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Language Translation from English to Malay in Solid Waste Engineering

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ABSTRACT

Engineering translations are dense with technical jargon and terms that necessitate linguistic and field expertise. The challenges arise from the requirement that the target texts be idiomatic and retain the same phrasing order, meaning, and nuances as the source text, which a layperson cannot translate directly. The Malay language is Malaysia's official language. Because Malay is the official language in the governing and executive constitutions, the research instrument should be available in Malay. The purpose of this research is to translate from English to Malay a qualitative risk framework for solid waste engineering. On three psychometric scales, 26 items were translated using a back-translation method involving eight linguistic experts. The Malaysian Institute of Translation and Books (ITBM) provided the primary translation, which was then reviewed by a panel of experts as a secondary translation. Next, content validation on a 5-point Likert scale was conducted with five civil engineering field experts to assess instrument structure and reliability agreement. To represent the expert validation process, a descriptive analysis of mean score agreement was performed. The studies discovered deviation losses in forward (8.98%) and backward (17.95%) translation. The results also revealed experts produce accurate translations, particularly the equivalents of engineering expressions, acronyms, measurements, and terminology. Eventually, expert consensus on six aspects was achieved for 27.8/30 (92.7%) and affirmed that the framework is valid and thus applicable. This paper recommends that translation requires quality control, which comprises three processes: conversion to the target language, comparison, and reconciliation by subject matter experts.

Keywords: Civil engineering; risk framework; solid waste; qualitative translation

INTRODUCTION

The Malay language is the Malaysian people's national language and a means of fostering unity among the multi-ethnic and multi-racial community. The risk framework used as a research instrument must be provided in Malay. This is because Malay is the official language used in the governing and executive constitutions. The difficulty is that translation demands a thorough understanding of both grammar and culture. A translator must understand both the rules of the language and the habits of the native speaker.

This study aims to translate a qualitative risk framework from English to the Malay language for solid waste engineering. Larson (1998) states that a quality translation implies three aspects, namely accuracy, acceptability, and readability. According to Alshehab (2018), aspects of accuracy in translation evaluation are often used to indicate the extent to which a translation is relevant to the original text. Toury's (1995) theory classified translation into six main approaches, consisting of sociolinguistic, hermeneutic, linguistic, communicative, literary, and semiotic (Coban 2019).

Engineering translation necessitates a thorough understanding of technical papers as well as specific requirements by experts in respective fields (Subedi et al. 2021). Any inaccuracies in the translated texts, as well as any missing information, lead to litigation risk or the need to retranslate (Andrade et al. 2017). Thus, this study focuses on language experts interpreting a qualitative risk framework for solid waste engineering. A set of evaluation instruments were created and validated by civil engineering, solid waste, environmental engineering, and risk management experts.

The five principles of translation theory by Etienne Dolet (1540) are as follows: The translator must fully comprehend the original text's content and author's intent. The translator must be fluent in both the source language and the language of the intended recipient. Translators cannot translate word for word. The translator must use language forms that are commonly used in the language of the recipient. Through the selection and arrangement of words, the translator should recreate the correct overall impression of the source text (Eshkuvatovna & Ilhomovna 2022).

Kalfoss (2019) defines translation as the process of rendering text from a source language into its equivalent

in another language. Emphasizing this fact, Ali (2020) mentioned that translation is governed by three main principles. The first principle is that the translated text in the target language should be reflected by the meaning found in the source text. The second principle is that the form in the source language should be sustained and preserved, and finally, the translator must reconcile a balance between the most acceptable similes, metaphors, proverbs and phrasal verbs with the suitable idiomatic that aids comprehension in the target language (Ali 2020).

Jumatulaini (2020) says that humans produce the most reliable and faultless translations. Cultural, idiomatic, colloquialisms, technical terms, and expression factors might sometimes make translation challenging (Jumatulaini 2020). In this respect, Hawkins et al. (2020) find that translations require linguistic, socio-cultural and pragmatic proficiency in both the source and target languages. As Wu & Wu (2021) indicate, it is impossible to translate directly from English to another language. They summarize that translation demands deep understanding of grammatical structures and cultural sensitivity to be perceived by the native reader.

Furthermore, the ISO 17100:2015 minimum standard mandates translations to be reviewed by a second person (Karabiyik 2019). The standard also specifies that a translator must have a translation competence certificate issued by an appropriate government body (Ottmann & Canfora 2020). In this way, the translator, proofreader, and reviser must all have sufficient knowledge in the field of the texts to be translated in order to understand and deal with any issues that arise (Liang 2021).

METHODOLOGY

The framework of this study was adapted from prior English language research. The back translation (Brislin 1970) method was used to translate from the source into the Malay language. This method is widely used in civil engineering text translation (Alzubi et al. 2022; Grinberga-Zalite & Zvirbule 2022; Shi et al. 2022) as well as by other engineering researchers to maintain the similarity of meaning between the original version and the translation (Boukreris 2017; Khosravani 2013; Subedi et al. 2021). Back translation also was applied as a quality assessment tool in multilingual survey research by Son (2018).

Back translation is a method for determining the accuracy of a translation in multi-country research (Behr 2017). The back translation method involves a bilingual native of the target country converting a text from the source language into a foreign language, which is subsequently translated back into the source language by another bilingual native speaker (Brislin 1970). Chai et al. (2020) conducted research aimed at evaluating the Malay version of the Cardiac Rehabilitation Barriers Scale Manual using back translation methods assessed by three experts. The findings revealed that there is some direct translation of technical phrases as well as frequent grammatical, structural, and contextual errors. The nurse spent an excessive amount of time reading and attempting to comprehend specific instructions. Chai et al. (2020) suggests the translator should choose precise, appropriate and plain vocabulary in order to be compatible with the intended reader.

Expert panels translated this framework, first from the source language to the target language (forward translation) and then back into the source language (backward translation). The experts will review the translations and validate whether the solid waste engineering practices are met. At the start of the process, the Malaysian Institute of Translation and Books (ITBM) that were certified as legitimate, was appointed as a primary translator to provide translations from English to Malay. The accuracy of the translation is next reviewed by a panel of experts using a back-translation instrument based from a study entitled *Garis Panduan bagi Penterjemahan Alat Ukur Skala Daya Tahan 25 Item* (Madihie et al. 2013). The list of expert panels for the translation of the study instruments is shown in Table 1.

TABLE 1. Panel of instrument translation experts

Position	Expert field	Experience	Quantity	Institution
Forward translation				
Senior Executive	Translation	>24 years	1	ITBM
Associate Professor	Malay Language	>25 years	1	UPSI
Associate Professor	English Language	>24 years	1	UTP
Senior Lecturer	English Language	>15 years	1	UPNM
Backward translation				
Professor	English Language	>30 years	1	UPSI
		>3 years		Taylor's University
Associate Professor	Malay Language	>23 years	1	UiTM
Senior Lecturer	English Language	>20 years	1	UTeM
Senior Lecturer	English Language	>18 years	1	UTHM
				Total expert: 8 persons

Experts were chosen based on their research experience of at least five years, their ability to do research and lecture on a continuous basis, their involvement in management or organisational administration, and their fluency and competency in English and Malay. According to Abfalter et al. (2021), translation verification entails the participation of at least six experts, three for forward translation and three for reverse translation. The expert panel's responses and feedback were used to improve the research instrument development process.

Table 2 demonstrates the coding of translation experts for the purpose of the translation evaluation findings, specifically the FWT code for forward translation and the BWT code for backward translation.

CONTENT VALIDATION

Once the linguists has completed the instrument translation, content validation is performed to get expert opinion in a certain field in order to validate the items and structures that will be utilised to obtain expert agreement later.

The purpose of content validity is to ensure that items on the test tool that indicate language style, sentence comprehension, instrument constructions, and reliability of features in the field of study are accurate. The list of expert panels for the study of instruments' content validity after translation is shown in Table 3.

Table 4 shows the expert coding of the study instrument's content validation. The specialists reviewed the study instrument's validity and provided feedback on the format structure, appropriateness structure, and internal structure. After reviewing and evaluating the research instruments, the expert examined the study instrument's writing format, word clarity, language compatibility, font size, text spacing, and instrument clarity in compliance with the study's title.

TABLE 2. Expert coding in language translation

Name	Respondent (expert)	Code
	Forward translation	
Mr. Enche Abdullah Abdul Kadir	Expert 1	FWT1
Associate Professor Dr. Hj. Mohd Rashid Md. Idris	Expert 2	FWT2
Associate Professor Dr. Shahrina Md Nordin	Expert 3	FWT3
Dr. Fazillah Sulaiman	Expert 4	FWT4
	Backward translation	
Professor Dr. Sopia Md Yassin	Expert 5	BWT1
Associate Professor Ts. Dr. Janudin Sardi	Expert 6	BWT2
Dr. Linda Khoo Mei Sui	Expert 7	BWT3
Dr. Mimi Nahariah Azwani Mohamed	Expert 8	BWT4

TABLE 3. Content validation experts

Position	Expertise	Experience	Quantity	Institution
Professor	Solid Waste Engineering	>47 years >4 years	1	UM Sunway University
Professor	Civil Engineering	>44 years	1	USM
Professor	Solid Waste Engineering	>24 years	1	UM
Associate Professor	Risk Management	>22 years	1	UPM
Senior Lecturer	Safety, Health and Environmental Engineering	>20 years	1	UMP
			Total expert: 5 persons	

TABLE 4. Expert coding in content validity

Name	Respondent (expert)	Code
Professor Dr. Agamuthu Pariatamby	Expert 1	PKK1
Professor Dr. Hamidi Abdul Aziz	Expert 2	PKK2
Professor Dr. Ismail Yusoff	Expert 3	PKK3
Associate Professor Ir. Dr. Wan Azlina Wan Ab. Karim Ghani	Expert 4	PKK4
Dr. Nurud Suria Suhaimi	Expert 5	PKK5

RESULTS

TRANSLATION RESULTS

The instruments were adapted from Zemba et al. (2010), written in English, and subjected to expert validation. This translation started with the appointment of a state-certified translator from ITBM as the primary translator. The translation findings from ITBM are as in Table 5.

The language experts then did secondary research via forward translation (4 experts) and backward translation (4 experts) to determine language appropriateness goals that the targeted reader would understand. Individuals with Malay as their mother tongue and outstanding English speaking and writing skills were selected as expert criterion.

A revision table with translator approval is included in the language translation confirmation form (Appendix A) in Level I, Level II and Level III as measuring indicator. The following is a description of each level:

Level I : No significant difference, ranging from 90% to 100%.
Level II : Slight difference, ranging from 80% to 89%.
Level III : Significant difference, ranging from 79% to 0%.

The translation can be used if the results of the translator's evaluation fall into the Level I and Level II categories. Whereas the evaluation in Level III requires a second round of improvement, review or retranslation. The deviation loss percentage represents the translation's deviation from the original language (Dhyaningrum, 2020).

Table 6 shows the results of forward translation, while Table 7 shows the results of backward translation. According to the tables, the deviation losses for forward translation is 8.98%, while for backward translation is 17.95%. The study instrument was then modified based on linguists' recommendations and language translation findings. Some of the improvements have been made to the evaluations that fall into Level II and Level III.

1. Expert FWT3 suggested that the translation of Healthcare Waste (*Sisa Bahan Perubatan*) use a term commonly applied in journal papers, namely *Sisa Penjagaan Kesihatan*, because medical waste is solely concerned with drug disposal management. Thus, item 11 was changed to "*Sisa Penjagaan Kesihatan*".

2. Expert FWT4 recommended that the acronyms for items 9, 10 and 11 be retained as English acronyms to avoid confusion and misunderstanding by readers. Hence the acronym is retained to "*Sisa Pepejal Perbandaran* (MSW)", "*Sisa Berbahaya* (HW)" and "*Sisa Penjagaan Kesihatan* (HCW)".

3. Expert FWT3 proposed improvement to item 20, which is Impact Level, because the risk framework is intended to assess the possible consequences that will be borne by the organisation when a risky event occurs.

4. Expert FWT3 suggested item 25, "Catastrophic" (*Menyebabkan Kemusnahan*) is translated into "*Memudaratkan*" because the level of risk impact provides a level of measurement of impact on human physical and organisational loss. This assertion also supported by expert BWT2, who point out that the translation of "*Menyebabkan Kemusnahan*" does not match the original word "Catastrophic." As a corollary, item 25 is renamed "*Memudaratkan*" instead of "*Menyebabkan Kemusnahan*".

5. According to Expert BWT1, item 2, "*Jenis Risiko*" should be altered as "ID *Risiko*" because, with regard to the original instrument, "Risk ID" refers to the identification record of the risk report registration rather than the risk type.

6. Expert BWT2 argued that translation involves the source language and the target language. Therefore, items 15, 16, 17, item 18, and item 19 in the instrument typically use the following scales "1-*Tidak Pernah*, 2-*Jarang-jarang*, 3-*Sekali Sekala*, 4-*Kerap kali*" and "5-*Sentiasa*".

CONTENT VALIDATION RESULTS

Content validation with five experts was undertaken before the questionnaire was distributed to the 13 experts who had agreed to participate in fuzzy delphi study to ensure the appropriateness of item elements in the instrument design. The instrument's content is validated by the nomination of five experts in the field of Civil Engineering, Risk Management, Solid Waste Engineering and Safety, Health and Environment Engineering. Table 8 lists the contents of the elements used in the instrument's construction.

TABLE 5. Instrument translation findings by ITBM

English	Malay	Item number
Date	*Tarikh*	1
Risk ID	*Jenis risiko*	2
Category	*Kategori*	3
Lecturer	*Pensyarah*	4
Management	*Pengurusan*	5
Student	*Pelajar*	6
Contractor	*Kontraktor*	7
Type of Waste	*Jenis Sisa*	8
Municipal Solid Waste (MSW)	*Sisa Pepejal Perbandaran (SPP)*	9
Hazardous Waste (HW)	*Sisa Berbahaya (SB)*	10
Healthcare Waste (HCW)	*Sisa Bahan Perubatan (SBP)*	11
Risk Description	*Penerangan Risiko*	12
Risk Source	*Punca Risiko*	13
Frequency Level	*Tahap Kekerapan*	14
Rare	*Sangat Tidak Kerap*	15
Unlikely	*Tidak Kerap*	16
Moderate	*Agak Kerap*	17
Likely	*Kerap*	18
Very Likely	*Sangat Kerap*	19
Impact Level	*Tahap Kesan*	20
Minor	*Kecil*	21
Moderate	*Sederhana*	22
Significant	*Ketara*	23
Major	*Besar*	24
Catastrophic	*Menyebabkan Kemusnahan*	25
Risk Control Suggestion	*Cadangan Kawalan Risiko*	26

TABLE 6. Forward translation findings

Item number	English	Malay	FWT1	FWT2	FWT3	FWT4
1	Date	*Tarikh*	I	I	I	I
2	Risk ID	*Jenis risiko*	I	I	I	I
3	Category	*Kategori*	I	I	I	I
4	Lecturer	*Pensyarah*	I	I	I	I
5	Management	*Pengurusan*	I	I	I	I
6	Student	*Pelajar*	I	I	I	I
7	Contractor	*Kontraktor*	I	I	I	I
8	Type of Waste	*Jenis Sisa*	I	I	I	I
9	Municipal Solid Waste (MSW)	*Sisa Pepejal Perbandaran (SPP)*	I	I	I	II
10	Hazardous Waste (HW)	*Sisa Berbahaya (SB)*	I	I	I	II
11	Healthcare Waste (HCW)	*Sisa Bahan Perubatan (SBP)*	I	I	III	II
12	Risk Description	*Penerangan Risiko*	I	I	I	I
13	Risk Source	*Punca Risiko*	I	I	I	I
14	Frequency Level	*Tahap Kekerapan*	I	I	I	I

continue…

...continued

15	Rare	*Sangat Tidak Kerap*	I	I	I	I
16	Unlikely	*Tidak Kerap*	I	I	I	I
17	Moderate	*Agak Kerap*	I	I	I	I
18	Likely	*Kerap*	I	I	I	I
19	Very Likely	*Sangat Kerap*	I	I	I	I
20	Impact Level	*Tahap Kesan*	I	I	II	I
21	Minor	*Kecil*	I	I	I	I
22	Moderate	*Sederhana*	I	I	I	I
23	Significant	*Ketara*	I	I	I	I
24	Major	*Besar*	I	I	I	I
25	Catastrophic	*Menyebabkan Kemusnahan*	I	I	II	I
26	Risk Control Suggestion	*Cadangan Kawalan Risiko*	I	I	I	I
		Deviation loss	0%	0%	5.13%	3.85%

TABLE 7. Backward translation findings

Item number	Malay	English	BWT1	BWT2	BWT3	BWT4
1	Tarikh	Date	I	I	I	I
2	Jenis risiko	Risk ID	II	I	I	I
3	Kategori	Category	I	I	I	I
4	Pensyarah	Lecturer	I	I	I	I
5	Pengurusan	Management	I	I	I	I
6	Pelajar	Student	I	I	I	I
7	Kontraktor	Contractor	I	I	I	I
8	Jenis Sisa	Type of Waste	I	I	I	I
9	Sisa Pepejal Perbandaran (SPP)	Municipal Solid Waste (MSW)	I	I	I	I
10	Sisa Berbahaya (SB)	Hazardous Waste (HW)	I	I	I	III
11	Sisa Bahan Perubatan (SBP)	Healthcare Waste (HCW)	I	I	I	I
12	Penerangan Risiko	Risk Description	I	I	I	I
13	Punca Risiko	Risk Source	I	I	I	I
14	Tahap Kekerapan	Frequency Level	I	I	I	I
15	Sangat Tidak Kerap	Rare	I	III	I	I
16	Tidak Kerap	Unlikely	I	II	I	I
17	Agak Kerap	Moderate	I	II	I	I
18	Kerap	Likely	I	II	I	I
19	Sangat Kerap	Very Likely	I	II	I	I
20	Tahap Kesan	Impact Level	I	I	I	II
21	Kecil	Minor	I	I	I	I
22	Sederhana	Moderate	I	I	I	I
23	Ketara	Significant	I	I	I	I
24	Besar	Major	I	I	I	I
25	Menyebabkan Kemusnahan	Catastrophic	II	I	I	II
26	Cadangan Kawalan Risiko	Risk Control Suggestion	I	I	I	I
		Deviation loss	5.13%	7.69%	0%	5.13%

TABLE 8. Construct items in a content validation form

Section	Item	Answer	Item number
Section A	• Gender	Male/Female	1
Respondent Demographics	• Environmental management-related fields of study?	Yes/No	2
	• University	UM/UPM/UIAM/UiTM/USIM	3
	• Age	18-19 years old/ 20-21 years old /22-23 years old / 24 years or older	4
	• Category	Lecturer/ Management/ Student/ Contractor	5
Section B Waste Management Risk Assessment	• Waste type	Municipal Solid Waste (MSW)/ Hazardous Waste (HW)/ Healthcare Waste (HCW)	6
	• Risk Description	Open ended question	7
	• Risk Source	Open ended question	8
	• Frequency Level	Rare/ Unlikely/ Moderate/ Likely/ Very Likely	9
	• Impact Level	Minor/ Moderate/ Significant/ Major/ Catastrophic	10
	• Risk Control Suggestion	Open ended question	11

Expert evaluation is based on a scale of 1 to 5, with Poor (1), Fair (2), Average (3), Good (4) and Excellent (5). Experts are also given a paragraph to jot down suggestions for improvement. The results of the instrument content validation are shown in Table 9.

The instrument's content validation were analysed by calculating the average mean value for each aspect to determine the level of expert agreement. This analysis method was adapted from Taderhoost (2018), that is, the expert agreement score analysis is based on a minimum score of 1 and a maximum score of 5. Table 10 shows Taderhoost (2018) mean score value interpretation for the Likert scale from 1 to 5. Table 11 displays the results of the content validation of this study instrument in the form of a mean score.

Based on the findings of the content validation mean score, all five experts agreed on every aspect of the study instrument model. However, some experts have provided the following suggestions for improvement:

1. Expert PKK1 suggested adding items for the study of 3R practices, namely reduce, reuse, and recycle. This is to ensure that respondents understand the concept of environmental sustainability and are committed to putting the 3R into action. The 3R practise study was augmented by adapting the techniques in the study by Karupiah and Iksan (2012). This addition divides the research instrument into three sections that is, Section A (Respondent Demographics), Section B (Sustainable Waste Management Practices) and Section C (Waste Management Risk Reporting).
2. Expert PKK4 recommends that item 2 be changed to the selection of a field of study at the PhD, Master's, Degree or Diploma level. This is due to the fact that knowledge of environmental management or green education has been instilled at all levels of the field of study. PhD, Master's, Degree, and Diploma answer options have been added to field items of study.
3. Expert PKK4 proposes including respondents' choice of faculty in their demographics in order to identify risk incidents reported by which faculty. Faculty items were supplemented with answer options from the faculties of engineering, medicine, and science.
4. According to expert PKK3, an item should be added to indicate whether the respondent wanted to make a complaint or a suggestion so that the report can clearly state that the risk has occurred or has the potential to occur. The question item, "Would the respondent like to make a complaint or suggestion?" has been added.
5. Expert PKK3 proposes adding one item of waste management effectiveness factors to allow respondents to choose which variables to test. As a result, one item was added to allow respondents to choose which waste management risk factors to report.

TABLE 9. Content validation results

Number	Aspect	PKK1	PKK2	PKK3	PKK4	PKK5
1	The objective of the instrument is stated clearly.	5	5	5	5	5
2	The suitability of content with competency standard and indicator.	5	4	4	4	4
3	The format is appropriate.	5	3	5	5	5
4	The meaning of every item is clear.	5	5	5	5	5
5	The items are presented and organised in a methodical manner.	5	5	5	5	5
6	The scale and evaluation rating adapted is appropriate for the item.	4	3	4	4	5

TABLE 10. Mean score value interpretation

Mean score	Agreement level	Mean interpretation
1.00 to 2.40	Disagree	Major correction
2.41 to 3.80	Neutral	Minor correction
3.81 to 5.00	Agree	No correction

Source: Taderhoost (2018)

TABLE 11. Mean score for content validation

Number	Aspect	Mean score	Agreement level	Mean interpretation
1	The objective of the instrument is stated clearly.	5.0	Agree	No correction
2	The suitability of content with competency standard and indicator.	4.2	Agree	No correction
3	The format is appropriate.	4.6	Agree	No correction
4	The meaning of every item is clear.	5.0	Agree	No correction
5	The items are presented and organised in a methodical manner.	5.0	Agree	No correction
6	The scale and evaluation rating adapted is appropriate for the item.	4.0	Agree	No correction

6. Expert PKK5 advises reviewing item 8, which is the source of the risk because the instructions are unclear. Item 8 is converted from "Risk Source" to "Risk Location" after a review of the original instrument Zemba et al. (2010).

7. Expert PKK3 states, that the frequency level scale (item 9) and the impact level scale (item 10) were ambiguous to respondents. Expert PKK3 suggests alluding to the indicator scales used by previous waste management researchers. The frequency and impact levels were scaled up with reference to research by Kabbashi et al. (2013). Several inquiries and clarifications were discussed with Expert PKK3. Following agreement with the experts, item 9 was added to the time period scale, and item 10 was added to the scale of consequences to be borne by the organisation.

8. PKK2 expert point to item 10, the impact level scale, with small, medium, significant, large, and detrimental scales, requires little adjustment to the arrangement beginning with very small, small, medium, large, and very large impact levels.

DISCUSSION

The study's aim of translating a qualitative risk framework for solid waste engineering from English to Malay was accomplished. Back translation was carried out by appointing a professional (ITBM) as the primary translator and having it reviewed by a panel of experts as the secondary translator. Following that, the final translation was subjected to expert judgement for content validation. Some changes have been made in response to the experts' suggestions and constructive feedback.

The difficulties encountered during the translation process could be attributed to ITBM's straight translation, in which the words were translated word-to-word because the ITBM layperson lack of civil engineering knowledge. The forward and backward secondary translators, as well as the expert panel, were all professional bilingual academics with over 15 years of research experience in this study field. As a result, the translation is of high quality, precise, and understandable, particularly for the technical terminology.

These findings are also consistent with Peng (2018), translated using machine translator (MT) and computer-aided translation (CAT). The problems encountered included the quality of the translations produced being very patchy. Some parts of the translation are likely to be excellent, while others are likely to be unclear or even incoherent, and, most

importantly, some parts are simply incorrect. That makes it of limited use in research as it's not suitable for any text where accuracy and clear understanding are needed. The study recommends adding a human translator review as post-editing to correct MT inaccuracies and unnatural wording.

Moreover, the findings of this study are further strengthened by Chai et al. (2020), who translated the Cardiac Rehabilitation Barriers Scale from English to Malay using the back translation method by three experts. Chai et al. (2020) identified a few of the back translation limitations, which involves costly documents, time-consuming tasks, multiple expert reconciliations and validation by highly skilled experts.

There are several ways to translate text into various languages, depending on cost, quality and time. The options are consultant, field expert, mobile application, online tool, software, and other IT technology. According to Motlaq and Mahadi (2020), the obvious benefits of machine translation are that it is virtually instant and free. These translations can be faster and cheaper to produce than using human translators if the initial machine translation is reasonably good, which largely depends on the language involved (Ali 2020).

In another study, Herdawan (2020), analysis of Google Translate translations from Indonesian to English. The outcome showed that the meanings were sometimes accurate and partially identical. However, there are drawbacks. In other circumstances, the translations were completely irrelevant, inaccurate, confusing and misinterpreted the local nuances. On the other hand, Sutopo (2018) finds that utilising Transtool software to translate Civil Engineering content is convenient for short and basic words. Nonetheless, the output is neither accessible, intelligible nor correct for long sentences and engineering terminology. Sutopo (2018) advises that the translated material be double-checked and rectified by a field expert.

CONCLUSION

This study achieved the objective of translating a qualitative risk framework from English to Malay, which obtained consensus among experts and was deemed valid and applicable.

The panel experts' agreement was quantified and summarised quantitatively during the process. The consensus score obtained 27.8/30 (92.7%) with deviation losses losses in forward (8.98%) and backward (17.95%) translation. This has proven that back translation can aid in the detection of errors, ambiguities, or confusion. It can also help improve the translation's validity, accuracy, quality, and readability. However, there are drawbacks such as time consumption, professional costs, and expert involvement.

Although machine translation has the advantages of being faster, more affordable, available online and having a variety of applications, the disadvantage is that it illiteracy to grasp the true meaning of a text. Moreover, translation is a process that entails bilingual translators, a feature that machines cannot provide thoroughly.

In summary, depending on the purpose of the translation, there are pro and cons for both humans and machines. This study recommends that translation requires quality control, which comprises of three processes: conversion to target language, comparing and reconciliation by subject matter experts. This is performed to verify that translations are reliable and accurate.

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DECLARATION OF COMPETING INTEREST

None

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APPENDIX A

TRANSLATION EVALUATION REPORT

Please mark one box for each item that indicates your level of evaluation based on the following measuring indicator:

Level I	No significant difference, ranging from 90% to 100%.
Level II	Slight difference, ranging from 80% to 89%.
Level III	Significant difference, ranging from 79% to 0%.

English (original)	Malay translated by Malaysian Institute of Translation & Books (ITBM)	Level I 90-100%	Level II 80-89%	Level III 79-0%	Constructive feedback (if any)
1. Date	*Tarikh*				
2. Risk ID	*Jenis Risiko*				
3. Category	*Kategori*				
4. Lecturer	*Pensyarah*				
5. Management	*Pengurusan*				
6. Student	*Pelajar*				
7. Contractor	*Kontraktor*				
8. Type of waste	*Jenis sisa*				
9. Municipal solid waste (MSW)	*Sisa pepejal perbandaran (SPP)*				
10. Hazardous waste (HW)	*Sisa berbahaya (SB)*				
11. Healthcare waste (HCW)	*Sisa bahan perubatan (SBP)*				
12. Risk description	*Penerangan risiko*				
13. Risk source	*Punca risiko*				
14. Frequency level	*Tahap kekerapan*				
15. Rare	*Sangat tidak kerap*				
16. Unlikely	*Tidak kerap*				
17. Moderate	*Agak kerap*				
18. Likely	*Kerap*				
19. Very Likely	*Sangat kerap*				
20. Impact level	*Tahap kesan*				
21. Minor	*Kecil*				
22. Moderate	*Sederhana*				
23. Significant	*Ketara*				
24. Major	*Besar*				
25. Catastrophic	*Menyebabkan kemusnahan*				
26. Risk control suggestion	*Cadangan kawalan risiko*				