

Ergonomics study in the stress level among Electronics Assembly Line Workers

Kamarulzaman Mahmad Khairai^{1, a}, Muhammad Nubli Abdul Wahab^{2, b},
Ezrin Hani Sukadarin^{3, c}

¹University Malaysia Pahang (MALAYSIA);

²University Malaysia Pahang (MALAYSIA);

³University Malaysia Pahang (MALAYSIA)

zamankamarul90@yahoo.com, m nubli@ump.edu.my, ezrin@ump.edu.my

Keywords: Stress, Biofeedback, Electronics Operators, Cognitive Ergonomics.

Abstract. Human and cognitive ergonomics become one of essential elements in industrial field nowadays due to employer concern on physical, spiritual and emotional of their workers. The need of industrial today required operator's cognitive functions with less manual human control but in reality human judgement cannot be eliminate as there are various task that only can be perform by human. The objective of this study is to investigate the level of stress among Muslim electronics assembly line workers in electronic factories in Malaysia. The method used in this study is a survey questionnaire. The study is to compare the stress level between male and female, different ages of worker, years of working experience and task deliver in the plant to perform their duty and contribute to company. The tool administered is DASS 42 questions which distributed to the 360 worker from different level which is staffs and operators. Based on it, emWavePro device are used to test workers biofeedback performance in order to determine target persons for stress management module implementation. Workers performances in terms of productivity are measure after complete module implementation. The result may shows that workers that undergo this programed as a subjects improve their work performance by increasing productivity. Workers may came to work with positive attitude that impact positive environment to the plant. Using DASS, 319 of electronics assembly line workers are evaluated and from that 18 workers are identified with extremely severe of depression, anxiety and stress. From 18 workers, 61.1% are come from age between 19 and 29 years old with working experience less than 5 years. These 18 workers had potential to influence others that can disturb positive environment on the plant and change it to negative environment. Cognitive ergonomics is one of important elements to be focus as it impact workers performance every day. Not only physical, spiritual and emotional of the workers also contribute to the plant achievement in general.

Conclusion

According to this study, most females have extremely depression, anxiety and stress problems compared to male. The ages between 19-29 indicate the highest number of persons with length of service below 5 years, some of whom still new in an electronics manufacturing company and need adequate training and should be monitored to be able to do the job better. So management need to pay more attention to this target group on how to tackle them with their need as workers for their generation. Furthermore, 61.1% is a huge number that can impact plant performance in terms of profit loss and gain.

Acknowledgement

I would like to express my special thanks of gratitude to my supervisor, Associate Professor Dr.Muhammad Nubli Abdul Wahab and co-supervisor Dr.Ezrin Hani Sukadarin for their able guidance and support in completing this paper.

I would also like to thanks to University Malaysia Pahang and BI Technologies Corporation Sdn Bhd for financial assistance under grant RDU192404.

References

- Barabasz, A. F., dan Watkins, J. G. (2005). *Hypnotherapeutic techniques*. New York: Brunner-Routledge.
- Cohen J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). NY: Academic Press.
- Eaton, W., Anthony, J.C., Mandel, W. and Garrison, R. (1990), "Occupations and the prevalence of major depressive disorder", *Journal of Occupational Medicine*, Vol. 32 No. 11, pp. 1079-1097.
- Garver R. B. (1977). The enhancement of human performance with hypnosis through neuromotor facilitation and control of arousal level. *American Journal of Clinical Hypnosis*. 19(2): 177-181.
- Hassan, Z. (2016). Ergonomics problems and stress among workers in a. (October).
- Howard W. L., Reardon J. P. (1986). Changes in the self concept and athletic performance of weight lifters through a cognitive-hypnotic approach: An empirical study. *American Journal of Clinical Hypnosis*. 28(4) : 248-257.
- Kapur, R. (2018). Transformational leadership and employee creativity. <https://doi.org/10.1108/MD-07-2014-0464>
- Lovibond, S.H., dan Lovibond, P. F. (1995). Manual for the Depression Anxiety Stress impact of a neW emotional self-management program on stress, emotions, heart rate variability. *Integrative Physiological & Behavioral Science*. 33(2): 151.
- Patrick, J., Smy, V., Tombs, M. and Shelton, K. H. (2012). Being in one's chosen job determines pre-training attitudes and training outcomes. *Journal of Occupational and Organizational Psychology*. 85(2): 245-257.
- Ramos-galarza, C., & Acosta-rodas, P. (2018). Stress and productivity in workers of textile companies. <https://doi.org/10.1108/JFMM-02-2018-0030>
- Ross, C.E. and Mirowsky, J. (2006), "Sex differences in the effect of education on depression: resource multiplication or resource substitution", *Social Science and Medicine*, Vol. 63 No. 5, pp. 1400-1413.
- Rusli dan Wijaya, J. (2009). *The Secret of Hynopsis*. Jakarta.
- Salahuddin, L., Jaegel, C., Myeong Gi, J., dan Kim, D. (2007). Ultra Short Term Analysis of Heart Rate Variability for Monitoring Mental Stress in Mobile Settings. *Proc. Engineering in Medicine and Biology Society, 29th Annual International Conference of the IEEE*. 4656-4659. Milano: 23-26 Ogos.
- Severe, E. (1995). *Depression Anxiety and Stress Scale (DASS)*. 65, 1–5.
- Shahidah Hamzah. (2017). *Bagi mengukur ciri-ciri disiplin dan ijazah doktor falsafah (teknologi kemanusiaan)*.
- Simon, R.W. (1995), "Gender, multiple roles, role meaning, and mental health", *Journal of Health and Social Behavior*, Vol. 36, June, pp. 182-194.
- Wallen N.E dan Fraenkel J.R. (2011). *Education Research A Guide to the Process*. New Jersey: Lawrence Erlbaum Associates. Inc.
- Wecker N.S., Kramer J.H., Wisniewski A, Delis D. C., Kaplan E. (2000). Age effects on executive ability. *Neuropsychology*. 14: 409-414.