terms of good ergonomics can lead to employee's job satisfaction and hence enhanced performance?	70 (37.4)	92 (49.2)	11 (5.9)	8 (4.3)	6 (3.2)	187 (100)
5.	To what extent do you believe bringing economic principles into workplace design can impact lecturers performance effectively?	75 (40.1)	85 (45.5)	15 (8.0)	8 (5.3)	4 (2.1)	187 (100)
	Total	361	439	76	36	23	935
	Percentage of the total	(38.6)	(47.0)	(8.1)	(3.9)	(2.5)	(100)

Note: (VGE = Very great extent; GE = Great extent; ME = Moderate extent; LE = Little extent; VLE = Very little extent).

From Table 4.2, it can be seen that, on average, 38.6 percent of the respondents agreed to a very large extent, 47.0 percent of them agreed to a large extent, 8.1 percent of them agreed to a moderate extent, 3.9 percent agreed to a small extent, and 2.3 percent of them agreed to a very small extent. The implication of the analysis is that respondents agreed to varying extents that office ergonomics have a significant influence on the performance of academics in public universities.

4.1 Test of Hypotheses

The relevant hypotheses (both null and alternative) were restated and tested in this section of the analysis at a significance level of 0.05, using the Karl Pearson correlation coefficient technique as follows:

Re-Statement of Hypotheses

H_o: There is no significant positive relationship between physical office ergonomic factors and academic performance in public universities in Anambra.

H_1: There is a significant positive relationship between physical office ergonomics and academic performance in public universities in Anambra State.

Table 3. Correlation Analysis

Correlation Matrix

Variables		Performance Academics	Physical Office Ergonomic Factors
Performance Academics	Pearson Correlation	1	.897*
	Sig.(2-tailed)		.000
	N	187	187
Physical Office Ergonomic Factors	Pearson Correlation	.897*	1
	Sig.(2-tailed)	.000	
	N	187	187

Correlation is significant 0.05 level (2-tailed)

From Table 4.3, the correlation matrix shows r = .897, p = .000 and n = 187. Thus, the correlation coefficient (.897) is significant because p = .000 is less than $P \leq 0.05$, which is the α level. Consequently, the null hypothesis was rejected, while the alternative, which suggests that physical office ergonomic factors have a significant positive relationship with academics' performance in public universities in Anambra State, was accepted.

4.2 Discussion of Research Results

The discussion of the findings in this section of the analysis was guided by the results of the test of hypothesis, which revealed that physical office ergonomic factors have a significant positive relationship with the performance of academic staff in public universities in Anambra State, Nigeria. This finding is consistent with that of Sheila (2020), who found from their study of the effect of ergonomic factors on employees' performance that the physical workplace environment significantly affects employees' performance in the organization. Good physical ergonomic factors, such as furniture and office space, reduce the tendency for stress and other ailments associated with sub-standard office facilities, thereby promoting job satisfaction among employees. Job satisfaction is necessary for enhancing employee performance.

Inadequate office ergonomics often results in poor or negative work behaviors such as absenteeism, tardiness, and turnover intentions, which are factors that are inversely related to performance in any

organization. Therefore, it goes without the saying that physical workplace interior design and furnishing are critical steps towards improving employee performance in public universities. The implication is that workplace environment ergonomic factors such as furniture and equipment, spatial office arrangement, flexibility and comfort, room temperature and air quality, illumination/lighting level in the office, etc., are office conditions that permit enhanced performance from employees when they are adequately provided.

5. Conclusion

5.1 Conclusion

This study examined the relationship between ergonomic factors of physical offices and the performance of academic staff in public universities in Anambra State. The results showed a strong positive relationship between ergonomic factors and academic staff performance in public universities. Thus, organizations with a conducive work environment, in terms of adequate physical ergonomic factors, are more likely to experience effective and efficient employee performance because adequate ergonomic factors lead to job satisfaction and consequently enhanced performance.

5.2 Recommendations

From the findings and conclusions drawn, the following recommendations were made:

1. Ergonomic Factors can be used to improve employee performance and productivity in an organization. Authorities in public universities should entice employees by providing the necessary workplace ergonomics and ensuring that they are in good working conditions at all times. This will make work a great delight for lecturers, who will reciprocate with greater performance.

2. Poor physical office ergonomic facilities are an invitation for the exhibition of dimensions of negative work behavior, which include absenteeism, tardiness, lateness, and turnover intentions. Therefore, authorities of public universities should endeavor to avoid such situations by adequately providing the necessary ergonomic factors that can facilitate academic productivity and performance.

5.3 Limitations and Important Suggestions

The narrowing of the scope of the study to only public Universities in Anambra State limits the generalizability of the study. In addition, the study was conducted with only one objective, and this led to the following suggestions: to carry out research using other dimensions that affect other ergonomic factors that have not been properly proven, such as the relationship between Cognitive or Psychological, Organizational Ergonomics, and employee performance.

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