



The Perspective of Work Ergonomics on Employee Task Performance in Hotel and Tourism Industry, Malaysia [†]

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Abstract: Work ergonomics is considered one of the important issues in every organisation because it is related to employees' safety and health. The statistics recorded by the Department of Occupational Safety and Health (DOSH), Malaysia, showed an increasing number of accidents in the workplace related to the hotel and tourism industry. Thus, this study aims to examine the relationship between work ergonomics, including physical ergonomics, organisational ergonomics, and cognitive ergonomics, with employee performance. To conduct this study, the researchers will collect data from primary sources. The researchers will randomly distribute the questionnaire to those working in the hotel and tourism industry in Malaysia. All data will be analysed using Smart PLS. The study findings will be clarified using frequency analysis, descriptive statistics, correlation, and multiple regression analysis.

Keywords: work ergonomics; physical ergonomics; organisational ergonomics; cognitive ergonomics



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1. Introduction

The workforce is the most valued asset of any organisation, and therefore, work environment conditions are critical to optimising productivity and performance. In addition, employee performance and productivity are now two of the most significant issues that an organisation's human resource department must handle. Employee performance is critical for an organisation since it ensures that the organisation's goals are achieved. Performance may be defined as the behaviour or actions that employees engage in, in accordance with their duties and roles, for the organisation's goals to be met [1]. The factors that influence productivity and performance among employees can be classified into two main categories: management-driven factors, which include developing an organisational plan such as division of responsibilities at all levels, having excellent working hours with enough time for rest, absence coverage, safety and health policies, advancing working system, and providing training [2]. In addition, the second category is related to workplace elements including workplace design, machinery and tools, temperature, lighting, humidity, and noise.

Ergonomics is the scientific study of the interactions between humans and other elements of a system to improve human well-being and overall system performance. The term ergonomics is derived from the Greek terms *ergon*, which means work, and *nomos*, which means rules; thus, ergonomics may be defined as the law of work [3]. Ergonomics is

the study of equipment and jobs that are designed to be suitable for human capabilities and limitations. Ergonomics, therefore, matches the job to the individual, whether in the workplace or with a consumer product, and it provides opportunities for business by increasing human well-being, lowering costs, improving quality, and increasing productivity [4].

Dr Paula Cenni, a European Ergonomist, defined Ergonomics as a science of work which relates to a culture and a method beneficial for the development of a man-centred labour system aimed at psychophysical welfare and at safety and production efficiency [5].

Based on occupational accident statistics reported by the Department of Occupational Safety and Health, the number of occupational accidents in Malaysia rose year-by-year in all industries, including the manufacturing sector, hotel and tourism sector, utility sector, public service, and statutory authorities. Meanwhile, Social Security Organisation (SOCSCO) statistics in 2013 showed that the number of cases related to ergonomics reached 694 from 2630 reported cases [6].

In addition, the Chairman of the National Institute of Occupational Safety and Health (NIOSH) stated that the number of occupational musculoskeletal disorder (MSD) cases in Malaysia is increasing year-by-year. For example, in 2005, there were only 10 MSD cases reported; however, in 2014, the number of cases reported were 675. In just 9 years, the number of cases has risen dramatically. The Social Security Organisation (SOCSCO) showed that claims related to ergonomics were also higher than other occupational diseases.

As a developing country, Malaysia views human resources as a national asset, and national growth occurs when each employee's contribution to the economy is significant and beneficial. Like other developing countries, safety and health issues are important to maintaining a safe working environment and employees' safety while performing their tasks. Thus, the Malaysian government enacted a law in 1994 called the Occupational Safety and Health Act (OSHA 1994), which underlines the employer and employees' role and responsibilities to create a positive, safe, and healthy environment in the workplace. OSHA 1994 is designed to ensure employees are not abused, which can lead to an accident, disease, or illness.

As the specific Occupational Safety and Health Act 1994 has mentioned, the work environment should be secure and conducive to fulfilling the physiological and physical needs of the employees. Furthermore, due to employers' lack of concern and serious intervention on ergonomic issues, workplace illnesses and personal accidents are consistently high. Ergonomics have a lower priority and are less likely to be followed by many people because they are time-consuming, costly, and considered difficult for management to handle with the current economic situation [7]. However, employees also have the right to work in a secure and healthy workplace. Meanwhile, better working circumstances help to meet the demands of employees and increase their performance. Furthermore, it can reduce the number of absent employees due to health problems caused by a lack of workplace safety, and the business activities can run smoothly. Organisations must have training on the benefits of providing ergonomically appropriate facilities in their workplace. The more knowledge that the employer receives, the more protection they can have for their employees and assist them in remaining healthy, and they can possibly help achieve the best results from employees [8].

Human factors are highly complicated, especially in terms of technology. Ergonomics has received little debate and study among researchers, leading to a lack of awareness among the general community. Furthermore, surveys on occupational safety and health issues in the hotel and tourism industry are limited in Malaysia. Today, a growing number of cases of ergonomic illness is being recorded by the Department of Occupational Safety and Health (DOSH), and the study regarding it is crucial. Indirectly, it has a negative impact on employee morale, and employers will face an increasing cost-of-compensation problem.

Therefore, it is critical to understand what types of work ergonomics could potentially affect employees' performance. This includes: 1. identifying the relationship between physical ergonomics and employees' performance; 2. determining the relationship between

organisational ergonomics and employees' performance; and 3. examining the relationship between cognitive ergonomics and employees' performance. Thus, the study focuses on the review of the work ergonomic perspective on employee task performance in the hotel and tourism industry as a conceptual analysis.

This model was developed by [9] and used mainly by previous researchers to study work environment and performance. The proposed developed the habitability pyramid to demonstrate the relationship between comfortable environmental work and physical comfort, functional comfort, and, lastly, psychological comfort (Figure 1). Physical comfort covers basic human needs such as security, cleanliness, and accessibility, all of which are required for a high standard of life. Furthermore, functional comfort is frequently defined as ergonomic assistance for people when doing work-related responsibilities and activities, such as lighting and meeting space. Meanwhile, psychological comfort stems from feelings of identification, ownership, and control over one's employment.

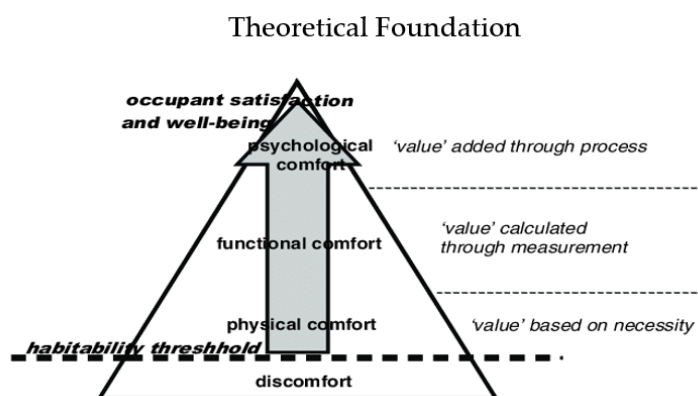


Figure 1. The habitability pyramid.

2. Literature Review

2.1. Work Ergonomics

Ergonomics is a combination of two Greek words, *Ergon* (work) and *Nomos* (natural laws). Ergonomics is defined as a holistic strategy where physical, cognitive, social, organisational, environmental, and other associated variables are considered when designing and evaluating tasks, products, settings, and systems to fully match employees' needs, skills, and limits [10]. From the Occupational Safety and Health Act (OSHA) perspective, ergonomics is a process where jobs are designed based on workplace layout, work setting, and workflow that is suitable for employees rather than being enforced on the employees. To align and meet the needs, capacities, and limitations in the workplace, ergonomics can be described as a holistic approach that considers physical, cognitive, social, organisational, environmental, and other associated factors [10].

A proper workplace design through ergonomics can help protect employees from any illness and injuries such as muscle pain or cumulative trauma disorder (CTD). Employee safety is inevitably crucial for every organisation because every country has its Occupational Safety and Health Act that employers must comply with to ensure the safety of employees in the workplace. According to [11], if employers do not adequately care for their employees, several safety and health issues can arise, which may cause unnecessary long-term stress among employees. For example, an office design that forces workers to sit in uncomfortable positions for an extended time may decrease commitment and increase lethargy and dissatisfaction among employees. Consequently, this may affect employees' bodies and nervous systems that ensures the plausibility of a musculoskeletal disorder (MSD) diagnosis.

The philosophy of ergonomics is concerned with recognising the relationship between people and other elements within a system, and developing theories, concepts, and strategies to accommodate workers, which would allow companies to fully optimise employee

productivity and overall system efficiency [7]. One of the main objectives of ergonomics is to increase the level of employee task performance in the workplace. According to Taylor's theory, an organisation's management is responsible for designing job assignment and maintaining workers' safety and comfort to work efficiently in the workplace while also reaching a higher degree of productivity [12]. Taylor opines that one of the fastest ways to accomplish results is by investing in the right individuals and equipment.

According to [7], ergonomics concerns about interactions between people and other elements of a system and the formulation of theory, principles, and data for workers to increase human capital and system performance. This concept involves broader and all-encompassing use of structures that consider the possible attainable domain of specialisation within the area of ergonomics. The three domains of specialisation are physical, organisational, and cognitive ergonomics, which are the main focus of this study.

2.2. Physical Ergonomics

Physiological ergonomics incorporates human anatomical, anthropometric, neurological, and biomechanical factors linked to physical activity [7]. Physical ergonomic factors such as lighting, noise, temperature, and humidity can affect employees' productivity and performance. This statement aligns with a previous study by [13], stating that physical ergonomics, especially layout and design, influence employees' actions in the workplace and have a positive relationship with employees' performance. An excellent physical work environment will help to boost employees' performance and improve their productivity [14]. Physical ergonomics is important not just for employee performance, but also for their well-being, social relationships, and health.

Besides that, a good and safe work environment can help make a business more competitive in their industry. In the working environment concept, task performance and physical ergonomics are inextricably linked with the working environment [15]. Problems related to physical ergonomics will arise almost every day for quite a long time.

Additionally, it is crucial to promote and develop the ergonomics concept in various industries in Malaysia to help increase the performance and safety of workers in the workplace [16]. Most researchers refer to Herzberg's two-factor theory on "hygiene factors or job context", which emphasises the importance of 'work environment' and 'organisation policy' in helping people understand the relationship between physical space, ergonomics, and employee performance [17].

Previous research by [18] showed that physical work ergonomics has a positive and significant effect on Ibis Style Bali Denpasar Hotel employees. In addition, physical ergonomics (office layout, lighting, furniture, and equipment) also showed a positive and significant relationship with employees in a government agency in Kedah, Malaysia [19].

According to [20], who conducted a study on workplace ergonomics and academic staff performance in the College of Education at Umm Al-Qura University in Mecca, physical ergonomics has a positive relationship with employees' performance. This proved that if an organisation creates and provides an excellent ergonomic workplace, people will perform better while executing their tasks. As a response, the following hypothesis is developed to be tested in future study:

H1. *There is a significant relationship between physical ergonomics and employee task performance.*

2.3. Organisational Ergonomics

Macroergonomics is an organisational study that focuses on harmonising work systems at both the macro- and microlevels [10]. In ergonomics, the term "compatibility" has been described as "a fit" in an unstructured manner. Organisational ergonomics focuses on organisational structures, policies, and procedures to figure out how to improve the sociotechnical system [10], indicated that communication, job design, virtual organisation, teamwork, organisational culture, and quality management are all related to organisational ergonomics. The fundamental goal of organisational ergonomics is to adjust the organisation's whole work practice and working system to accommodate existing activities and

available capabilities, talents, and individual constraints. It aims to assure the efficiency, convenience, and safety of the workforce.

Organisational ergonomics uses participatory ergonomics by including individuals in ensuring that all key aspects of their work environment are controlled, with adequate competence and authority to drive all procedures to achieve desired results. Based on [21], only 18 case studies were chosen out of 166 projects that went through a huge multinational company's vetting process. It was discovered that adopting an organisational ergonomics technique lowered the probability of work-related musculoskeletal disorders while increasing activity levels. This implies that there is a strong link between organisational ergonomics and employee performance.

According to a previous study [22], communication (one of the variables in organisational ergonomics) had a significant positive effect on employees' performance in Hotel Puri Saron, Seminyak, Kuta, Bali. In addition, another study [23] also showed that communication had a significant and positive relationship with workers' performance in North Sumatra Province. It can therefore be concluded that communication is an important variable that must be a priority for organisations to develop good organisational ergonomics in their workplace.

In addition, past research by [24] indicated that 73.5% of employees' performance is influenced by motivation and leadership (variables of organisational ergonomics) in Wahana Resources Ltd. North Seram District, Central Maluku Regency, Indonesia. This means that organisational ergonomics is crucial for every organisation included in the hotel and tourism industry to ensure the performance of employees will increase and directly affect business success. Thus, the following hypothesis is developed to be tested in future studies:

H2. *There is a significant relationship between organisational ergonomics and employees' performance.*

2.4. Cognitive Ergonomics

Cognitive ergonomics is the study of workers' mental processes and how they interact with other people and their electronic environments, emphasising the examination of individual cognitive processes and the limits of those processes [25]. According to [26], cognitive ergonomics is the study of cognition work and organisational settings to enhance human well-being and machine efficiency.

Moreover, components of cognitive ergonomics include logical reasoning, perception, motor reaction, and the relationship and interaction of other human beings in the workplace [10,27]. Additionally, training, workload, workplace tension, decision-making, and the human–system relationship are also variables related to cognitive ergonomics. However, there is still a lack of study that is directly focused on the relationship between cognitive ergonomics and workers' performance among researchers.

Previous studies revealed a significant relationship between training and employees' performance in the hotel industry [28,29]. In addition, training was also found to have a positive relationship with employees' performance in the oil and gas industry [30,31]. This means that one of the variables related to cognitive ergonomics is training, which considered an important factor that helps to boost employees' performance and must be properly planned by human resources management in every organisation regardless of the size of business and industry types. When employees have proper training to conduct their tasks, this helps to reduce their workload that would otherwise be large due to a lack of idea or skill to make it.

Another work of research, [32], showed that one of the main factors that influences and has a significant effect on employees' performance in the hotel industry is workload. The workload is one of the main variables related to cognitive ergonomics in an organisation. Task complexity, complementation of task in a particular period, and effort needed to complete the task all contribute to the workload of a person. Thus, an organisation needs to ensure that workload is matched with the individual capacity to ensure they can perform well and increase their performance. However, this study was terminated by [32] since it

revealed that workload has a negative impact on performance among academics in Turkey. Thus, the following hypothesis is developed to be tested in future study:

H3. *There is a significant relationship between cognitive ergonomics and employee performance.*

3. Conclusions and Discussion

Based on findings made during the literature review, many studies have been conducted to observe the relationship between physical ergonomics and employees' performance from an employee's perspective. However, there is a lack of study regarding two other main variables related to work ergonomics, which are organisational ergonomics and cognitive ergonomics. The main problem of injuries and accidents that happened in the workplace is related to work ergonomics that have a negative effect on employees' performance. In addition, work ergonomics can also lead to mental health, bone disease, and muscle issues for employees, which can have a negative effect on employees' performance. The researchers considered it necessary to examine and assess the knowledge of what sorts of work ergonomics are affecting employees' performance, due to numerous concerns that have arisen in the workplace relating to employees' safety and health, including in the hotel and tourism industry. Furthermore, future research should consider a comparative study with other countries to identify the extent to which ergonomics affects the performance of workers in this industry and includes the mediator variables, such as employee job satisfaction, to better understand the employees' perspective regarding work ergonomics.

The Occupational Safety and Health Act 1994 is a piece of Malaysian legislation that was gazetted in 1994 to ensure safety and health for workers in Malaysia. As a basis, Malaysian businesses and industries must obey the act's regulations. Thus, employers must ensure they provide a working environment free of risks that might threaten their employees' safety and health. Some examples and conditions that employers and management in the organisation must implement in their workplace include dividing tasks according to employees' ability, ensuring the workplace environment is in good condition, and providing training and supervision to guarantee workplace safety and health. This is very crucial because it can affect employees' performance and, in the end, can lead to a negative effect on business activities and efficiency. In addition, employees must also obey all regulations regarding safety and health in their workplace to avoid facing any unwanted issues while conducting their tasks.

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