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RELIABILITY AND VALIDITY OF INTEGRATED PHYSICAL AND PSYCHOSOCIAL SAFETY CLIMATE ON OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT PRACTICES QUESTIONNAIRE IN MALAYSIA PUBLIC EDUCATION SECTOR: A RASCH ANALYSIS

MUHAMAD AFFANDI ISMAIL, FAHIRAH SYALIZA MOKHTAR* AND AZLINZURAINI AHMAD

Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia.

**Corresponding author: fahirah.mokhtar@umt.edu.my*
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Abstract: The study aims to address the low safety performance in Malaysia's public education sector by focusing on the integrated physical and psychosocial safety climate on Occupational Safety and Health (OSH) management practices. The study found that despite the government's implementation of various OSH policies, the frequency of accidents is still concerning. Therefore, a reliability and validity study of the Occupational Safety and Health Management Practices Questionnaire (OSHMPQ) needs to be conducted before conducting the actual study. The OSHMPQ is based on indicators that evaluate OSH management practices toward physical and psychosocial safety climate. The study conducted Rasch analysis among 51 respondents to measure the reliability and validity using statistics summary, unidimensionality analysis, and persons-items fit measures. The results showed that the OSHMPQ contains strong evidence and measures the intended construct-related safety characteristics toward physical and psychosocial safety climate. However, the study identified 3 items as confusing and 5 items as straightforward. The findings of this study are crucial for ensuring the creation of reliable and insightful OSHMP instruments for use in subsequent research in Malaysia's public education sector.

Keywords: Occupational safety and health management practices, Rasch analysis model, validity and reliability, public academic sector.

Introduction

Occupational Safety and Health (OSH) is associated with a prudent, healthy, and conducive working environment. It is one of the economy's sub-composites underneath the Malaysians Well-Being Index as well as the dynamic affecting life's well-being and propagating innovative, productive, and healthy workforces. A better OSH management corresponds with national development policy as stated in the 12th Malaysia Plan (RMKe-12), the National Occupational Safety and Health (DKKPN), and "Wawasan Kemakmuran Bersama 2030" (WKB 2030) on top of representing a sustainable social and economic development locally, nationally and globally (Jabatan Keselamatan dan Kesihatan Pekerjaan Malaysia, 2021; World Health Organization, 2001). Aside from being a principal government policy, it also communicates the goals advocating global transformation and future economic growth as indicated in the Sustainable Development Goal (SDG), the third objective (health and good well-being), and the eighth objective (a good working environment and economic growth). International Labour Organization has positioned these objectives as an ignition to the other SDG's objectives because good work warrants a robust fiscal and income (International Labour Organization, 2017; The United Nations, 2021). According to WHO, mortality, accidents, and occupational sickness at work are comparatively prominent; only 10 to 15% of the working environment reaches a satisfactory parallel (World Health Organization, 2019). In Malaysia, the average mortality rate at work records a notorious value

compared to the other Southeast Asian countries and exceeds the global value estimation (Rahman & Kamil, 2022). The employment division that details the most accident records is manufacturing, followed by the public service division (Institut Keselamatan dan Kesihatan Pekerjaan Kebangsaan, 2020; Rahman & Kamil, 2022).

OSH Implementation History in Malaysia

OSH implementation history in Malaysia has ensued within five eras: The boiler safety era before 1914, the machinery safety era from 1914 to 1952, the safety industry era from 1953 to 1967, and the industry occupational health and safety era from 1994 until the present (Arifin *et al*., 2013). Currently, Malaysia is administering The Occupational Health and Safety Act 1994 (AKKP 1994), which relates to the OSH commandment enforced on 24th February 1994. This Act safeguards 10 natures of industry such as agriculture, forestry and fishery, mining and quarry, manufacturing; electrical services, gas, and water and cleanliness; construction, trade; transportation; financial institution and insurance; business services; accounting, lawsuit; property management and public services. In this Act, there are three highlights, i.e., work environment, employees and non-employees, whereby the AKKP 1994 enforcement is due to ensure safety, health, and employees' welfare towards health and safety risks against occupational activities; encouraging an appropriate working environment conforming to physiological and psychological needs; creating safety and health standards equivalent to the OSH legislation (Akta 514 - Akta Keselamatan dan Kesihatan Pekerjaan 1994, 2013).

Public Education Sector Accidents' Statistics

At present, the public service sector boasts 1.6 million in-service employees and OSH management should be a part of civil servants (Rahman & Kamil, 2022). As a measure to uphold compliance to the public service's AKKP 1994 enforcement, in October 2019, the Prime Minister Department (JPM) issued a General Directive (SPA) Vol 3, Year 2019, recounting AKKP 1994 compliance and the rules and regulations to all ministries, departments, government agencies, and federal statutory bodies and a step ahead to establish the OSH implementation in public sectors (Jabatan Perdana Menteri, 2019). Thus, all ministries, departments, government agencies, and federal statutory bodies need to observe the AKKP 1994 and undertake safety, health, and employees' and non-employees well-being by providing a safe and healthy working environment to conform to OSH requirements. Nonetheless, there is a sudden upsurge in accidents number arises at the Public Education Institute (PEI). Table 1 shows that occupational accidents at the PEI from 2012 to 2019 were a large increase in 2017, with 385 cases compared to 76 cases in 2016, while 2018 shows an even trend with a total of 374 and 2019 with a total 351 accidents cases occurring. According to WHO, the risks associated with the education profession are related to job design and structure, planning and implementation of management and administration, environment, organisational culture, interpersonal relationships, roles in organisations, and career development (Wischlitzki *et al*., 2020). The task of education is physically and mentally challenging to the teachers themselves (Desouky & Allam, 2017; Ek Klai & Kamarul Bahrin, 2020) such as occupational stress risks (Ahola *et al*., 2005; Zhong *et al*., 2009), very large classes (Ng *et al*.., 2019) and students behaviours (Ariffin *et al*., 2021). Desouky and Allam (2017) discovered that 67.6% of public school teachers disclose occupational stress-related risks, while Opoku (2021) recounted exhaustion and burnout similarly transpire at Malaysia's PEI. Anjum and Muazzam (2019) similarly uncovered that civil servants from PEI are at high risk of occupational health risks. Generally, depression will turn out to be the main mental illness among Malaysians, and based on WHO statistics, it was learned that 9% of Malaysians were reported having major depression (World Health Organization, 2017; Ng *et al.*, 2019; Azmi *et al.*, 2021). As equated to other

employment sectors, the working environment at PEI functions as a working and learning environment, and the number of employees is fewer than the number of non-employees. These risks will lead to the occurrence of occupational accidents and occupational diseases, either physical or psychosocial, in PEI.

The researchers revealed flaws in the OSHMP management at PEI as these circumstances are the key contributor to PEI adversity to attain safety performance, which may enhance safety behaviour (Adilah *et al*., 2018; Hashim & Aziz, 2018; Voon & Ariff, 2019; Abdullah & Aziz, 2020). However, the measurement instrument for AKPPK that safeguards OSH is not available as the previous researchers emphasised occupational safety compared to occupational health (Idris *et al*., 2012; Bronkhorst, 2015; McLinton *et al*., 2018).

Integrating Physical and Psychosocial Safety Climate

The Occupational Safety and Health Management Practices Questionnaire (OSHMPQ) is designed based on a proactive indicator that indicates preliminary evidence in identifying safety behaviour at the workplace via safety and health management evaluation incorporating physical and psychosocial accident risks. Since the unavailability of the instrument measuring OSH management practice based on two safety combined attributes, physical and psychosocial safety, this instrument is therefore proposed on the grounds of construct suitability of the preceding research investigating elements of OSH management practices to recognise physical safety climate and psychosocial health climate towards safety behaviour. Yaris *et al*. (2020) advocate the Physical and Psychosocial Workplace Safety (PPWS) model incorporated with the JD-R Model and Safety Performance Model to distinguish physical safety behaviour and psychosocial health behaviour based on occupational demands and resources. There are two domains used in job resources namely physical safety behaviour, and psychosocial health behaviour, which denotes the aiding feature that minimises occupational demands, encourages the fulfilment of occupational objectives, and expands personnel involvement. Both of these domains are evaluated based on four constructs: Management commitment, priority, organisational communication, and organisational involvement. These are referred to Dedobbeleer and Beland (1991), Griffin and Neal (2000), Hall *et al*. (2010), and Zohar (1980) research. McLinton *et al*. (2019) research affirms that most literature has already modelled these two climates, i.e., physical safety behaviour and psychosocial health behaviour as if those climates are separate entities and function independently. Hence, McLinton explored research that integrates occupational safety and occupational health property collectively based on workforce perception towards policy, practice, and organisational procedures and management, which communicates safety and safety priority compared to interactional productivity in their dynamic influence towards safety and health at the workplace. Both of these domains are assessed based on four constructs: Management commitment, priority, organisational communication, and organisational involvement using Hall *et al*. (2010) and Idris *et al*. (2012) instrument. In his research, Bronkhorst (2015) established that physical and psychosocial safety climates set a role and dominate an immediate relation towards physical and psychosocial safety climate behaviour as well as influence

Table 1: Occupational accidents reported in the Malaysia Public Education Institute 2012-2019

	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Occupational accidents reported	367	65	45	53	76	385	374	351

Source: (*Pertubuhan Keselamatan Sosial,* 2016, 2017, 2018, 2019).

occupational demands and occupational resources with the aforementioned behaviour. Aside from that, this research also proves the workplace safety climate partakes two physical and psychosocial dimensions where both equally maneuvre the same operation regarding informed communication concerning workplace safety priority or occupational psychosocial health. In this research, workplace safety climate and psychosocial health climate are evaluated based on four constructs: Management commitment, management priority, organisational communication, and organisational involvement using Hall *et al*. (2010) and Idris *et al*. (2012) instruments. Bronkhorst and Vermeeren's (2016) research established the influence of employees' health on the relationship between safety climate and organisational health performance via three safety climate channels: Physical, psychosocial, and the combination of physical and psychosocial climates. For the physical channel, the hypothesis is achieved against physical safety climate and musculoskeletal disturbance. The psychosocial hypothesis channel is established against psychosocial safety climate and emotional exhaustion, while physical and psychosocial combination hypotheses are executed against psychosocial safety climate, musculoskeletal disturbance, and emotional exhaustion. The findings verify an unequivocal correlation between occupational safety and occupational health whereby psychosocial safety climate is diametrically connected to physical and mental health in which the employees will not object to psychological disorder until they physically experience the disorder. Hence, this research impacts the development of the safety performance model (Neal *et al*., 2000) via a combination of elements of safety management practice for safety climate (Zohar, 1980) and psychosocial safety climate (Hall *et al*., 2010) as preliminary indicators of safety performance. The development of a new OSHMP dimension for preliminary indicators is based on occupational safety and occupational health perspectives, which need to be within a safety management system practising unified organisational safety management (Bronkhorst, 2015; Bronkhorst & Vermeeren, 2016; McLinton *et al*., 2019; Yaris *et al*., 2020) where self-regulatory processes mediate the relationship of job demands and resources to safety behaviours. The aim is to provide a parsimonious, comprehensive approach to safety by summarising and strengthening current theoretical explanations. The PPWS provides multiple contributions to the literature; 1. This research concentrated on four primary characteristics of OSHMP: Management commitment, priority, organisational communication, and organisational involvement to satisfy OSH. Table 2 explains the definition for each construct that assesses the OSH management practice domain in the OSHMPQ instrument.

Therefore, this research is intended to fill in the gap of prevailing assessment instruments, with the fundamental intensity being on items and constructs for OSHMP overlaying occupational health and safety. The OSHMPQ is designed by evaluating OSHMP toward physical safety climate and psychosocial safety climate. It looks at the appropriateness of the constructs used based on preceding studies that evaluate the elements in OSHMP characterisations of the physical and psychosocial safety climates. The reliability and validity of the OSHMPQ are an initial step in associating the level of OSHMP for the study of OSH in the PEI in Malaysia. The premeditated principal inquiry is: Are the OSHMPQ valid and reliable as OSHMP at PEI measurements? Pertaining to the testing measurement instrument, the endorsement of the responsiveness aspect, overall capability, and item fit is likewise mandatory.

Materials and Methods

Constructs Development

The OSHMP instrument is based on proactive indicators, which are early indicators for identifying safety behaviours in the workplace through assessments of safety and health management practices that encompass physical and psychological accident risks. Since no instrument assesses OSHMP based on a combination of physical and psychosocial safety

Table 2: Definition of construct that assesses OSH management practice domain in the OSHMPQ instrument

Construct	Definition	Source
Management Commitment	The management is committed to making decisions, resolving problems, and being supportive of and concerned about glitches or issues that compromise OSH.	(Idris *et al*., 2012; Loh *et al*., 2020)
Management Priority	The feat accentuates well-being and OSH relatively by the management compared to other organisational goals.	(Dollard & Bakker, 2010; Idris *et al.,* 2012; Loh *et al.,* 2020; Bayram *et al.,* 2021; Opoku, 2021)
Organisational Communication	Interactional practice concerning OSH and an organisation that extends a safe and good working environment for OSH via information and organisational efforts to deliver and promote OSH standpoints at the workplace.	(Chandrakantan Subramaniam & Md Lazim Mohd Zin, 2013; Loh *et al*., 2020)
Organisational Involvement	All operatives at all organisational levels and departments actively participate in establishing OSH at the workplace, preventing risks, and maintaining OSH at the workplace and in all OSH properties within an organisation.	(Punnett *et al.,* 2009; Samra, J, Gilbert, M. Shain, M., & Bilsker, 2012; Hong *et al.,* 2018; Naji *et al.,* 2021)

Source: Authors' field study.

aspects, this instrument explores the suitability of the construct based on previous studies that evaluate OSH management practice elements to identify the physical and psychosocial health climate. Yaris *et al*. (2020) assessed two domains in the work resource: Physical safety climate and psychosocial health climate. These domains are evaluated based on four constructs: Management commitment, priorities, communication, and participation. McLinton *et al*., 2019 integrate elements of occupational health and safety into a theoretical model based on four constructs, namely management commitment, management priorities, organisational communication, and organisational participation, and consider how they interact in terms of their dynamic impact on workplace health and safety. Bronkhorst, (2015) has tested four constructs namely management commitment, management priorities, organisational communication and organisational participation to define the function and interaction between physical and psychosocial safety climate and physical and psychosocial safety behaviours. Bronkhorst and Vermeeren (2016) have examined the impact of worker health on the relationship between safety climate and organisational health performance through three channels of safety climate, namely physical, psychosocial, and a combination of physical and psychosocial. These psychosocial and physical safety climate domains were assessed based on four constructs: Management commitment, priorities, organisational communication, and participation. Based on the literature review, there were four constructs used to measure physical safety climate and psychosocial health climate domains: Management commitment, priorities, organisational communication, and organisational participation.

Consequently, the applicability of these four constructs; management commitment, management priorities, organisational communication, and organisational involvement, will be evaluated and comply with the requirements of the MS ISO 9001: 2008 Quality Procedures PK-19: Safety and Health Audit of the Malaysian Public Employment Service, which sets forth the standards for auditing and monitoring workplaces in the public sector. There are eight required standard activities, including safety and health management, which include elements like an OSH policy statement, the designation of an OSH officer, OSH training, the maintenance of safety equipment, and accident reporting and detection associated with management commitment and management priorities. The workplace environment's safety includes aspects like flooring, warning signs, traffic areas, work routes, and cleanliness associated with organisational commitment constructions, management priorities, organisational communication, and organisational participation. The safety of the building's premises, including components like the floor foundation, roof, and electrical wiring, is associated with management commitment and priorities. Machinery consists of elements such as inspection and maintenance of machinery and the provision of a safe work system for machinery related to the construction of management commitment and priorities. Chemical management includes registration, labelling, risk assessment, control, warning, and disposal in relation to the management commitment and priorities. The health provisions consist of surveillance, inspection, facilities, ventilation, lighting, ergonomics, noise, and dust that are related to management priority components. A form of welfare that includes meal amenities. Relaxation and restrooms are associated with management priority factors. Public safety consists of policy aspects intended to ensure the safety of the public other than employees and child control in line with the concept of management commitment, management priorities, and organisational participation.

It was determined that all four structures fulfilled the criteria for OSH audits in the public sector. Thus, the four components used to evaluate safety and health management practices will be management commitment, management priorities, organisational communication, and organisational participation.

Item Development

Each item used to evaluate four identified constructs was cross-referenced with the instrument used in previous physical and psychosocial safety climate research, such as Bronkhorst (2015); Bronkhorst and Vermeeren (2016); Idris *et al*. (2012); McLinton *et al*., (2019). According to the study, the researcher adopted the PSC-12 questionnaire to assess the psychosocial safety climate and modified the instrument by replacing certain terms to assess the physical safety climate. Idris *et al*. (2012) conducted the first study to modify the PSC-12 questionnaire in order to evaluate the physical safety climate. Even though the PSC-12 questionnaire was modified to assess physical safety aspects, the instrument's reliability ($\alpha = 0.93$) remained good despite its initial purpose of assessing psychosocial factors. The modification was made by changing the stem to 'climate for physical safety in your team' and replacing words such as 'psychological health' with 'employees' safety'. Concerned with the application of the PSC-12 questionnaire modification made in the study by Idris *et al*. (2012), Bronkhorst (2015) has also modified the PSC-12 instrument to assess the physical safety climate where the instrument's reliability value ($\alpha = 0.89$) high. Other researchers, including Bronkhorst and Vermeeren (2016) and Sousa *et al*. (2020), subsequently used the Bronkhorst (2015) instrument for assessing physical safety climate and psychosocial safety climate. However, in the study by McLinton *et al*., 2019 PSC-12 was used to assess the psychosocial safety climate, and instrument Idris *et al.* (2012) was used to measure the physical safety climate. Based on research instruments by Hall *et al*. (2010), Idris *et al*. (2012), and Bronkhorst (2015), the OSHMP instrument will modify

12 items by replacing "psychological" in the Hall *et al*. (2010) instrument, and "physical" in the Bronkhorst (2015) instrument, with "safety and health". To further enhance the OSHMP instrument, 5 items were adapted from Vinodkumar and Bhasi (2010), which evaluates six constructs in the safety management practice such as management commitment, management priority, organisational communication and organisational participation to determine safety performance; 1 item from Cox, (2000) which evaluates management commitment to describe the development of an innovative approach to assessing safety climate; and 1 item from Pronovost *et al*. (2003) to determine safety climate scale. These seven adapted questions are additional items intended to enhance the assessment of the constructs. Table 3 shows a list of items modified and adapted from previous research.

Translation and Expert Reviews

The original instruments utilised in this study were obtained from English and translated into Malay after adjustments and alterations. As indicated by Su and Parham (2002), "back-to-back translation" is performed to translate the original instrument into the local language by Teaching of English as a Second Language (TESL) lecturers with 20 years of expertise. Hence, the translation is performed by a fluent bilingual translator in the target language. The following stage of the OSHMP instrument in bilingualism was given to the experts for review, opinions, recommendations, and agreement on all of the to-be-utilised components. Local academicians (lecturers) and industry professionals with extensive knowledge in occupational safety, health management, and leadership have been selected as the experts. Table 4 exhibits a demographical brief of these experts.

Sample

This research is pilot research executed before the proper field research is bound to assess the instruments' feasibility and research. Data was collected using a pre-survey instrument, which was value-added and transformed into Google Forms. The online survey has been distributed from May 1st, 2022 to June 30th, 2022 (two months). The targeted respondents are academic lecturers working at public educational institutions. There were 277 academic lecturers in the research population, where 51 respondents had already responded to the survey, and all responses were automatically documented in Google Drive. The number of respondents corresponds with Emory and Cooper's (1991) view, which exerts that the number of respondents for a pilot study should be within the range of 25 to 100 persons. Table 5 shows the total of the research population and sample.

Instruments

OSHMP instruments consist of four constructs and 19 items; namely, the management priority construct comprises 5 items, the management commitment construct also comprises 5 items, the organisational communication construct consists of 5 items, and the organisational involvement construct consists of 4 items. The item construction design is based on the revised version of 12 items from the PSC-12 instrument by Hall *et al*. (2010), 5 items are tailored from Vinodkumar and Bhasi (2010) instrument, 1 item is customised Cox (2000) instrument and 1 item modified Pronovost *et al.* (2003) instrument. In this instrument, respondents are requested to give precedence to the Likert 5 scale point, which is 1 = strongly disagree, 2 = disagree, 3 = partially disagree, 4 = agree, and 5 = strongly agree to evaluate respondents' agreement for each item as these instruments are being used in the prior research.

Data Collection

The OSHMPQ is accessible online, and the Uniform Resource Locator (URL) address has been distributed to participants from three Institut Pendidikan Guru (IPG): IPG Kampus Bahasa Antarabangsa, IPG Kampus Kota Bharu, and IPG Kampus Raja Melewar. The selection

Table 3: Methodological summary of OSHMP instrument

Construct	Code	Item	Source
Management commitment	Q1	In my workplace, my direct supervisor acts quickly to correct problems/issues that affect employees' safety and health.	Hall *et al*. (2010)
	Q2	My direct supervisor clearly considers the safety and health of employees to be of great importance.	Hall *et al*. (2010)
	Q3	When near-miss accidents are reported, my management acts quickly to solve the problems.	Vinodkumar & Bhasi (2010)
	Q4	My direct supervisor acts decisively when a concern of an employee safety and health status are raised.	Hall *et al*. (2010)
	Q5	Management acts only after accidents have occurred.	Cox & Cheyne (2000)
Management priority	Q6	The safety and health of staff is a priority for this organisation.	Hall *et al*. (2010)
	Q7	Senior management considers employee safety and health to be as important as productivity.	Hall *et al*. (2010)
	Q8	Senior management shows support for safety and health injury prevention through involvement and commitment.	Hall *et al*. (2010)
	Q9	I feel that management is willing to compromise on safety and health to increase production.	Vinodkumar & Bhasi (2010)
	Q10	Safety rules and procedures are strictly followed by the management.	Vinodkumar & Bhasi (2010)
Organisational communication	Q11	There is good communication here about safety and health issues which affect me.	Hall *et al*. (2010)
	Q12	Information about workplace safety and health is always brought to my attention in this organisation.	Hall *et al*. (2010)
	Q13	My complaints, remarks, and contributions to resolving safety and health concerns safety in the organisation is listened to.	Hall *et al*. (2010)
	Q14	Management operates an open-door policy on safety and health issues.	Vinodkumar & Bhasi (2010)
	Q15	I know the proper channels to report my concerns.	Pronovost *et al*. (2003)
Organisational involvement.	Q16	Participation and consultation in safety and health occur with employees, works councils, and health and safety coordinators.	Hall *et al*. (2010)
	Q17	Employees are encouraged to become involved in safety and health matters.	Hall *et al*. (2010)
	Q18	In my organisation, the prevention of safety and health injury involves all levels of the organisation.	Hall *et al*. (2010)
	Q19	My workplace has safety committees consisting of representatives of management and employees.	Vinodkumar & Bhasi (2010)

Source: Authors' field study.

Table 4: Expert's information

No.	Institution	Academic Qualification	Expertise
1	Department of Occupational Safety and Health, Malaysia	PhD, Dr, Ir	Policy, International and Research Development, Occupational Safety and Health.
2	IPG Kota Bharu Campus	PhD, Dr	Occupational Safety and Health at Educational Institution.
3	IPG Kota Bharu Campus	PhD, Dr	Management and Administration at Educational Institution.

Source: Authors' field study.

of the sample is simply random within 277 academic lecturers during the period of data collecting from May 1st 2022 to June 30th 2022 (two months).

Data Analysis

The Rasch model analysis with MINISTEP version 4.8.2 was used to measure the reliability and validity of OSHMP instruments. The Rasch Measurement Model is a psychometric technique designed to calculate respondent achievement, monitor instrument quality, enhance instrument accuracy (Boone, 2016), and anticipate the likelihood that respondents would choose a certain response (Mahmud & Porter, 2015). Analysis of the Rasch Measurement Model generates a logit that can assess a person's ability to answer items based on item difficulty and item fit, in turn, serves to assess item suitability in terms of whether functioning normally in performing proper measurements (Lina Wøhlk Olsen, 2003; Sumintono & Widhiarso, 2015). In addition, improper responses suggest that the respondent had a misunderstanding of the item.

Results

Item Measure

The level of item difficulty in Rasch analysis can be determined by examining the measure order table. In this table, a joint maximum-likelihood estimation measure has been ordered such that the item with the greatest value is the most difficult. In contrast, the item with the lowest value represents the item with the least amount of difficulty. There are four categories of items' difficulty level which are the value >1 shows the most difficult item, the value of 0 – 1 unveils the difficult item, the value of -1 – 0 reveals the easy item, and the value of < -1 displays the easiest item (Sumintono & Widhiarso, 2015). Based on the level of difficulty, the items' analysis performed Q5 (1.68) and Q11 (1.34) are the most difficult, as indicated in Table 6.

Reliability Analysis

The altitude of instrument reliability can be regulated by means of Cronbach Alpha's interpretation value, which has the range of $0.00 < \alpha < 1.0$. If purportedly the range value extends to 1.0, it indicates reliability is good,

Table 5: Research population and sample

Location	Total Population	Total Sample
IPG Kampus Bahasa Antarabangsa	98	12
IPG Kampus Raja Malewar	85	18
IPG Kampus Kota Bharu	94	21
	277	**51**

Source: Authors' field study.

high, and effective. Whilst the range approaches 0.00, it justifies the level of low reliability. The value of reliability, which is less than $\alpha < 0.60$, is deemed inadequate and unacceptable. In contrast, a reliability value that exceeds $\alpha > 0.70$ is acceptable, and a reliability value that exceeds $\alpha > 0.8$ is good and satisfactory (Uma Sekaran, 2003). Based on Table 7, the value of reliability for safety management and occupational health practice dimension has been analysed against 19 items, which presents the value of 0.933 and reveals that all items in this dimension are inclusively very reliable and operational with a high level of consistency (Boone *et al*., 2014). Nonetheless, as reliability analysis is undertaken against every construct in that dimension, it discloses the management commitment construct suffers a low value at 0.643, whereby Q5 is recognised as a requisite item to be enhanced or abandoned (Bond, 2015). The new Cronbach's Alpha set value, if Q5 is to be abandoned, is at 0.925. The reliability value for other constructs is in a good range and acceptable between 0.807 and 0.952.

Analysis of Reliability Index and Separation for Items and Individuals

In this study, the acceptance range for the item and individual reliability values is based on the recommendations of Sumintono and Widhiarso (2015), as shown in Table 8. The results of the analysis obtained are shown in Table 9, showing the value of individual reliability as 0.88, which indicates good and acceptable. These individual reliability values indicate the items tested can distinguish one individual's ability from another, while the item reliability value is 0.82, which indicates good and acceptable. The reliability value of this item indicates that the item is equivalent even though the same item is assigned to another group of individuals with similar characteristics (Sumintono &

Table 6: OSHMPQ item difficulty level result summary

Item	JMLE	Interpretation
Q5	1.68	Very difficult
Q11	1.34	Very difficult
Q9	0.37	Difficult
Q12	0.70	Difficult
Q13	0.28	Difficult
Q14	0.04	Difficult
Q16	0.04	Difficult
Q17	-0.11	Easy
Q3	-0.16	Easy
Q1	-0.21	Easy
Q7	-0.21	Easy
Q19	-0.27	Easy
Q6	-0.32	Easy
Q18	-0.38	Easy
Q2	-0.43	Easy
Q10	-0.43	Easy
Q15	-0.43	Easy
Q8	-0.49	Easy
Q4	-0.67	Easy

Source: Authors' field study.

Table 7: The reliability analysis results for the complete instrument and each construct

Construct	Alpha Cronbach Value	Interpretation
Occupational Safety and Health Management Practice Domain	0.933	Very good and highly effective with a high level of consistency
Management Commitment	0.925	Very good and effective with a high level of consistency
Management Priority	0.807	Good and acceptable
Organisational Communication	0.820	Good and acceptable
Organisational Involvement	0.924	Very good and effective with a high level of consistency

Source: Authors' field study.

Widhiarso, 2015). Meanwhile, the individual and item separation index showed good results as it exceeded the value of 2.0 (Boone *et al*., 2014). The value of the individual separation index was 2.77 (rounded to 3), indicating 3 levels of ability identified in the sample tested, while the value of the item separation index was 2.17 (rounded to 2). This is where there were two different levels of item agreement. Based on the results of reliability analysis and item and individual segregation index, the OSHMP instrument meets the criteria and is at a good and acceptable level.

Polarity Analysis and Item Fit

In Rasch analysis, the level of polarity and item fit can be measured by looking at the misfit order table. In this table, the outfit Means-Square Values (MNSQ), Outfit Z-Standard (Z-STD), and Point Measure Correlation (PTMEA-CORR) are the criteria used to see the level of item suitability. Acceptance ranges for polarity values and item suitability are based on the recommendations of Boone *et al*. (2014) as shown in Table 10. The findings of the analysis are presented in Table 11. The polarity analysis

Table 8: Measurement tables to determine item and individual reliability scales

Item and Individual Reliability Values	Interpretation
< 0.67	Low
0.67 – 0.80	Medium
0.81 – 0.90	Good
0.91 – 0.94	Tinggi
> 0.94	Very high

Source: (Sumintono & Widhiarso, 2015).

Table 9: OSHMP reliability values and separation indices for items and individuals

Result	Value	Interpretation
Cronbach alpha	0.933	High
Individual Reliability	0.88	Good and accepted
Item Reliability	0.82	Good and accepted
Individual separation	2.77	Good
Item separation	2.17	Good

Source: Authors' field study.

Table 10: Acceptance range values for polarity and item suitability level

Statistic	Acceptance Range Values
Outfit Mean Square	0.5 < MNSQ < 1.5
Outfit Z-standard	-2.0 < Z-STD < +2.0
Point Measure Correlation	0.4 < PT-MEA CORR < 0.85

Source: (Boone *et al*., 2014).

Table 11: OSHMPQ polarity and item fit values result in summary

Item	Outfit MNSQ	Outfit Z-std	PT-MEA CORR
Q1	0.71	-1.17	0.71
Q2	0.59	-1.77	0.74
Q3	1.27	1.05	0.62
Q4	0.48	-2.39	0.74
Q5	5.28	9.91	0.12
Q6	1.12	0.54	0.69
Q7	0.6	-1.77	0.72
Q8	0.52	-2.14	0.73
Q9	3.5	6.56	0.25
Q10	0.49	-2.33	0.72
Q11	2.31	4.75	0.51
Q12	0.98	-0.01	0.67
Q13	0.35	-3.58	0.76
Q14	0.42	-3.29	0.75
Q15	0.53	-2.09	0.68
Q16	0.44	-2.82	0.76
Q17	0.61	-1.74	0.73
Q18	0.84	-0.58	0.64
Q19	0.73	-1.08	0.64

Source: Authors' field study.

of items using the PTMEA-CORR value shows that the items in the OSHMP instrument are a positive value (+) moving in the same direction according to the measured construct (Boone *et al*., 2014). However, 2 items are outside the polarity value of the item, which is less than 0.4, namely item Q5 (0.12) and item Q9 (0.25). Based on the item polarity analysis results, the OSHMP instrument used works in a parallel direction, as all values are positive. In item fit analysis by evaluating outfit MNSQ and Z-STD. According to Boone *et al*. (2014), outfit MNSQ values should be in the range between 0.5 and 1.5 to ensure the item developed is suitable for measuring constructs. If the value obtained is greater than 1.5, the item is misleading. If the value is less than 0.5, it indicates that the respondent expected the item to be too simple. The results of the analysis showed that 8 items were outside the acceptance range, i.e., items Q5, Q9, and Q11 were above the value of 1.5, i.e., the items were very confusing while Q10, Q4, Q16, Q14, and Q13 were less than 0.5, i.e., the items were very simple. In addition, the value

of the Z-STD outfit needs to be in the range of -2 to +2. The results of the analysis showed that 10 items were outside the acceptance range, namely items Q5, Q9, and Q11 were above the value of +2.0 while Q15, Q8, Q10, Q4, Q16, Q14, and Q13 were less than -2.0.

Based on these three criteria, there are a few interpretations as to whether to abandon or retain the items, such as Boone *et al*. (2014), if the item is outside the acceptable range and does not satisfy each standard, it is thus unacceptable. However, Linacre (2007) has a different opinion: If the item justifies the outfit MNSQ value as acceptable, the Z-STD outfit index may be disregarded even though it is outside the acceptable range. An identical interpretation by Sumintono and Widhiarso (2015) clarifies that if the item fulfils one of the criteria, the item should thus be retained (Jamilah Ahmad & Siew Nyet Moi @ Sopiah Abdullah, 2020). Based on the executed analysis, it was learned that items Q5 and Q9 will be discarded due to failure to satisfy all three standards.

Analysis Residual Principal Component Analysis (PCA)

The unidimensionality of an instrument is important to assess whether the developed instrument is capable of measuring what it is supposed to measure (Sumintono & Widhiarso, 2015). Developed items should test constructs that measure one dimension only. Rasch analysis using the Residual Principal Component Analysis (PCA) technique allows for identifying side factors that threaten a single construct. Linacre (2007) emphasised that the best variance value is > 60%, as shown in Table 12.

PCA results revealed that the variance explained by the OSHMPQ instrument is 55.6%, and the expected model is 59.2%. The model meets the minimum acceptance requirement value and is in a good range. Thus, it may be argued that the OSHMP instrument contains strong unidimensional evidence and measures the intended construct. Non-attainment of the expected model result is due to item interference or ambiguous crude variance of 10.5% in comparison 1. The value is deemed good and sufficient if it is less than 15%.

Discussion

This paper aims to evaluate the reliability and validity of the OSHMPQ as an initial step in associating the level of OSHMP for the study of OSH in the PEI in Malaysia. The OSHMPQ was designed for Malaysian civil servants in public education institutions. Thus, the OSHMPQ is a modified item available in Malay translation. At the time of the data collection, there were no inquiries regarding the questionnaire from any of the respondents. Aside from that, the session did not indicate any issues with the instrument's accessibility. The study population responded positively to the questionnaire in terms of clarity, question arrangement, spelling errors, and accessibility.

Table 13 shows overall, the reliability value Cronbach's Alpha for the OSHMPQ is high at $\alpha = 0.933$, a clear suggestion of a very good and effective OSHMP instrument with a high level of consistency. Note that the reliability value for each construct is within an acceptable range, between $\alpha = 0.807$ and $\alpha = 0.952$, except for the management commitment construct, which is $\alpha = 0.643$. It is considered weak and unsatisfactory

Table 12: Unidimensionality based on value -described raw variants

Value	Interpretation
≥ 20%	Accepted
≥ 40%	Good
≥ 60%	Very good

Source: (Linacre, 2007).

Table 13: The reliability analysis results and isolation for each item and individual

Test	Result	Interpretation
Cronbach's Alpha	0.933	The level of OSHMP instrument reliability is very high, close to 1.0, which explains that reliability is at a good, high, and effective level (Uma Sekaran, 2003).
Individual reliability	0.88	Item testing can afford to distinguish an individual's ability from another individual at an appropriate level (Sumintono & Widhiarso, 2015).
Item reliability	0.82	Items are equivalent even though a similar item is presented to a group of different individuals at an appropriate level (Sumintono & Widhiarso, 2015).
Individual Isolation	2.77	Item can distinguish individuals based on ability at a good level (Sumintono & Widhiarso, 2015).
Item isolation	2.17	Item is capable of isolating items based on the level of difficulty at a good level (Sumintono & Widhiarso, 2015).
PCA observed	55.6%	The variant explained by the OSHMP instrument is at 55.6%, with the value of the expected model at 59.2%, and satisfies the minimal need for acceptable value and within a good range (Linacre, 2007; Sumintono & Widhiarso, 2015).
PCA expected	59.2%	

Source: Authors' field study

(Sekaran, U. & Bougie, 2009). The items tested are equivalent despite giving the same item to another group of individuals; the item reliability value is 0.82, which indicates good and acceptable, and the individual reliability value is 0.88. It represents good and acceptable to distinguish the ability of one individual from another individual is also good and acceptable. In addition, the value of the individual isolation index was 2.77 (rounded to 3), indicating 3 levels of ability identified in the sample tested. In contrast, the value of the item isolation index was 2.17 (rounded to 2), indicating there were 2 different levels of item agreement. In summary, results from the person and item reliability index and the high-reliability value in each construct confirmed that the OSHMPQ was admissible and suitable to describe OSHMP within the local context. The components in this constructed OSHMP instrument have strong unidimensional evidence and are capable of measuring 55.6% of the dimensions of OSH management practices based on PCA values, which are viewed as good if greater than 40%. Because all PTMEA-CORR readings are positive, the item polarity analysis indicates that the OSHMP instrument utilised operates in a parallel direction. If the value is positive, then the objects functioned in the same direction as the domain that was being measured. It appears to be heading on a specific path based on these factors. An examination of this domain's structure demonstrates how well the relationship between the item and the respondent is established. Measurement of domain validity begins with this analysis.

Based on three tests conducted, which are Outfit MNSQ, Outfit Z-STD, and PTMEA-CORR, it was discovered that item Q5 and item Q9 are deficient in satisfying the required prerequisite and should be removed from OSHMPQ. Item Q5 is an item to evaluate a construct of management commitment adapted from Cox and Cheyne's (2000) research. The reliability value of the management commitment construct (Cronbach's Alpha) is at $\alpha = 0.643$, which is weak and unsatisfactory (Sekaran, U. & Bougie, 2009) where item Q5 is suggested to be removed where the new value of the management commitment reliability construct is at $\alpha = 0.925$. This is the most challenging item with the highest joint maximum-likelihood estimation (JMLE) value

measure at 1.68 and very perplexing based on the Outfit MNSQ value at 5.28. Aside from that, the Outfit Z-STD and PTMEA-CORR values also demonstrate item Q5 is outside of the predetermined acceptance range. As for item Q9, it is an item that evaluates the management priority construct adapted from Vinodkumar and Bhasi's (2010) research. The reliability value of (Cronbach's Alpha) management priority construct is at $\alpha = 0.807$, which is considered good and can be accepted. This item is placed third on the list of challenging items as well as misperceiving with JMLE value measure at 0.37 based on Outfit MNSQ value at 3.50. Apart from that, Outfit Z-STD and PTMEA-CORR also demonstrate item Q9 is outside of the predetermined acceptance range. Even though there are other items deemed unfit of the predetermined acceptance range, only those that do not meet three criteria, particularly means-square outfit, Z-STD, and PTMEA-CORR, are preconditions used to administer the suitability of the item.

Conclusion

The Rasch measurement model was useful in determining the validity and reliability of the research instrument because it could explain the constructs of valid items and provide a consistent description of the measured constructs based on the theoretical assumptions. This model could be applied to legitimate response patterns and reliable measurement items. Note that 12 modification items are accepted due to the predetermined acceptance item fulfilment and sufficiently adept at measuring OSHMP for physical and psychosocial safety climates. Between the 7 adapted items, it was learned that 2 items did not meet the prerequisite of acceptance: Item Q5, which measures management commitment. On the other hand, item Q9 which measures management priority construct. Item Q5 was adapted from Cox and Cheyne's (2000) research, while item Q9 was adapted from Vinodkumar and Bhasi's (2010) research. Therefore, items Q5 and Q9 will be removed from the OSHMP instrument. Distinctively, the OSHMPQ reliability value is very good and effective with high consistency. Items tested are equivalent even though the same items were distributed to different groups of individuals. The items are also competent in distinguishing an individual's aptitude from another. Aside from that, the tested items are qualified to segregate items by level of difficulty and set apart individual based on their capability. The raw variant level is justified by the achieved measurement at 55.6% as compared to the projected model at 59.2% caused by 10.5% item disorder or uncertain raw variance. Therefore, it can be concluded that OSHMPQ boasts strong unidimensional evidence and can categorically measure the intended construct.

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Conflict of Interest Statement

The authors declared that they have no conflict of interest.

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APPENDIX

APPENDIX 1: The level of item difficulty

ITEM STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	JMLE MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PTMEASUR-AL CORR.	PTMEASUR-AL EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
5	155	51	1.68	.18	3.74	8.73	5.28	9.91	.12	.72	22.9	45.8	Q5
11	165	51	1.34	.19	2.07	4.24	2.31	4.75	.51	.70	29.2	46.5	Q11
9	190	51	.37	.21	2.59	5.02	3.50	6.56	.25	.64	60.4	57.5	Q9
12	190	51	.37	.21	.89	-.45	.98	-.01	.67	.64	64.6	57.5	Q12
13	192	51	.28	.21	.39	-3.49	.35	-3.58	.76	.64	81.3	57.9	Q13
14	197	51	.04	.22	.42	-3.12	.37	-3.29	.75	.62	81.3	61.7	Q14
16	197	51	.04	.22	.44	-3.00	.44	-2.82	.76	.62	77.1	61.7	Q16
17	200	51	-.11	.23	.57	-2.09	.61	-1.74	.73	.61	66.7	62.6	Q17
3	201	51	-.16	.23	1.15	.68	1.27	1.05	.62	.61	75.0	62.8	Q3
1	202	51	-.21	.23	.80	-.81	.71	-1.17	.71	.61	68.8	62.9	Q1
7	202	51	-.21	.23	.71	-1.30	.60	-1.77	.72	.61	72.9	62.9	Q7
19	203	51	-.27	.23	.84	-.64	.73	-1.08	.64	.60	64.6	63.0	Q19
6	204	51	-.32	.23	.61	-1.86	1.12	.54	.69	.60	72.9	63.0	Q6
18	205	51	-.38	.24	.91	-.31	.84	-.58	.64	.60	66.7	63.0	Q18
2	206	51	-.43	.24	.64	-1.67	.59	-1.77	.74	.59	68.8	63.3	Q2
10	206	51	-.43	.24	.50	-2.48	.49	-2.33	.72	.59	72.9	63.3	Q10
15	206	51	-.43	.24	.69	-1.39	.53	-2.09	.68	.59	75.0	63.3	Q15
8	207	51	-.49	.24	.56	-2.15	.52	-2.14	.73	.59	70.8	63.2	Q8
4	210	51	-.67	.24	.49	-2.62	.48	-2.39	.74	.58	68.8	64.4	Q4
MEAN	196.7	51.0	.00	.22	1.00	-.46	1.14	-.21			66.3	60.3	
P.SD	13.9	.0	.59	.02	.85	3.08	1.23	3.47			14.8	5.3	

APPENDIX 2: Analysis of reliability index and separation for items and individuals

SUMMARY OF 51 MEASURED (EXTREME AND NON-EXTREME) PERSON

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	73.3	19.0	1.67	.46				
SEM	1.6	.0	.28	.05				
P.SD	11.1	.0	1.95	.36				
S.SD	11.2	.0	1.97	.37				
MAX.	95.0	19.0	7.50	1.85				
MIN.	42.0	19.0	-1.45	.26				
REAL RMSE	.66	TRUE SD	1.83	SEPARATION	2.77	PERSON RELIABILITY	.88	
MODEL RMSE	.59	TRUE SD	1.86	SEPARATION	3.16	PERSON RELIABILITY	.91	
S.E. OF PERSON MEAN = .28								

PERSON RAW SCORE-TO-MEASURE CORRELATION = .92

CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .93 SEM = 2.86

STANDARDIZED (50 ITEM) RELIABILITY = .96

SUMMARY OF 19 MEASURED (NON-EXTREME) ITEM

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	196.7	51.0	.00	.22	1.00	-.46	1.14	-.21
SEM	3.3	.0	.14	.00	.20	.73	.29	.82
P.SD	13.9	.0	.59	.02	.85	3.08	1.23	3.47
S.SD	14.2	.0	.61	.02	.87	3.16	1.26	3.56
MAX.	210.0	51.0	1.68	.24	3.74	8.73	5.28	9.91
MIN.	155.0	51.0	-.67	.18	.39	-3.49	.35	-3.58
REAL RMSE	.25	TRUE SD	.54	SEPARATION	2.17	ITEM RELIABILITY	.82	
MODEL RMSE	.23	TRUE SD	.55	SEPARATION	2.43	ITEM RELIABILITY	.86	
S.E. OF ITEM MEAN = .14								

APPENDIX 3: Item Fit Table

ITEM STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	JMLE MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PTMEASUR-AL CORR.	PTMEASUR-AL EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
5	155	51	1.68	.18	3.74	8.73	5.28	9.91	A .12	.72	22.9	45.8	Q5
9	190	51	.37	.21	2.59	5.02	3.50	6.56	B .25	.64	60.4	57.5	Q9
11	165	51	1.34	.19	2.07	4.24	2.31	4.75	C .51	.70	29.2	46.5	Q11
3	201	51	-.16	.23	1.15	.68	1.27	1.05	D .62	.61	75.0	62.8	Q3
6	204	51	-.32	.23	.61	-1.86	1.12	.54	E .69	.60	72.9	63.0	Q6
12	190	51	.37	.21	.89	-.45	.98	-.01	F .67	.64	64.6	57.5	Q12
18	205	51	-.38	.24	.91	-.31	.84	-.58	G .64	.60	66.7	63.0	Q18
19	203	51	-.27	.23	.84	-.64	.73	-1.08	H .64	.60	64.6	63.0	Q19
1	202	51	-.21	.23	.80	-.81	.71	-1.17	I .71	.61	68.8	62.9	Q1
7	202	51	-.21	.23	.71	-1.30	.60	-1.77	J .72	.61	72.9	62.9	Q7
15	206	51	-.43	.24	.69	-1.39	.53	-2.09	i .68	.59	75.0	63.3	Q15
2	206	51	-.43	.24	.64	-1.67	.59	-1.77	h .74	.59	68.8	63.3	Q2
17	200	51	-.11	.23	.57	-2.09	.61	-1.74	g .73	.61	66.7	62.6	Q17
8	207	51	-.49	.24	.56	-2.15	.52	-2.14	f .73	.59	70.8	63.2	Q8
10	206	51	-.43	.24	.50	-2.48	.49	-2.33	e .72	.59	72.9	63.3	Q10
4	210	51	-.67	.24	.49	-2.62	.48	-2.39	d .74	.58	68.8	64.4	Q4
16	197	51	.04	.22	.44	-3.00	.44	-2.82	c .76	.62	77.1	61.7	Q16
14	197	51	.04	.22	.42	-3.12	.37	-3.29	b .75	.62	81.3	61.7	Q14
13	192	51	.28	.21	.39	-3.49	.35	-3.58	a .76	.64	81.3	57.9	Q13
MEAN	196.7	51.0	.00	.22	1.00	-.46	1.14	-.21			66.3	60.3	
P.SD	13.9	.0	.59	.02	.85	3.08	1.23	3.47			14.8	5.3	

APPENDIX 4: Principal Component Analysis (PCA)

Table of STANDARDIZED RESIDUAL variance in Eigenvalue units = ITEM information units

	Eigenvalue	Observed		Expected
Total raw variance in observations =	38.2548	100.0%		100.0%
Raw variance explained by measures =	21.2548	55.6%		59.2%
Raw variance explained by persons =	16.0098	41.9%		44.6%
Raw Variance explained by items =	5.2450	13.7%		14.6%
Raw unexplained variance (total) =	17.0000	44.4%	100.0%	40.8%
Unexplned variance in 1st contrast =	4.0050	10.5%	23.6%	
Unexplned variance in 2nd contrast =	2.7669	7.2%	16.3%	
Unexplned variance in 3rd contrast =	1.6821	4.4%	9.9%	
Unexplned variance in 4th contrast =	1.3969	3.7%	8.2%	
Unexplned variance in 5th contrast =	1.3723	3.6%	8.1%	

APPENDIX 5: OSHMPQ Instrument

1	Di tempat kerja saya, pihak pengurusan bertindak cepat dalam menangani masalah/ isu yang boleh menjejaskan keselamatan dan kesihatan pekerja.	1 2 3 4 5
	In my workplace, my management acts quickly to correct problems/issues that affect employees' safety and health.	
2	Di tempat kerja saya, pihak pengurusan sangat bertegas apabila terdapat perkara yang dibangkitkan berkaitan dengan status keselamatan dan kesihatan pekerja.	1 2 3 4 5
	My management acts decisively when a concern of an employees' Safety and health status is raised.	
3	Di tempat kerja saya, pihak pengurusan bertindak cepat untuk menyelesaikan masalah berkenaan nyaris kemalangan atau kemalangan yang hampir berlaku jika ianya berkaitan dengan keselamatan dan kesihatan pekerja.	1 2 3 4 5
	When near-miss safety and health accidents are reported, my management acts quickly to solve the problems.	
4	Di tempat kerja saya, pihak pengurusan menunjukkan sokongan melalui keterlibatan dan komitmen terhadap keselamatan dan kesihatan pekerja.	1 2 3 4 5
	My management shows support for safety and health injury prevention through involvement and commitment.	
5	Di tempat kerja saya, pihak pengurusan hanya bertindak selepas berlakunya kemalangan pekerjaan.	1 2 3 4 5
	Management acts only after accidents have occurred.	
6	keselamatan dan kesihatan kakitangan adalah keutamaan untuk organisasi tempat saya bekerja.	1 2 3 4 5
	Safety and health of staff is a priority for this organisation.	
7	Pihak pengurusan secara jelas memberikan tumpuan terhadap keselamatan dan kesihatan pekerja sebagai satu keutamaan.	1 2 3 4 5
	My management clearly considers the safety and health of employees to be of great importance.	
8	Pihak pengurusan mengambilkira keselamatan dan kesihatan pekerja sama penting dengan produktiviti.	1 2 3 4 5
	My management considers employee safety and health to be as important as productivity.	
9	Saya merasakan pihak pengurusan bersedia untuk berkompromi dengan keselamatan dan kesihatan untuk meningkatkan produktiviti.	1 2 3 4 5
	I feel that management is willing to compromise on safety and health to increase productivity.	
10	Pihak pengurusan sangat mematuhi peraturan dan prosedur keselamatan dan kesihatan.	1 2 3 4 5
	Safety and health rules and procedures are strictly followed by the management.	
11	Di tempat kerja saya, terdapat komunikasi yang baik berkaitan keselamatan dan kesihatan yang boleh menjejaskan saya.	1 2 3 4 5
	There is good communication here about safety and health issues which affect me.	

12	Maklumat berkaitan dengan keselamatan dan kesihatan tempat kerja selalu dibincangkan oleh pengurus/ penyelia atasan saya.	1 2 3 4 5
	Information about workplace safety and health is always brought to my attention in this organisation.	
13	Di tempat kerja saya, pihak pengurusan mengambil perhatian terhadap pandangan saya untuk menyelesaikan masalah berkaitan keselamatan dan kesihatan pekerjaan.	1 2 3 4 5
	My complaints, remarks and contributions to resolving safety and health concerns safety in the organisation is listened to.	
14	Pengurusan mengamalkan "dasar pintu terbuka" mengenai isu keselamatan dan kesihatan.	1 2 3 4 5
	Management operates an open-door policy on safety and health issues	
15	Saya tahu saluran yang sesuai untuk melaporkan keperihatinan berkenaan keselamatan dan kesihatan.	1 2 3 4 5
	I know the proper channels to report my concerns.	
16	Penyertaan dan perundingan di antara pekerja dan wakil dari pihak berkaitan dalam membincangkan hal-hal keselamatan dan kesihatan wujud di tempat kerja saya.	1 2 3 4 5
	Participation and consultation in safety and health occurs with employees, works councils and health and safety coordinators.	
17	Pekerja adalah digalakkan untuk turut serta dalam hal-hal yang berkaitan dengan keselamatan dan kesihatan.	1 2 3 4 5
	Employees are encouraged to become involved in safety and health matters.	
18	Pencegahan kemalangan bagi keselamatan dan kesihatan melibatkan semua peringkat pekerja dalam organisasi.	1 2 3 4 5
	In my organisation, the prevention of safety and health injury involves all levels of the organisation.	
19	Terdapat Jawatankuasa Keselamatan Dan Kesihatan (JKKP) di IPG saya bertugas yang terdiri daripada wakil pengurusan dan pekerja.	1 2 3 4 5
	My workplace has safety committees consisting of representatives of management and employees.	