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Ergonomics and Organizational Sustainability: A Study of Peacock Paint Limited, Ikot Ekan, Etinan L.G.A Akwa Ibom State

Thomas, Cornelia David
M.Sc Student Department of Business Administration, Faculty of Management Sciences
Akwa Ibom State University, Nigeria

Dr. (Mrs) Eno G. Ukpong
Department of Accounting, Faculty of management sciences, Akwa Ibom State university, Nigeria

Dr. Usoro, Malachi Udo
Department of Business Administration, Faculty of Management Sciences, Akwa Ibom State University, Nigeria

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ABSTRACT:*This study investigates the relationship between ergonomics and organizational sustainability. Four specific objectives, four research questions and hypotheses guided the study. The variables under review were work posture, mental workload, new work paradigms and factory layout. The study is restricted to peacock paint limited located at Ikot Ekan, Etinan LGA. Descriptive survey research was employed for the study. The total population of this research study was 308 which comprises of the staff (employers and workers) of peacock paint limited, Ikot Ekan. Etinan LGA. The sample size for this study is 174 determined using Taro Yamani formula. Simple random sampling technique was employed for the study. The information for the research work was collected from primary and secondary sources. The primary source was mainly through questionnaire. The secondary sources involved review of company's document and literature on ergonomics. The validity of the instrument was ascertained through presenting the instrument to the experts who assessed the suitability of the instrument for measuring the variables under study. To determine the reliability of the instrument, the instrument was presented to group of staff in a factory (Peacock Paint Limited) using a pilot test. Cronbach Alpha was then used to determine the reliability index which gave a value of 0.962. The instrument was then administered to the staff of Peacock Paint Limited. The data was analysed using Pearson Product Moment Correlation (PPMC) to answer the research questions and to test the null hypotheses at 0.5level of significance. Findings of the study show that Work Posture, Mental Workload, New Work Paradigms and factory layout are all related to Organisational Sustainability. It is concluded that there is a relationship between ergonomics and Organizational Sustainability. It is recommended among others that Job rotation as a matter of policy should be practiced by the company. That is, Workplace should be efficiently designed to enable easy interaction between workers and equipment and in support of new work paradigms; the company should consider allowing employees work in shifts. The management of peacock paint limited should take some effective measures to safe guide the health of workers by providing safety tools and equipment.*

KEYWORD: ergonomics, organizational sustainability, work posture, mental workload, new work paradigms and factory layout.

INTRODUCTION

In the broadest possible sense, sustainability refers to the ability of something to maintain or "sustain" itself over time. In business and policy contexts, limits to sustainability are determined by physical and natural resources, environmental and social resources as well as human resource management. In a broader context, social, environmental and government demands are considered the three pillars of sustainability. Within the corporate world, they are sometimes referred to as the triple bottom line. Issues of sustainability are increasingly being linked with the nature of work environments, particularly with the concept of ergonomics and employee performance.

Competitive advantage and accomplishment of organization's goal is achieved through high performing staff. Many researchers concluded that employee performance relates to job satisfaction. However, Al-Anzi (2009) claimed that there are two factors that influence employee performance that is (i) management driven factor containing organization planning in staff responsibilities, administrative support/tools, working patterns/hours, health and safety policies, training etc. (ii) factor that arises from workplace and premise design such as furniture, workspace or the setting, lighting, ventilation, noise level, premise hygiene and facilities that effect staff performance, all of these relate to ergonomics.

Just as a country's future relies on its citizens, so the future of an organization depends on its employees and this applies to any field of business. The knowledge economy is heavily reliant on the intellectual capital of workers. Over, the years, employee performance has been driven by the personality trait, reward, superior subordinate relationship and the task itself. However, this has changed, there are other factors associated with staff turnover/performance in general. This includes safety, work conditions, work environment, nature of job and other factors all related to the place of work termed ergonomics. In today's rapidly changing world, it is getting harder to provide better living conditions for people. One of the main reasons why it is difficult to overcome this situation is the changes taking place in every part of life such as income level, purchasing power and technology. The study examines the relationship between ergonomics and organizational sustainability because many organizations in today's world are rapidly giving up due to unawareness of ergonomics. Ergonomics is the scientific study of people and their working conditions, especially done in order to improve effectiveness. Ergonomics applies information about human behaviour, abilities and limitations and other characteristics to the design of tools, machines, tasks, jobs and environments for productive, safe, comfortable and effective human use. The target of ergonomics is the entire workforce of both the modern sector as well as in the traditional and informal sectors. Basically all activities that use man in it will always be related to ergonomics because of its relation to the correct working procedure.

Ergonomics is the study of the interaction between people and machines and the factors that affect the interaction. Its purpose is to improve the performance of systems by improving human machine interaction. Ergonomics allow workers to do their jobs. Do it right, do it safely, do it with comfort, and, do it with accuracy. A good ergonomic workspace takes into consideration many types of furniture, devices and tools that can improve the space itself for the employee. This can include adjustable workbenches, chairs, accessories, tool rack solutions, tilting storage bins, adjustable computer screens, arm rests, foot rests, temperature controls, air conditioning, lighting, seating, and more. Ergonomics is the sum of all parts. By having all components and areas in easy reach and at comfortable distances, it minimizes the amount of bending, twisting and reaching workers need to make, and consequently reduces strain, stress, and discomfort, leading to a more relaxed positions and greater efficiency. The expectation is that throughput should be positively affected when proper ergonomics are applied across processes.

However, ergonomics is the only factor that drives success and competitiveness in the business world; it focuses on the optimization of socio technical system, including their organizational structure, processes and policies. Ergonomics is not just about how an individual interacts with an object. Organizations need to be ergonomically designed to suit the workers (Crayon and Smith, 2010). Ergonomics is a multidisciplinary science which concerns about fitting the job to the operators and fitting products to users‟ demand to make them more efficient, productive, satisfied and safer (Karwowski, W. 2018). Ergonomics in peacock paint limited has exposed workers to job hazard and injuries considering the type of equipment and materials they handle. Such hazards and injuries includes: falling from height, heavy lifting of weight, repetitive movement, twisting and breathing in toxic chemicals while working to increase productivity. Organisational ergonomics is define as the study of the design of a workplace, equipment and system which takes into consideration human being‘s physical, physiological capabilities and optimizes the effectiveness and productivity of work system while assuming safety, health and well-being of workers (Fernandez and Marley 2011).

Generally, the goal of ergonomics is to fit the task of the individual, not the individual to the task. Most organisations in the developing nation like Nigeria, organisational ergonomics has been efficiently practiced; study has indicated that employees in such organisations finds it difficult to work towards the expected goals; even if they ought to try, they are still affected physically that is, painful disorders in the muscles, joints, nerves, tendons and soft tissues of the body, which are collectively called ―work-related musculoskeletal disorder (WMSD). According to the International Ergonomics Association (2016); Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies theoretical, principles, data and methods to design in order to optimize human well-being and overall system performance.

Statement of the problem

In large part, most of the reasons for failure in any company are deficiencies in the systems and process rather than the employee. The role of management is to change the process rather than badgering individuals to do better. Where there are no effective provisions in terms of materials,

machines and systems to support work procedure, failure is most often the next. While employees may easily be blamed for failure, most failure could be traced to poor work conditions, work environment and issues all related to ergonomics. There are many reasons to establish or revitalize an ergonomics process. One common purpose is to address ergonomics-related injuries, but good ergonomics brings many more economic and intangible benefits, and some of those benefits will expand the influence, value and success of ergonomics and continuous improvement throughout your company. Failure to plan and compensate for poor ergonomics in workplace will lead to poor employee performance, equipment and machine breakdown, downtime and poor health of employees.

It will be untrue to say that peacock paints limited are not facing difficulty in the production of their products, factors arising from repetitiveness of the work, work posture, lifting activity, lighting conditions, noise, lack of adequate tools, lack of well-designed workspace, functional workstations, a workload that is too high or too low, unclear tasks, time pressures, may have negative impact on people and the organization. All these factors definitely have a direct and indirect impact on organizational sustainability. Ergonomics also deals with psychological and social aspects of the person and their work. Safety is also a factor that hinders organizational sustainability, no worker wants to work in an unsafe environment, the increased rate and high cost of ergonomics injuries and illness such as carpal tunnel syndrome, tendinitis and Musculoskeletal Disorders (MSDs) cut across all industries. Some of the employee in peacock paint limited are faced with these, and when a worker is ill or injured, there will be low productivity, inadequacy in the products produced, little or no profit and will lead to winding up of the organization.

Peacock paints limited lacks effective layout which imposed accident and injuries to employees. Work environment seems not to be conducive to workers. There is no provision for safety tools to help their workers prevent or reduce injuries at work place; human workers may be at risk for developing work-related musculoskeletal disorders (MSDs), resulting in pain, inability to work and high costs for the company in terms of compensation, productivity losses and replacement of personnel. Organization like peacock paint limited continues to use noisy window unit air-conditioners in fairly illuminated offices which obviously have the capacity of affecting the cognitive abilities and health, and overall productivity of the users of the facility.

Without a doubt, some of the equipment used is without ergonomic features. It is therefore feared that due to long term poor working position, a number of the employees in peacock paint limited may have suffered various degrees of back, spine, neck and stress related ailments. In the mist of these challenges at the workplace, management however, expects employees of all categories to put up their best performance to help in the attainment of set organizational objectives and goals as well as sustaining the organization. Workers are often seen in a workplace environment that, to a large extent lacks the affable atmosphere that safeguards his safety and overall interests. In order to highlight the need for better ergonomics as a way of

enhancing the efficiency and effectiveness of the worker and sustaining the organization, this study examine the relationship between ergonomics and organizational sustainability in peacock paint limited.

Objectives of the Study

The principal objective of the work was to examine the relationship between ergonomics and organizational sustainability.

The specific objectives were:

1. To examine the relationship between work posture and increasing productivity in peacock paint limited.
2. To assess the relationship between mental workload and work performance in peacock paint limited.
3. To ascertain the relationship between new work paradigms and adaptability in peacock paint limited.
4. To examine the relationship between factory layout and organizational safety in peacock paint limited.

Statement of Hypotheses

Ho_1: There is no significant relationship between work posture and increasing productivity in peacock paint limited.

Ho_2: There is no relationship between mental workload and work performance in peacock paint limited.

Ho_3: There is no correlation between new work paradigms and adaptability in peacock paint limited.

Ho_4: There is no relationship between factory layout and organizational safety in peacock paint limited.

LITERATURE REVIEW

Concept of Ergonomics

The word ergonomics comes from the Greek word “ergo” means work, and “nomos” means laws (Rooney, 1994). Ergonomics is defined as the design of workplace, equipment, machine, tool, product, environment and system, taking into consideration the human’s physical, physiological capabilities and optimizing the effectiveness and productivity of work system while assuring the safety, health and wellbeing of the workers (Jeffrey, 1995). Ergonomics refers to ways of adjusting the work atmosphere and practices to prevent injuries as well as mental stress such that the company’s profitability won’t be affected due to sick days and other forms of absenteeism.

Ergonomics is the subject of science which is centred towards human behaviour and response with respect to their sitting, standing, and movement. Ergonomics is considered to be a philosophical concept and human way of thinking. It is utilized in various areas like aviation,

sports, transportation, education, entertainment equipment and facilities in home, public and workplace. Entire human community benefits from ergonomics design.

Ergonomics is considered to be a scientific concept with common sense but at the same time, the utilization and application may not be easy as it needs to be designed and used by the complex people with different perspectives and preference making the system more complicated to design based on how it can be accommodated.

Ergonomics has found applications in businesses, particularly, manufacturing companies. The demographic combination with a variety of people in gender, qualification, physical abilities and fitness and inbuilt qualities with different cultural and social values needs the factor of ergonomics for a seamless interaction with work environment. The interphase between employees and the company are machines, equipment and systems. However, ergonomics is taken into account when designing, installing and operating machines as well as when working in offices. Based on the nature of company and product manufactured, ergonomics ensures that workers are comfortable and can work at optimal levels, considering, posture, work environment and conditions as well as time spent on the job and personal safety. These factors can influence task performance and sustainability of the business (Hameed & Amjad, 2009)..

Dimensions of Ergonomics Specialization

According to the International Ergonomics Association (2016) there are three broad domains of ergonomics: cognitive, organizational and physical.

Cognitive Ergonomics: Cognitive ergonomics is concerned with mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system. Related topics to cognitive ergonomics are: mental workload, decision-making, skilled performance, human-computer interaction, human reliability, work stress and training as these may relate to human-system design

Organizational Ergonomics: Organizational ergonomics is concerned with the optimization of sociotechnical systems, including their organizational structures, policies, and processes.

Relevant Topics Include: Communication, Crew Resource Management, Work Design, and Design of Working Times, Teamwork, Participatory Design, Community Ergonomics, Cooperative Work, New Work Paradigms, Virtual Organizations, Telework, and Quality Management.

Workplace Ergonomics: The science of fitting workplace conditions and job demands to the capabilities of the working population. Ergonomics is an approach or solution to deal with a number of problems—among them are work-related musculoskeletal disorders. At its core, workplace ergonomics is really about building a better workplace. When jobs are designed to match the capabilities of people, it results in better work being produced and a better experience for the person doing it.

Physical Ergonomics: Physical ergonomics is concerned with human anatomical, anthropometric, physiological and biomechanical characteristics as they relate to physical

activity. This is the ergonomics domain we are most concerned with in the workplace, and most of the content on this site is very much focused on workplace ergonomics.

The concept of Physical Ergonomics environmental condition

Physical environmental condition includes heat, humidity, noise, smell, light, dust and facility that may influence staff psychological factor (Kahya, 2007). Building design is important to set the mood of a person who enters the building (Attaran & Wargo, 1999). Certain auspicious colors such as red and yellow/gold may also be used (Hobson, 1994) in some culture; it is associated with prosperity, luck and religion (Singh, 2006). Appropriate ventilation removes impurities present in the air, creating a dust-free, more pleasant and healthier environment The "sick building syndrome" or rather congestion in workplace can lead staff's to complain about illness, slips, falls and trips cause injuries and sprain which lead to absenteeism (Rooney, 1994). In fact, the floor tiling, walls and blinds should be integrated into a comprehensive plan. Furniture should not only be designed and arranged for practical in use, but essentially comfortable and pleasing to the eyes. On the other hand, lighting surrounds the workplace apparently influences staff performances, where increased illumination changes from fluorescent tubes installed and windows placed for outside light might create discomfort (Govindaraju, et.al., 2000), as human eye cannot adjust quickly between two level lights (Rooney, 1994).

Measures of Ergonomics

Work Posture: is the way a person holds and position their body at work. Posture is the basis of skilled movements and visual observation. Many tasks require fine, skilled hand movements and close observation of the object of the work. In such cases, posture becomes the platform of these actions. A posture is the source of musculoskeletal load. Except for relaxed standing, sitting and lying horizontally, muscles have to create forces to balance the posture and/or control movements. In classical heavy tasks, for example in the construction industry or in the manual handling of heavy materials, external forces, both dynamic and static, add to the internal forces in the body, sometimes creating high loads which may exceed the capacity of the tissues.

Mental workload: Mental workload is defined as the cognitive, mental or intellectual type work demands. Also define as an intervening variable similar to attention. It must be inferred from changes in performance. The study of mental workload (also known as cognitive workload) is one of the most important variables in psychology, ergonomics, and human factors for understanding performance. Performance declines when mental workload is too high or too low. So, a good way to define mental workload as a whole is as the product of factors that contribute to one's workload efficiency for a given task load Computational models of attention and workload offer the greatest promise for practitioners.

New work paradigms: is defined as a new work standard, perspective, or set of ideas. A paradigm is a way of looking at something in a different dimension. In education, relying on lectures is a paradigm: if you suddenly shifted to all group work, that would be a new paradigm. When you change paradigms, you're changing how you think about something.

Factory layout: factory layout design refers to a plan of an optimum arrangement of facilities including personnel, operating equipment, storage space, material handling equipment and all other supporting services along with the design of a best structure to contain all this facilities. Moore, (2014). It is one of the most significant current discussions in ergonomics. A good layout design well suited to the ergonomics philosophy is a sine qua non (cause) for effective production and efficient operations in any organization.

Concept of Organizational Sustainability

Organizational sustainability, also known as corporate sustainability, is the management and coordination of environmental, social and financial demands and concerns to ensure responsible, ethical and ongoing success (Wigmore, 2020). From a manufacturing point of view, Huang & Badurdeen (2017) defines sustainable manufacturing as the transformation of raw materials into finished products through processes that reduce negative environmental impacts, make optimal use of energy and natural resources, are safe for society, and are economically sound.The significance of sustainability has developed and spread during the past two decades, permeating widely through political, industrial, commercial, scientific and other channels. This special issue of Ergonomics reflects on the impact this has had and is having on the field of ergonomics and human factors. Several of the contributions to the special issue indicate how the meaning of the term 'sustainable' has shifted and evolved over the years. With earlier use, dating back to the middle ages, the meaning was of something capable of being maintained or likely to endure.

Corporate sustainability practices typically fall under the umbrella of ESG, or environment, social, and governance practices. Corporations implement ESG in order to reduce their environmental footprint or to accomplish other objectives of benefit to society (Beattie, 2021). Sustainable development has been receiving substantial attention and has become a concern for researchers as well as practitioners in various areas, such as design, engineering, and business, over the past few decades. It is a concept of development that is widely spreading throughout the world through policy, industry, commerce, research, academia, and other arenas (Haslam & Waterson, 2013).The three correlated pillars of sustainable development are environmental protection, social wellbeing, and economic prosperity, which are integrated in a framework described as ESG, or environment, social, and governance practices.

Measures of organizational sustainability

Increased productivity: it is referred to as the large quantity of work that is attained in a unit of time by means of the factors of production. These factors include technology, capital, entrepreneurship, land and labour. It is the link between inputs and outputs and increases when and increased in output occurs with a lesser than comparative increase in input. It also occurs when equal amount of output is generated using fewer inputs Ilo (2015).

Bhatti (2017) and Qureshi (2017) were of the perspective that productivity can be seen as a measure of performance that encompasses both efficiency and effectiveness. It can also be

referred to as the ratio of output or production capacity of the workers in an organization. It is the correlation that exists between the quantity of inputs and outputs from a clearly defined process. Glen (2014) stated that the production sector is an ever changing beast and every year, the industry is faced with fresh challenges. The author stated that virtually all organizations constantly report the closure of industrial units, labour disputes between employers and their employees or reductions in the labour force due to recession and other economic dynamics. As a result, the image of production industries have been marred by low wages, high labour turn over, inadequate working conditions, poor performance and productivity Githinji, (2014).

Work performance: It is defined as the action or process of carrying out or accomplishing an action, task, or function. It is also defined as the total expected value to the organization of the discrete behavioral episodes that an individual carries out over a standard period of time. Austin & Crespin,(2018). One important idea in this definition is that performance is a property of behavior. In particular, it is an aggregated property of multiple, discrete behaviors that occur over some span of time. A second important idea is that the property of behavior to which performance refers is its expected value to the organization. Thus, the performance construct by this definition is a variable that distinguishes between sets of behaviors carried out by different individuals and between sets of behaviors carried out by the same individual at different times. The distinction is based on how much the sets of behaviors (in the aggregate) are likely to contribute to or detract from organizational effectiveness. In a word, variance in performance is variance in the expected organizational value of behavior.

Performance refers only to behaviors that can make a difference to organizational goal accomplishment. The performance domain embraces behaviors that might have positive effects and behaviors that might have negative effects on organizational goal accomplishment. Kane‘s (2015, 2017) Thus, behavioral episodes in the performance domain for any given individual might have varying expected values for the organization that range from slightly to extremely positive for behaviors that can help organizational goal accomplishment and from slightly to extremely negative for behaviors that can hinder organizational goal accomplishment. Because performance behaviors have varying positive or negative consequences for the organization, behaviors like those described in critical incidents are better candidates for the performance domain than are behaviors like those described in task activity statements. Borman (2019) Activity statements in task inventories can be extremely useful for analyzing a job according to the degree to which incumbents are involved with various tasks and for providing detailed reports of precisely what incumbents have to do in order to satisfy the demands of their jobs. What they do not typically provide, however, is specific information about how incumbents might do these tasks in ways that contribute to or detract from the accomplishment of organizational goals. A machinist who has a sophisticated understanding of engineering symbols and takes the time to understand important details of engineering drawings probably contributes more to organizational goal accomplishment than does a machinist who has only a cursory understanding of engineering symbols and impatiently scans them only superficially. Both can

be said to be executing the task, which is to interpret engineering drawings, but one executes it in a way that is more organizationally valuable because it is more likely to yield correct interpretations of the drawings.

Adaptability: Identify and adjust to changes in the environment. The American Psychological Association (APA)'s definition of adaptability is "the capacity to make appropriate responses to changed or changing situations; the ability to modify or adjust one's behavior in meeting different circumstances or different people" (VandenBos, 2017, p. 17).

Organizational safety (OS): According to business dictionary, organisational safety describes the policies and procedures in place to ensure the safety and health of employees within a workplace. OS involves hazard identification and control according to government standard and on-going safety training and education for employees. One of the biggest issue facing employers today is the safety of their employees. Organization has a moral responsibility to ensure the safety and wellbeing of their members.

Organizational accident is increasingly common. For instance, in 2003, the bureau of labour statistics (BLS) reported a total of 4.4million non-fatal workplace injuries in private industries. Ergonomic practices that promote safety can also help a company establish competitive advantage according to Ahonen et al. (2002) different international and national safety standard provide guidance to help organizations develop their safety management system with respect to diverse business need and requirement. Despite the fact that people are working and spending most of their hours at workplace, little attention and resources are accorded to health and safety in the organization.

Empirical Review

Previous studies have viewed Ergonomics has a critical element for organizational sustainability. Omolayo and Omole (2013) examined the influence of mental workload on job performance of two category of workers in the university namely, the academic and non-academic workers. 100 workers that were made up of 50 academic and 50 non-academic workers comprising of 68 male and 32 female participated in the study. Multiple Resource Questionnaire (MRQ) and Perceived Work Performance Scale (PWPS) were used to collect responses from the participants. Data were analyzed using Pearson correlation, independent t-test and Univaraite Analysis of Variance. Testing four hypotheses, results showed that there is no significant relationship between mental workload and job performance. Also, findings indicated that male workers do not exhibit greater mental workload than female workers. Furthermore, there is no significant main influence of age and educational qualifications on job performance, but there is significant main influence of length of service on job performance. No significant interaction influence of age, educational qualifications and length of service was found on job performance. However, there is

significant difference in the level of mental workload of academic and non-academic workers.

Ikonne (2014) investigated the influence of workstation and work posture ergonomics on the job satisfaction of librarians in the Federal and State University libraries in Southern Nigeria. The study adopted the survey research design. The total enumeration technique was used to include the 500 librarians from the 37 Federal and State University libraries in Southern Nigeria. Descriptive statistics was used to analyze the data collected. The findings revealed that there was a positive relationship between ergonomics (suitability of workstation and equipment and work posture designs) and job satisfaction. It was, therefore, recommended that ergonomic measures that would involve the set-up of adequate and healthy workstation equipment designs, which would allow the users to adopt optimal working postures suitable for a greater job satisfaction, be implemented in the Nigerian University libraries

Ray and Pana-Cryan (2021) investigated Work Flexibility and Work-Related Well-Being. Work organization practices, including work flexibility, are changing and can affect worker well-being. Common work flexibility types include working at home, taking time off when needed, and changing one's work schedule. Given the changes in and the importance of work flexibility, the study assesses its prevalence and association with worker well-being in the United States. We used 2002–2018 General Social Survey—Quality of Worklife (GSS-QWL) data, descriptive statistics, and regression analyses to assess the reported likelihood of job stress, job satisfaction, healthy days, and days with activity limitations among workers reporting work flexibility. The prevalence of work flexibility remained relatively stable during the period examined. Working at home increased the likelihood of job stress by 22% and job satisfaction by 65%. Taking time off decreased the likelihood of job stress by 56% and days with activity limitations by 24%, and more than doubled the likelihood of job satisfaction. Changing one's schedule decreased the likelihood of job stress by 20% and increased the likelihood of job satisfaction by 62%. This study used all the available data from GSS-QWL and demonstrated the ongoing importance of work flexibility for well-being.

METHODOLOGY

Research Design

Edet (2018) research design is a plan for collecting data and analyzing data in order to answer the investigation question. The purpose of this design will be to collect detailed and factual information to describe an existing phenomenon. Nworgu (2019) describes research design as a plan or blue print which specifies how data relating to a given problem should be collected and analyzed; it provides the procedural outline for the conduct of any given investigation. The research adopted a descriptive survey design. A descriptive research is the one which deals with the relationship among variables.

Population of the Study

A population is made up of all conceivable elements or observations relating to a particular phenomenon of interests to the researcher (Asika, 1991). The total population of this research study was three hundred and eight (308) which comprises of the staff (employers and workers) of Peacock Paint Limited, Ikot Ekan. Etinan LGA. Akwa Ibom State**.**

Peacock Paint Limited, Ikot Ekan. Etinan LGA. Akwa Ibom State.	**No. of staff**	**Percentage**
Female	102	33.11%
Male	206	66.88%
Total	**308**	**100%**

Source: Field survey, 2022.

Determination of Sample Size/ Sampling procedure

This study settles for a sample size since it was not be able to study the whole population. The sample size for this study was determined using Taro Yamani formula (1967), stated as follows:

$n = \frac{N}{1+N(e)^2}$ n = 174

A sample size of 174 respondents was used for this study**.**

Source of Data

One of the first steps in any statistical study must be the collection of suitable data. Data collection is the process of gathering and measuring information on variables of interest, in an established systematic manner that enables one to answer stated research questions, test hypotheses, and evaluate outcomes (Patton, 2012). This work adopted the use of both primary and secondary source of data. The primary source includes: questionnaire, personal interview and personal observation. Secondary source refers to information obtained from existing materials. These includes: textbooks, historical material collected from organization, internet, journals of different institutions along with different related studies about ergonomics and organizational sustainability to supplement the research.

Method of Data Collection

The information for the research work was collected from primary and secondary sources. The primary source was mainly through questionnaire which was design and structured in a reasonable and adequate form to allow respondent select the option which they consider most appropriate for each question. The adoption of the questionnaire survey as the method of data collection was to sample opinion of a reasonable percentage. In the questionnaire design, the researcher used 5likert scaling of Strongly Agreed SA (5), Agreed A (4), undecided UD (3), Strongly Disagreed SD (2), Disagreed D (1). The questionnaire which was divided into section A (which reviewed the demographic variables of respondents) and section B which contained some

research questions relevant to the problem at hand. The questions in the questionnaire were close-ended and were also drafted in a simple, explicit and understandable language.

Research Instrumentation

The questionnaire consisted of two sections. Section A measured the participants' biographical details which included: Gender, Age, Educational Qualification, Department and Length of Service. Section B consisted of the Ergonomics and Organizational Sustainability Questionnaire (EOSQ) which is a virtually self-administering survey and consists of statements measuring the dimensions of ergonomics namely work posture, mental workload, new work paradigm and factory layout and relationship on increased productivity, work performance, adaptability and organizational safety respectively (dimension of organizational sustainability). The statements of the questionnaire were configured using a five-point Likert scale ranging from 1, strongly disagree, to 5, strongly agree. The ethical clearance to conduct the research in the organisation was granted by the management and the ethics committee of the department and research institution. The questionnaire was completed during a group administration process facilitated by the researcher and it included a covering letter. The covering letter explained the purpose of the study and it explained ethical concerns such as anonymity, confidentiality, feedback and freedom of choice to participate in the study. The completed questionnaires were collected immediately by the researcher and were kept in a secure place.

Validity of Instruments

Validity of an Instrument is the degree of which a test measures what are purports to measure. Hence, a face (expert) and content validity was used to validate the instrument of data collected as the various questions were answered by the staff (employers and workers) of the establishments after thorough evaluation by the supervisor of this project, the suggestion and recommendation for improvements were used to review and improve on the research instruments. With that, the validity of the instrument was assured.

Reliability of Instruments refers to consistency and dependability of instruments. Hence, the researcher adopted a test and re-test method (pilot) Test by administering questionnaire to some group of respondents at different point in time and using Cronbach's Alpha statistical tool. The reliability estimates obtained were:

Cronbach's Alpha pre-test result

Table 3.2: Cronbach's Alpha Pre-test Result

S/No.	Vari ables	No. of Items	Cronbach's Alpha Coefficient
1	Work posture	5	0.721
2	Mental workload	5	0.707
3	New work paradigm	5	0.635
4	Factory layout	5	0.732
5	Increasing productivity	5	0.632
6	Work performance	5	0.674
7	Adaptability	5	0.712
8	Organizational safety	5	0.618
	Total	**40**	**0.997**

Source: SPSS, Version 25, (2022).

An acceptable lower limit could be as low as 0.5. Zoefel, (2005). Therefore a Cronbach Alpha co-effiecient of above 0.5 indicates internal consistency of items and can be relied on to explain the relationship between the variables under measurement. The Cronbach Alpha is preferred because it gives a more accurate estimate of instrument reliability Nwoke (2000). Thus, the co-efficient for the items in the instruments for this study were greater than 0.5 and found reliable.

Method of Data Analysis

Data analysis is the manipulation and refining of data in order to prepare them for the following process: Data Presentation, Data Tabulation and Analysis Eskor (2018). The researcher analyse the data using Pearson's Product-Moment Correlation (PPMC) with the help of Statistical package for Social Sciences (SPSS) of version 25 to ascertain the relationship that exist between the identified variables using a 0.05 level of significance.

Testing of Hypotheses

Hypothesis One

There is no significant relationship between work posture and increasing productivity in Peacock Paint Limited, Ikot Ekan, Etinan LGA. Pearson Product Moment Correlation Analysis was used to analysis the data in order to determine the relationship between the variables using Statistical Package Social Science (SPSS version 25).

Table 4.2.15: Correlation between work posture and increasing productivity in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

Correlated Variables		**Work posture**	**Increasing productivity**
Work posture	Pearson Correlation	1	.723**
	Sig. (2-tailed)		.000
	N	166	166
Increasing productivity	Pearson Correlation	.723**	1
	Sig. (2-tailed)	.000	
	N	166	166

**. Correlation is significant at the 0.01 level (2-tailed).
Source: SPSS COMPUTED RESULT, VERSION 25

From Table 4.2.15, the correlation (r) value of 0.723 indicates that there is a positive relationship between work posture and increasing productivity in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

However, since the p-value (0.000) is less than the level of significance of 0.01 (2 tailed). Therefore, the null hypothesis is rejected. This means that there is a significant relationship between work posture and increasing productivity in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

Hypothesis Two

There is no significant relationship between mental workload and work performance in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

Pearson Product Moment Correlation Analysis was used to analysis the data in order to determine the relationship between the variables using Statistical Package Social Science (SPSS version 25)

Table 4.2.16: Correlation between Mental Workload and Work performance in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

Correlated Variables		Mental workload	Work performance
Mental workload	Pearson Correlation	1	.663**
	Sig. (2-tailed)		.000
	N	166	166
Work performance	Pearson Correlation	.663**	1
	Sig. (2-tailed)	.000	
	N	166	166

**. Correlation is significant at the 0.01 level (2-tailed).
Source: SPSS COMPUTED RESULT, VERSION 25

From Table 4.2.16, the correlation(r) value of 0.663 indicates that there is a positive relationship between mental workload and work performance in Peacock Paint Limited, Ikot Ekan, Etinan LGA. However, since the p-value (0.000) is less than the level of significance of 0.01 (2 tailed). Therefore, the null hypothesis is rejected. This means that there is a significant relationship between mental workload and work performance in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

Hypothesis Three

There is no significant relationship between new work paradigm and adaptability in Peacock Paint Limited, Ikot Ekan, Etinan LGA.
Pearson Product Moment Correlation Analysis was used to analysis the data in order to determine the relationship between the variables using Statistical Package Social Science (SPSS version 25).

Table 4.2.17: Correlation between New Work Paradigm and Adaptability in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

Correlated Variables		**New Work Paradigm**	**Adaptability**
New Work Paradigm	Pearson Correlation	1	.645**
	Sig. (2-tailed)		.000
	N	166	166
Adaptability	Pearson Correlation	.645**	1
	Sig. (2-tailed)	.000	
	N	166	166

**. Correlation is significant at the 0.01 level (2-tailed).
Source: SPSS COMPUTED RESULT, VERSION 25

From Table 4.2.17, the correlation(r) value of 0.645 indicates that there is a positive relationship between New Work Paradigm and Adaptability in Peacock Paint Limited, Ikot Ekan, Etinan LGA. However, since the p-value (0.000) is less than the level of significance of 0.01 (2 tailed). Therefore, the null hypothesis is rejected. This means that there is a significant relationship between New Work Paradigm and Adaptability in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

Hypothesis four
There is no significant relationship between factory layout and organizational safety in Peacock Paint Limited, Ikot Ekan, Etinan LGA. Pearson Product Moment Correlation Analysis was used to analysis the data in order to determine the relationship between the variables using Statistical Package Social Science (SPSS version 25).

Table 4.2.18: Correlation between Factory Layout and Organizational Safety in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

Correlated Variables		factory layout	organizational safety
factory layout	Pearson Correlation	1	.618**
	Sig. (2-tailed)		.000
	N	166	166
organizational safety	Pearson Correlation	.618**	1
	Sig. (2-tailed)	.000	
	N	166	166

**. Correlation is significant at the 0.01 level (2-tailed).
Source: SPSS COMPUTED RESULT, VERSION 25

From Table 4.2.18, the correlation(r) value of 0.618 indicates that there is a positive relationship between factory layout and organisational safety in Peacock Paint Limited, Ikot Ekan, Etinan LGA.However, since the p-value (0.000) is less than the level of significance of 0.01 (2 tailed). Therefore, the null hypothesis is rejected. This means that there is a significant relationship between factory layout and organisational safety in Peacock Paint Limited, Ikot Ekan, Etinan LGA.

DISCUSSION OF FINDINGS

The findings of the study are discussed under the following subheadings

Relationship between Work Posture and Increasing Productivity

The result shows that the calculated r-value is 0.723, indicating a very high positive relationship between work posture and increasing productivity in peacock paint limited. The related hypothesis test indicates a significant relationship between work posture and increasing productivity in peacock paint limited. A well-designed workspace allows for good posture, fewer repetitive motions, better heights and reaches, less exertion, reduced awkward postures and high-force requirements, and more efficiency. This finding is supported by Vento (2015) who found that posture affects hormones. People who stand in powerful, expansive poses experience decreased cortisol and increased testosterone levels. This hormone combination increases leadership ability and disease resistance. A powerful pose can also help you take risks and land new clients, ask for a raise, or approach a problem resourcefully. This finding is also supported by Ikonne (2014) who found that work posture influences satisfaction, which in turn, enhances productivity.

Relationship between Mental Workload and Work Performance

The result shows that the calculated r-value is 0.663. This indicates that there is a positive relationship between mental workload and work performance. This shows that mental workload has a moderate positive relationship with work performance in peacock paint limited. The null hypothesis test indicates a significant relationship between mental workload and work performance in peacock paint limited. This finding is in line with Omolayo and Omole(2013)

who investigated influence of mental workload on job performance. The study found a negative influence of mental workload on job performance. The relationship observed in this study points to the fact that it is a negative impact.

Relationship between New Work Paradigms and Adaptability

The result shows that the calculated r-value is 0.645 This indicates that there is a moderate high positive relationship between new work paradigms and adaptability. This shows that there is a very high positive relationship between new work paradigms and adaptability in peacock paint limited. The corresponding hypothesis shows that there is a significant relationship between new work paradigms and adaptability in peacock paint limited. This finding is in line with Ray and Pana-Cryan (2021) who demonstrated the ongoing importance of work flexibility for well-being. They found that Taking time off decreased the likelihood of job stress by 56% and days with activity limitations by 24%, and more than doubled the likelihood of job satisfaction. Changing one's schedule decreased the likelihood of job stress by 20% and increased the likelihood of job satisfaction by 62%.

Relationship between factory layout and organizational safety

The result shows that the calculated r-value is 0.618. This indicates that there is a moderate positive relationship between factory layout and organizational safety in peacock paint limited. This shows that factory layout has a moderate positive relationship with organizational safety in peacock paint limited. The null hypothesis test indicates a significant relationship between factory layout and organizational safety in peacock paint limited. This finding is in line with Omolayo and Omole(2013) who investigated influence of factory layout on organizational safety. The study found a negative influence of factory layout on organizational safety. The relationship observed in this study points to the fact that it is a negative impact.

CONCLUSION

This research work indicates that ergonomics is very essential and crucial to the health and sustainability of an organization and individual. Therefore, for any organization to strive higher in a complex competitive world of business there is need to effective practice of ergonomics that will interact with workers and ensure their safety and wellbeing. Organization cannot operate in isolation and as such, there is need to integrate the various sub system in an organization to achieve a general goal and objective. Based on the findings of the study, it is concluded that there is a relationship between ergonomics and organizational sustainability. Specifically, it is concluded that significant relationship between work posture and increasing productivity; a significant relationship between mental workload and work performance; and significant relationship between new work paradigms and adaptability and significant relationship between factory layout and organizational safety.

Recommendations

The following recommendations are made.

1. The high level of mental workload in organizations commands attention. Therefore, management of organizations do not only need to consider the job performance of their workers, but also to assess their mental workload frequently.
2. Furthermore, organizations should make available the incentives that could increase work performance to their workers. These incentives include intrinsic (such as recognition, respect, sense of belonging, and the likes) and extrinsic includes (such as good pay package and allowances, job security, objective performance evaluation).
3. Job rotation as a matter of policy should be practiced by the company. That is, Workplace should be efficiently designed to enable easy interaction between workers and equipment and in support of new work paradigms; the company should consider allowing employees work in shifts.
4. The management of peacock paint limited should take some effective measures to safe guide the health of workers by providing safety tools and equipment.
5. Staff members should endeavor to practice good posture and follow safety measures in the discharge of their duties and assigned tasks.

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