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### Ergonomics and Work Productivity in the Hospitality Industry: A Theoretical Review

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#### Abstract

The most important challenges that a company's human resource department must deal with these days are employee productivity and performance. An organization's ability to assure the accomplishment of its objectives depends on the productivity of its employees. In order to enhance both human well-being and total system performance of hospitality organizations, ergonomics is a field of study applied to demystify how people interact with other components of a system in the places of work. The objectives of this paper were to investigate the areas of application of ergonomics in relation to productivity and to determine the impact of ergonomics on productivity of

employees in the hospitality industry. A qualitative research approach was used for this paper. The paper used document analysis approach to review the areas of applications of ergonomics and their impacts on the productivity of employees in the hospitality industry. Published research articles, books and information from other internet were used to obtain insights in the application of ergonomics and its impact on the productivity of employees in the hospitality industry. The findings are that ergonomics is a very significant discipline for consideration when designing the work places, equipment and it can impact on the wellbeing of the workers in hospitality organizations.

**Keywords:** Ergonomics, Productivity, Comfort Domains, Musculoskeletal Disorders

#### Introduction

A career in hospitality involves a lot of loud noise, crowded spaces, heavy, awkward, sharp, and hot things, repetitive motions, and stress, all of which increase the risk of musculoskeletal injuries, weariness, and unexpected accidents <sup>[1]</sup>. Ergonomics principles that can be applied to a wide range of user groups should be taken into account while designing workspaces in the hospitality industry. In order to effectively lower the risk of musculoskeletal injuries and establish a healthy work environment, ergonomic design concepts should be implemented from the very beginning of the design process of hospitality structures. Designing both work and non-work places should use ergonomic principles. An ergonomist's assessment and selection of furniture, done with user groups in mind, can help with purchasing decisions and lower the cost of repairing inappropriate furniture and paying employees for accidents sustained in an un-ergonomically designed workplace <sup>[2]</sup>. It is crucial to remember that an ergonomic work environment should support workers' happiness and health.

Further to this, <sup>[NO\_PRINTED\_FORM]</sup> <sup>1</sup>, is of the opinion that anything which can make workers uncomfortable, such as workstation seats, desks, lighting, temperature, and noise levels, can eventually have an impact on workers' well-being and productivity. Different people may react differently to the same environmental conditions in an office setting (such as comfort, temperature, ventilation, air quality, humidity, and satisfaction). These variations can be physiological or psychological and can be caused by factors such as age, sex, clothing, activity level, fatigue, past thermal history, present health status, allergies, or hypersensitivity. The physical surroundings can improve one's work, yet an uncomfortable setting might reduce productivity. The workplace design, which takes into account its impact on general health and employees' performance, also affects an employee's performance and productivity at the organizational level. The most crucial elements in establishing a healthy work environment are temperature, humidity, ventilation, light, noise, and crowding.

In the view of <sup>[NO\_PRINTED\_FORM]</sup> <sup>3</sup> Workers are entitled to a safe and healthy working environment. Ergonomics is a discipline that focuses on having improved working conditions while at the same time supporting employees' demands and boost output within the hospitality industry. Additionally, it can make corporate operations operate more smoothly and lower the number of workers absent from work due to health issues brought on by a lack of workplace safety. Employers need to be trained on the

advantages of setting up ergonomic workspaces. They can safeguard their workers more and help them stay healthier with greater knowledge, which may also enable them to get the maximum performance out of their workforce.

### Research objectives

1. To investigate the areas of application of ergonomics in relation to productivity in the hospitality industry.
2. To determine the impact of ergonomics on productivity of employees in the hospitality industry.

### Literature review

#### Work productivity in the hospitality industry

According to [NO\_PRINTED\_FORM] <sup>4</sup>, productivity is the measure of an employee's effectiveness in performing essential duties, such as offering satisfactory services to customers, handling guest complaints and attending to guest requests among others. It refers to the attribute or state of providing huge results or abundantly, which is frequently assessed by the ratio of output to input. Determining the productivity of workers is intrinsically difficult because their activities vary greatly, involving both creative and repetitive duties depending on the demands of the job. Assessment of work output and assessments of cognitive function may be necessary to perform tasks connected to the workplace as a measure of worker productivity. By reducing unfavorable features of human resources including absenteeism, turnover, tardiness, withdrawal behavior, and reluctance to change; and by leveraging incentives to foster employee commitment, worker productivity rises.

In the opinion of [NO\_PRINTED\_FORM] <sup>5</sup>, enhancing job satisfaction, employee welfare, and employee engagement through incentives results in increased employee commitment which results to increased employee productivity. Hospitality organizations need to consider new approaches to working, which means stepping outside of their comfort zones and conventional responsibilities. It is their responsibility to design work settings where employees may realize their full potential, feel purposeful in what they do, and love what they do. Workplace productivity rises when people are in good physical and mental health because they are more motivated to work. When they help workers see their worth within the company, supervisors can lift their moods. Positive attitudes at work have a positive impact on productivity when workers feel appreciated. In order to increase employee productivity, supervisory support evaluates which areas of their staff members need improvement and then assists them in putting the newly acquired abilities to use when finishing their work.

#### Ergonomics and work places

The term ergonomics refers to the study and process of creating and/or altering instruments, materials, equipment, work areas, tasks, jobs, products, systems, and environments to better suit the capabilities, constraints, and social demands of people who work in them (Maxwell, 2017) <sup>[6]</sup>. Chim, (2019) <sup>[7]</sup> is of the view that in order to minimize musculoskeletal pain, increase productivity and job efficiency, lower production costs, and promote human well-being, ergonomics should be carefully considered while designing a workplace in the hospitality industry.

The use of ergonomics in workplace design of hospitality structures has several advantages. Hospitality organizations have a number of functional areas where ergonomics

principles are applied. These areas many include but not limited to front office, kitchen, housekeeping, stores among others. By reducing the physical workload of the working individual, an ergonomic workplace design strategy has numerous benefits, such as the prevention of sickness and injury, such as musculoskeletal disorders including carpal tunnel syndrome, neck and shoulder discomfort, and back pain <sup>8</sup>. The likelihood of musculoskeletal injuries can be decreased in a well-designed workspace. In the setting of hospitality organizations, the elements of the workplace, the worker, the demands of the task, the surroundings, and the routine body motions and postures that employees adopt are all interdependent (Chim, 2019) <sup>[7]</sup>. An ergonomically designed workspace can also enhance the usability of goods, machinery, systems, and facilities, which promotes task completion and efficiency as well as the various workplace components' ease of use. With better forecasting and management of production and operating costs during a product's lifecycle, it is easy to comprehend that an ergonomic workplace design will ultimately increase productivity and lower production costs. Significantly, firms are legally obligated to adhere to local occupational safety and health regulations, and a safer and more ergonomic work environment promotes employee wellness. Better human performance and the wellbeing of employees will result from a company's commitment to developing a safe and healthy work environment (Chim, 2019) <sup>[7]</sup>.

#### Domains of ergonomics application in the hotels

Vischer, (2008) <sup>[9]</sup> suggested three types of ergonomic domains that are very important for performance and support of productivity in hospitality organizations. These are;

##### Physical ergonomic domain

According to the [NO\_PRINTED\_FORM] <sup>10</sup>, physical comfort is defined as meeting fundamental human needs like safety, hygienic conditions, and accessibility. These needs are typically met by adhering to current building codes and standards, which take into account factors like temperature comfort, relative humidity, air speed, and freshness for comfortable ventilation as well as lighting conditions that balance brightness and contrast. As evidenced by the nature of the work in the hotels and restaurants, human anatomical, anthropometric, physiological, and biomechanical traits as they apply to physical activity are the focus of physical ergonomics. Working postures, material handling, heavy lifting, repetitive motions, musculoskeletal problems associated with the job, workplace design, noise, vibration, temperature conditions, and safety and health are all pertinent concerns. These may apply to areas where construction, production and other functional operations are taking place in hotel premises.

##### Functional ergonomic domain

A conducive atmosphere for users to carry out tasks and activities linked to their jobs is known as functional comfort. The aspects of noise, thermal comfort, and air quality are all included in the building system's functional comfort. The interior of a building's functional comfort takes into account factors including daylighting, lighting quality, privacy, and the comfort of one's workspace <sup>8</sup>. Due to its ability to facilitate work flow and task needs, functional comfort also promotes functional and productivity enhancement in the

workplace. This often takes place in areas where the guests are usually served as well as the service scope where the employees of the establishments interact with the customers during the service delivery encounters. Effective collaboration both within the team and with external parties can enhance individual, team, and cross-team efficiency <sup>11</sup>.

### Psychological comfort domain

Feelings of control over one's workspace, ownership, and belonging are characteristics of psychological comfort. In the environmental comfort paradigm of workstation quality, psychological comfort is the highest level of comfort. Users who have an ergonomic workstation can feel more at ease psychologically and have a clear sense of their own area. Both employees and the customers as well as other stakeholders who may visit a premises for a variety of reasons may experience these aspects of psychological comfort in the hospitality facility. By increasing environmental empowerment, users might feel more a part of the workplace and more like owners if they are encouraged to participate in the design process <sup>8</sup>.

### Cognitive Ergonomics domain

[NO\_PRINTED\_FORM] <sup>10</sup> assert that the study of cognitive ergonomics focuses on how mental functions including perception, memory, reasoning, and motor response impact how people interact with other components of a system. Because these may have an impact on how people operate in systems, relevant subjects include mental workload, decision-making, skillful performance, human-computer interface, human mistake, work stress, and training. Customers and workers in the organizational premises are the greatest proportions of the persons who experience this domain of cognitive ergonomics. Moreover, [NO\_PRINTED\_FORM] <sup>3</sup> posits that regardless of the size of the company or the nature of the industry, human resources management in every organization must carefully plan training because it is thought to be a key component in improving employee performance. Employees' workloads, which would otherwise be high owing to a lack of creativity or ability, are reduced when they receive the right training to carry out their duties.

### Organizational ergonomics domain

[NO\_PRINTED\_FORM] <sup>10</sup> defines the field of organizational ergonomics as a discipline that focuses on optimizing socio-technical systems, which encompass their organizational structures, policies, and procedures. Human system considerations in communication, job design, schedule design, collaboration, participatory design, community ergonomics, cooperative work, innovative work models, virtual organizations, tele-work, and quality management are among the pertinent subjects. Employees who work within the hospitality premises are the ones who usually benefit from the dynamics inherent in the organizational ergonomics of the hospitality facility. In order to implement participatory ergonomics, organizational ergonomics involves people in making sure that all important elements of their workplace are under control and that they have the necessary authority and competence to direct all processes to produce the intended outcomes <sup>3</sup>.

### Areas of application of ergonomics in hotel operations

Tosi (2020) asserts that in ergonomics, the understanding of

human traits and capacities, along with the impact of product/system attributes and environmental factors on individuals, forms the essential scientific foundation that functions as a benchmark for the creation and evaluation of design and/or intervention options for working surfaces and areas in the hospitality structures. Similar to this, the first step in every review and/or planning process is to comprehend and evaluate the needs, attitudes, and expectations of individuals working in the various departments of the premises. This requires a shift in perspective from two different angles: The evaluation and design of systems, environments, and products, as well as the evaluation and design of the interactions between people and those environments, products, or systems; the assessment of the objective reality that people interact with, the projection of the future and the likelihood that these interactions will occur, and the design of the best possible solutions to address the needs and desires of the hotel employees.

According to [NO\_PRINTED\_FORM] <sup>1</sup>, Fundamental standards for evaluating the ergonomic system should be: Productivity, or the quantity of work completed in a given length of time; reliability, which is defined as the likelihood of faultless operation and the timely and error-free performance of tasks; economy: Ascertains monetary expenses (costs per unit of production, rate of return, etc.); the degree of physical strain on the system's ability to perform; we gauge this by measuring the amount of energy used per working cycle or per minute; the degree of mental strain caused by the system's operation - we assess the mental burden that a particular system places on an individual; the system's hazard, or the risk of harm to one's health; occupational safety and health, which reduces the risk of getting sick; system flexibility-the ability to make changes to the system in a flexible manner; ecosystem aesthetics-sensitivity to the beauty of individual components of the system; and stability, the propensity to maintain variable values within predetermined bounds.

A shift in the employment structure may result from raising the standard of labor through bettering the surroundings and working conditions. A first step in raising the caliber of work is identifying the reasons for and effects of unfavorable working environments and circumstances (Abid *et al.*, 2017) <sup>[13]</sup>. To illustrate, the layout and working plan of the kitchen should be practical, cozy, and efficient. In addition to raising labor costs, poorly designed kitchen work surfaces, storage areas, and inefficient work plans have a negative impact on the worker's physical well-being. A seamless energy flow between the workplace, the worker, and the task is facilitated by kitchen ergonomics. To lessen the homemaker's physical, psychological, and temporal expenses, the kitchen should be thoughtfully planned and arranged. In addition to physical and physiological considerations, a well-designed kitchen should primarily take into account the layout, positioning of furniture, cooking tools, and human movement. A worker may easily make the kitchen a comfortable and exciting place to work by using some inexpensive preparation and a little creativity. This will also make cooking tasks simpler and more enjoyable. Inadequately planned kitchen worktops and storage areas lead to physical harm, escalate labor expenses, and breed monotony in the routine kitchen tasks. This explains why it's important to pay close attention to the height of kitchen work surfaces and storage areas in order to

reduce the strain on the respiratory, muscular, and cardiovascular systems.

(Chim, 2019) <sup>[7]</sup> observes that the hotel workplace layouts, including the areas used for work and leisure, should be designed with ergonomics in mind. It comprises the general arrangement of the workspace, the design of the workstations, the seats, the conveyor, the storage, the breakout area, the canteen, the restroom, the gym, and other amenities like the windows, lighting, ventilation, and sound absorption systems. Furthermore, ergonomics should be incorporated into the design of the workplace's exit, entrance, emergency facilities, and any adjacent regions. For example, when utilizing a computer in an office setting, an individual's posture and body language are mostly determined by the nature of the activity at hand, the furniture that meets their needs, the workplace environment, and themselves. Adjustable chairs, desks, computer mice, and adjustable height monitors are just a few examples of the various furniture and equipment solutions that might be recommended. However, a user's working posture can only be supported if the chosen furniture and equipment are suitable for the required task and user group. Both the task and the furniture parameters affect the furniture's appropriateness and comfort. Before the products are bought, an ergonomist should be consulted in order to choose the right office supplies, computer peripherals, and furniture. When changing outdated materials or buying new furniture or equipment for the office, the entire workstation arrangement should be taken into account.

#### **Accommodation areas**

In the accommodation sector, there is usually a lot of haste to accomplish room preparation tasks within the allocated time. The quality of housekeeping influences a customer's decision to make a subsequent purchase or to recommend a specific location, hence housekeepers play a crucial role in the hotel and lodging industries. Cleaning experts known as housekeepers are in charge of doing laundry, cleaning, stocking supplies, and serving patrons. The most common places to work are inns, guest homes, hotels, motels, spas, and the sleeping coaches of passenger trains. Housekeepers frequently find their jobs to be stressful. While speed is necessary for the job, hurrying also increases the danger of workplace accidents (Alozie, 2019) <sup>[14]</sup>. In the event that housekeeping is understaffed, functional disorders and occupational hazards exacerbate the rush. Avoiding excessive rushing that leads to job overload will also help to prevent workplace accidents and needless sick days. Ergonomics describes the process of adapting methods and procedures to suit human needs at their place of occupation. In housekeeping, this could involve making a vacuum cleaner or cleaning cart easier for staff to use so that their tasks are completed more quickly. Because users of vacuum cleaners come in a range of heights and need to be able to reach a number of locations with it, this implies that the suction wand needs to be adjustable. Applying ergonomic principles enhances human health, safety, and well-being in addition to enabling uninterrupted, efficient system functioning. For the vacuum cleaner, for instance, safety could imply that the vacuum cord is sufficiently long to avoid becoming taut and obstructive, or that it coils up inside the appliance to prevent people from tripping over the excess cord.

#### **Food and beverage areas**

Human factors engineering and workplace ergonomics need to receive more consideration from facilities designers and equipment makers in light of the evolving foodservice environment. Work schedules and workstations that are well-designed in restaurants can reduce risks and increase productivity. Aspects of ergonomics including the need for a certain skill, level of physical activity, handling manual materials, workplace layout, posture during work, surroundings, work hours, and equipment. In a demanding sector of the economy such as food and beverage, it is imperative that individuals have a substantial degree of knowledge and authority to plan and control a large portion of their job in order to accomplish desired results. Using ergonomics techniques can assist in changing an organization's culture to one that emphasizes harmony and teamwork at work <sup>1</sup>.

Workplaces in the food production industry are often stationary. Therefore, workers in this kind of environment should be able to stand up straight, keep their arms close to their bodies, place their hands just below their elbows, rotate duties, especially those that call for the same motion, work with their shoulders relaxed, and push carts as much as they can rather than drag them. A higher load level would be advantageous, and anti-fatigue mats are a need in the workplace to reduce strain on the back, legs, and feet. Additionally, arrange the workspace so that frequently used materials are easy to reach, unpleasant postures for the back, shoulders, and rest are avoided, the walking distance between fryers and sinks is minimized, and the pick-up area in the central kitchen is located to the minimum.

#### **Materials and Methods**

The study methodology for this report was qualitative. This study reviewed the areas in which ergonomics is applied and how it affects staff productivity in the hospitality sector using a document analysis approach. Insights into the application of ergonomics and its effect on staff productivity in the hospitality sector were gathered through the use of published research articles, books, and information from other websites.

#### **Results and Discussion**

##### **Impacts of ergonomics on productivity**

[NO\_PRINTED\_FORM] <sup>15</sup>, opines that since workers are a company's most valuable asset, their working environment must be carefully considered in order to improve efficiency. Workers conduct their various responsibilities in these environments. A major trend in corporate organizations and businesses rearranging their office spaces in novel ways and models has been observed over the past few decades in recognition of the aforementioned. Discussions concerning the best places and methods for completing work have become more prevalent as a result of the move towards a more dynamic and flexible work environment as well as the necessity to satisfy the various and ever-expanding expectations and requirements of individuals <sup>16</sup>. A clear indication of the value management places on its workforce is the type of work environment and circumstances it offers. Further, [NO\_PRINTED\_FORM] <sup>15</sup> suggests that the productivity of employees is influenced by two primary factors: Those that are driven by management and those that originate from the workplace. She states that the following are factors that are

driven by management: The creation of organizational plans, such as the distribution of duties across all organizational levels; the definition of a job description; the level of access to management and the administrative support required to accomplish tasks; working patterns, shift work, break times; the absence of holidays; and health and safety policies, which include the provision of training and the development of safe working practices as well as an adequate supply of protective clothing and equipment. Vimalanathan and Babu (2017) <sup>[19]</sup> noted that there are additional elements that improve worker performance and productivity, such as factory or office layout, availability of workspace, machinery and workshop tools, lighting and illumination in the offices, weather, temperature, ventilation, humidity, noise, vibration, cleanliness, welfare facilities available, and quality of office furniture. Office layouts that maximize employee engagement and collaboration while on duty have become both very required and stylish. Ergonomics are crucial because when workers perform a certain task for extended periods of time, their bodies become strained from improper posture. This can result in symptoms like tension, exhaustion, and pains, as well as musculoskeletal disorders that impair their ability to function at their jobs.

Ergonomic procedures are essential since an employee's body is under stress while work due to awkward postures, repetitive movements, and severe temperatures, all of which can impact the musculoskeletal system in hospitality establishments. Employees may be feeling tired, uncomfortable, and in pain, all of which might be early indicators of musculoskeletal disorders (MSDs). An organization's success is directly correlated with its ergonomic procedures <sup>16</sup>. Workers who pay little attention run the risk of developing a variety of musculoskeletal problems. The success of a company is hampered by these diseases because they cause personnel to be inefficient. Workplace ergonomic risks can be a factor in diseases, injuries, and long-term health problems. Some prominent factors include awkward postures, excessive force needs, repeated jobs, poorly constructed workstations, and inadequate training. Safety ergonomics recognizes these risks and takes preventative action against them. In order to reduce workplace events and protect employee wellbeing, it highlights the significance of ergonomic assessments, risk management, and control techniques.<sup>17</sup>

[NO\_PRINTED\_FORM] <sup>17</sup>, proclaims that there are numerous advantages result from using safety ergonomics in the workplace. It first improves employee health and well-being by lowering the risk of work-related diseases and injuries. Safety ergonomics helps to reduce absenteeism rates and healthcare expenditures by preventing MSDs and other workplace illnesses. Second, it raises staff efficiency, decreases errors, and optimizes work processes to increase production. Thirdly, it creates a supportive and safe work environment, which increases employee engagement and satisfaction. Increased loyalty and retention follow from higher morale and job satisfaction among employees who feel protected and respected. Tasks like emptying trash cans, stripping and replacing towels and bed linens, dusting, vacuuming, mopping floors, and replacing amenities are all part of the physical labor that hotel housekeepers perform (Oxenbridge & Moensted, 2011) <sup>[20]</sup>. Psychosocial factors, such as work overload, time constraints, and payment

methods, are frequently associated with increased risk of musculoskeletal injuries.

[NO\_PRINTED\_FORM] <sup>18</sup> finds that in order to achieve workplace social sustainability in operations of hospitality organizations, two variables that need to be taken into account are musculoskeletal health and environmental issues. The hospitality organization needs to assess possible physical labor tasks like lifting, twisting, and bending. This is particularly in the sections of the hotel or restaurant where physical energy is applied, for instance in the rooms division, stores and at the lobby areas. In order to minimize the amount of time that workers must spend performing excessive manual handling, large forces in these tasks also require attention. Activities that impact the workplace include hazard prevention and accident analysis. Keeping an eye on aspects of the working environment including vibration, temperature, noise level, and lighting will help with this. Employees can find a work-life balance, be healthier, and experience less stress if the organization can pay special focus in the tasks involved.

### Conclusion

In conclusion, there are many practical areas of application of ergonomics in the operations of the hospitality operations in the hospitality industry. Some of these include the activities that are undertaken in the various departments as; the housekeeping, food and beverage production and service areas and also storage areas. Ergonomics in the hospitality operations is found to be very important as it directly impacts on the ability of the employees to work for a long period in the hotel if the ergonomic aspects of the workplace are optimal to facilitate the tasks that are carried out in the organizations.

### Recommendations

1. Managers should ensure that employees opinions and points of view should be considered when designing work surfaces and places.
2. Employees require to be trained on the appropriate dimensions of work surfaces and places and their impacts on their wellbeing when carrying out tasks in their places of work.
3. Managers need to understand the optimal ergonomic dimensions that will enable the workers to optimize their potential in order to improve on the productivity of their areas of operations.
4. Multiskilling should be emphasized in hotels because it enables employees to have a variety of skills and knowledge that can be applied in areas where employees may lack capacity due to ergonomic related risks and emergencies.
5. Hotel managers should consult with ergonomic professionals in various disciplines to get the best expertise in blending the ergonomic aspects in hotel workplaces and surfaces.

### Areas of further research

1. Further studies should be undertaken in environmental aspects of ergonomics that affect the working of employees in the hospitality industry. These areas involve specific attributes of the work environment such as noise, lighting, vibrations heating and other related environmental variables.

2. Empirical research should also be conducted to find out the relationships between the environmental aspects of ergonomics on the productivity of employees in the hospitality industry.
3. Studies need to be carried out to investigate the ergonomic aspects that are related to the use of technology in the hospitality industry as it is characterized by long sitting and standing hours depending on the nature of task being undertaken from the various departments of the organizations.

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