

The Need to Educate Foreign Workers Based on the Performance Factor in a Construction Project, Especially in a Highly Populated Area in Johor, Malaysia

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ABSTRACT

The problem of foreign worker is currently increasing due to many factors and has necessitated a comprehensive study to identify the critical factor that leads to the failure of construction projects. Therefore, the objective of this study is to investigate the factors affecting the performance of foreign labour so that the foreign worker can be trained and educated. Methodologically, a total of 68 questionnaires were distributed to respondents at construction sites in four districts of Johor Bahru, Kota Tinggi, Kulai and Pontian in Johor. The selected site was based on the study location, population, design criteria, sample size, sampling frame, sampling method and data collection method. The survey consisted of two sections, Sections A and B. Section A deals with the demographic profile of the respondents. Section B deals with the main factors affecting performance. The data was then analysed using descriptive analysis to determine the mean of the responses. The results show that inadequate health and safety awareness at the worksite is the most important factor affecting the performance of foreign workers. The results also show that the most negative influence of foreign workers is on the construction project. Therefore, the company needs to spend more resources on training the foreign workers. To overcome the problems, the company needs to set and pursue goals to improve the skills of the worker force. This factor is overcome through various strategies such as training foreign labours, monitoring their performance, communicating regularly with the workers and pursuing goals to improve the skills of the workers. The findings of this study can therefore be used to train and educate the foreign worker to perform better in construction projects, especially in heavily populated areas.

Keywords: Foreign worker; construction project; negative impact; cronbach's alpha; heavily populated area

INTRODUCTION

Malaysia's construction industry is expanding and is an important part of the country's economy. The construction industry is also one of the sectors of the economy that requires a large foreign worker to cope with the tasks at hand. According to the Malaysian Bureau of Statistics (2021), gross domestic product (GDP) grew by 16.1% in the second quarter of 2021, up from 2.7% in the previous quarter. The GDP growth for the second quarter of 2021

shows that construction is taking the lead. Growth is expected to quadruple to 40.3% from 10.4% in the previous quarter as major infrastructure projects such as the East Coast Rail Link, Light Rail Transit 3 and Mass Rail Transit 2 are built. The Malaysian worker is expected to increase from 15.58 million to 15.67 million by 2020 (Department of Statistic Malaysia, 2021). The phenomenon has also contributed to foreign migrants from neighbouring countries such as Indonesia, Bangladesh, Nepal, Myanmar, India and Vietnam (Hamid et al. 2011).

The performance of foreign worker entering the Malaysian construction industry will have an impact on our construction activities. In Malaysia, construction companies in particular are heavily dependent on foreign worker. This is because local workers are too choosy about their jobs and reluctant to take on difficult tasks and insecure jobs such as in the construction sector. As a result, many employers prefer to hire foreign rather than local workers for a construction project. Ariu (2022) found that the quality of foreign labour in Switzerland leads to higher quality products. However, foreign workers in this context are highly skilled European workers. Due to some problems with foreign workers, individual characteristics, behavioural biases and citizens' attitudes towards their perceptions of foreign workers have been studied in Japan (Tomura et al. 2019).

The factors that lead foreign workers to be interested in working in the construction industry in Malaysia are employer preferences, working conditions and the unattractiveness of the career path (Abdul-Rahman et al. 2012). The construction industry needs a sufficient number of skilled and unskilled workers. In addition, the attitude of workers plays a role in achieving the best outcome for high quality construction. The number of foreign workers working on construction projects is higher than that of local workers because foreign workers have more experience in construction projects (Hamid et al. 2013). In this regard, the foreign workers are able to perform better than the local workers in the construction sites. This is because the foreign workers can exert themselves more and work harder than most local workers.

Moreover, foreign workers are advantageous to the construction industry because they can work flexible overtime, are hardworking and less demanding. Foreign workers seem to be able to work long hours and they do not have annual leave, emergency leave and sick leave when working in the construction industry (Hamid et al. 2012). This positive attitude can bring benefits to both employers and other workers. For this reason, Shepherd et al. (2021) investigated the challenges that affect foreign workers in the construction industry in UK, Spain, and Italy. They concluded that foreign workers need to undergo safety training and conducted ethnographic studies to examine how contextual factors affect foreign workers' safety outcomes. Liu et al. (2023) also noted that construction worker safety has become a major concern in the construction industry. Since the number of deaths on the construction site is also a major problem, Zaira and Hadikusumo (2017) have developed an equation for this scenario. With regard to indigenous workers, Danso et al. (2022) found that the influence of local culture is closely related to the perception of safety risk by indigenous workers on the construction site.

Foreign workers are preferred by contractors because they are physically stronger and can work longer hours at lower wages than local workers (Hamid et al. 2012). Due to the lower wages of foreign workers, employers can gain some advantages, such as reducing production costs and increasing the company's profits. In Russia, Vakulenko and Leukhin (2017) find that wages for foreign workers are 40% lower than those of local workers. Due to this factor, employers do not have to pay more for social benefits such as health care and social funds because of the low wage, as is the case for native workers.

This study on the performance of foreign workers in construction could have an impact on the performance of any new worker. Therefore, this study will identify the various impacts that occur in construction projects in Johor. Based on these impacts, this study will identify the best outcome to improve and enhance the lower performance. The result will also be used by construction companies such as the Ministry of Construction (JKR), Ministry of Human Resources (KSM), Construction Industry Development Board (CIDB), National Institute of Occupational Safety and Health (NIOSH) and all stakeholders in the construction industry in Johor.

The objective of this study was to identify the factors that affect the performance of foreign workers so that the information can be used to train and educate the foreign workers in relation to construction projects. In the future, a new strategy can be developed to address this issue.

METHODOLOGY

LOCATION AND SAMPLE SIZES FOR COLLECTION DATA

The study was conducted using a quantitative research design such as questionnaires. The questionnaires were distributed to survey the performance of foreign workers in a construction project in Johor, so that an alternative method to educate them can be made. The target population of the study was the construction site personnel in Johor Bahru, Kota Tinggi, Kulai and Pontian, Johor as shown Figure 1.

Sample sizes were calculated using the sample size calculator from Raosoft (2022). The sample size calculator with the margin of error and confidence level was set at 10% and 90% of this sample size calculator. The population for this study was concentrated in Johor State area. The questionnaires were distributed to the employees in the four districts of Johor Bahru, Kota Tinggi, Kulai and Pontian, which belong to the contractors' group. Table 3.2 shows that the number of contractors in Johor Bahru is 5789, in Kota Tinggi 827, in Kulai 809 and in Pontian 548,

based on the Construction Industry Development Board (2022). The total number of contractors is 7973 and was used for the population in this study. The populations were collected up to the second quarter of 2022.

In determining the sample size or number of respondents, a 50% distribution of respondents was aimed for. The sample size calculator revealed that the recommended minimum number of respondents for this study is 68 respondents.

DATA COLLECTION METHOD

A total of 68 participants answered all questions. Respondents were selected based on inclusion and exclusion criteria. Respondents residing anywhere in Johor, Malaysia participated in the study. Data were collected over a period of three months, from 1 February 2022 to 30 April 2022. Respondents were given a brief explanation about the study before answering the questionnaire. In this study, the study instrument of choice was a questionnaire using a Google form and a printout. This method is most effective as Malaysia has currently implemented the Movement Control Order due to COVID-19. Respondents were asked to complete questionnaires which are available in English.

Two sections were provided in the questionnaires: Section A: Demographic profile of the respondents and Section B: Identification of factors affecting the performance of foreign workers in construction projects. All respondents had to answer the questionnaires using the Likert scale: strongly disagree, disagree, unsure, agree and strongly agree. The mean for each Likert scale is shown in Table 1.

Section A of the demographic profile of respondents highlighted gender, age, education, age of company, familiarity with construction projects, position in construction project and project specific area. In section B of the identification of factors affecting the performance of foreign workers in construction projects, ten factors were elaborated to train the foreign workers. The first is related to the multinational foreign workers lacking knowledge and skills on the construction site (B1). The second is that the multinational foreign workers are not able to learn basic skills (B2). The third factor is the lack of experience in construction projects (B3). The fourth factor is the limited understanding of the construction project (B4). The fifth is that the foreign workers are not familiar with the construction project (B5). The sixth factor is the lack of awareness of health and safety on the construction site (B6). The seventh factor is the lack of knowledge of standard operating procedures on the construction site (B7). The eighth is the lack of training of the foreign workers (B8). The ninth factor is the foreign workers' ignorance of construction technology, especially the latest technology (B9). The tenth is the lack of

understanding of the instructions given by the project manager and project engineer (B10).

DATA ANALYSIS

All factors were analysed using the Statistical Package for the Social Sciences (SPSS) to obtain corresponding data on the method of training foreign workers based on the measured performance. The data were then analysed using frequency analysis, mean index analysis and Cronbach's alpha test to determine the reliability of the Likert scale questions and to ensure that the property measures of each question were equal under one variable.

The descriptive analysis was carried out to investigate the performance of the foreign workers with related demographic elements. The descriptive statistic is used to classify the socio-demographics of the respondents and to classify the mean values for the performance of foreign workers in a construction project, especially in a heavily populated area in Johor, the factors affecting the performance, the impact of the foreign workers on their performance and the strategy to improve the problems and termed as descriptive statistics. As a result, a descriptive analysis using mean is conducted to learn about the performance of foreign workers in construction projects in Johor. A statistic is used to determine the mean. Survey responses were recorded using a 5-point Likert scale and the following alternatives were used to determine the result of the study.

The mean index was used to classify the question with the mean based on the classification of each mean. The classification of the mean was based on Hamid et al. (2013) where the classification levels were divided into five levels.

A reliability test was an important element in this study. It was to ensure that all data obtained were reliable and valid. The measure used for the reliability test was Cronbach's alpha. Since this study was based on the Likert scale, Cronbach's alpha was the appropriate measure of the validity of the data.

Cronbach's alpha was used to measure and evaluate the reliability or internal consistency of a set of scales or test items. In other words, the reliability of a measurement refers to the extent to which it is a consistent measure of a concept, and Cronbach's alpha is a way of measuring the strength of this consistency. Cronbach's alpha was calculated by correlating the score for each scale item with the total score for each observation (usually individual survey respondents or test takers) and then comparing it with the variance for all individual item scores. According to Gliem & Gliem (2003), a Cronbach's alpha value of less than 0.6 is considered poor or weak. Meanwhile, a value of 0.7 is sufficient and if the Cronbach's Alpha value is above 0.8, it is considered good (Gliem & Gliem, 2003).

TABLE 1. Mean Scores of Descriptive Statistics (Hamid et al. 2013)

Mean Score	Classification
$\leq \text{Mean} \leq 1.5$	Strongly Disagree
$1.5 \leq \text{Mean} \leq 2.5$	Disagree
$2.5 \leq \text{Mean} \leq 3.5$	Slightly Agree
$3.5 \leq \text{Mean} \leq 4.5$	Agree
$4.5 \leq \text{Mean} \leq 5.0$	Strongly Agree



FIGURE 1. Johor Map (Source: Colour Johor Map, 2014)

RESULTS AND DISCUSSION

RESULTS FOR SECTION A: DEMOGRAPHIC PROFILING OF THE RESPONDENTS

The demographic profiling of the respondents were the main element in order to get accurate information of the respondents. A total of 68 respondents involved in this

study, which came from the districts of Johor Bahru, Kota Tinggi, Kulai and Pontian.

Of the 68 respondents, 38 are men and 30 are women, representing 55.90% and 44.10% respectively, as shown in Figure 2 and Table 2. From Figure 2 shows that the proportion of male respondents is slightly higher than that of female respondents, as most male respondents are interested in working in the construction industry.

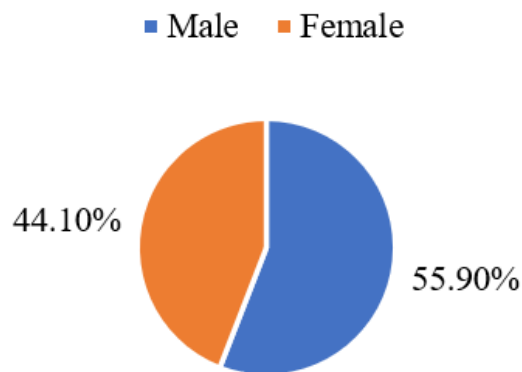


FIGURE 2. Profile of respondents based on the gender

Based on the data collected, most of the respondents were in the age group of 18 to 25 years. There are 24 respondents from this age group, accounting for 35.3%. The second most common age group of respondents was 26 to 35 years old, accounting for 33.8%. From Figure 3

shows that the younger generation found it easier to answer the questionnaire compared to the other age groups. In the 56-60 age group, only 3 respondents wanted to answer the questionnaire. Busy schedules could be the reason for local staff not having time to answer the questionnaire.

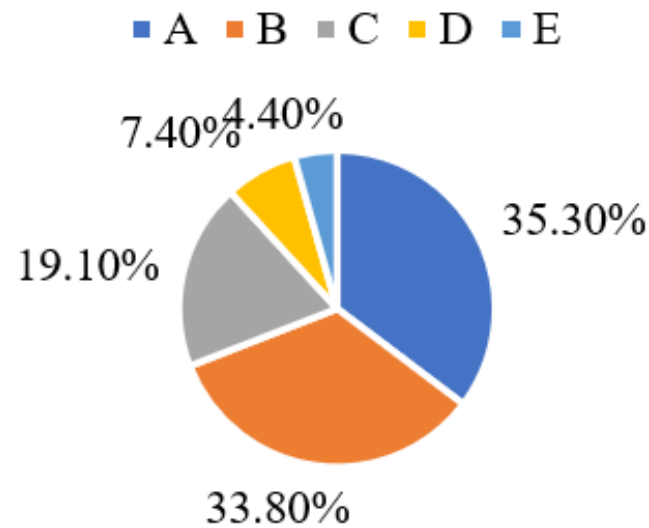


FIGURE 3. Percentage response based on the age range

TABLE 2. Percentage frequency of the respondents based on gender

Gender	Frequency	%	Valid %	Cumulative %
Male	38	55.9	55.9	55.9
Female	30	44.1	44.1	100.0
Total	68	100.0	100.0	

TABLE 3. Percentage frequency of the respondents based on the range of age

Designations	Age ranges	Frequency	Percent	Valid Percent	Cumulative Percent
A	18 years to 25 years	24	35.3	35.3	35.3
B	26 years to 35 years	23	33.8	33.8	69.1
C	36 years to 45 years	13	19.1	19.1	88.2
D	46 years to 55 years	5	7.4	7.4	95.6
E	56 years to 60 years	3	4.4	4.4	100.0
	Total	68	100.0	100.0	

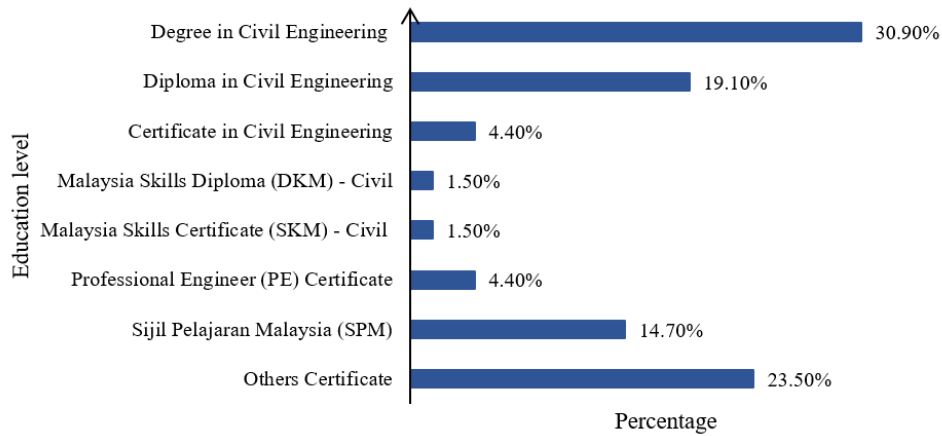


FIGURE 4. Percentage respondents based on the education levels

From the level of education, 21 respondents have a degree in civil engineering (30.9%), 13 respondents have a diploma (19.1%), followed by a certificate in civil engineering and a certificate as a professional engineer (PE) (4.4%), followed by a Malaysia Skills Diploma (DKM) and a Malaysia Skills Certificate (SKM) in civil engineering (1.5%) and finally 10 respondents with a Sijil Pelajaran Malaysia (14.7%). As shown in Figure 4, the different levels of education in the construction companies were listed in a bar chart. Thus, in this study, the diversity of education levels was taken into account to ensure that the results are largely unbiased.

The age of the company is one of the factors that contribute significantly to the performance of foreign workers. The longer the company has been in the

construction industry, the more procedures have been introduced. New technologies are used to facilitate the construction projects and many other factors. The older the company, the more experience, and many projects it had, and the more mature the company's employees became. For this criterion, the profile of the company was differentiated into (i) less than 5 years, (ii) 5 - 10 years, (iii) 11 - 20 years and (iv) more than 20 years. Figure 5 shows that 22 of the respondents are under 5 years old, representing 32.4%. The demographic profile also shows that 15 respondents are between 5 and 10 years old which is 22.1%. 20 respondents are between 11 and 20 years old, which corresponds to 29.4%. Finally, the number of respondents with a company age of more than 20 years is the lowest at 16.2%.

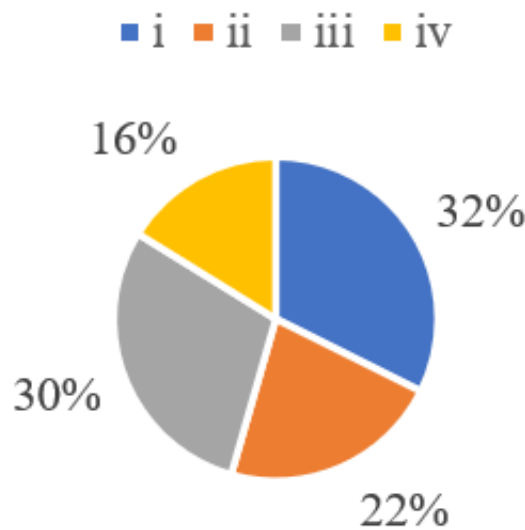


FIGURE 5. Percentage frequency of the respondents based on the age of company

Older workers are an asset to the company because their experience and industry knowledge are a great advantage. They can use this to solve all kinds of problems. They have most likely experienced similar situations before and are better able to deal with crises. Because they have been working for many years, they usually have good contacts and business relationships that they can use. Since work experience is important, five levels of respondents' work experience were considered in this study. A distinction was made between less than 5 years (A), 6 - 10 years (B),

11 - 15 years (C) and 16 years or more (D). Of the 68 respondents, those with less than 5 years of work experience recorded the highest percentage, 50.0%, representing 34 respondents. Figure 6 shows that respondents with 16 years and above work experience recorded the lowest number, only 10.3%, which is equivalent to only 7 respondents. Furthermore, there are 15 respondents with work experience of 6 to 10 years, accounting for 22.1%, and finally 12 respondents with work experience of 11 to 15 years, accounting for 17.6%.

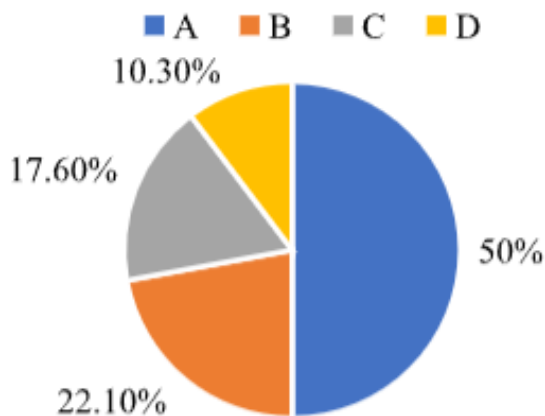


FIGURE 6. Working experience of the respondents

Similar to the year of experience with the construction project, familiarity with the construction project is also one of the factors for selecting respondents. Figure 7 shows the profile of respondents based on their familiarity with

construction projects. There are 56 respondents who are familiar with construction projects by answering “yes” which is 82.4% and 12 respondents who are not familiar with construction projects which is 17.6%.

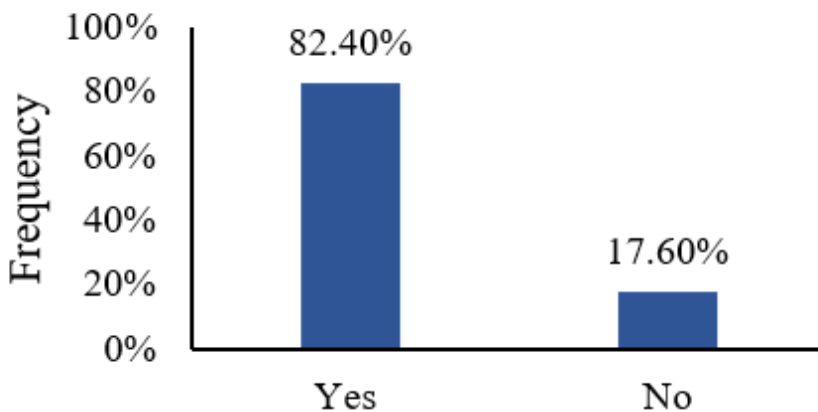


FIGURE 7. Familiarity of the respondents with construction project

The respondents' position in a construction company helps to identify the significant data related to the performance of foreign workers. Of the 68 respondents, project manager contributes 10.3%, project engineer 8.8%, construction manager 2.9%, construction engineer 10.3%, construction supervisor 20.6%, safety engineer 5.9%,

safety officer 1.5%, safety supervisor 1.5% and clerk of work 13.2% as shown in Figure 8. However, 23.5% is categorised as other respondents. Based on this data, all respondents were professional and had knowledge of construction workers.

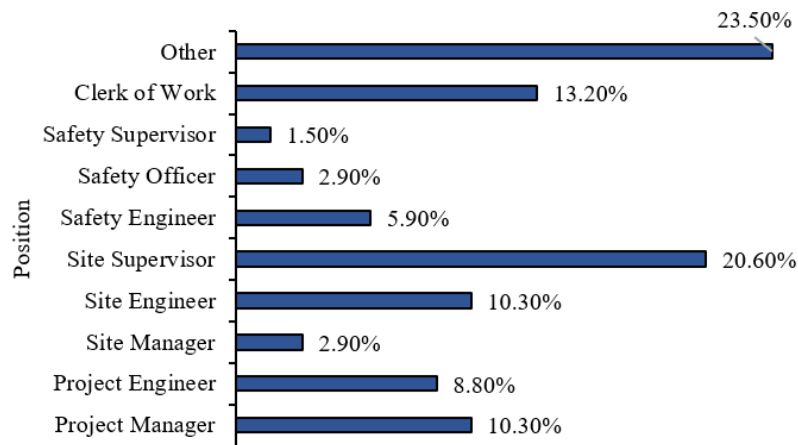


FIGURE 8. Categories of respondents based on the position in the construction company

Figure 9 shows the respondents according to the five locations that are in highly populated areas. Respondents residing in Pontian have the lowest number of respondents at 8.8%, which accounts for only 6 respondents. In addition, there are 17 respondents with a construction business area in Kulai, representing 25.0%, and 11 respondents with a construction business area in Kota Tinggi, representing 16.2%. From the data collected, the construction company

area in Johor Bahru is higher than the other localities due to the rapid development in Johor Bahru which includes various construction and transport projects. The construction of Forest City and the Rapid Transit System (RTS) to connect Johor Bahru to Singapore have attracted the interest of other companies to take on the proposed construction projects.

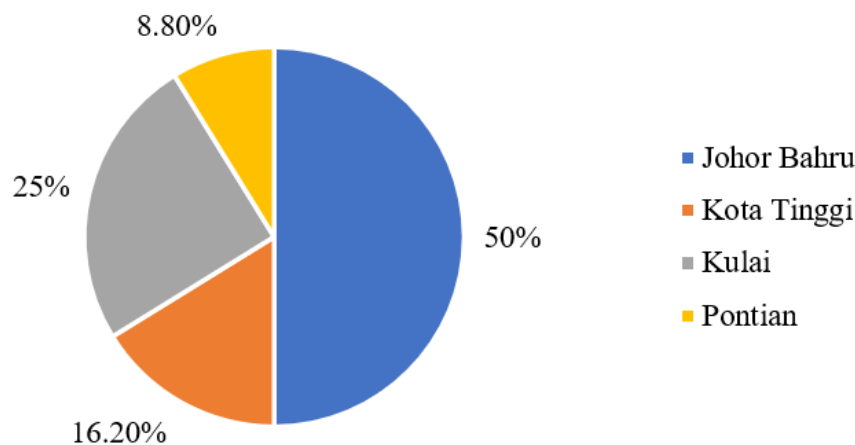


FIGURE 9. Location of the construction company

IDENTIFY THE FACTORS INFLUENCING ON THE PERFORMANCE OF FOREIGN WORKERS AT CONSTRUCTION PROJECTS

Table 4 and Figure 10 show the factors that affect the performance of foreign worker on construction projects. The highest factor agreed by most respondents is lack of health and safety awareness (B6) with a mean index (MI) of 3.84. This is followed by lack of understanding of the project manager's and project engineer's instructions (B10) with 3.78 MI, educational problems (B8) with 3.69 MI, lack of knowledge of standard operating procedures (SOP) (B7) with 3.68 MI, ignorance of modern construction technology (B9) with 3.65 MI, limited understanding (B4) with 3.59 MI, lack of experience (B3) with 3.47 MI, lack of knowledge and skills of foreign workers (B1) with 3.40 MI, not familiar with construction project (B5) with 3.21 MI and foreign workers are not able to work with basic skills (B2) with 3.06 MI. In this figure, there were six (6) factors that the respondents agreed with, namely B4, B6, B7, B8, B9 and B10. In addition, respondents marginally agreed with B1, B2, B3 and B5.

1. Thus, the most important factors affecting the performance of foreign workers in construction projects are inadequate health and safety awareness. As construction is one of the most dangerous industries in terms of worker safety and health, poor health and safety awareness can have a significant impact on the performance of a construction project for a number of reasons:

2. Increased risk of accidents and injuries: Workers who are unaware of safety procedures and protocols are more

likely to make mistakes that can lead to accidents and injuries. These incidents can lead to lost work, lower productivity, higher insurance premiums and legal liability, all of which can negatively impact project performance.

3. Lower morale and motivation: workers who do not feel safe and protected are less motivated and less engaged in their work. This can lead to lower productivity, poorer quality of work and more absenteeism.

4. Delays and cost overruns: When accidents and injuries occur, work may need to be interrupted or delayed to allow for investigations, repairs and medical care. This can lead to cost overruns and schedule delays that can affect project performance.

Damage to reputation: A construction project with a poor safety record can damage a company's reputation and its ability to secure future projects. Clients and investors may be reluctant to work with a company that has had safety issues in the past, which can limit future business opportunities.

In summary, poor health and safety awareness can have a significant negative impact on the performance of a construction project. These include increased risk of accidents and injuries, lower morale and motivation, delays and cost overruns, and damage to reputation. It is therefore critical for companies in the construction industry to prioritise safety and provide comprehensive safety training to all workers. Nowadays, most foreign workers are less qualified and do not have the necessary training to work in Malaysia. For this reason, they are not be aware of the safety and health risks in a construction project.

TABLE 4. Classification of factors influencing on the performance of foreign labours at construction projects

IDs	Factor influencing on the performance of foreign labours	Mean Index (MI)	Class
B1	Foreign labours lack knowledge and skills	3.40	Slightly agreed
B2	Foreign labours can't be able to work at basic skills	3.06	Slightly agreed
B3	Deficiency of experience	3.47	Slightly agreed
B4	Limited understanding	3.59	Agreed
B5	Unfamiliar with construction project	3.21	Slightly agreed
B6	Lack adequate awareness of safety and health	3.84	Agreed
B7	Lack knowledge to use the standard operating procedure	3.68	Agreed
B8	Educational issues	3.69	Agreed
B9	Unfamiliar regarding modern construction technology	3.65	Agreed
B10	Lacks understand the instruction manual from project manager and project engineer	3.78	Agreed

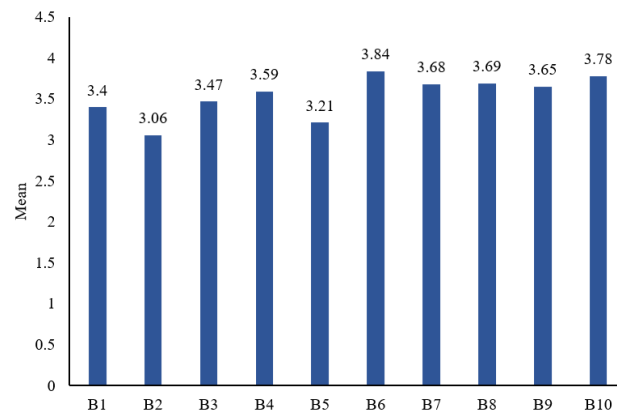


FIGURE 10. Factors influencing on the performance of foreign workers at construction projects

RELIABILITY ANALYSIS

The Cronbach’s Alpha Coefficient was used for reliability test as shown in Table 5. As according to Gliem & Gliem (2003), Cronbach’s Alpha value that is less than 0.6 is poor or weak. Meanwhile, the value that shows 0.7 is sufficient and if the Cronbach’s Alpha value is more than 0.8, it is considered good. If it is more than 0.9, categorized as excellent internal consistency. Hence, from this study found that the coefficient reliability for the factor of influencing the performance of foreign workers was 0.95. It means that it is excellent and reliable as key factor to educate the foreign workers in the construction project.

TABLE 5. Cronbach’s Alpha result on reliability

Set of variables	Cronbach’s Alpha
Factor influencing on the performance of foreign labours	.950

CONCLUSION

In summary, the analysis of the survey data obtained shows that the main factor affecting the performance of foreign workers is inadequate awareness of safety and health at the construction site, with the highest mean score of 3.84 MI. Most foreign workers’ performance is affected due to lack of awareness of health and safety on the construction site. The Cronbach’s Alpha coefficient of 0.950 for the factor affecting the performance of the foreign workers indicates that the key factor for training the foreign workers at the construction site is excellent and reliable.

Consequently, given the low performance of foreign workers, the company needs to devote more resources to their training in order to improve their performance and increase productivity in construction. To increase productivity in construction, several strategies need to be taken to minimise the causes and effect factors.

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DECLARATION OF COMPETING INTEREST

None

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