

THE CORRELATION BETWEEN PSYCHOSOCIAL RISK FACTORS AND WORK PERFORMANCE IN MANUFACTURING INDUSTRY

Nuruzzakiah MI, Ezrin Hani S and Hanida AA

Faculty of Industrial Sciences and Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Pahang, Malaysia

* Corresponding author: Ezrin Hani S

Email: ezrin@ump.edu.my

ABSTRACT

Nature of psychosocial risk as to the unseen hazards in the working population, potentially exposing the workers towards the adverse effect of mental health. Compromising the well-being of mental health could lead to deterioration of work performance. The objective of this study is to analyze the constructed measure of psychosocial risk factors and work performance of manufacturing workers using statistical analysis. Then, the constructed measure is used to find the correlations between the two factors. A set of the questionnaire is administered to 258 manufacturing workers. The questionnaires were adapted and adopted from Copenhagen Psychosocial Questionnaire (COPSOQ III), NIOSH Generic Job Stress Questionnaire, and Individual Work Performance Questionnaire (IWPQ 1.0) and the instrument were found to be reliable (Cronbach Alpha value = 0.7). After conducting Exploratory Factor Analysis by using Principal Component Analysis, the construct validity to conduct data collection in the manufacturing industry is tested. Using eight factors understudy that already extracted using factor analysis, it is found that there are significant psychosocial risk factors present in the manufacturing industry. As for the association between psychosocial and work performance, it is found that there is a significant association between psychosocial risk factors and work performance. This study is essential to explore the presence of psychosocial risk factors that underlies in the manufacturing industry, which might affect worker performance and well-being. For future research, it is recommended so that this study can be replicated to other manufacturing industry or different types of industries to see the robustness of the developed instruments. At the same time, the issue of psychosocial risk factors and workers' performance also can be identified, and the mitigation can be planned.

Keywords: Psychosocial Risk Factors; Mental Health; Work Performance; Safety and Health; Manufacturing Industry

INTRODUCTION

Psychosocial risk factors emerge as one of threat that affects workers at work. It has been associated with causing both physical harm and adverse effect on the mental health well-being of the workers through a series of adverse events at the workplace. It is presumed that France telecom suicide incident had projected the reality of mental health adverse effects among the working population¹. The event made the research regarding mental health at work more prominent ever since. It also shows that the psychological and physical health of a person can be affected by psychosocial work environment^{2,3}. In addition to that, a poor working environment substantially compromises workers' performance and affect the productivity of the organization. Workers affected by the risk factors show significant changes such as poor social work behaviour, fatigue, and even poor work performance. One study revealed, poor psychosocial work environment associated with absenteeism and some deterioration of clinical conditions². With that being said, the potential of psychosocial risk factors to affect the worker's performance at work cannot be taken for granted. The importance of identifying the specific psychosocial risk factors at work must be implemented so that particular control measures can be applied to prevent the risk effectively.

Psychosocial risk factors are defined as work design, work management, the context of work organization and social factors at a workplace that are likely causing physical and psychological harm other than affecting organizational performance^{4,5,6,7}. On the other hand, psychosocial risk can be defined as the potential harmful characteristics of a workplace or organizational and social aspect that possibly can cause harm to the workers. Theoretically, a minimum level of psychosocial risk is present at any type of workplace, but through a series of continuous exposure towards the hazards, lack of prevention and recognition other than mismanagement could pose a threat to the health of the workers⁵. Different types of workplaces, industries, or job characteristics will rise to a different kind of risk. This becomes one of the reasons why the statement of "zero exposure" at the workplace is can not be trusted. Besides, in the hierarchy of risk control, managing and comprehending the psychosocial risk start with eliminating the risk in the first hand. To be able to do so, it is crucial to recognize the presence of the risk factors in the workplace. The intangibility of psychosocial hazards does not mean it cannot be managed systematically and strategically, as it a concern on organizational aspects that always govern the workers at the workplace. Since psychosocial risk circling the

organizational work environment factors and social context of the work environment, it is essential to clearly understand the contributing risk factors of psychosocial that harassing the mental health of the workers.

Work performance on the other side is measured through the competency and the proficiency of the job task performed at work. Work performance has been a relevant outcome measure in occupational health studies⁸. In contrast, the poor work performance of workers, unreliable decisions, and impaired judgment lead to accidents, missed deadlines, and increased costs in business⁹. Thus it can be the indicator towards problems and issues arising at the workplace varying from many aspects of work such as underpaid, social isolation, or work overload. The job conducted by the workers is expected to meet the company's needs. As human power still needed in manufacturing plant, even most advanced invention of the machine to run the process needs the human to monitor throughout the process. The work environment at a manufacturing plant generally equipped with automatic tools and complex systems, but these changes due to technology development these past decades still not overcome the need to utilize human resources to ensure the running processes are not stopped or interrupted. Besides that, since it is known that workers' contribution and role in the work organization are vital such as in the production line, storage, finance, administration, transportation, and many others to make the company run effectively and become a functional business. In simple words, workers in the organization are the most critical resources¹⁰. So it is undeniable that the development factor and excellence business depend on the performance of workers at work.

Federation of Malaysian Manufacturers (FMM)¹¹ state that industrial related accidents that occur in manufacturing industries are becoming concerned. This statement is due to the increase in the rate of industrial accidents in manufacturing industries. Statistically, the number of reported industrial accidents in the manufacturing sectors has increased every year. Figure 1 shows the occurrence of occupational accidents reported in Malaysia¹². Based on figure 1(a), non-permanent disability (NPD) type of injury was recorded as the highest occurrence, followed by permanent disability (PD) and death. Figure 1 (b) shows the total number of accidents regardless of permanent, non-permanent disability and death were reported as the highest occurrence of occupational accidents in the manufacturing sector compared to other sectors. Referring to this issue, studies regarding occupational risk in the manufacturing industry are undeniably essential. Any potential type of risk that possibly present in the plant should be addressed and systematically governed by the plant management. Another form of psychosocial

risk in manufacturing plant includes working long and laborious working hours which will cause the workers to be emotionally exhausted. Due to the intangibility of psychosocial risk, exposed workers might bring much adversity to the mental health well-being of the workers.

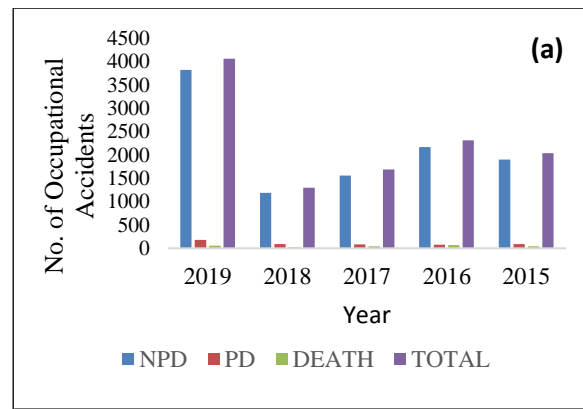


Figure 1 (a): Frequency of total occupational accidents in Malaysia

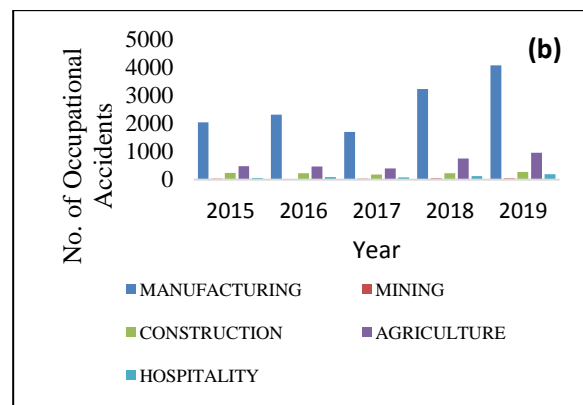


Figure 1 (b): Frequency of accidents by the industrial sector in Malaysia

In the field of occupational safety and health, it is widely known that other types of hazards, such as operational hazards of physical hazards, can cause harm to the workers. Occupational Safety and Health Act (OSHA)¹³, 1994 a law of Malaysia under section 4(c) objectives of the OSHA 1994, one of them clearly state that, to promote a work environment that adapted to the physiological and psychological workers' needs. This law embodied the fact that every workplace must be aware of the details to ensure the safety and well-being of the workers at the workplace. This study intentionally to increase awareness regarding the psychosocial risks and issues in workplace settings. This study will determine the psychosocial risk factors among manufacturing workers. By assessing the psychosocial risk factors encountered, appropriate and strategic preventive action or any safety and health hazards can be identified and taken care of accordingly which in turn can improve the work strategy and job performance of the workers itself.

METHODS

This study is conducted cross-sectionally by utilizing quantitative methods. Inferential analysis using statistical software also used to describe the factors and relationships among the variables. A developed survey instrument was used to do the data collection. In total, 258 manufacturing workers ranging from several departments in the plant have participated in this study. Before answering the questionnaire, the respondents were given a consent form to be filled. Short instruction on answering the survey was given. The respondents were administered with a set questionnaire that was adapted and adopted from 3 consecutive questionnaires. There are the Copenhagen Psychosocial Questionnaire (COPSOQ)¹⁴, NIOSH Generic Job Stress Questionnaire¹⁵, and Individual Work Performance Questionnaire (IWPQ 1.0)⁸. The content validity specifying in the manufacturing industry was tested using Principal Component Analysis (PCA).

From Table 1, a new construct measure of 8 psychosocial risk factors and work performance with 40 items originated from 10 factors with 63 items. The questionnaire consists of 3 main parts, which are Part A, Part B, and Part C. Part A explicitly for demographic information. Part B consists of questions for psychosocial risk factors at work with six retained factors. While part C, the questions are related to the work performance factors with two retained factors.

The eight factors that have been retained include Factor 1 (Task and contextual performance), Factor 2 (Job demands), Factor 3 (Counterproductive work behaviour), Factor 4 (Environment and equipment), Factor 5 (Job content), Factor 6 (Career development), Factor 7 (Interpersonal relationship at work) and Factor 8 (Job control). These new constructs are used to conduct correlated research design and

inferential analysis to achieve the objective of the study, which is to investigate the correlation between psychosocial risk factors and work performance factors. Figure 2 shows the general research methodology in this paper.

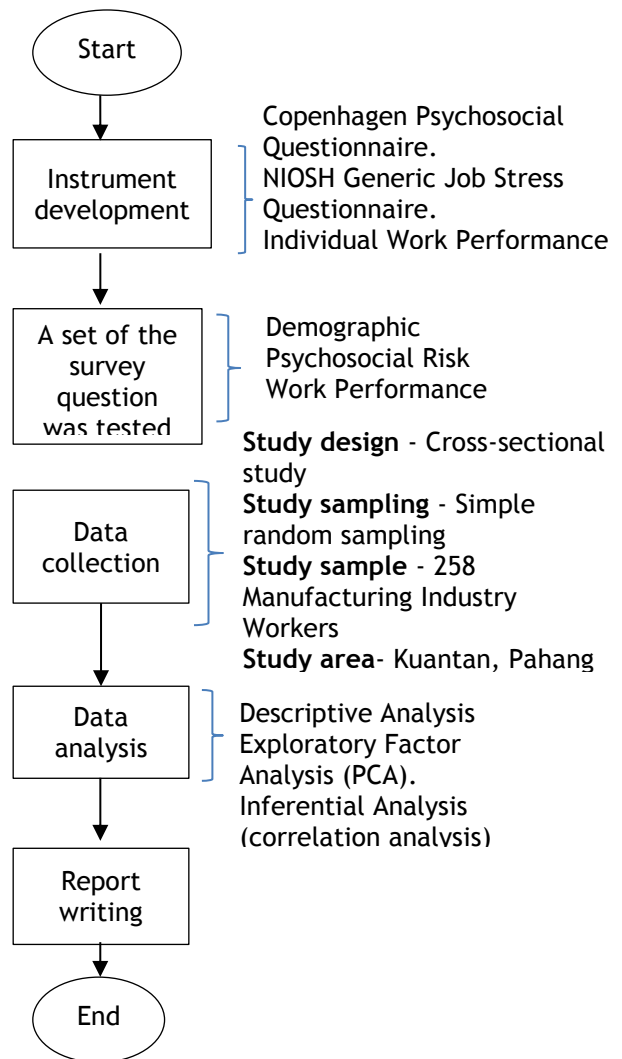


Figure 2: Research methodology

Table 1: Changes in the dimensional construct of the factors

	Original construct		Source to obtain the factors/ item	Construct for the current study	
	Factor	Item		Factor	Item
Psychosocial risk	7	S1,S2,S3,S4,F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12,J1,J2,J3,J4,J5,J6,C1,C2,C3,C4,E1,E2,E3,E4,E5,E6,E7,E8,R1,R2,R3,R4,R5,R6,O1,O2,O3,O4,O5,	COPSOQ	6	S1,S2,S3,S4,F4,F5,F10,F11,J2,J3,J5,C1,C2,C4,E2,E3,E4,E7,E8,R1,R2,R4,R5
Work performance	3	T1,T2,T3,T4,T5,P1,P2,P3,P4,P5,P6,P7,P8,B1,B2,B3,B4,B5	IWPQ 1.0	2	T1,T2,T3,T4,T5,P2,P3,P4,P5,P6,P7,P8,B1,B2,B3,B4,B5
Total	10	63	-	8	40

RESULTS

Demographic information

Table 2 shows the demographic information of the respondents. The majority of the respondent participated are male workers with 89.5%. Only 10.5% of the respondents are female workers. The least age group that participated in the study is the oldest age group, with 3.1%. While, age group of 36-45 and 16-25 are 13.2% and 14.7%, respectively. The highest percentage of the age group is 26-35, with 69%. Next, most of the respondents are Malaysian, with 98.8%. In contrast, only 1.2% of the remaining respondents are of other nationalities. In terms of educational level, the highest percentage of level education fall into certificate holders with 46.5% of the respondent. Then, followed by diploma, bachelor degree, and master holders with 43.4%, 9.7% and 0.4% consecutively. Most of the respondents have the shortest years of working experience with 68.6%, followed by 26.4% and 5%, which belong to 6-10 years and more than 11 working experience respectively.

Table 2: Demographic information of the respondents

Demographic	Items	Freq. (N=258)	(%)
Gender	Male	231	89.5
	Female	27	10.5
Age	16-25 years	38	14.7
	26-35 years	178	69.0
	36-45 years	34	13.2
	46-65 years	8	3.1
Nationality	Malaysian	255	98.8
	Other	3	1.2
Educational level	Certificate	120	46.5
	Diploma	112	43.4
	Bachelor degree	25	9.7
	Master	1	0.4
Years of working	≤ 5 years	177	68.6
	6-10 years	68	26.4
	11 years and above	13	5.0

Descriptive analysis psychosocial risk factors

Table 2 shows the significant contributing factors of psychosocial risk in the manufacturing industry. The significant risk factors that exist in the manufacturing plant were determined. Mean analyses were used to determine the tendency of the answer of the respondents. Before that, note that the five Likert's scale used in the questionnaire ranging from 1 term as "always", 2

terms as "often", 3 terms as "sometimes" and 5 terms as "never". To analyse the significant risk factors of the central psychosocial tendency of mean is used to measure the scoring of the questionnaire.

Table 2: Mean and Standard Deviation value for psychosocial construct

Construct	Mean	Standard Deviation
Interpersonal relationship at work	1.932	0.6792
Job demands	2.581	0.7552
Job control	3.052	0.7101
Career development	1.970	0.7998
Environment and equipment	2.514	0.8047
Job content	3.210	0.6748

Descriptive analysis of work performance factors

In the work performance factors, there are (1) task performance and (2) contextual performance and (3) counterproductive work behaviour measure in this study. Five Likert's scale was used to measure the work performance factors in the study. The Likert's scale used for work performance scale ranging from 1 termed as "seldom" to 5 termed as "always". Task performance and contextual performance scale indicated that the higher the mean value demonstrated as excellent work performance at work. In contrast, counterproductive work behaviour scale demonstrated as the higher mean value indicated as bad work performance at work. Table 3 shows a descriptive analysis of work performance factors.

Table 3: Mean and Standard Deviation value for Work performance construct

Construct	Mean	Standard Deviation
Task performance	2.172	0.7639
Contextual performance	2.366	0.6909
Counterproductive work behaviour	4.139	0.8956

DISCUSSION

Psychosocial risk factors

Interpersonal relationship at work scale indicates that low mean value is interpreted as the workers having a good interpersonal relationship at work. From the results, the mean and standard deviation value for an interpersonal relationship at work is (1.932, 0.6792), which shows the workers have an excellent interpersonal relationship among the colleagues. Good interpersonal relationship at work provides harmony working condition for the worker to

increase work productivity. There are four items in the interpersonal relationship at work section. The items were coded as S1, S2, S3 and S4. The example of the question related to Interpersonal factors such as "Is there a good atmosphere and good cooperation between the colleagues at work?"

The second scale is a job demands scale, which contradicts with the previous factor scale. The higher the mean value indicated that, the lower the job demands. Results show that the mean and standard deviation value for job demands is 2.581 and 0.7552, which is interpreted as the worker are having quite high job demands at work. Higher job demand can cause the workers to experience mental fatigue and exhaustion, especially during long and laborious work hours. Commonly, the manufacturing plant implements work shift for the workers; this is due to the plant has to be running for almost 24 hours. In order to ensure the efficiency of the machinery operation and systems, manufacturing workers have to work extended work hours. High job demand among manufacturing workers indicates that their nature of working in the manufacturing plant is demanding. There is a total of 12 items for job demands factors, which are coded as F1 until F12. The example of the question to measure job demand is "Does your work demand a great deal of concentration or constant attention or high level of precision?"

Next scale is a job control scale. The lower the mean value indicated that very high job control of the workers while higher mean value indicated that low job control. The results show that the mean value for job control is 3.052 (0.710), which interpreted as a moderate job control level given to the workers in the plant. Job control is related to job satisfaction. Workers with high job control can increase the job satisfaction of the workers. The items in the job control factors contain seven items that termed as J1 to J7. Example of job control related questions "can you control the amount of work assigned to you?"

Career development scale indicated that the lower the mean value, the higher the chance of career development at work. The results show that the mean value of career development is 1.970 (0.7998). The results interpreted as high possibilities of career development at work. Career development at work can increase worker motivation to work more productively. Many corporates nowadays provide workers with many incentives to enhance workers' motivation. As a result, the worker can work effectively, thus ensure the productivity and performance of the organization. There are four items included in the career development factor. Career development factors were termed as C1 to C4 in the questionnaire. Example of the item to measure

career development factor "Does your work allow you to develop your skills?"

The next scale is the environment and equipment scale. This scale indicated the lower the mean value demonstrate as a poor physical work environment. The mean value of environment and equipment factors is 2.514 (0.8047), which is indicated as the work environment is at a moderate level of the physical work environment. The working condition can enhance the work performance of the workers while poor working conditions ultimately will negatively impact the efficiency of the job task conducted by the workers. The result indicates the facilities provided by the company is not adequate with the workers to need, or some other assumption might be the job task, in general, require them to be exposed to particular risk or hazards at the workplace. Some physical work conditions affecting the worker to work effectively include illumination, temperature, quality of air, noise level, and others. Environment and equipment factor, there is a total of eight items, termed as E1 until E8 in the questionnaire. The items used to measure environment and equipment factor "The level of noise in the area in which I work is usually high".

Job content scale presents as the lower the mean value score, the higher the job content of the workers. The mean value of the job content factor is 3.210 (standard deviation is 0.6748), which demonstrated a moderate level of job content at work. The moderate level of job content indicated that the workers have to work at a fast pace sometimes, the workers have to work very hard sometimes, having many workloads sometimes and have to concentrate on doing the work sometimes thoroughly. To the low job content, can lead to underwork or underutilized. In contrast, too high job content can cause the workers to be burden with too much workload, which will negatively impact both the workers and the organization itself. There are six items in the job content factors. The items are termed as R1 until R6 in the questionnaire. The question used to measure job content in the questionnaire is "How often your job requires you to work very fast?".

Work performance factors

The mean value and standard deviation for the task and contextual performance are 2.172 and 0.6909, which interpreted as low contextual work performance of the workers. It also indicates that the workers' behaviour did not support the psychological environment and social of the organization thus it affecting the effectiveness of the worker and the core function to conduct their specific technical task that assigns to the workers. Item used to measure contextual performance is "I came up with creative solutions to new

problems". Next, the mean and standard deviation of task performance is (2.172, 0.7639). This mean value also indicates the tendency of the data to show that the workers are having low work performance. Some examples of low task performance factors include not able to complete the job task assigned, low quality of the task, and have inadequate skills and others. One of the items used to measure task performance includes "I managed to plan my work so that it was done on time." The mean value 4.139 (standard deviation, 0.8956) of counterproductive work behaviour factor is interpreted as high counterproductive work behaviour among the workers. Any type of counterproductive work behaviour can negatively impact the company reputation. The workers assumed to have some problems at work, which results in negative work behaviour as the outcome.

Correlation analysis

The results of the study show, there are correlations between psychosocial risk factors and work performance. The analysis is conducted using bivariate analysis. Since the distribution of the data did not meet the assumptions of normal data distributions, Spearman's rho analysis is used to determine the correlations between the factors. Table 4 presents the result of the correlation between counterproductive work behaviour and psychosocial risk factors. It is found that there is a significant association between counterproductive work behaviour and interpersonal relationship at work at 0.01 level of significance. At the same time, there is a significant association between counterproductive work behaviour and career development and environment and equipment factors at a significance level of 0.05.

Table 4: The result of correlations between counterproductive work behaviour and psychosocial risk factors

Analysis	Correlations	Counterproductive work behaviour
Spearman's rho	Interpersonal relationship at work	0.130*
	Career development	0.237**
	Environment and equipment	0.284**

**Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

From Table 5, there is a significant association between task performance and interpersonal relationship at work at significance level 0.05. There is also a significant association between task performance and career development and environment and equipment at the significance level 0.01. For contextual performance, there is a

significant association between contextual performance and environment and equipment factor at a significance level of 0.05. At the same time, there is also a significant association between contextual performances with three psychosocial risk factors which are interpersonal relationship at work factor, career development factor and job demands factors at significance level 0.01.

Table 5: The result of the association between psychosocial factors and work performance factors

Analysis	Correlations	Task performance	Contextual performance
Spearman's rho	Interpersonal relationship at work	0.152*	0.246**
	Career development	0.243**	0.361**
	Environment and equipment	0.237**	0.137*
	Job demands	0.116	0.200**

**Correlation is significant at the 0.01 level (2-tailed)
 * Correlation is significant at the 0.05 level (2-tailed)

CONCLUSION

In conclusion, this study had attempted to achieve to investigate significant psychosocial risk factors in the manufacturing industry. It is achieved by conducting a descriptive analysis of the factors to determine the central tendency of the scores obtained by the respondents. It is revealed that the significant psychosocial factors present in the manufacturing plant are high job demands, moderate job control level, moderate level of the physical work environment and a moderate level of job content level of the workers. The second objective is to identify the work performance of the manufacturing workers, which is also achieved by conducting the descriptive analysis of mean on the answers of the questionnaires. It is found that the work performance of manufacturing workers at the plant is low, and there is negative work behaviour among the workers as the results. The third objective is accomplished by bivariate analysis of Spearman's rho analysis, to analyse the association between the psychosocial risk factors and work performance factors. It is found that there is a significant association between psychosocial risk factors and work performance.

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COMPETING INTERESTS

There is no conflict of interest.

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