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Ergonomics Awareness and Employee Performance: An Exploratory Study

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Abstract:
The study examined the effects of ergonomics on employee performance by ascertaining the level of ergonomics awareness in Nigerian organizations, identifying the factors hindering the use of ergonomic, and the best practices and methods adopted by various organizations across industries. Despite a knowledge of importance to a growing number of researchers in Nigeria, there is still a dearth in knowledge of ergonomics design and its implementation in Nigeria. This can be observed in the low level of its adoption. The study adopted an exploratory approach through the review of literature. It was seen that several factors have hindered the efficient implementation of ergonomics in Nigeria which ranges from awareness, insufficient relevant studies, personnel considerations, resources constraints, technological changes, communication and integration disconnection between employees and equipment designers. Also, some best practices and methods adopted by various organizations across industries were identified to include, but not limited to: integration of human element into work design, ergonomics maturity levels (reactive, preventive, proactive and advanced) and quality of workspace (office design, furniture and spatial arrangements, lightings and heating arrangements, noise level). It is, however, recommended that researchers in the field of ergonomics and practitioners in the industry should intensify efforts in carrying out relevant study, organizing conferences and seminars as well as media publicity on why ergonomics should be part of our daily activities. It is also recommended that organizations should orientate and train employees on ergonomics so that they will be aware of the benefits derivable from it and be able to fit into the organization's designs. Lastly, they should integrate employee/human element into ergonomics design process by getting detailed anthropomorphic data, which may bridge the communication disconnect between employees and ergonomic designers.

Keywords: Employee performance, Ergonomics awareness, Ergonomics design, Hindrances, Implementation methods and practices

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1. Introduction

Employees are one of the most important tools of any organisation in general (Gabčanová, 2011:2) and project organisations in particular as the quality of output of the organisation depends largely the caliber of the people working therein (Golden, 2011; Heskett, 2006; International Labour Organisation, 2011). With positive and creative contributions from employees, the quality of the output of an organisation can give an immense competitive advantage over their competitors. To achieve this in the present day competitive environment, management will need to take some strategic decisions to improve the performance of its human assets (Gabčanová, 2011:4). One of these decisions is to develop a work system that will fit job to an employee, rather than the employee to the job (Computer/Electronic Accommodations Program, 2012). This innovative management strategic decision is known as ergonomics (human factors). It involves the scientific use of human data to design a workstation, work center, or working environment to create a job friendly environment for individual employee. This is to improve the wellbeing, safety and efficiency of workers by fitting the environment to them and not the other way around (Ergo Squad, 2012). It also improves the flow of work within an organisation. For example, most organisations like Lagos State University (LASU) do order for furniture fittings with uniform size without regard to the anthropomorphic data of individual employee of the organisation. This may have adverse effects on some of the employees who sometimes have to adjust their sitting position to reduce stress.

According to Exemplis Corp (2014), it is difficult for an employee to be productive when physically uncomfortable. Any office provisions (including furniture fittings, level of noise, workstations, lighting, temperature etc.) that makes employees uncomfortable in the short or long period, can affect productivity. Exemplis Corp. (2014) identified a 2009 study that shows that an ergonomic office design motivates employees with increase performance. Exemplis Corp. (2014) also advocate employee inputs whenever office furniture fittings are to be replaced or any physical environmental changes are needed. This is because a working environment without ergonomic inputs can lead to the development of musculoskeletal disorders (MSDs) among staff in an organisation. This disorder was recognized as the most prevalent of all safety issues in the Nigerian agriculture sector (Obi, 2015:53). This could invariably reduce the efficiency and performance of employees.

Thus, corporate organisations and businesses such as the construction and oil and gas, as identified by Asante (2012), have in recent decades reconfigured their offices and fields to fit new models that create a more exciting and flexible workplace environment. Asante (2012:12) further stressed how leading researchers have recommended office ergonomics as one of the key guides to equipping employees to help produce best performance at the workplace. As the quality of employee's workplace environment does have a high degree of impact on the level of employee's motivation and subsequent performance (Ergo Squad, 2012).

Ergonomics or Human Factor design is not just limited to office workplace alone as identified by Chartered Institute of Ergonomics and Human Factors (2017). It also supports the development of the technology that enhances the management of some of the most crowded areas of airspace in the world, whilst maintaining an exemplary safety record. For example, ergonomics or human factor ensures that technological advances can be implemented in a way that enable even a human pilot to remain 'in the loop' when controlling the aircraft or take advantage of an accurate sensing and visualisation tools provided by engineering innovations and help passengers to evacuate safely from aircraft through designs of interior lights and safety information, informed by ergonomics researches (Chartered Institute of Ergonomics and Human Factors, 2017).

Thus this study reviewed research papers to identify the practices and methods adopted by construction and oil and gas organisations about Employee Ergonomics.

2. Statement of the Problem

Leading researchers like Obi (2015:59) have identified relatively high level of safety risk exposure among employees in Nigeria, showing the unpopularity in the use of ergonomics design and inputs in Nigeria workplace environment. Hence, there is a growing need in Nigeria to develop ergonomics in all sectors of the economy as specified by Adaramola (2013:1103). Despite a knowledge of importance to a growing number of researchers in Nigeria, the level of ergonomics awareness is still low (Ismaila, 2010:733; Oladeinde, Ekejindu, Omoregie, & Aguh, 2015:6). This has led to the inability of organisations' decision makers and employees to tap into the benefits of ergonomics designs and its implementation in various industries in Nigeria. This can be observed in the low level of its adoption in academic and research environment like Lagos State University that is expected to enlighten the society about its design, implementation and advantages. Hence,

this study is a critical examination of past studies to assess how ergonomics design and inputs have fared in improving the performance of employees especially in Nigeria using an exploratory research method.

2.1. Objectives of the Study

- To ascertain the level of ergonomics design and inputs awareness in improving employee performance in project organisations.
- To identify the factors hindering the use of ergonomics as a strategic tool for improving employee performance in project organisations.
- To identify the different practices and methods adopted by various organisations such as the construction and oil and gas industries in the design of equipment, workspace.

3. Literature Review

This study examined various literature by reviewing relevant aspects, including the concept of ergonomics awareness, employee performance and substantive findings with respect to the two variables in Nigeria.

3.1 Conceptual Framework

According to Occupational Safety and Health Academy (OSHA) (2017), ergonomics involves the designing of workstations, work practices and work flow to fit the employees' capabilities. It also involves a design that reduces risk factors that may contribute to common work related injuries and illnesses, such as sprains and strain and cumulative trauma disorders (CTDs). These are common employees' safety issues that occurs as a result of accumulated strain on the employee for a period of time (Grainger, Forest, & Hamilton, 2013). For example, the design of work spaces that make employees to work in awkward postures some portion/all the time may result in excessive effort, fatigue and discomfort of the employee. These conditions may cause damage to some of the body components such as muscles, tendons, ligament, nerves and blood vessels. Such Injuries are known as musculoskeletal disorders (MSDs) (Occupational Safety and Health Academy, 2017).

Ismaila (2010:731) adopted the International Ergonomics Association (IEA) (2000) concept of ergonomics. The concept expressed ergonomics as a *scientific discipline concerned with*

understanding of the interaction among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance. An examination of this concept shows that, one of the main objectives of ergonomics is to improve employee performance in work place.

Ergonomics is also expressed as a holistic approach in which considerations of physical, cognitive, social, organisational, environmental and other relevant factors are taken into account to enhance the design and evaluation of tasks, jobs, products, environments and systems in order to make them compatible with the needs, abilities and limitations of employees (International Ergonomics Association, 2017). This new concept also shows that ergonomics is not limited to the improvement of individual employee alone but an improvement in Organisational performance. This concept also involved a broader and an all-encompassing use of constructs that identify the possible domains of specialisation within the discipline of ergonomics. These domains of specialisation are Physical Ergonomics, Employee/Cognitive Ergonomics and Organisational Ergonomics. These are as shown in table 1 and 2. While table 1 shows the ergonomics domain of specialization as identified by IEA (2017), table 2 shows additional domains as identified by Asante (2012:8). The study is of the opinion that the domains identified in table 2 are subsets of any of the domains in table 1, the two tables are to show the views of the different school of thought on the concept. For example, office ergonomics and engineering psychology are addressed by physical ergonomics while macro ergonomics are embedded in Organisational ergonomics.

Table 1. Ergonomics Domains of Specialisation

Domains	Concept/Definition	Relevant topics
Physical ergonomics	Concerned with human anatomical, anthropometric, physiological and biomechanical characteristics as they relate to physical activity.	Working postures, materials handling, work related, musculoskeletal disorders, workplace layout, safety and health, repetitive movements,
Employee/Cognitive ergonomics	Concerned with mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system.	Mental workload, decision-making, skilled performance, human-computer interaction, human reliability, work stress and training as may relate to human-system design.
Organizational ergonomics	Concerned with the optimization of sociotechnical systems, including their organizational structures, policies, and processes.	Communication, crew resource management, work design, design of working times, teamwork, participatory design, community ergonomics, cooperative work, new work paradigms, virtual organizations, telework, and quality management.

Source: International Ergonomics Association, (2017)

Table 2. Additional Ergonomics Domains of Specialisation

Domains	Concept/Definition	Relevant topics/Aims
Office Ergonomics	Cconcerned with the office environment.	Workplace elements such as workstations, computers, chairs, lighting, noise level, room temperature etc. could be tailored to fit and enhance employee health, safety and performance.
Engineering Psychology	Concerned with the relationship between machines and human beings, along with the effort to improve that relation.	Inform change in the location of the work place, redesigning of work equipment and modifications in the way that work related equipment is used. The aim is to make things as user friendly as possible
Macro ergonomics	It cconcern is less of person specific and concentrates more on the organizational environment including the history, culture, goal and design of the environment.	To improve productivity and enhance employee satisfaction, health and safety

Source: Asante, (2012)

Since the main objective of ergonomics is to improve the performance of both employee and the organisation as a whole as identified earlier, it is imperative that the study examine the concept of employee performance.

Mathis and Jackson (2009:25) believed performance is associated with quantity and quality of output, timeliness of output, presence on the job, efficiency and/or effectiveness of work completed.

According to Aguinis (2009:42) the concept of performance only involve the behaviours of employees and does not include the results of an employee's behaviour. Thus, Thao and Hwang (2011:14) are of the opinion that performance is about behaviour or what employees do, not about what employees produce or the outcomes of their work. Thao and Hwang (2011:16) further stressed that perceived employee performance represents the general belief of the employee about his behaviour and contributions in the success of organisation. Employee performance may be taken in the perspective of three factors which makes it possible for one worker or team to perform better than others such as "declarative knowledge", "procedural knowledge" and "motivation" (Thao & Hwang, 2011:17).

Thao and Hwang (2011:21) also expressed employee performance as the successful completion of tasks by an individual(s), as set and measured by the system, to pre-defined acceptable standards while efficiently and effectively utilizing available resource within a changing environment. Thus, this study is of the opinion that employee performance is a relative term that requires a baseline for comparison of employee output.

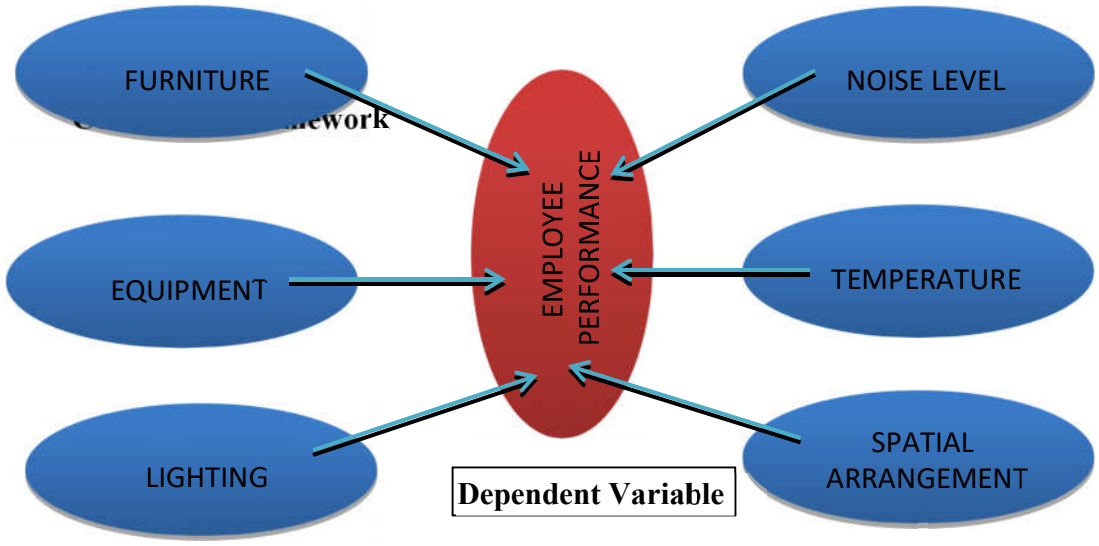
O'Neil (2011:22) in his article "Office Ergonomic Standards; Layperson's Guide" asserts that furniture designed using ergonomic principles can improve performance and reduce workplace injury (Asante, 2012:60). According to Gutnick (2007), a study by The National Safety Council in USA established that on an average workday, one million employees will be absent from work due to job stress. Other researchers such as Taiwo (2009:305) claims that about 86% of productivity problems reside in the work environments. The work environment has effect on the performance of employees. The type of work environment in which employees operate determines the way in which such enterprises prosper.

Although other organisational elements such as praise and recognition, compensation and financial reward impact on employee performance, studies have also shown that an employee's workplace environment is a key determinant of their level of performance. How well the workplace

engages an employee impacts their level of motivation to perform. Indeed, poor workplace environment influences employees: health and safety, error rate, level of innovation, collaboration with other employees, absenteeism and, ultimately, how long they stay in the job (Asante, 2012:42).

Asante (2012:25) depicted his own conceptual view of the relationship between ergonomics design and employee performance as shown in Figure 1. His conceptualized framework defines the set of workplace variables that are perceived to impacts on an employee performance. These variables such as noise level, temperature etc. are essentially independent variables impacting on employee performance, the dependent variable. Asante's (2012) study, like other researchers in the field of ergonomics, confirmed that deficiencies of ergonomics design and input variables have varying adverse effects on the performance of employees.

Figure 1. Conceptual Framework



Independent Variables

Source: Asante, (2012)

Based on the few reviewed literature, this study believes there is a significant positive relationship between ergonomics and employee performance. But despite the relationship between the two variables, the question is; how has ergonomics design and inputs awareness fared in improving the performance of employee in Nigeria?

4. Ergonomics Awareness in Nigeria

Ismaila (2010:731) conducted a study on Ergonomics Awareness in Nigeria as a developing country that recently has an ergonomics society. Ismaila (2010:732) is of the opinion that it is essential to ascertain the level of ergonomics awareness in the country based on the benefits accruable from ergonomics as a subject on one hand and ergonomics society of Nigeria on the other. His study concluded that there is very low level of ergonomics awareness. This to Ismaila may be due to the fact that the generality of Nigerians (irrespective of their background or educational qualification) were not conversant with the benefits derivable from ergonomics, not only to workplace but to humans' daily activities.

Ismaila's (2010:734) result is not different from the outcome of the study of most researchers in Nigeria on the issue. For example, Oladeinde, Ekejindu, Omoregie and Aguh (2015:16) in their study of the 'Awareness and Knowledge of Ergonomics among Medical Laboratory Scientists in Nigeria' concluded that, awareness of ergonomics and knowledge of gains of its right application was poor among the study participants. Their study further revealed that the level of awareness was not significantly affected by affiliation, area of specialization, post-qualification experience, and educational qualification of their study participants. Thus, Oladeinde et. al. (2015:17); Momodu, Edosomwan and Edosomwan (2014:10) advocated for regular ergonomic education and awareness of ergonomics practice to be consciously taken to the door step of employers and employees by Ergonomics Society of Nigeria.

Also a look at some other research studies (e.g. Adeyemi, 2009:251; Adeyemi, 2010:4; Asaolu & Itsekor, 2014:24; Dunmade, Adegoke, & Agboola, 2014:32; Ikonne, 2014:82) as on the awareness of ergonomics in notable academic environments shows a similar trend. Though, an academic environment is assumed to be enlightened enough to be a major advocate of research findings that improve how jobs are fit for its staffs and not staff for job. The findings of different researchers like Adeyemi (2009:251); Adeyemi (2010:4); Asaolu and Itsekor (2014:24); Dunmade, Adegoke and Agboola (2014:32); Ikonne (2014:82) etc. on ergonomics inputs, using academics environments, showed that sampled respondents from the selected institutions are faced with a variety of ergonomic problems that have led to tension, stress, headaches, and other pain, due to the low level of ergonomics awareness in the researchers sampled institutions. Critical examination of the findings of Adeyemi (2009:250); Adeyemi (2010:3); Asaolu and Itsekor (2014:22) show the same researcher using the same environment over a five-year period of study with almost the same

outcome (no improvement over the study period). This shows that despite the three publications of her findings, the level of awareness was low, at least among the management decision makers in the sampled institution (Covenant University Library, Sango Otta, Ogun State, Nigeria). Hence, Adeyemi (2010:4) is of the opinion that Nigerian library institutions should integrate ergonomic issues into their curriculum, as the formal teaching of this concept would help sensitize library practitioners to emerging global standards.

Though the findings of Omoneye (2016:42) revealed that an insignificant relationship exists between ergonomic hazards and performance, the study also showed that the more the level of stress reduced through ergonomics inputs and design, the higher the performance among the employees. The latter is in convergence with the outcome of other researchers on the relationship between the two variables.

Based on the above reviewed literatures, it is obvious there is a low level of ergonomics design and inputs awareness in Nigeria. Hence, most workers operate with an extra effort of 'unknown stress' due to poorly ergonomics design workstations at workplace to compensate and meeting their organisations employees' expected performance in Nigeria.

5. Factors Hindering the Use of Ergonomics / Human Factors

A number of factors act as barriers to the use of ergonomics as a strategic tool for improving the performance of employees in organisations. These can be summarized according to Pinder (2015) as financial, organisational, personal and knowledge-based. Financial considerations and pressures within a firm, particularly its business strategy, can lead to it being unwilling to spend money on using ergonomics, especially if it is perceived that the financial benefit is perceived to be low or marginal. Organisational considerations such as a requirement to complete a given task or project within stipulated time and budget can prevent the use of ergonomics in work design. However, in most projects, tasks are carried out by a range of specialists and organisational units which creates a situation in which compromises must be negotiated between individuals and teams with different goals, and ergonomics considerations may be seen as less important than some others. Personal factors are also important in the use of ergonomic, particularly commitment from individual senior managers who are to perceive its value to the business. Lack of specific ergonomic knowledge among many organisational heads and senior managers means they may be unable to identify when

ergonomics could benefit the organisational productivity. They may also be unaware of how to access specialist advice if it is not immediately available to them.

Awareness has been proven to play an important role in providing the safest and healthiest work environment possible for employees, and ergonomics is still not a hot issue to be considered by many construction companies (Ahankoob & Charehzehi, 2013:39). Chung and Shorrock (2011:) examined the gap in ergonomic studies and the application of their findings. They identified that there is a "lack of relevance" of several research papers to ergonomic practitioners' concern, some of the studies seen as "relevant" tends to lack scientific merit. The high volume of irrelevant studies has masked the relevant studies which has brought about the difficulty in obtaining relevant journal articles, low applicability of findings, which invariably has affected or hindered the use of ergonomics due to lack of awareness of ergonomics' benefits to organisations and individual productivity. This study, however, is in line with that of Adeyemi (2009:251); Adeyemi (2010:4); Asaolu and Itsekor (2014:24); Dunmade, Adegoke and Agboola (2014:32); Ikonne (2014:83); Ismaila (2010:733) which identified that there is low awareness of ergonomics and that organisations are not conversant with the benefits derivable from ergonomics, not only to the organisation but also to employee's daily activities.

Neumann, Ekman and Winkel (2009:535) reported that ergonomics required large investment of resources which may not be available to small and medium scale enterprises in Nigeria, if ergonomics is to be considered, the company may lack the means to modify or develop its own ergonomics design to fit into the ongoing daily activities. This is in convergence with the study of Tasiu (2016:52) which identified resources constraints, technology changes and lack of practical recommendation in ergonomics assessment reports. Neumann, et al. (2009) also identified that personnel consideration also play a major role as employees may be unwilling to transfer to new roles or undergo life changes to fit into the ergonomic designs, the organisation may not be will to create an ergonomics structure or design which may see them loose some of their key members of staff.

Dubblestyne (as cited in Tasiu, 2016) reported that barriers to implementing ergonomics are; employees not integrated in the design process, communication disconnects, many employers simply do not comprehend the term "ergonomics", as the concept is still considered by some as "voodoo science or time study", and ergonomics not considered during the work design phase.

Other challenges according to Tasiu (2016:55) include; costs constraints, technology change which can result in loss of jobs, lack of practical recommendations in ergonomic assessment reports, lack of resources/funding/training, maintenance and psychosocial aspects are not addressed.

6. Organizations' Practices and Methods About Employee Ergonomics

Employee ergonomics is an aspect of ergonomics that deals with fitting the job to worker (Khedkar & Pawar, 2015:456). Various organisations across several industries have over time developed several practices and methods of implementing cognitive ergonomics in order to improve productivity by improving employee wellbeing.

Integration of human element into job design has been a proven practice of implementing ergonomics in automobile organisations. The study of Bradley (as cited in Khedkar & Pawar, 2015:456) observed that the ergonomic process at Ford has been successful in altering engineering process to better integrate human elements to job design which is responsible for the reducing ergonomic risk on jobs. This reduction of ergonomic risk has been observed to have a positive correlation with the increase in the quality of products. The study further observed that launching a new vehicle assembly line required less re-work of the workstations and an overall reduction in worker absenteeism and injury.

Employees in the Oil rigs have perceived work in that environment as 'work in extreme environmental conditions' and 'with a diverse schedule'. Major ergonomic issues responsible for these were identified to be adverse environment, long shift, a diverse schedule and hard physical task which have led to work-related musculoskeletal issues (Khedkar & Pawar, 2015:456). According to them, workers were extremely tired at the end of the workday and considered work to exceed their capacity. However, it has been observed in the study of Mallon (2010) that companies go through levels of maturity to tackle work-related musculoskeletal issues. These levels of maturity are reactive, preventive, proactive and advanced. Reactive ergonomics is implemented after a problem has already occurred, such as a risk assessment report being written and used to suggest what measures can be taken to reduce the risk of the same errors occurring again. Preventive ergonomics is implemented at the initial stage of placing the employee on the job, a Physical Demand Analysis of the job is done and only personnel that possesses the criteria

is hired, training is also done to encourage healthy work behaviour, safe work habits and techniques. Proactive ergonomics is the practice of planning an ergonomic process early in to the job design. Advanced ergonomics, here the histories of risk assessments, root causes and issues/concerns are used by advanced engineering and job design to improve their future designs (Humantech Inc., 2012; Medical Device Usability, 2016).

Workspace quality such as office design, furniture and spatial arrangements, lightings and heating arrangements, and noise level have also been a method employed to improve employee attitude and productivity following the study of Shruti (2012:1994) on office design factors and employees' productivity. The results from survey showed that nine out of ten employees believed that workspace quality affects employees' attitude and productivity. The study further revealed that office design, furniture and spatial arrangements, lightings and heating arrangements, and noise level have positive effects on productivity. To further buttress on this, the study of Asante (2012:72) also revealed that Petroleum House ergonomics lapses such as inadequate office illumination, use of un-ergonomic furniture, unappreciable noise level and hazardous work environment have adverse impact employees' performance.

Table 3 below presents recent studies in ergonomics and major findings:

Table 3. Major findings from recent studies on ergonomics

S/N	AUTHOR(S)	MAJOR FINDINGS
1	Adeyemi (2009)	There is a growing and pervasive awareness of the concept of ergonomics among library staff but they still face major ergonomics problems leading to pain in the wrist, forearm, elbow, neck or back followed by discomfort, aching or tingly, dry, itching or sore eyes, cramping, numbness or a burning sensation in the hand, reduced grip strength in the hand, weakness, tension, stress, headaches and related ailments
2	Adeyemi (2010)	Library staff are faced with ergonomics problem which led to tension, stress, headaches, and other pain. Preventive measures such as provision of trolleys and elevators, compulsory breaks, and computer monitor protectors which has improve the safe and healthy working condition which invariably increase productivity.
3	Ahankoob & Charehzehi (2013)	Ergonomics awareness plays important roles in providing the safest and healthiest work possible for employees but ergonomics is still not a hot issue in many construction companies
4	Asante (2012)	Revealed that ergonomics lapses in Ghana National Petroleum Company (GNPC) such as inadequate office illumination, use of un-ergonomic furniture, unappreciable noise level and hazardous work environment have adverse impact employees' performance.

S/N	AUTHOR(S)	MAJOR FINDINGS
5	Dunmade, Adeyoke & Agboola (2014)	Findings from the study revealed that university staff are suffering from ergonomic hazards; quite a number of them lack knowledge of health problem and stress associated with ICT usage; and that there is positive relationship between ergonomic hazards and techno-stress; and finally techno-stress have negative consequences on individual worker's performance.
6	Ismaila (2010)	It is evident from the study that the level of ergonomics awareness in the country is poor. It is evident that ignorance about ergonomics is not limited to profession, gender, educational attainment and age. The poor awareness may be due to fact that the generality of Nigerians are not conversant with the benefits derivable from ergonomics.
7	Momodu, Edosomwan & Edosomwan (2014)	The study identified major ergonomic deficiencies to be Computer Workstation poor furniture, lighting and temperature control. The study reveals that 72%, 66%, 47%, 46% and 35% shown relative errors in terms of Chair height, chair back/arm rest, temperature, desk height and lighting respectively. The study revealed that these relative errors are responsible for most of the work-related musculoskeletal disorder (WRMD's) which are: eye strain, shoulder pain, arm pain and back pain.
8	Oladeinde, Ekejindu, Omoregie & Aguh (2015)	Examined ergonomics awareness and knowledge among Medical Laboratory Scientists. The study concluded that awareness of ergonomics and knowledge of gains of its right application was poor among the Medical Laboratory Scientists.
9	Omoneye (2016)	Revealed that an insignificant relationship exists between ergonomic hazards and performance, the study also showed that the more the level of stress reduced through ergonomics inputs and design, the higher the performance among the employees
10	Tasiu (2016)	• The awareness of ergonomics among construction craftsmen is very low. • Adoptability of Ergonomic practices among construction craftsmen is low. • Factors militating against adoption of ergonomics among construction craftsmen are lack of knowledge and understanding of ergonomics, cost of procuring ergonomic equipment, employees reluctant to use safety tools and gadgets, lack of legislation enforcing ergonomics practices and temporary employment were factors perceived to be militating against adoption of ergonomics. • Factors that could enhance ergonomics adoption among craftsmen are training and education, funding and government intervention, involvement of labour unions, contractor support and commitment to ergonomics and changes in tools and equipment.

Source: Researcher (2017).

7. Conclusion and recommendations

It is evident through the reviews of studies, as cited above, that the level of ergonomics awareness in the country is low, this may be due to the fact that employers in Nigeria are not conversant with

the benefits derivable from the implementation of ergonomics in employees' daily activities. The reviews also showed that several factors have hindered the efficient implementation of ergonomics in Nigeria which ranges from awareness, insufficient relevant studies to organisational practices, resources constraints, technological changes, communication and integration disconnection between employees and ergonomics designers, personnel considerations, ergonomic knowledge and training. Lastly from the review, some best practices and methods adopted by various organisations across industries about employee ergonomics were identified to include, but not limited to: integration of human element into work design, ergonomics maturity levels (reactive, preventive, proactive and advanced) and quality of workspace (office design, furniture and spatial arrangements, lightings and heating arrangements, noise level).

Ergonomics researchers and practitioners in the country should intensify efforts in carrying out relevant study on the link between ergonomic awareness and employee performance, organisation of conferences and seminars as well as media publicity across the country on why ergonomics should be part of our daily activities. Organisations should orientate and train employees on ergonomics so that they will be aware of the benefits derivable from ergonomics and be able to fit into the organisation's ergonomic designs. Lastly, they should integrate employee/human element into ergonomics design process, this will bridge the communication disconnect between employees and ergonomic designers.

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Świadomość ergonomii a kondycja pracowników: Badania wyjaśniające

Streszczenie

W niniejszym artykule zbadano wpływ ergonomii w miejscu pracy na kondycję pracowników poprzez ustalenie poziomu świadomości ergonomii w nigeryjskich organizacjach, identyfikując czynniki utrudniające wykorzystanie ergonomii, a także najlepsze praktyki i metody przyjmowane przez różne organizacje w przemysłach. Mimo rosnącej liczy naukowców w Nigerii, nadal daje się zauważyć lukę w wiedzy dotyczącej projektowania ergonomicznego i jego zastosowania w Nigerii. Można to zaobserwować także w niskim poziomie przyswajania takich rozwiązań. W badaniach wykorzystano podejście wyjaśniające poprzez przegląd literatury. Zauważono, że kilka czynników utrudnia wydajne zastosowanie ergonomii w Nigerii, począwszy od świadomości, niewystarczających badań na ten temat, kwestii personalnych, ograniczeń zasobowych aż po zmiany technologiczne oraz brak komunikacji i integracji pomiędzy pracownikami a projektantami wyposażenia. Zidentyfikowano także najlepsze praktyki i metody przyjmowane przez różne organizacje w przemysłach, aby uwzględnić (nie ograniczając się do tego zakresu): integrację elementu ludzkiego z aranżacją miejsca pracy, poziomy dojrzałości ergonomii (reaktywna, zapobiegawcza, proaktywna, zaawansowana) oraz jakość przestrzeni pracy (układ biura, umeblowanie, aranżacja przestrzeni, oświetlenie i ogrzewanie, poziom hałasu). Mimo wszystko stwierdzono, że badacze ergonomii, jak też praktycy z sektorów przemysłowych powinni zintensyfikować wysiłki na rzecz prowadzenia badań, organizowania konferencji i seminariów, jak również publikacji medialnych na temat, dlaczego ergonomia powinna być częścią naszych codziennych czynności. Zarekomendowano także, aby organizacje prowadziły szkolenia pracowników w zakresie ergonomii w celu uświadomienia im korzyści z niej płynących oraz umożliwienia dostosowania się do rozwiązań wdrażanych w organizacjach. Wreszcie, organizacje powinny integrować pracowników / element ludzki z procesem projektowania ergonomicznego poprzez gromadzenie i dostarczanie dokładnych danych antropomorficznych, które pomogą zbudować pomost pomiędzy pracownikami a projektantami ergonomii.

***Słowa kluczowe**:* kondycja pracowników, świadomość ergonomii, projekty ergonomiczne, utrudnienia, metody i praktyki implementacji

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