

## **Preliminary Study on the Implementation of ISO 45001:2018 for Gemas – Johor Bahru Electrified Double Track Project**

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**Abstract:** Occupational health and safety (OHS) management are a subset of public health that focuses on improving workplace health and safety. It examines worker injury and sickness patterns and makes recommendations for reducing the risks and hazards they face on the job. This study aims to investigate the level of readiness for leadership, support and operation are ready to implement for ISO 45001:2018 to Gemas – Johor Bahru Electrified Double Track Project. For the first objective, intensive literature review was conducted determine the benefit of ISO 45001:2018 occupational health and safety management system certification programme for construction railway. Second objective was to investigate the readiness of ISO 45001:2018 occupational health and safety management Certification Programme implementation for Gemas - Johor Bahru Electrified double track project. In order to achieve the objectives, a questionnaire was constructed and disseminated to 30 respondents (n=30). Data collected was analyzed using SPSS version 27. The data was reliable based on Cronbach's Alpha value which is above 0.7. Descriptive analysis was done, and it was found that the mean score is high for leadership (mean=4.47), support (mean=4.54) and operation (mean=4.45). It can be proven that the organization, top management, staff, and workers are ready to implement the ISO 45001:2018 on this project. It was also found that the significance correlations of leadership, support, and planning between ISO 45001:2018 were significant of the 2-tailed value was less than 0.05 (p-value<0.05). Lastly, master work program for expansion scope of certification was developed and proposed to the organization.

**Keywords:** ISO 45001:2018, OSHMS, Construction Railway

## 1. Introduction

The construction sector is commonly blamed for having high accident rates, long-term disabilities, and even fatalities, placing it among the sectors with an unacceptably high accident rate, long-term disabilities, and even fatalities [1]. Construction sector accidents are a worldwide problem. For instance, from 2011 to 2015, there were 118,532 occurrences in Korea's construction industry, resulting in 2,663 fatalities [2]. Lack of planning, unsafe working conditions, and human variables, which might include psychological problems, social and cultural challenges, or organizational training, are the main causes of workplace accidents [3]. The most crucial element of a company's safety management system, according to the chain of causes of contemporary accidents, is the company's safety culture, which directs the design of the organizational structure and operating procedures and helps organisations prevent accidents and enhance safety performance. 4.

According to Heras et al, (2020) [5], Ibañez et al, (2021) [6], Jannah et al, (2020) [7], the benefit of implementing ISO 45001 for organizations is that organizations can establish a systematic process to reduce the number of work accidents and can take into account risks and hazards, as well as legal and other requirements. Thus, to achieve the aims of the project, three objectives were proposed. First, to investigate ISO 45001:2018 occupational health and safety management system Certification Programme for construction double track project by intensive literature and document review. Secondly, to identify the readiness of ISO 45001:2018 occupational health and safety management System Certification Programme implementation for Gemas - Johor Bahru Electrified double track project. Lastly, to develop master work program for expansion scope of certification. In order to identify the readiness of ISO 45001:2018 occupational safety and health management System Certification, a survey questionnaire was to be distributed among the worker of HSE Staff of EDTP Project. The data will be collected and analyzed quantitatively by using SPSS. Based on the analysis, the master work program for expansion scope of certification was to be established and proposed to the management.

This research objective is to analyze the significant influence for Clause 5 (Leadership and Worker Participation), Clause 7 (Support), and Clause 8 (Operation), in implementation of these ISO 45001:2018 to the Gemas - Johor Bahru Electrified Double Track Project. Expansion of ISO 45001:2018 for Gemas-Johor Bahru Project by using the Quantitative data analysis which is survey analysis, that will have questionnaire and shall be disseminated among Health and Safety (HSE) Department workers that involve in the certification process via Google Form.

## 2. Materials and Methods

Statistical Package for the Social Science (SPSS) Software was used to validate and analyze the survey and the questions that were invalid will be removed from questionnaires.

### 2.1 Data Instruments

To Investigate ISO 45001:2018 Certification Programme for occupational safety and health management system for constructions double track project, a researcher used qualitative method which is from past research to collect the information. The researcher also used quantitative approaches to conduct this research. For this research design, health, safety & environment workers at the, Kluang Main Office will be consisting on this study's population. A set of questionnaires that consist of 4 sections will be given to the them to identify the readiness of ISO 45001:2018 Certification Programme for occupational safety and health management system for Gemas - Johor Bahru Electrified Double Track Project. Therefore, the data will be analysed using the Statistical Package for the Social Sciences to make the process of analysis easier (SPSS). Other than that, to develop the master work program for

expansion scope of certification the method that will be used are focus on group discussion and brainstorming to get the outcome. The research design as tabulated in Table 1 below.

**Table 1: Research Design**

Objectives	Method	Data
To determine the benefit of ISO 45001:2018 occupational health and safety management system certification programme for construction railway.	Qualitative- Literature and document review	ISO 45001:2018 standards, past literature, OHSAS 18001.
To investigate the readiness of ISO 45001:2018 occupational safety and health management system Certification Programme implementation for Gemas - Johor Bahru Electrified double track project.	Quantitative statistical analysis- SPSS	Survey data
To develop master work program for expansion scope of certification.	Brainstorm/focus group discussion	Outcome: Master work program

The questionnaire contains of Section A, Section B, Section C, and section D. Section A contained multiple choice questions regarding the respondent's profile, whereas Section B, Section C, and Section D contained questions about ISO Clauses 5; Leadership, Clause 7; Support, and Clause 8; Operation. The ranking was Likert Scale 1 to 5 as showed in Table 2.

**Table 2: Stage Ranking Score in Likert Scale**

Section	SCALE				
	1	2	3	4	5
<b>B</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>C</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>D</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

## 2.2 Data Collection

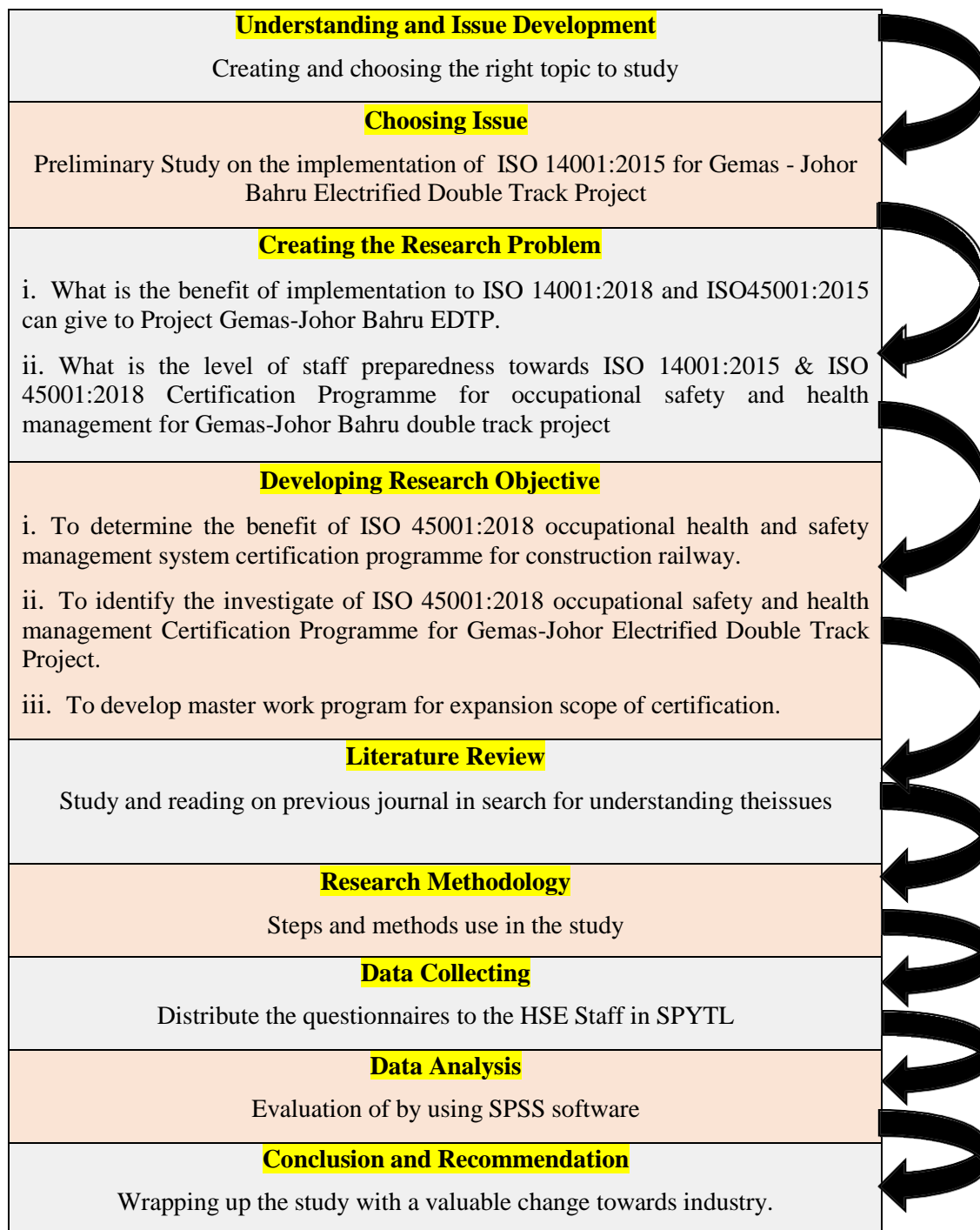
The data for this study was gathered through questionnaires sent to health, safety, and environmental workers. The surveys will be asked about ISO Clause 5, 7 and 8 components in order to assess their comprehension and readiness to apply ISO 45001:2018. This questionnaire includes Sections A, B, C, and D. In section A consist of demographic data which HSE staff need to fill up their name, work in which section, their position, department, work experience (years), and their status of employment whether permanent, contract, sub-contractor or temporary. While in Section B, consist of question related with clause 5: leadership, to investigate the level of readiness in ISO 45001:2018. For Section C, consist of question related with clause 7: support, which also to investigate the level readiness in ISO 45001:2018. Lastly, in Section D, consist of a question to investigate the level of readiness in ISO 45001:2018 that related to clause 8: operation. The results of the survey may usually be promptly and easily quantified by a researcher or via the use of software. According to company statistics, the company employs a total of 30 HSE personnel. The researchers chose a sample of 28 workers for the survey need to be collected based on the entire population of the study on the measurement Table 3 samples of Krejcie and Morgan (1970).

To get additional information and data, the researcher has been using secondary data which is obtained from literature, journal, article and news, and web or online survey from internet to study the past journal and research for the benefit of ISO 45001:2018 can give to the construction or railway industries that are similar to the researcher company.

### 2.3 Research Process

This study was conducted with a series of actions that must be followed and completed in order to conduct the research effectively and in proper order so that the study proceeds smoothly and on time. The following diagram shows the process taken to carry out the research.

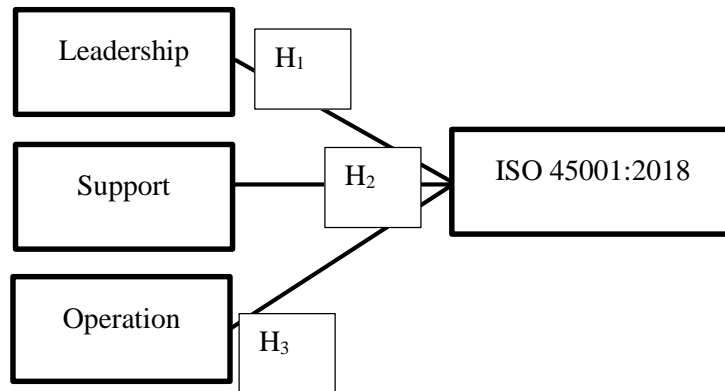
**Figure 1: Research Process**



### 2.3 Data Analysis

A conceptual framework in Figure 3 and several hypotheses have been developed to analysed between clause 5 leadership, clause 7 support. Clause 8 operation between ISO 45001:2018.

**Figure 2: Conceptual Framework**



H<sub>1</sub>: There is a significant relationship of Leadership between ISO 45001:2018

H<sub>2</sub>: There is a significant relationship of Support between ISO 45001:2018

H<sub>3</sub>: There is a significant relationship of Operation between ISO 45001:2018

### 3. Results and Discussion

Discusses the results of the survey form that was conducted as well analysis and discussion. The collected data was analyzed using Statistical Package for the Social Science (SPSS) Statistics software version 29 to get results. This software provides reliability test results, mean, standard deviation, etc. The results are discussed based on the scale rated by the respondents on survey form by section. This research collected data from 30 set of questionnaires the respondent answer. The goal of the analysis to determine whether the objective is achieved in this research.

#### 3.1 Results

In Table 4 shows that the reliability value for overall respondent was high at 0.944. This can be concluded that the respondents can understand the questionnaires given and overall error rate is at the lowest level.

**Table 4: Overall Respondent Reliability**

Reliability Statistics	
Cronbach's Alpha	N of Items
.944	27

In Table 5 shows the respondents who answered are divided according to their section. Section is a place divided along the Gemas - Johor Bahru project. Here that can see section 1 (Segamat) as many as employees (10%) answered. Section 2 (Paloh) has a total of 4 people (13.3%), meanwhile Section 4

(Kulai) and 5 (Larkin) have the same number of 4 employees (13.3%) and finally the others section includes such as Kluang Main Office and Kempas Depot is a total of 12 employees which is 40.0%, the highest number represents employees.

It shows a distribution of respondents from their position of work. Based on study findings, the highest represents of 10 employees (33.3%) are others which is it represents of the head of department, deputy manager, environmental manager, technical assistant, technical officer, and intern. Meanwhile, site safety supervisor is the second highest represents of 9 employees (30%) and followed by a position of safety health officer represents of 6 employees (20%). While the position of HSE manager only 4 employees (13.3%) and the least represent of employee is the environmental manager position which was only 1 employee (3.3%) serving at Gemas – Johor Bahru Electrified Double Track Project.

Referring to Table 5, it shows that all the employees who answered this survey was health safety and environment staff (HSE) which are representatives of 30 employees (100%) that are working at Gemas – Johor Bahru Electrified Double Track Project. Table 4.3 shows a distribution of respondents according to work experience. Based on the study, employees with 1 to 5 years of experience are 11 staff (36.7%), 6 to 10 years representing of 9 staff (30%), while 11 to 15 years 5 staff (16.7%), which is the same number with employees more than 16 years of experience represents only 5 staff (16.7%). It was also found that, the distribution of the respondent's status of employment. Out of 30 employees, 14 (45%) are permanent staff, while 16 staff (55%) are contractors work at Gemas-Johor Bahru Electrified Double Track Project.

**Table 5: Demographic Analysis**

<b>CHARACTERISTIC</b>	<b>N</b>	<b>%</b>
<b><u>SECTION</u></b>	3	10
Section 1		
Section 2	4	13.3
Section 3	3	10
Section 4	4	13.3
Section 5	4	13.3
Others	12	40
<b><u>Position</u></b>		
HSE Manager	4	13.3
Environmental Manager	1	3.3
Safety Health Officer	6	20
Site Safety Supervisor	9	30
Others	10	33.3
<b><u>DEPARTMENT</u></b>		
HSE	30	100
<b><u>WORK EXPERIENCE</u></b>		
1-5 Years	11	36.7
6-10 Years	9	30
11-15 Years	5	16.7
16 Years and Above	5	16.7
<b><u>STATUS OF EMPLOYMENT</u></b>		
Permanent	14	45
Contract	16	55

Descriptive analysis was done, and it was found that the mean score is high for leadership (mean=4.47), support (mean=4.54) and operation (mean=4.45). It can be proven that the organization, top management, staff, and workers are ready to implement the ISO 45001:2018 on this project. Refer Table 6 for Overall mean distribution for the level of readiness of leadership, support, and operation in

ISO 45001:2018 at Gemas – Johor Bahru Electrified Double Track Project (EDTP) Overall Respondent Reliability.

**Table 6: Overall mean distribution for the level of readiness of leadership, support and operation in ISO 45001:2018 at Gemas – Johor Bahru Electrified Double Track Project (EDTP) Overall Respondent Reliability**

CLAUSE	MEAN	STANDARD DEVIATION	READINESS LEVEL
LEADERSHIP	4.47	0.43	HIGH (H)
SUPPORT	4.54	0.42	HIGH (H)
OPERATION	4.45	0.41	HIGH (H)

In this study, there were three main elements of ISO 45001:2018 tested using correlation test, Spearman's rho. This was done in order to analyse the correlation of these three main elements as significant factors in implementing the ISO 45001:2018. Based on the table 7, a correlation of 1 indicates a perfect ascending linear relation: higher scores on one variable are associated with higher scores on the other variable. Based on table 7, the correlation value is 0.631. There is correlation between leadership and ISO 45001:2018 since the p-value is <0.001, a correlation is statistically significant if its "Sig. (2-tailed)" < 0.05. Thus, we accept the null hypothesis.

**Table 7: Correlation Between Leadership and ISO 45001:2018**

		Leadership	ISO 45001:2018
<b>Leadership</b>	Spearman's rho	1.000	.631**
	Sig. (2-tailed)		<0.001
	N	30	30
<b>ISO 45001:2018</b>	Spearman's rho	.631**	1.000
	Sig. (2-tailed)	< .001	
	N	30	30

Based on table 8, the correlation value is 0.689. This it shows that there is a correlation between support and ISO 45001:2018. Since the p-value is <0.001, a correlation is statistically significant if its "Sig. (2-tailed)" < 0.05. Thus, we accept the null hypothesis. There was a significant correlation between leadership and ISO 45001:2018.

**Table 8: Correlation Between Support and ISO 45001:2018**

		<b>Support</b>	<b>ISO 45001:2018</b>
<b>Support</b>	Spearman's rho	1.000	.689**
	Sig. (2-tailed)		<0.001
	N	30	30
<b>ISO 45001:2018</b>	Spearman's rho	.689**	1.000
	Sig. (2-tailed)	< .001	
	N	30	30

Based on table 9, the correlation value is 0.656. There was a correlation between support and ISO 45001:2018 since the p-value is <0.001, a correlation is statistically significant if its "Sig. (2-tailed)" < 0.05. Thus, we accept the null hypothesis. There was a significant correlation between Operation and ISO 45001:2018.

**Table 9: Correlation Between Operation and ISO 45001:2018**

		<b>Operation</b>	<b>ISO 45001:2018</b>
<b>Operation</b>	Spearman's rho	1.000	.656**
	Sig. (2-tailed)		<0.001
	N	30	30
<b>ISO 45001:2018</b>	Spearman's rho	.656**	1.000
	Sig. (2-tailed)	< .001	
	N	30	30

Table 10 summarized the Spearman's rho correlation test. It shows that three hypotheses have a significant positive relationship, and the hypothesis was accepted because the significance of the 2-tailed value was less than 0.05 based on the result, the goals and hypotheses required by researcher leadership, support and operation have a positive relationship with ISO 45001:2018. Therefore, as proven, hypotheses were supported.

**Table 10: Spearman's Rho Correlation Test**

	<b>Hypothesis</b>	<b>Correlation Coefficient</b>	<b>Significance testing</b>	<b>Hypothesis accepted/rejected</b>
<b>H1</b>	There is significant relationship of leadership towards ISO 45001:2018	0.631	0.001	Hypothesis accepted
<b>H2</b>	There is significant relationship of support towards ISO 45001:2018	0.689	0.001	Hypothesis accepted



<b>H3</b>	There is significant relationship of operation towards ISO 45001:2018	0.656	0.001	Hypothesis accepted
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This study has shown that the level of readiness for leadership, support and operation were ready to implement for ISO 45001:2018 to Gemas – Johor Bahru Electrified Double Track Project and it has good impact towards safety and health in the workplace. In order to achieve the objectives, descriptive analysis has been analysed and the mean score is high for leadership (mean=4.47), support (mean=4.54) and operation (mean=4.45). With this, it can be proven that the organization, top management, staff, and workers were ready to implement the ISO 45001:2018 on this project. Lastly, the recommendation for better improvement has been established according to the objectives number three which was to develop master work program for expansion scope of certification can be refer on the Appendix A.

#### 4. Conclusion

ISO certification provide various benefits to various sectors of companies for example in terms of cost, company image, to attract stakeholders and it is also a set of standards that is globally recognized symbol of superior safety. In addition, organizations can demonstrate compliance with all legal obligations, strict adherence to and enforcement of health and safety best practices. It was highly recommended to implement ISO 45001:2018 to the construction or railway industry. From the survey results, it indicated that the level of readiness of HSE staff in this project in terms of leadership, support and operation was high through a descriptive analysis. A descriptive analysis was conducted to obtain the results for their level of readiness. It can be concluded that the top management, organization, and workers must be ready and give a lot of support to implement the ISO 45001:2018 because, with their contribution to the effectiveness of the OH&S management system was very vital in order to prevent the illness, injury, property damage and fatal occur at the workplace and to succeed in getting ISO certification. Thus, the implementation and practice of ISO 45001:2018 in Gemas – Johor Bahru Electrified Double Track Project still needed improvements. Result from the analysis and survey has bring the positive outcome but can be recommended to establish the master work program. Therefore, the researcher and the head of HSE as well as the deputy HSE manager have issued a master work program that has been reviewed and finalized to be used during the implementation of ISO 45001.

Since this study only focuses on the compliance of leadership clause 5, support clause 7 and elements of operation clause 8 in ISO 45001:2018, it is recommended that further studies focus on the compliance of all clauses in ISO 45001:2018, for emphasis and better implementation. Second, it is recommended to include workshop conducted by DOSH in master work program for accreditation of ISO next year and it is recommended to digitalize the ISO documentation for easier use, retrieval and updating of the documentation if there are any changes.

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