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## **The need of ergonomics workplace for aging workforce**

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**Abstract**--Workplace environment plays a major role towards the employees' performance since job performance is important as it plays a major role in determining the productivity of the organization itself. For the older the worker of aging adult worker, this group are more concern on ergonomics issues and needed to be see to ensure the continuity of excellent performance and productivity of the company. Thus, this research explores how the workplace ergonomics affect job performance among aging workforce. Previous studies focused on ergonomics among workers but not specific towards aging workforce.

This study aims on how to increase or maintain older workers' job performance by providing better workplace ergonomics and proposed a conceptual framework of the factors of ergonomics workplace for aging workforce.

**Keywords**---job performance, workplace ergonomics, aging workforce.

## **Introduction**

Every organization and institution requires human resource to manage the employees in every levels and departments to ensure the continuance smoothness of its operation. Since every employee has their own "character", human resource personnel especially, plays an important role in dealing with their needs as well as fulfilling their satisfaction (M Badrul, N.S., 2018). Nevertheless, the employees' satisfaction affects directly to their performance. Apart from that, employees are considered as a very important 'tools' to help the company and organization to achieve more in their business (Chin, M., Chua, W., Ong, K., Tan, S., and Wong, S., 2016).

Individual job performance is a relevant outcome measure of studies in the occupational setting, it refers to how well someone performs at his or her work (Ertmer & Newby, 2013). Since workplace environment plays a major role towards the employees' performance, there are several articles on workplace ergonomics and job performance towards the aging workforce. Job performance is important as it plays a major role in determining the productivity of the organization and the country itself. According to Productivity Report 2016/2017 by Malaysia Productivity Corporation (MPC), Malaysia's labour productivity expanded by 3.5% in 2016 to RM78,218 from RM75,548 in 2015. While manufacturing contributes the highest contribution of productivity at RM106,647 and with a growth of 1.4%, services sector was the second highest with a level of RM68,166 and growth of 2.8%.

Older workers or aging workforce clearly has more experience and knowledge to deal with work issue and make decision rather than younger workers thus sometimes they are needed even though they have reached beyond their retirement age due to their expertise. Furthermore, the rate of aging workforce is increasing day by day. According to Sewdas et al 2017, older workers are ranged 65 years and above. In Malaysia, the mandatory retirement age for employees are at the age of 60 years old. However, there are still quite a high number of old people working after the retirement age. "The number of Malaysians aged 60 years and above is projected to reach 3.5 million in 2020 and 6.3 million in 2040 which is about 20 percent of the total population," SSRC director Professor Datuk Norma (More Malaysians Opt to Stay in Active Employment After Retirement. The New Straits Time. Thus, the older the worker, the more concern on ergonomics issues need to be see to ensure the continuity of excellent performance and productivity of the aging workforce. It is an ultimate challenges to human resource nowadays as they not only manage diversity among employees but they have to manage "age diversity" in a company (Drabe, Hauff, & Richter, 2015).

Ergonomic is basically an important factor to ensure employees are comfortable to do their work. It is a common understanding that all workers need a comfortable work station and surrounding to be able to perform their work especially those whom are working in the office. According to Rowan & Wright (1995), ergonomics refers to the complex relationship between workers and their work that permeates every aspect of the workplace. The ergonomic process is basically aimed at prevention of work place illness and development of best possible workplace design. Ergonomic often being relate with the company's management. This is because lack of management control often leads to grounds for accidents and toleration of hazardous practices among the employees (Niu, 2010). Management hold a big part of responsibilities to ensure all employees are able to get the appropriate training and information in order to protect themselves from accidents and illness in the workplace.

### **Problem statement**

Many articles focusing on ergonomics but there is limited articles has been focusing aging workforce. For aging workforce, the articles are focused on how to promote health awareness, prevent risk and accident at the workplace and relate how the environment can affect the productivity of aging workforce. Therefore, it is important to focusing and investigate how workplace ergonomic factors can affect the job performance among aging workforce (Canning & Bloom, 2012). Many companies do not employ appropriate safety approaches and procedures to protect and promote healthy behaviour in older employees. The company that took this issue lightly are exposing their employees with high risk of accident and chronic diseases. As a person gets older, metabolism and body capability will be lower. Employees especially older workers need to take care of their health so that they are able to perform well. An organization cannot operate if there is lack of employees that is responsible to perform their duty. In simple words, sick employees will apply sick leave thus, reducing the number of work force as well as increasing in the numbers of delayed tasks. Each year about 270 million occupational accidents and 160 million occupational diseases occur in the world, as reported by the International Labour Organization (Rahim, N., Ng, H., Boots, D., and Karyn, 2014). Older workers are more exposed with risk due to their conditions. Care and prevention must be prioritized to all workers especially to older employees. Furthermore, if accidents and diseases occurred, company need to spend quite an amount of money as medical expenses nowadays are expensive.

### **Literature review**

To tackle the problems of aging workforce and availability of ergonomics workplace, these are the factors that contribute towards job performance of aging workforce toward ergonomic workplace.

- Job Performance  
In the case of aging workforce, performance of old workers may vary based on their motivation. There is some research has been done that stated that performance of older workers tends to be lower than young workers (Sundram, V.P.K. et all, 2019). This is due to changes in their physical and

ability However, motivation plays an important role in determining high performance among workers. Motivation will lead to the fact that workers and employees of an organization that done his or her duties in a responsible and serious way. According to Fox, Brogmus, & Maynard (2015), in many jobs, experience, quality and learned efficiencies make older workers more productive than younger workers. This one of the reasons why nowadays most of older workers are the key personnel in the organizations and it is rare to see young workers are able to compete with these factors. Sometimes, a trade-off results in higher quality work at lower speed from older workers.

- **Ergonomics**  
Majority of employees suffer from work related disorders and injuries due to their work conditions and its incompatibility with their needs, abilities and limitations (Ministry of Human Resource, 2018). This problem will directly affect their safety, health, welfare. Furthermore, the organization itself suffers from high expenses due to medical cost. It is estimated that 4 percent of the world gross national product is lost due to these accidents and illnesses (Rahim, Ng, Biggs, & Boots, 2014). There are numbers of physical conditions that can lead to a productivity decrease of an employee, such as spinal cord problems, neck and shoulder pain and thoracic issues all derived from ineffective ergonomics.
- **Human**  
A human being regarded as an individual is called a person and employees are all human. Components in human are body postures and health. The two items are the components lies in factor for human. Body posture can lead to work stress. According to Ministry of Human Resource, awkward positions refer to positions of the body such as limbs, joints and back that deviate significantly from the neutral position while job tasks are being performed (Ministry of Human Resource, 2018). Some research has been made and proved that wrong body posture can lead to many diseases and body pain. Furthermore the poor posture often associated with the seated position can place increased demands on the postural muscles of this region.
- **Machine**  
Tools is the only component in machine. Tools in specific is device, gadget or appliances used in the workplace. For example, computers, mouse and keyboard. According to US Department of Labour, the usage of improper tools and poor machine design can create physical stress on workers' bodies, which can lead to injury. In relation to machines, research demonstrates that injuries at the workplace occurred because of tools used by employees in performing their tasks. However, for aging workforce, adaptation of tools is very important especially when it comes with technology. Unlike the new generation, most of the aging workforce tend to stick with traditional method in completing tasks. Digital tools can, for example, provide flexibility and autonomy but also lead to an increase in job demands and unclear boundaries between work and nonwork life (Bordi, Okkonen, Mäkinen, & Heikkilä-Tammi, 2018).
- **Work Area**  
Work area consists of two components which are work area design and working chair. Work area design is the most crucial part in ergonomic since

it will determine whether the employees are comfortable or uncomfortable. Work area design is strongly connected with working environment (Johan, Z.J. et al., 2019). Often, ergonomics evaluations involve the assessment of an existing work area, with the intent of reducing risk factors that have been prompted by reports of pain or discomfort. When designing workstations, the main variables of ergonomic considerations involve the human, in regards to body posture and health; the machine, in terms of tools suitability and maintenance; the work area, which includes, but is not limited to, working chair and work area design as well as the work environment.

- **Environment**  
Humidity, acoustic, lighting, shiftwork and working hours are the components in environment. Employees interact with work environment (Fak, B., Kaya, E., Merve, M., and Necla, Z., 2015). Moreover, they also discover that by having a proper workplace environment, it helps in reducing the number of absenteeism and thus can increase the employees' performance which will leads to the increasing number of productivities in the workplace (Ibrahim, I. et all, 2019,2020). According to Department of Occupational Safety and Health, environmental factor has considerable effect on human performance and may lead to poor work enthusiasm including productivity. Examples of environmental factors are extreme temperatures, lighting and noise. Long working hours and insufficient rest can result in chronic fatigue, and, expectedly, extreme fatigue will lead to stress. Thus, every each of the components play an important role in affecting a worker's performance.
- **Garments**  
It is not impossible that garments play an important role in ergonomics. Changing in body figure can make someone feels uncomfortable wearing their own clothes. Clothing can play an important role in helping older adults maintain a positive self-image in the midst of overwhelming change. Beside that, aesthetics, fit, comfort, ease of wear, price and ease of personal care are common concerns for this class of users (Amer, A. et all, 2019). There are also research on ergonomic garments. These research involved ergonomic garments that were developed using virtual prototyping, sewn and tested by IMP. There is a great gap in the fashion industry that fails to provide garments adapted to the positional constraints of different tasks, especially when users are seated due to most clothing are designed for people who are walking or standing (Braganca, S., Fontes, L., Arezes, P., Edelman, E., and Carvalho, M., 2015).
- **Exercise**  
Exercises are no doubt is one of the most important activity in daily life no matter if you are young or old. It helps to maintain healthy body and lifestyle. Exercise, habitual activity and genetic endowment all play a role in how much or how little strength changes with age and in most cases, factors such as exercise and regular or habitual activity can slow down or moderate some of the decline in physical capacities. Not only that, a recent study which concluded that regular stretching exercises performed for four weeks can decrease neck and shoulder pain (Shariat, A., Cleland, J., Danaee, M., Kargarfard, M., Sangelaji, B., and Tamrin, S., 2018). This recent study proved that exercise is beneficial towards human being.

- Safety Management

The safety management practices played as main role in determining the safety performance. Therefore, it advisable to the company that they should take a lot of initiative to be always being aware about safety among their employee and employer, whether they were being work or take a task to work within the place that needed much more attention about safety behaviour among themselves (Azmir, S., 2018). However, the top management should take a lot of responsibility to motivated toward among their workers and always be remaining themselves about the importance of safety in the workplace. There are six dimensions of safety management practices which are management commitment, safety training, workers' involvement in safety, safety communication and feedback, safety rules and procedures and safety promotion policies.

### Conceptual framework

In this article, a proposed model depicted the factors of workplace ergonomics for the aging adult. Based on the proposed framework, the variables covers the aspects of the need for aging adult to perform in the workplace. Figure 1 below demonstrates the proposed research framework of the study. The independent variables are Human, Machine, Work Area, Environment, Garment, Exercise and Safety Management while the dependent variables is Job Performance. The research objectives is to explore the factors that influences the job performance for aging adult and proposed a conceptual framework.

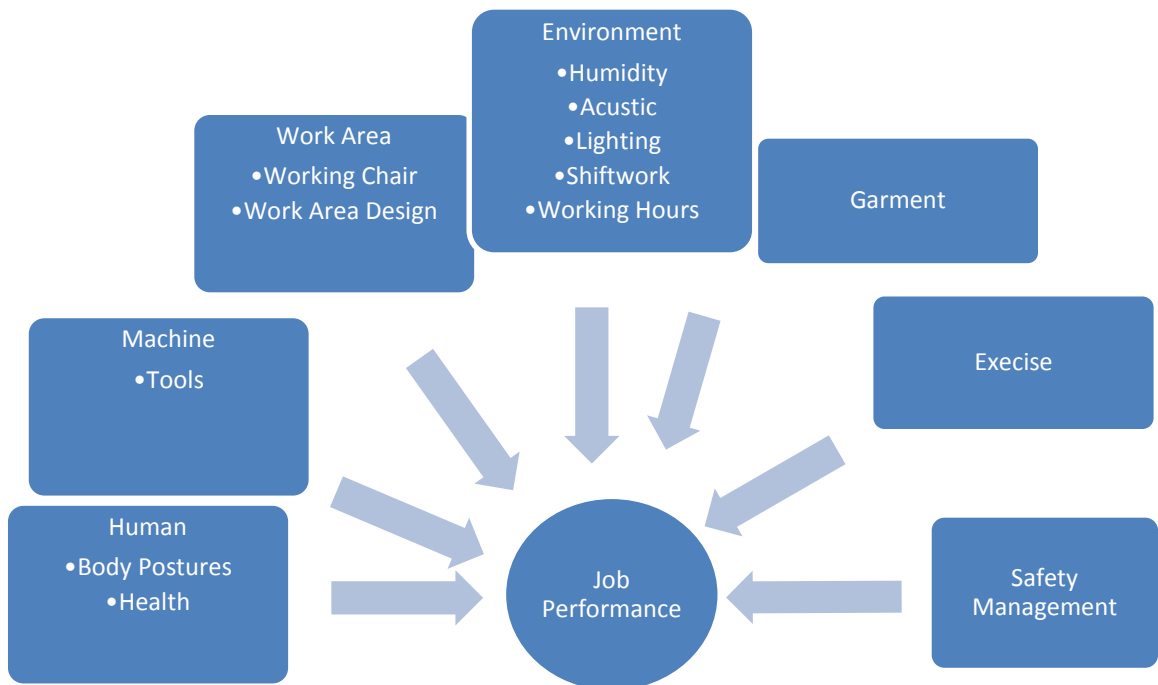


Figure 1

## Discussion and Conclusion

The aging workforce brings with it new challenges in areas such as employment, income security and aged care. The productive potential of persons above age 50 can mitigate the economic growth effects of aging and talent shortages. Hence, there is the need for expanding adequate social protection coverage for older persons and developing a systemic and actionable aged care strategy plus to improve quality standards of aged care homes. Thus, this article is proposed the factors that influences the job performance for aging adult. Based on several literature reviews, this research reveals constructs, and a set of preliminary detriments that may influence the job performance for aging workforce. The proposed factors covering human, machine, work area, environment, garment, exercise and safety management could potentially influence the job performance. Based on the above argument, the majority of the current research of job performance generally focuses on ergonomic workplace with a particular lack of discussion on the factors of aging workforce. Therefore, this article believes that the proposed model offers a valuable tool for future researchers to understand the factors that influencing the aging workforce toward job performance. All in all, the initial proposed research model is still untested. Nevertheless, proposing an instrument for survey and testing of the proposed research model is essential for future research.

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