



UNIVERSITI PUTRA MALAYSIA

***PERCEPTIONS OF SAFETY AND HEALTH PRACTITIONERS ON THE
ROLES AND IMPORTANCE OF NATIONAL NON-GOVERNMENTAL
ORGANIZATIONS (NGOs) IN ENHANCING OCCUPATIONAL SAFETY
AND HEALTH (OSH) PERFORMANCE IN MALAYSIA***

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**A PROJECT PAPER SUBMITTED AS PARTIAL REQUIREMENT FOR THE
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ABSTRACT

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Background: In fulfilling their duties, Safety and Health Practitioners (SHP) are expected to continuously improve, keeping themselves with up-to-date knowledge, best practices, legislative provisions, development, and innovation, etc.; all of which can be achieved collectively via activities and programs regularly established by Occupational Safety and Health based Non-Governmental Organizations (OSH-NGOs). However, little is known on the perception of SHP towards the roles and contribution of OSH-NGOs enhancing OSH performance in Malaysia. **Objective:** This study intended to determine the perceptions of Safety and Health Practitioners (SHP) on the roles and importance of OSH-NGOs in enhancing Occupational Safety and Health (OSH) performances in Malaysia as well as the associated and predictive factors. **Methodology:** A cross-sectional study with convenience sampling method was employed in this study. A validated and pre-tested self-administered questionnaire were distributed to the target participants via social medias in the form of online survey link. SPSS Version 25 was used to analyze all the data received. **Result:** A total of 188 SHP participated in this study, most of which were male (60.1%) within the mean age of 33 ± 9.44 years old with university level degrees (72.9%), married (66.0%), working in the manufacturing (33.0%) and construction industries (22.1%) with a mean of 8 ± 9.87 years working experiences. With most of the respondents (96.3%) were aware of the existence of OSH-NGOs, most had in occasion joined the activities organized by these OSH-NGOs despite only half (54.8%) became a member for at least one OSH-NGOs. Overall, the perceptions among the respondents were positive towards the roles and importance of OSH-NGOs in enhancing OSH performances in Malaysia. However, the perceptions were not significantly associated with any of the sociodemographic factors, occupational experiences, or their involvement in the activities by the OSH-NGOs. Nevertheless, it was surprising to find that education level significantly predicts their perceptions towards OSH-NGOs; lower education level (pre-university) was at higher odd of reporting negative perceptions. **Conclusion:** In alignment with the concept of self-regulation in the Occupational Safety and Health Act, 1994, OSH-NGOs is one of the many stakeholders in OSH which should be in the arsenal of roadmap, master and action plans in enhancing OSH performance in Malaysia through strategic partnership.

Keywords: *OSH, NGOs, perceptions, roles, contribution, performance*

**PERSEPSI PENGAMAL KESELAMATAN DAN KESIHATAN TERHADAP
PERANAN DAN KEPENTINGAN NGO UNTUK MENINGKATKAN
PRESTASI KESELAMATAN DAN KESIHATAN PEKERJAAN (KKP) DI
MALAYSIA**

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ABSTRAK

Pengerusi : Profesor Madya Ng Yee Guan, PhD
Fakulti : Perubatan dan Sains Kesihatan

Latar belakang: Dalam memenuhi tugas mereka, Pengamal Keselamatan dan Kesihatan diharapkan dapat terus meningkatkan prestasi diri, melengkapkan diri mereka dengan pengetahuan terkini, melaksanakan kerja dengan baik, mematuhi undang-undang, pembangunan diri, dan inovasi, dll.; semuanya dapat dicapai secara kolektif melalui aktiviti dan program secara berkala yang dijalankan oleh Organisasi Bukan Kerajaan yang berasaskan Keselamatan dan Kesihatan Pekerjaan (NGO-KKP). Walau bagaimanapun, sedikit yang diketahui mengenai persepsi Pengamal Keselamatan dan Kesihatan terhadap peranan dan sumbangan (NGO-KKP) untuk meningkatkan prestasi Keselamatan dan Kesihatan Pekerjaan (KKP) di Malaysia.

Objektif: Kajian ini bertujuan untuk menentukan persepsi Pengamal Keselamatan dan Kesihatan terhadap peranan dan kepentingan NGO-KKP dalam meningkatkan prestasi KKP di Malaysia serta hubungan dan faktor-faktor yang mempengaruhi persepsi. **Metodologi:** Kajian keratan rentas dengan kaedah persampelan mudah telah digunakan dalam kajian ini. Satu set soal selidik yang berstruktur dan disahkan telah diedarkan kepada peserta sasaran melalui media sosial dalam bentuk pautan tinjauan dalam talian. SPSS Versi 25 digunakan untuk menganalisis semua data yang diterima. **Hasil kajian:** Sebanyak 188 KKP mengambil bahagian dalam kajian ini, yang kebanyakannya ialah lelaki (60.1%) dalam purata usia 33 ± 9.44 tahun, mempunyai ijazah sarjana muda (72.9%), sudah berkahwin (66.0%), bekerja di industri perkilangan (33.0 %) dan industri pembinaan (22.1%) dengan purata 8 ± 9.87 tahun pengalaman bekerja. Sebilangan besar responden (96.3%) menyedari kewujudan NGO-KKP, yang kebanyakannya menyertai aktiviti yang dianjurkan oleh NGO-KKP ini walaupun hanya separuh (54.8%) menjadi ahli untuk sekurang-kurangnya satu NGO-KKP. Secara keseluruhan, persepsi di kalangan responden ialah positif terhadap peranan dan kepentingan NGO-KKP dalam meningkatkan prestasi KKP di Malaysia. Walau bagaimanapun, persepsi terhadap NGO-KKP tidak mempunyai hubungan dengan faktor sosiodemografi, pengalaman pekerjaan, atau keterlibatan mereka dalam NGO-KKP. Walaupun begitu, sangat mengejutkan apabila didapati bahawa tahap pendidikan mempengaruhi persepsi mereka terhadap NGO-KKP; tahap pendidikan rendah (pra-universiti) berada pada tahap yang lebih tinggi untuk melaporkan persepsi negatif. **Kesimpulan:** Selaras dengan konsep aturan sendiri dalam Akta Keselamatan dan Kesihatan Pekerjaan, 1994, NGO-KKP ialah salah satu daripada pihak yang berkepentingan dalam KKP yang seharusnya terlibat dalam rancangan tindakan untuk meningkatkan prestasi KKP di Malaysia melalui perkongsian strategik.

Kata kunci: *NGO-KKP, persepsi, peranan, sumbangan, prestasi*

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ABBREVIATIONS

NGO	Non-Governmental Organization
SHP	Safety and Health Practitioners
OSH	Occupational Safety and Health
OSHMP 2020	Occupational Safety And Health Master Plan 2020
MSOSH	Malaysian Society For Occupational Safety and Health
MOHPA	Malaysian Occupational Health Practitioners Association
HFEM	Human Factors and Ergonomics Society Malaysia
MOSHPA	Malaysian Occupational Safety and Health Practitioners Association
MIHA	Malaysian Industrial Hygiene Association
PESHA	Pahang Environment Safety and Health Association
NRGSHE	Northern Region Group Safety Health Environment
MiSHA	Malaysian Industrial Safety and Health Association
MAEH	Malaysia Association of Environmental Health
MSIEA	Malaysian Steam and Internal Combustion Engine Engineer Association
FMM	Federation of Malaysian Manufacturers
MSHR	Malaysian Society for Hard Reduction
MARPA	Malaysian Radiation Protection Association

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

1.1.1 OVERVIEW OF NON-GOVERNMENTAL ORGANIZATIONS

Non-Governmental Organizations (NGOs) are non-profit establishment or entity that are not part of the government agencies, but they may receive some funding from the government. NGOs are also defined as organizations that generally pursue a public interest agenda rather than commercial interests (Hall-Jones, 2006). NGOs can either be funded by the public or private grants (McGann & Johnstone, 2006) where they are typically membership-based. Grants aside, some NGOs may steer into profit-making activities whereas some others are completely dependent upon the governments for funding (Hall-Jones, 2006).

NGOs can have a massive impact on any sector they work in. This is because they are unfettered, not connected to specific agendas, and most importantly, can act independently (Young & Dhanda, 2013). It is a substantial benefit to NGOs to maintain their institutional independence and political neutrality (Asamoah, 2003). Although NGOs are diverse organizations, they have one common goal: they are usually focused on short-term targets, but they work on long-term issues. Another benefit of NGOs is that they have the trust of the public which is an advantage for them to carry out their work (Hall-Jones, 2006).

1.1.2 OCCUPATIONAL SAFETY AND HEALTH BASED NON-GOVERNMENTAL ORGANIZATIONS (OSH-NGOS)

With respect to the occupational safety and health (OSH) discipline, there are various types of international, national, and expert/professional-based NGOs. Depending on the objectives of their establishment, different NGOs focus on a specific or combination of a variety of disciplines or sub-disciplines on OSH. This includes but not limited to standardization, technical, medical, social, and legal aspects as well as specific sectors of economic activities, professions, and social groups (International Labour Organization, 2015).

Activities organized by OSH-NGOs generally include providing education, training, and forums in the form of workshops, conferences and short seminars while some expert-based NGOs may be involved in consultation activities. All those activities are important in order to provide information on professional issues and for the exchange of ideas and information. It is also to prevent occupational accidents and diseases among workers.

The membership of OSH-NGOs may consist of individual person of certain specialist or generalist, a group of similar standing such as employees and employers, national associations or institutions, producers or manufacturers which collectively addresses occupational safety and health issues and challenges (ILO, 2015). The networks of NGOs allow exchange of multi-disciplinary knowledge and capabilities

(ILO, 2015) through formal and informal activities, meetings, dialogues, etc. (ILO, 2015).

In Malaysia, NGOs are legally bound to register with Registrar of Societies (Societies Act, 1966). Among prominent national level society on OSH is the Malaysian Society for Occupational Safety and Health (MSOSH). There are also state level societies such as the Pahang Environmental Safety and Health Association, regional level societies such as Northern and Southern Region Group Safety, Health and Environment, etc. while professional societies on OSH includes but not limited to societies such as Human Factors and Ergonomics Society Malaysia (HFEM), Malaysian Industrial Hygiene Association (MIHA), Malaysian Occupational Scaffolding Association (MOSA), Malaysian Society of Occupational Health Doctors (MSOHD), Academy of Occupational and Environmental Medicine Malaysia (AOEMM) and Society of Occupational and Environmental Medicine (SOEM).

For the purpose of this study, the OSH-NGOs shall only include non-politically affiliated, state or national non-governmental organization.

1.2 PROBLEM STATEMENT

Despite the efforts of the OSH authorities and other stakeholders on OSH (i.e.: accident-avoidance program and workplace accident-free week program, enforcement, etc.), accidents at workplace were still prominent in the past 5 years

(Department of Occupational Safety and Health, 2021). Based on statistics by Department of Occupational Safety and Health (2021) as provided in Figure 1.1, there were 38,753 industrial accidents reported and 4.84 fatality rate occurred for every 100,000 workers and 2.81 accidents rate for every 1,000 workers in 2015.

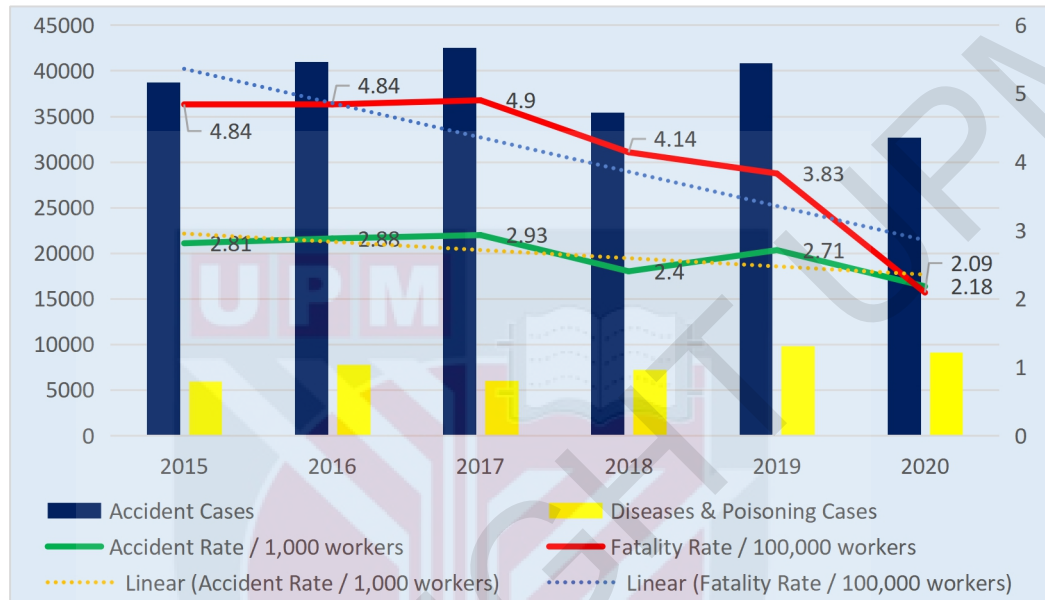


Figure 1.1: Statistics of occupational accidents, diseases and poisoning cases and rate from 2015 - 2019

The subsequent year saw an overall increasing trend in year 2017 (41,005 reported industrial accidents, stagnant fatality rate, 2.88 accidents rate) and on year 2018 (42,513 reported industrial accidents, 4.9 fatality rate, 2.93 accidents rate). The statistics in year 2018 however showed positive improvement with an overall decline (35,460 reported industrial accidents, 4.14 fatality rate, 2.4 accidents rate) which then increases in 2019 for reported industrial accidents (40,811) and accidents rate (2.71) but decrease in fatality rate to 3.83 deaths per 100,000 workers (Department of Occupational Safety and Health, 2021).

Regardless of the overall decline, the OSH statistics for year 2020 was not comparable as it was where the COVID-19 pandemic struck which put many occupational sectors at a slow-down following the Movement Control Orders introduced by the government in Malaysia to curb the spread of the disease. The statistics does not reflect normal economics activity and thus is not generalizable.

The same goes for occupational diseases and poisoning (Figure 1.1), despite the roles and importance of OSH stakeholders in promotional and knowledge transfer activities on Occupational Health aspects (such as noise, chemical handling, storage, PPE or other emergency procedures) the trend in Figure 1.1 were random with not clear pattern of overall increase and decrease cases being reported.

Compared with our neighboring countries, for example Singapore, their OSH statistics were generally lower than Malaysia with total reported workplace injuries from year 2015 – 2018 were 12,351, 13,014, 12,498 and 12,810 in respective year while the fatality rate in 2016 was much lower with 1.9 deaths per 100,000 workers (ILOStats, 2021). The OSH statistics in Malaysia were however better than Thailand where they recorded accidents exceeding 50,000 cases from year 2015 – 2017 with an overall decreasing trend including fatality and accident rate (Government of Singapore, 2021).

Where the principles of Occupational Safety and Health Act 1994 promotes self-regulation of the industry to establish OSH in workplace, there may be lack not only in the quantity of Safety and Health Practitioners (SHP) but also quality necessary to implement an effective OSH management (Keng & Razak, 2014). To

that end, SHP are essential professional as they play a particularly essential roles in Occupational Safety and Health (OSH) development in Malaysia acting as intermediary for the enforcer (government) and their employers.

As such the professional development of these SHP is important and were legally required. It is through the participation in activities organized by OSH-NGOs that the quality and quantity of these SHP were expected to be improved. However, due to the lack of data or any source of references, there may be potentially lack of participation in activities organized by OSH-NGOs which may be traced back to the lack in awareness on the existence of the NGOs or probably being negative (perception) of the OSH-NGOs roles and contribution.

Despite the prominent existence of OSH-NGOs in Malaysia, there has yet been any data or literature available to describe the NGO actual professionalization from an organizational perspective. There is a gap in the literature limiting current understanding of the roles of NGOs (Bayaliev-Jailobaeva, 2014). Based on a study by Ritvo, Berdzenishvili, Khazalia, Khidesheli, Liqokeli & Samkharadze (2013), the authors explained that the perception of people on NGOs were different; for example, some believed that the roles of NGOs are not important where some others accuse NGOs of wasting the funds they receive and focused only on their own interests.

To some extent, their presence may also not be recognized or acknowledged in terms of what they do and whom they are helping. A previous study presented that there was individual who commented that NGOs were only slightly effective while some perceived NGOs were not being effective and some others indicated that NGOs

are lazy, sleepy, unpredictable, useless and egoistical with goals that are not relevant to current situation with most degrading comments on NGOs being sly, sneaky, cunning, like to take advantage of a situation and caring for themselves only – negative perceptions on NGOs (Ritro et al., 2013).

Negative perceptions on NGOs overall can cause severe impact especially towards the government as they are a huge support to the government in influencing changes and raising awareness. In addition, the negative perceptions could directly affect involvement or participation in NGOs which lead to not only stagnant but stunted development due to losses in trust, membership, reliance, support, etc. (Razeen, 2010).

In this case, a quick literature search in Google Scholar database were also not able to find the perception of SHP on OSH-NGOs in Malaysia or in fact in any other countries.

Besides that, the lack in commitment and hence financial resources is also another potential barrier or challenges. Companies typically tend to spend their financial resources on activities that can generate greater profits where unbeknownst to most, the business case of OSH implementation most prominently addresses indirect financial consequences as per the ice-berg model. Due to the lack of insight, OSH-concern tends to be neglected; and thus, in most cases receive insufficient funding (Surienty, Hong & Hung, 2011).

1.3 STUDY JUSTIFICATION

OSH is an important aspects or element to be improved in line with the Malaysian Shared Prosperity Vision 2030; to build a united, prosperous and dignified nation (Ministry of Economic Affairs, 2019). With the help of OSH-related NGOs in Malaysia, it is possible to raise the national OSH practices and eventually improve the performances and productivity of working environments, ultimately improve the economy and becoming an economic centre of Asia as stated in Shared Prosperity Vision 2030.

This study will provide a baseline perception on the roles and importance of OSH related NGO amongst OSH practitioners which can be used by various stakeholders including the NGOs themselves to improve overall OSH performance in Malaysia. Specifically, the NGOs themselves can realign their vision, mission, strategies, etc. whilst the relevant government agencies could use the data to plan and develop policy, programmes, and activities in line with one of the objectives of Occupational Safety and Health Master Plan, 2020 (OSHMP20) (DOSH, 2015).

Indirectly, this study is also expected to pique the interest and raise awareness of not only OSH practitioners on the presence, roles, and importance of NGOs available around them but also to determine their perception of the OSH-NGOs. As a result, the OSH-NGOs in Malaysia could carry out improvements and seek alternatives through their representative (OSH practitioners) to help support and improve the OSH performances in the company.

1.4 OBJECTIVES

1.4.1 GENERAL OBJECTIVES

To determine association between the perceptions of SHP on the roles and importance of OSH-NGOs in enhancing OSH performance in Malaysia.

1.4.2 SPECIFIC OBJECTIVES

- i) To determine the sociodemographic factors (age, gender, monthly income, education level and marital status), occupational information (work experiences and industries), awareness and involvement with OSH-NGOs (membership and participation)
- ii) To determine the perceptions on the roles and importance of OSH-NGOs to enhance OSH performance among Safety and Health Practitioners (SHP) in Malaysia.
- iii) To determine the association between sociodemographic factors (age, gender, monthly income, education level and marital status) occupational information (work experiences and industries), awareness and involvement with OSH-NGOs (membership and participation) among SHP with the perceptions on the roles and importance of OSH-NGOs in enhancing OSH performance in Malaysia.

- iv) To determine predictive factors affecting perceptions of SHP on the roles and importance of OSH-NGOs in enhancing OSH performance in Malaysia.

1.5 HYPOTHESIS

- i) There is a significant association between sociodemographic factors (age, gender, monthly income, education level and marital status) occupational information (work experiences and industries), awareness and involvement with OSH-NGOs (membership and participation) among SHP with the perceptions on the roles and importance of OSH-NGOs in enhancing OSH performance in Malaysia.
- ii) There are significant predictive factors affecting perceptions of SHP on the roles and importance of OSH-NGOs in enhancing OSH performance in Malaysia.

1.6 CONCEPTUAL FRAMEWORK

Based on Occupational Safety and Health Master Plan 2020 (OSHMP 2020), the goal of the plan is to introduce preventive culture at workplace. In order to achieve the goal, five strategies have been implemented in order to increase

stakeholder awareness, responsibility and commitment to OSH. The five strategies include:

- Government leadership
- Strengthening OSH Management
- OSH Sharing and Network
- Mainstreaming IH
- International Alliance

The third strategy which was on OSH Sharing and Network addresses partnership from the various stakeholders is essential in achieving the OSH Master Plan 2020. The stakeholders include government, associations, competence person and related individual (Omar, 2019). Under associations, OSH-NGO were expected to contribute to the enhancement of OSH performance via information sharing (knowledge-transfer) activities and program on OSH to the SHP (DOSH, 2015).

In Malaysia, OSH-NGOs are divided into three levels which are national, state, and professional level. The development of OSH-NGOs is to become the center of information to disseminate all latest OSH information to the people. In addition, the development is also to assist DOSH in the development of National Level OSH standards or guidelines and providing technical experts in the relevant field. Other than that, it is also to establish Code of Ethics to control the professionalism of the OSH competencies (MyFOSH, 2019). The conceptual framework is as summarized in Figure 1.2.

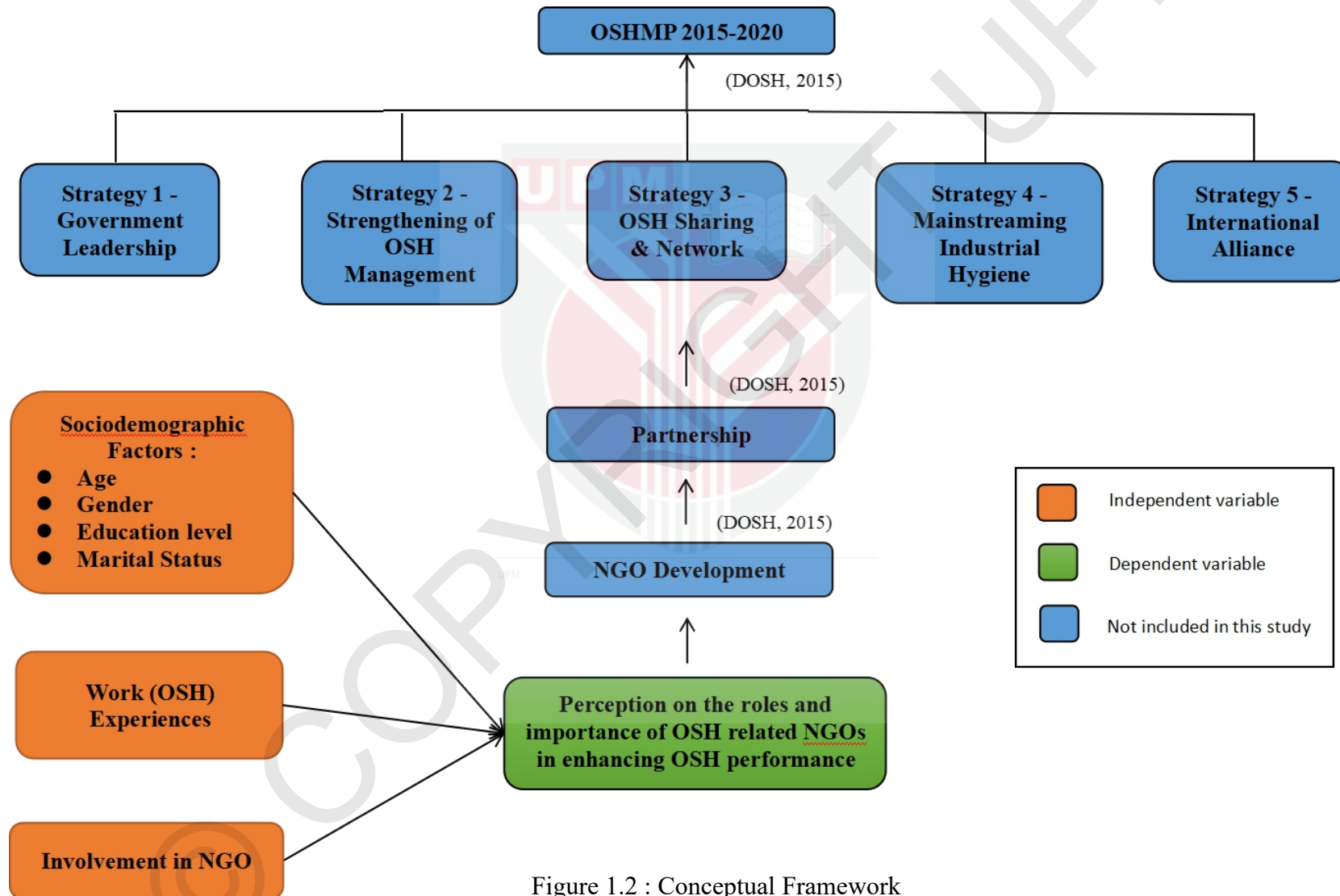


Figure 1.2 : Conceptual Framework

1.7 DEFINITION

1.7.1 SOCIODEMOGRAPHIC FACTORS

Conceptual Definition

Sociodemographic factors are the social and demographic characteristics of the population (Merriam-Webster, n.d.).

Operational Definition

In this study, the sociodemographic factors that being studied are gender, age, monthly income, and education level that were collected through online questionnaire Section A (Sociodemographic Information).

1.7.2 EXPERIENCE

Conceptual Definition

Experience is knowledge or skill in a particular job or activity, which is derived from doing the job or activity for a long time (Collins, 2021).

Operational Definition

In this study, the experience is express in term of the work experiences specifically in the field of OSH which was collected through online questionnaire Section B (Occupational Information).

1.7.3 PERCEPTIONS

Conceptual Definition

Perceptions as stated in Longman dictionary is “the way you think about something and your idea of what it is like (Logman Dictionary of Contemporary English, n.d).”

In philosophy, psychology, and cognitive science, perception is the process of attaining awareness or understanding of sensory information. The word “perception” comes from the Latin words perceptio, percipio, and means “receiving, collecting, action of taking possession, and apprehension with the mind or senses (Oxford English Dictionary, 2016).”

Perception is divided into two dimension which are physical dimension and psychological dimension. Physical dimension is the conversion of stimulus of physical mechanisms (eyes, ears and nose) into a usable form which beneficial in enhancing information and knowledge of the people. Meanwhile, psychological dimension is beliefs, values, attitudes, needs and interests of people. The conversion of stimuli is different based on the people personalities (Qiong, 2017).

Operational Definition

Perceptions of SHP on the roles and importance of OSH-NGOs in enhancing OSH performance in Malaysia were measured using online questionnaire (Section D).

CHAPTER 2

LITERATURE REVIEW

2.1 OCCUPATIONAL SAFETY AND HEALTH MASTER PLAN 2020 (OSHMP 2020)

In Malaysia, the Occupational Safety and Health Master Plan 2016-2020 (OSHMP 2015-2020) is a strategy with corresponding programs developed to increase national occupational safety and health (OSH) performance to a greater level. Excellent OSH levels will enhance the quality of life of the workers and also contribute to increased productivity and improvement in the Working Life Component Index of the Malaysian Well-being Index (Department of Occupational Safety and Health, 2015).

The OSHMP was created to promote a Safe and Healthy Work Culture among employers and workers. Safe and Healthy Work Culture is key in making workplaces safer and healthier in Malaysia by creating a strategic program to prevent accidents and occupational diseases. The bits of help and assistants from OSH-NGOs are very important to improve the national OSH levels (DOSHS, 2015).

OSH Sharing and Network is the third strategy in OSHMP 2020 that focuses on integrating various strata of society to promote Preventive Culture. OSH-NGOs are one of the stakeholders that have links with the industries. The contributions from OSH-NGOs can be in many forms that includes consultation, sharing of information,

best practices, development of OSH guidelines and standards for industries, training and OSH promotions and campaigns (DOSH, 2015).

Encouragement and promotion of OSH should not only be carried out among organizations but also needs to be fostered among practitioners, business associations, trade unions, and industries. Encouragement and promotion of OSH are needed to raise awareness, knowledge, and skills among the business community and the public. The initiatives for OSH-NGOs and other stakeholders were developed as follow (DOSH, 2015):

- Awareness raising through OSH programs.
- Sharing knowledge and best practices, development of guidelines and standards.
- Implementation of OSH pioneering projects.
- Innovative collaboration between NGOs, the public and private sector.

The cooperation and collaboration among stakeholders were expected to help achieve the third strategy of OSHMP which were to develop a variety of societies to promote Preventive Culture. This variety of society is expected to help in boosting the promotion of Preventive Culture (DOSH, 2015).

2.2 OSH-NGOs IN MALAYSIA

2.2.1 LEGISLATIVE PROVISION

As was mentioned in Chapter 1, NGOs in Malaysia are legally bound to register with Registrar of Societies (ROS) (Societies Act, 1966). ROS is a government agency legally empowered to oversee the establishment and activities of all societies. According to provisions of the Act, societies are required to adhere to both Federal and State Constitutions Principles (Societies Act, 1966). The registration of societies can be done online through Registry of Societies Electronic System (eROSES) (Registry of Societies, 2021).

2.2.2 VISION, MISSION AND OBJECTIVES

As has been described in sub-Chapter 2.2, OSH-Related NGOs plays an important role in promoting and enhancing the OSH practices in Malaysia. Specifically, they organize and carry out various programs related to Occupational Safety and Health. As was discussed in background of study (sub-Chapter 1.1), NGOs carry out a variety of different activities. By organizing and carrying OSH-related activities, they disseminate information related to OSH throughout the nation.

For example, Malaysian Society for Occupational Safety and Health (MSOSH), from just the period of January 2021 to June 2021, carried out a total of 14 activities including workshops, courses, webinars, conferences, and programs (MSOSH, 2021) while Human Factor and Ergonomics (HFEM) has also carried out a total of 8 activities related to ergonomics including webinars, courses, and competitions from January 2021 to April 2021 (HFEM, 2021).

Besides that, Malaysian Occupational Safety and Health Practitioners Association (MOSHPA) is also among NGOs which have been actively conducting Occupational Safety, Health and Environment (OSHE) Training throughout Malaysia along with HRDF, CIDB and PERKESO. While it is expected that these training helps in improving the quality and quantity of OSHE officers in Malaysia (MyFOSH, 2019) the activities organize and carry out by OSH-Related NGOs are vary based on their own vision, mission, and objectives.

Among examples of OSH-Related NGOs in Malaysia and their vision, mission and objectives as provided in Table 2.1

Table 2.1: Vision, Mission and Objectives of national OSH-Related NGOs (Malaysian Federation of Occupational Safety and Health, 2019)

NGO	VISION	MISSION	OBJECTIVES
Malaysian Society for Occupational Safety and Health (MSOSH)	To be the leader in Occupational Safety and Health (OSH) Organization in Asia Pacific.	To enhance and promote OSH in all workplaces and in all industries in support of the Government's policy on OSH.	<ul style="list-style-type: none"> ➤ To develop leadership, ethical and integrity values among the members. ➤ To enhance competency and capability for OSH Practitioners and Professionals. ➤ To promote volunteerism among the members. ➤ To be a platform for togetherness and welfare through strong member partnership. ➤ To move proactively into OSH international participation and collaboration activities. ➤ To inculcate a balance health, safety, well-being among member as an agent of change for public community.
Malaysian Occupational Health Practitioners Association (MOHPA)	To be the leader in Occupational Health (OH) Organization in Malaysia.	To enhance and promote OH in all workplaces and in all industries in support of the Government's policy on OSH.	<ul style="list-style-type: none"> ➤ Maintain the welfare and importance of the services and profession of occupational health doctors, occupational health nurses, occupational health technicians and members registered with the association as the leader in occupational health services at the workplace by providing guidance, training and assistance in OSH. ➤ Collecting, analyzing and reviewing occupational health data for prevention purposes and suggesting improvements to the government to improve the quality of occupational health services in Malaysia. ➤ Train, assist and promote the development of occupational health programs at all levels whether employers, employees or competent persons.

NGO	VISION	MISSION	OBJECTIVES
Human Factors and Ergonomics Society Malaysia (HFEM)	HFEM envision being a leader in HF/E development by developing the discipline, profession, and contributing to the society at large.	To promote the growth and exchange of knowledge related to the characteristics of human beings that are applicable to the design of various systems and devices.	<ul style="list-style-type: none"> ➤ To take a local, regional, and global responsibility. ➤ Remain at the forefront of technological and scientific development. ➤ To disseminate information about HFE/HCI on a global scale. ➤ To facilitate communication among professionals. ➤ To develop guidelines for educational accreditation and professional certification. ➤ To seek new sources of funding. ➤ To give opportunities in HFEM business by doing special projects.
Malaysian Occupational Safety and Health Practitioners Association (MOSHPA)	We strive to be the leading NGO on Occupational Safety and Health in Malaysia.	To guide safety practitioners and to achieve best practice in Occupational safety and Health.	<ul style="list-style-type: none"> ➤ To benefit the interested welfare of its members. ➤ To exchange knowledge, information and practices on OSH among its members. ➤ To foster safety and health culture to Malaysian work force. ➤ To create awareness on safety and health practices in Malaysia. ➤ To maintain high professionalism and work ethics among its members.
Malaysian Industrial Hygiene Association (MIHA)	Promote the anticipation, identification, evaluation and control of environmental factors, stressors arising in or from the workplace or its products in relation to the health or well-	N/A	<ul style="list-style-type: none"> ➤ Strengthen MIHA operation through structured organization & resource optimization. ➤ Enhance the Industrial Hygiene (IH) knowledge through training, technical conferences and other platforms of sharing, interchanging and dissemination. ➤ Promote the IH profession through professional certification, recognition and collaboration with governmental, industrial, educational and other professional bodies. ➤ Continue to add value to MIHA stakeholders through structured engagement and communication program.

NGO	VISION	MISSION	OBJECTIVES
	being of workers and public.		
Pahang Environment Safety and Health Association (PESHA)	To reduce fatality and accident rate in Pahang.	To strengthen the involvement of OSH Practitioners in development of safety and health in Pahang.	<ul style="list-style-type: none"> ➤ To form a network for all OSH Practitioners in the state of Pahang. ➤ To share OSH practices to the community to educate on safety in order to build a community that are fully educate on safety and healthy. ➤ To become a field to share on safety and health practices in industries. ➤ To become members' references to obtain skills in implementing OSH at workplace. ➤ To develop a continuous education development program to support creating an excellent OSH Practitioners.
Northern Region Group Safety Health Environment (NRGSHE)	To become an established and respected Occupational Safety and Health (OSH) association in Malaysia.	N/A	<ul style="list-style-type: none"> ➤ To gather all the OSH Practitioners under one platform through smart partnership. ➤ To consolidate ideas & efforts among the OSH Practitioners in advancing their knowledge and attributes in the challenging working environments. ➤ To continually increase the quality, capacity & capability of OSH among the Practitioners. ➤ To support the government and the public in promoting/inculcating Occupational Safety & health (OSH) Culture.
Malaysian Industrial	To be an icon and trusted premier	To be the premier association on OSH with professional	<ul style="list-style-type: none"> ➤ M - Management System: To promote OSH Management System. ➤ I - Information: To provide the latest information on OSH at

NGO	VISION	MISSION	OBJECTIVES
Safety and Health Association (MiSHA)	association.	ethics	national and global levels. ➤ S - Skills: To enhance skills on OSH at optimum level. ➤ H - Habit: To incubate habit on OSH. ➤ A - Assists each other: To assist all sectors on OSH.
Malaysia Association of Environmental Health (MAEH)	<ul style="list-style-type: none"> • To be champion in Environmental Health issues. • To support international initiatives into the local and national agenda on good environmental health practices. 	To strive for the advancement of the environment health profession through human resource development.	<ul style="list-style-type: none"> ➤ To promote generally the object of environmental health and the dissemination of knowledge of environmental health. ➤ To represent the views and interest of the view and interest of the profession of Environmental Health Practitioner and to preserve and maintain its integrity by imposing strict rules of conduct as a condition of membership by other means promoting just and honourable practice in such profession. ➤ To promote the consideration and discussion of questions affecting the professional status of Environmental Health Practitioners. ➤ To acquire any rights or privileges which MAEH may regards as necessary of the convenient for its purpose or for promoting the interest of the professional status of Environmental Health Practitioners. ➤ To raise the character and status and to advance the interest of the Profession of Environmental Health Practitioners and those engaged therein. ➤ To consider and deal with matters affecting the professional status of MAEH members and to decide all questions of professional usage or courtesy. ➤ To promote legal or other professional assistance for the protection of the interest of any members or members of the

NGO	VISION	MISSION	OBJECTIVES
			<p>profession in cases which may be deemed to involve the questions of principle affecting the profession generally and not the individual interest of the party's litigation only.</p> <ul style="list-style-type: none"> ➤ To diffuse amongst its members' information on all matters affecting or of importance to the profession of EH Practitioners and to print, publish, issue and circulate such papers, periodicals, books, circulars and other literary or artistic matter as may seem conducive to any of these objects. ➤ To disseminate knowledge regarding practical sanitation and kindred subjects for the benefit of the community and to assist by co-operation or otherwise similar associations in upholding and advancing the objects of Sanitary and Environmental Health matters generally. ➤ To promote or contribute to or co-operation in the provision in the training and education facilities for persons to become Environmental Health Practitioners and to provide all means for securing efficiency and responsibility on the part of those admitted members. ➤ In furtherance of the objects of MAEH, to establish where necessary and when practicable and to maintain Libraries, Lecture and Classrooms or other Institution; to institute Courses of Lectures and demonstration; to hold meeting for the hearing of communications on EH subjects and discussions thereon; to hold exhibitions of sanitary subjects apparatus of appliances at such exhibitions or otherwise brought under notice of the Association. ➤ To watch over any proposed legislation of Governmental action affecting the profession of environmental health practitioners, to

NGO	VISION	MISSION	OBJECTIVES
			<p>promote such legislation in the interest of the profession; to oppose such legislation as may be found to be hostile to the profession.</p>
<p>Malaysian Steam and Internal Combustion Engine Engineer Association (MSIEA)</p>	<p>To be highly respected as technical and professional body to ensure public interest and safety in engineering related to Boiler, Steam System and Internal Combustion Engine.</p>	<p>To ensure that the engineering services related to boilers, steam systems and internal combustion engines provided in the country are of high quality, delivered with due diligence, adhere to professional ethics and are bench marked with best practices.</p>	<ul style="list-style-type: none"> ➤ To increase the knowledge. ➤ To promote the profession through encouragement of interest. ➤ To collect and make accessible to all who engaged. ➤ To contribute knowledge and expertise. ➤ To promote the professional field.

2.2.3 MEMBERSHIP OF NGO

The membership of NGOs typically consists of an individual; in the case of OSH-NGOs, Safety and Health Practitioners (SHP), a person of certain specialist, etc. (ILO, 2015). There could be different types of membership in NGOs; for example, in HFEM, there are full, associate, student, and corporate categories (HFEM, 2021). Another example is MSIEA that has five categories of membership that include full, associate, student, organizational, and honorary (MSIEA, 2016). All these categories come with different entrance and annual renewal fees. In addition, the different category has different criteria and benefits.

However, there are also membership of NGOs which membership consists of organization; company, partnership or sole proprietor. For example, there are three types of membership in Federation of Malaysian Manufacturers (FMM); ordinary, affiliate and association which membership is by company. Ordinary members are for companies incorporated as manufacturing meanwhile affiliate members are for companies in manufacturing-related services. Association members are for industry association of which 75% of its members are direct members of FMM (Federation of Malaysian Manufacturers, 2021).

Similarly, the membership for Malaysian Employers Federation (MEF) consists of individual companies (private sector) and sectoral employers' organizations which is divided into two types of membership: ordinary and associate. Ordinary members are for individual companies whereas associate members are for sectoral employers' organizations. Ordinary members are then divided into two types

which are single company membership and group membership while associate members are further divided into six types that include Founder Association Members (FM) 1 and 2 and Association Members (AM) 1 to 4 (Malaysian Employers Federation, 2021).

2.3 SAFETY AND HEALTH PRACTITIONERS (SHP)

OSH Practitioners usually works as an employee in a medium to large organizations, especially organizations that involve manual and machine labour although some may also work in smaller organizations where they have mixed or multi-function roles with supervision. They are expected to interact with all levels of management including shop floor, supervision, and middle management (INSHPO, 2016) to execute their duties and responsibilities.

2.3.1 LEGAL PROVISIONS, COMPETENCY AND PROFESSIONAL DEVELOPMENT OF SHP

Based on Regulation 8 of the Occupational Safety and Health (Safety and Health Officer) Regulations 1997, certified Safety and Health Officer is required to regularly attend continuous education programme in order to maintain their certification. It is compulsory for every employer to ensure their employees to attend continuous education program (OSHA, 1994).

Based on the Guideline of Continuous Education Program (CEP) Point System 2011, all competent OSH Practitioners are required to collect CEP point in order to renew their competency (DOSH, 2011). The aim of the CEP points requirement was to ensure that the competent persons are up to date on OSH knowledges and practices as they carry out the essential function to advice, train, support and monitor organizations' compliance to the hazard and risk assessment and control the procedures on behalf of their management (INSHPO, 2016).

The guidelines provide various mechanism for collection of CEP points with different weightage by attending activities or programs listed in the guideline. Activities or programs include meetings, services, formal education, and training until the end of the session, courses, seminars, conferences, dialogues, workshops, conventions and talks on Continuous Professional Development (CPD) for safety and occupational health, other courses and informal learning and educational activities (DOSH, 2011).

These activities which provides CEP points are generally acknowledged by DOSH, although some may require application, is most actively carried out by most OSH-NGOs. This indirectly develop an essential interaction and build relationship between the SHP with the OSH-NGOs as attend the activities or programs organized to attain the CEP point (MyFOSH, 2019).

2.3.2 ORGANIZATIONAL STRUCTURE

Safety and Health Practitioners typically works in an organization which structure may differs between organizations. Some of the time, they are merged with environmental components within a department or unit office such as Health, Safety and Environment (HSE) / Environmental, Health and Safety (EHS) / Safety, Health and Environment (SHE) to manage the corporate environmental issues. Besides that, some organization further enlarge their duties and responsibility by adding on security component to the department, section, or unit; Health, Safety, Security and Environment (HSSE).

In some cases, due to the implementation of certification of management system such as ISO 9001: 2015 - Quality Management System, certain organization integrate the quality component to the department, section, or unit. The extension could led to the establishment of Health, Safety, Environment and Quality (HSEQ) / Health, Safety, Security, Environment and Quality (HSSEQ) / Quality, Health, Safety and Environment (QSHE) / Quality, Health, Safety, Security and Environment (QHSSE) (Shaw, 2016). Furthermore, the organization structure could also be combined with Corporate Social Responsibility (CSR); the existence of CSR is to balance social, environmental, and economic factors to operate sustainably.

In summary, a Safety and Health Practitioners could be held in charge or responsible not just on Occupational Safety and Health, but could very well extend to environmental management, quality management (system), corporate social responsibility and sustainability (Shaw, 2016).

2.4 PERCEPTIONS TOWARDS OSH-NGOs

Based on a study by Grødeland (2006), it was found that many people are not being able to define NGOs and what they are all about. In addition, the perceptions of people towards NGOs were also different, for example, some perceived NGOs positively while some other sees NGOs in a negative context.

Specifically, the positive viewpoint perceived NGOs to be a medium which provides assistance or help by raising or brought forth the issues or promote something good for the people. The negative viewpoint was where it was perceived that NGOs often failed to achieve results and if they did, only limited number of people benefited from the activities (Grødeland, 2006).

Dissatisfaction with NGOs is not uncommon as previous study has pointed out that they lack evidence of any substantial achievement despite being loud. There was also individual who perceived NGOs as being selfish and closed (privileged) organizations, putting their own well-being instead of their target groups. NGOs were also seen as biased and not a trustworthy organization. Besides that, some has also commented that NGOs were engaged or affiliated in criminal activities such as money laundry (Grødeland, 2006).

CHAPTER 3

METHODOLOGY

3.1 STUDY DESIGN

A cross-sectional study was carried out to collect data on the sociodemographic information, occupational information, involvement with NGOs and perception on the roles and importance of OSH-related NGOs to enhance OSH performance among Safety and Health Practitioners (SHP) in Malaysia from March to April 2021.

3.2 STUDY LOCATION

This study was conducted within Malaysia which involves Safety and Health Practitioners throughout the country.

3.3 SAMPLING METHOD

3.3.1 SAMPLING STRATEGY

This study used convenience sampling, a non-probability sampling methods to recruit respondents who fulfilled the inclusion and exclusion criteria as will be described further in sub-Chapter 3.6: Data Collection Procedures.

3.3.2 SAMPLE POPULATION

The target population for this study were all the Safety and Health Practitioners (SHP) in Malaysia during the period of study.

3.3.4 SAMPLING UNIT

The sampling unit of this study was all Safety and Health Practitioners (SHP) who fulfil the following inclusion criteria.

3.3.4.1 INCLUSION CRITERIA

The inclusion criteria of this study were SHP who was employed/self-employed during the study period and had at least 1 year working experiences in Occupational Safety and Health at the time they answer the questionnaire survey.

3.3.4.2 EXCLUSION CRITERIA

The exclusion criteria of this study were SHP who held a position as executive committee in any OSH-NGOs at the time of the study was being conducted.

3.3.5 SAMPLE SIZE – CALCULATION

Two proportion formula (Lemeshow et al., 1990) was used to calculate sample size estimation. The calculations were as follow:

Two proportion

$$N = \frac{(Z^2)[P_1(1 - P_1) + P_2(1 - P_2)]}{d^2}$$

N : Sample size

Z : desired Confidence Interval - set as 1.96 at 95%

P1: prevalence of perceptions of SHP among post degree background from previous study - from Rozlina et al., (2012) = 0.13

P2: prevalence of perceptions of SHP among SPM background from previous study - from Rozlina et al., (2012) = 0.11

d: desired level of precision - 0.05

$$N = \frac{(1.96^2)[0.13(1 - 0.13) + 0.11(1 - 0.11)]}{0.05^2}$$

$$N = 324 \text{ respondents}$$

From the result, the required sample size to achieve statistical significance was 324.

However, considering the average response rate among SHP (43%) as was reported in previous study (Rozlina et al., 2012), adjustment was made to consider non-response rate as follow:

$$\frac{324}{\frac{43}{100}} = 874 \text{ respondents}$$

As a result, the questionnaire should be disseminated to at least 874 respondents (being the Safety and Health Practitioners) taking into consideration the potential of only 43% of the 874 SHP would complete the questionnaire survey.

3.4 INSTRUMENTS - QUESTIONNAIRE

A structured self-administrated questionnaire which was divided into 4 sections (Section A - D) was used for this study. The questionnaire includes:

- i. Section A (Sociodemographic Information),
- ii. Section B (Occupational Information),
- iii. Section C (Awareness and Participation of OSH-NGOs in Malaysia) and
- iv. Section D (Perceptions on The Roles and Importance of OSH-NGOs in Enhancing OSH performance in Malaysia).

3.4.1 SOCIODEMOGRAPHIC INFORMATION

For Section A, respondents were required to provide their sociodemographic background information including socioeconomic characteristics using close-ended questions such as gender, age, education level and marital status.

3.4.2 OCCUPATIONAL INFORMATION

For Section B, respondents were asked about their occupational information. The type of question for Section B was multiple response choice questions. The questions include years of experiences in Safety and Health, positions of work and industry they worked in.

3.4.3 AWARENESS AND PARTICIPATION OF OSH-NGOs IN MALAYSIA

For Section C, respondents were asked about their awareness and participation in OSH-related NGOs in Malaysia. The type of question for Section C was close-ended questions and multiple response choice questions. The questions include awareness of the existence of OSH-related NGOs, membership, and years of participation in OSH-related NGOs, frequencies of participation in any activities organized by OSH-related NGOs and the reasons of participation.

3.4.4 PERCEPTIONS ON THE ROLES OF OSH-NGOs IN ENHANCING OSH IN MALAYSIA

For Section D, there were 15 questions where respondents were required to provide their perceptions on the roles of OSH-NGOs in enhancing OSH performance in Malaysia. The types of questions for Section D were close-ended questions where response is required in the form of Likert scale; (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) Strongly agree.

3.5 QUALITY CONTROL

Negative questions were included in the questionnaire as one of the quality controls to prevent response bias by respondents. The presence of different direction of questions was expected to stimulate participants to pay more attention in providing better quality responses as indicated by Irions & Allen (2017).

3.5.1 VALIDITY OF QUESTIONNAIRE

The questionnaire was validated via content validation. The content validation evidence can be represented by the content validity index (CVI). Content validation form was prepared to ensure the review panel of experts had a clear understanding on the content to be validated and the method of validation. The selection of review panel of experts was based on their expertise and experience in the field and topic to be studied.

The panel of experts who were involved in this study was Mr. Mohamad Aliasman Morshidi and Prof. Dr Shamsul Bahri Mohd Tamrin. The criteria for panel of experts were individual who:

- i) had vast experiences in both Occupational Safety and Health and Non-Governmental Organizations;
- ii) had at least five years of experience in the field of Occupational Safety and Health,

- iii) had at least five years and 10 years experiences as a regular member and committee member respectively in any OSH-Related NGO, and
- iv) had experience in participating activity organize by OSH-Related NGOs.

An online content validation form was sent to all review panel of experts by using *Google Form*. The experts are requested to critically review the domain and its items before providing score on each item. After reviewing domain and item, the experts are requested to provide score on each item independently based on the relevant scale (1: the item is not relevant to the measured domain; 2: the item is quite relevant; 3: the item is highly relevant to the measured domain). The expert was also provided specific sections to leave their qualitative comments to improve the relevance of items to the targeted domain. All comments were taken into consideration to refine the domain and its items.

Some of the comments were:

- i) add an additional choice 'to collect CEP point' in the selection of answer for question six: reason of joining in Section C,
- ii) separate questions on Knowledge, Attitude and Practice (KAP) among employers and employees on OSH related laws and regulations in Malaysia in Section D into 3 separate questions for each of the Knowledge, Attitude and Practice domain, and
- iii) removal of questions not related to the perception of SHP on the roles of OSH-NGOs in enhancing OSH performance in Malaysia in Section D.

The final step of content validation was the calculation of CVI. There were two forms of CVI, in which CVI for item (I-CVI) and CVI for scale (S-CVI). The procedure for content validation is stated in the Figure 3.1. Prior to the calculation of CVI, the relevance rating must be recorded as 1 (relevance scale of 2 or 3) or 0 (relevance scale of 1). A scale with excellent content validity should be composed of I-CVIs of 0.78 or higher and S-CVI/UA and S-CVI/Ave of 0.80 and 0.90 or higher, respectively (Shi, Mo and Sun, 2012).

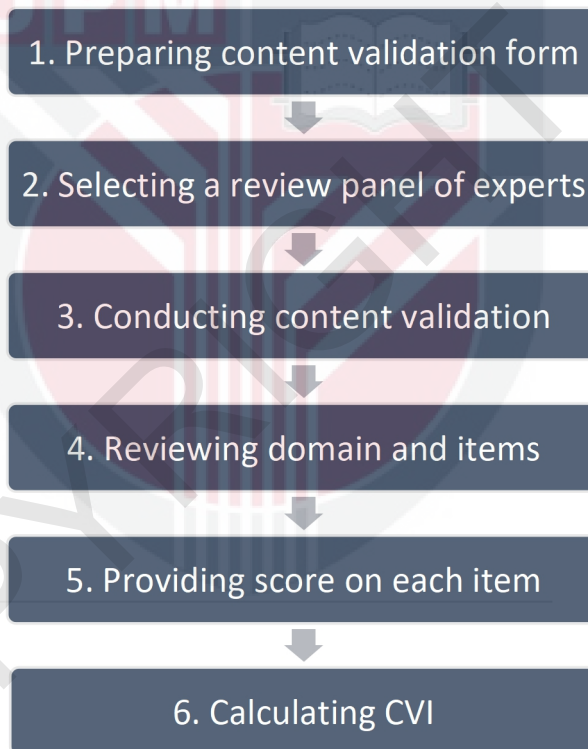


Figure 3.1: Flowchart for content validation

Based on the calculation, the I-CVI, S-CVI/Ave and S-CVI/UA were satisfactory; achieved satisfactory level of content validity as summarized in Table 3.1 while the detailed calculation of CVI being provided in Appendix 1.

Table 3.1 : Findings of CVI

S-CVI/Ave (based on I-CVI)	1.80
S-CVI/UA	0.83
S-CVI/Ave (based on proportion relevance)	0.91

3.5.2 RELIABILITY OF QUESTIONNAIRE

The questionnaire was pre-tested among 33 Safety and Health Practitioners who had fulfilled the inclusive and exclusive criteria. Cronbach's alpha was known as internal consistency approach and commonly used to measure reliability. Cronbach's alpha coefficient was to measure how closely related a set of items in the questionnaire.

The range of values begin from zero to a maximum of one, where the closer the value of Cronbach's alpha coefficient to one, the higher the internal consistency of items leading to high variance of the data. Table 3.2 shows the list of Cronbach's alpha coefficient value.

Table 3.2: List of Cronbach's alpha coefficient value

Value	Description
< 0.5	Unacceptable
> 0.5	Poor
> 0.6	Questionable
> 0.7	Acceptable
> 0.8	Good
> 0.9	Excellent

(Source : George and Mallery, 2003)

Based on Table 3.2, the measure of internal consistency in the pre-test achieved Cronbach's alpha coefficient of 0.730 that was considered as acceptable.

3.6 DATA COLLECTION PROCEDURE

The structured and validated self-administrated online questionnaire was distributed via link-sharing among the respondents through an online platform that includes email, *WhatsApp*, *Telegram*, *Facebook* and *LinkedIn*. A list of email addresses was obtained from the list of MSOSH registered members and Alumni list from the Department of Environmental and Occupational Health, Universiti Putra Malaysia.

On *WhatsApp* platform, the link to the online questionnaire was posted in several groups that include OSH Group (DOSH Perak) and groups of industrial training. The same goes to *Telegram*, where link to the questionnaire was posted in a group called 'Safety and Health Practitioners' which consist of 1,060 members. Furthermore, this questionnaire was also posted in several groups of safety and health practitioners in *Facebook*. The groups include:

- SHO, SSS & OSH Practitioners, Consultants,
- Occupational Fire Eng, Safety, Health, Security & Environment Practitioners,
- HSE Practitioners,
- Sarawak Health and Safety Practitioners,

- Sabah Safety Practitioners,
- Malaysia Environmental, Safety & Health Practitioner,
- Safety, Health and Environmental Officers and
- Safety and Health Officers.

In addition, the link to the questionnaire were also posted in *Facebook* groups of OSH-Related NGOs that include :

- Southern Region HSE Practitioner (SRG SHE),
- Northern HSE Practitioners (NRG SGE),
- Malaysian Industrial Safety and Health Association (MISHA),
- Johor Occupational Safety, Health & Environment (JOSHE),
- Malaysian Society for Occupational Safety and Health (MSOSH) and
- Sabah Occupational Safety, Health & Environment (SOSHEA).

Other than that, the questionnaire was also posted on researchers' LinkedIn page and being shared by several connection. Lastly, the admin of all OSH-NGOs had been contacted to acquire their help in distributing the questionnaire to all their members.

3.7 DATA ANALYSIS

All data obtained from this study were analyzed using Software Statistical Package for Social Science (SPSS) version 25. The analysis of the data were dependent upon

the objectives of the study. Data entry and exploratory data analysis were carried out as described in the following sub-chapters.

3.7.1 SCORING SYSTEM

To determine positive and negative perceptions, the score for each item were calculated using a standard scoring system as described in the following sub-chapters.

3.7.1.1 PERCEPTIONS OF SHP TOWARDS OSH-RELATE NGOs

All 15 statements related to roles and importance of OSH-Related NGOs to enhance OSH performances in Malaysia measured the perceptions of Safety and Health Practitioners (SHP). The perception was in the form of 5-Likert scale (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree and 5 = strongly agree). A score, that represent the perceptions, obtained by summing the scale of each respondent to all the statements (Babbie, 1999).

However, for negative statement, the score had been reversed when the summated score was calculated (Warmbrod, 2014). The total sum score differs as each respondent had different opinion. The sum score then was categorized into two groups: negative and positive. Sum score ≤ 44 indicated negative perceptions meanwhile sum score ≥ 45 indicated as positive perceptions. Table 3.3 shows an example of calculation of sum score.

In order to identify the perception of respondents for each statement, the 5-Likert scale had been divided into two where the scale of 1 and 2 indicated negative perceptions while the scale of 4 and 5 indicated positive perceptions. Meanwhile, for scale 3, it is excluded as it is neither positive nor negative. However, for negative statement, the scale had been reversed (Warmbrod, 2014).

Table 3.3: Calculation of sum score of perception

Example					
Statement	1 = strongly disagree	2 = disagree	3 = neutral	4 = agree	5 = strongly agree
Statement 1				/	
Statement 2				/	
Statement 3				/	
Statement 4		/			
Statement 5				/	
Statement 6				/	
Statement 7		/			
Statement 8				/	
Statement 9				/	
Statement 10		/			
Statement 11		/			
Statement 12				/	
Statement 13				/	
Statement 14				/	
Statement 15		/			
Total = 2+2+2+2+2+4+4+4+4+4+4+4+4+4+4 = 50					

3.7.2 UNIVARIATE ANALYSIS

Normality testing was performed for all variables. The normality testing was conducted using histograms, normal Q-Q plots, box plots skewness, kurtosis and Kolmogorov-Smirnov test. All variables were not normally distributed. The skewness was not in the range of -1.96 to 1.96 and the p -value for Kolmogorov-Smirnov test was less than 0.05. Therefore, median and interquartile range were used in this study.

In addition, descriptive analysis was carried out for sociodemographic characteristics, occupational information and involvement with NGOs and perceptions among Safety and Health Practitioners (SHP) in Malaysia. Mean, standard deviation, median, Inter-quartile range, frequency, and percentage were obtained.

3.7.3 BIVARIATE ANALYSIS

Chi-square test and Fisher-exact test were used to determine the significance of association in the proportions between different groups (Kremelberg, 2011). This test was used to test the hypothesis in determining the association between categorical variables (sociodemographic factor, occupational information, and involvement with NGOs) with the perceptions of SHP on the roles and importance of OSH-NGOs in enhancing OSH performance in Malaysia which was reported in the binary outcome (negative perception or positive perception). Fisher-exact test was used when there

was a violation of the expected frequencies less than 5 (more than 20%) (Kuzma & Bohnenblust, 2005).

3.7.4 MULTIVARIATE ANALYSIS

Logistic regression analysis was used to investigate the factor affecting the perceptions of Safety and Health Practitioners on the roles and importance of OSH-related NGOs to enhance OSH performance in Malaysia. Logistics regression begins with simple logistic regression (SLR) to screen potential study variables for multivariable analysis. Variables with a p-value less than 0.25 in SLR were further analyzed using multiple logistic regression (MLR), with stepwise variable selection method (Bachok, 2011). Odds ratio, adjusted β , standard error, Wald-value, confidential interval, and p-value were presented. The statistical analysis used in this study was as summarized in Table 3.4.

Table 3.4: Statistical Analysis According to Objectives

No.	Objectives	Analysis
1.	To determine the sociodemographic (age, gender, monthly income, education level and marital status) and work experiences among Safety and Health Practitioners (SHP) in Malaysia.	Descriptive analysis <ul style="list-style-type: none"> • mean, • standard deviation, • frequency and • percentage
2.	To determine the association between the involvement with NGOs (number of members and participation) with the perceptions on the roles and importance of OSH-Related NGOs in enhancing OSH performance in Malaysia.	Bivariate analysis <ul style="list-style-type: none"> • Spearman rho • Chi-square test
3.	To determine the associations between work experience in industries among Safety and Health Practitioners (SHP) with the perceptions on the roles and importance of OSH-Related NGOs in enhancing OSH performance in Malaysia.	Bivariate analysis <ul style="list-style-type: none"> • Spearman correlation • Chi-square test

4.	To determine the association between sociodemographic factors (age, gender, monthly income, education level and marital status) among Safety and Health Practitioners (SHP) with the perceptions of Safety and Health Practitioners on the roles and importance of OSH-Related NGOs in enhancing OSH performance in Malaysia.	Multivariate analysis <ul style="list-style-type: none"> • Logistic regression
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3.8 ETHICAL CONSIDERATION

3.8.1 INSTITUTIONAL APPROVAL

3.8.1.1 UPM

This study had obtained an approval from medical research and ethics committee Universiti Putra Malaysia [JKEUPM-2020-495].

3.8.2 INDIVIDUAL CONSENT

Individual consent was obtained from all respondents at the beginning of the online questionnaire where they were required to click ‘confirm and consent’ to continue to participate in this study.

CHAPTER 4

RESULTS

4.1 SPECIFIC OBJECTIVE 1: SOCIODEMOGRAPHIC BACKGROUND, OCCUPATIONAL INFORMATION, AND INVOLVEMENT WITH NGOs

4.1.1 SOCIODEMOGRAPHIC BACKGROUND

As provided in Table 4.1, a total of 188 safety and health practitioners participated in the online questionnaire consisted of 113 males (60.1%) and 75 females (39.9%). The mean and median age of the respondents was 35 ± 9.44 and 33 years (IQR=12) respectively.

In terms of education level, only a few of them stopped their formal education at pre-University level (1.1%). Meanwhile, a total of 72.9% of them completed their undergraduate study and quite a number of them (26.1%) continued their education to postgraduate level. More than half the respondents (66.0%) were married, four were divorced (2.1%) while the rest were single (31.9%).

Table 4.1: Distribution of respondents based on the sociodemographic factors

Factors	Frequency	%	Mean(SD)	Median(IQR)
Age (years old)			35(9.44)	33(12)
≤ 33	98	52.1		
> 34	90	47.9		
Gender			-	-
Male	113	60.1		
Female	75	39.9		
Highest education level				
Pre-University	2	1.1	-	-
Undergraduate	137	72.9		
Postgraduate	49	26.1		
Marital status				
Single	60	31.9	-	-
Married	124	66.0		
Divorced	4	2.1		

N=188

4.1.2 OCCUPATIONAL INFORMATION

As provided in Table 4.2, the job title of the respondents varied; most were Safety and Health Officer (SHO) (50.5%), Health, Safety and Environment Officer (HSE) (19.7%), Environmental, Health and Safety Officer (EHS) (6.4%), Quality, Safety, Health, Environmental and Integrity Officer (QSHE) (5.9%), Industrial Hygienist (IH) (3.7%), Safety, Health and Environment Officer (SHE) (2.7%), Technical Professional (2.7%), Health, Safety, Security and Environmental Officer (HSSE) (2.7%) and Consultant (2.1%).

The industries where they were currently employed were Manufacturing (33.0%), followed by Construction (22.1%) and Utilities - Gas, Electricity, Water and Sanitary Services (10.9%), Mining and Quarrying (3.2%), Hotels and Restaurant (5.0%), Agriculture, Forestry and Fishing (2.1%), Transport, Storage and

Communication (6.5%), Public Services and Statutory Authorities (8.0%), Finance, Insurance, Real Estate and Business Services (6.5%) and Wholesale and Retail Trades (2.7%).

The mean and standard deviation of work experiences among the respondents were 11.25 ± 9.87 with a median and interquartile range of 8 years and 12 years respectively.

Table 4.2 Occupational Information of Respondents

Information	Frequency	%
Job title		
SHO	95	50.5
HSE	37	19.7
EHS	12	6.4
QSHE	11	5.9
IH	7	3.7
SHE	5	2.7
Technical Professional	5	2.7
HSSE	5	2.7
Consultant	4	2.1
Engineer	3	1.6
ESO	2	1.1
SSS	1	0.5
OHD	1	0.5
Industries		
Manufacturing	112	33.0
Mining and Quarrying	11	3.2
Construction	75	22.1
Hotels and Restaurant	17	5.0
Agriculture, Forestry and Fishing	7	2.1
Transport, Storage and Communication	22	6.5
Public Services and Statutory Authorities	27	8.0
Utilities - Gas, Electricity, Water and Sanitary Services	37	10.9
Finance, Insurance, Real Estate and Business Services	22	6.5
Wholesale and Retail Trades	9	2.7
Work experience in industries (years)*		
≤ 8	96	51.1
> 8	92	48.9

N=188

* Mean (SD) = 11.25 (9.87); Median (IQR) = 8 (12)

4.1.3 INVOLVEMENT WITH NGOs

Almost all the respondents (96.3%) were aware of the existence of OSH-NGOs in Malaysia but only about half of them (54.8%) had become members of at least one NGO which 53.4% of them had joined for at least one year. The OSH-NGO most participated were Malaysian Society for Occupational Safety and Health (MSOSH) (16.0%) followed by Malaysian Occupational Health Practitioners Association (MOHPA) (7.5%), Malaysian Industrial Hygiene Association (MIHA) (6.4%), Human Factors and Ergonomics Society Malaysia (HFEM) (4.3%) and others (3.2%) as provided in Table 4.3.

The participation in activities organized by OSH-NGOs among respondents was 76.1% which was quite high. The frequency which the respondents participated in programmes and activities organized by OSH-NGOs were once a year (29.8%), followed by several times a year (21.8%) and two times a year (16.5%). There were also respondents that participated in activities monthly (4.3%) and weekly (3.7%).

The most common reason of participation in activities organized by OSH-NGOs among the respondents were for professional development (25.1%) and to improve social networking (23.1%). However, there were also reasons such as to collect CEP point (19.9%), increase soft skills (18.1%) and others (3.9%) for example to increase knowledge, to help and support the development of OSH Practitioners Competencies, to teach and develop others and for corporate social responsibility purposes (CSR).

Table 4.3 Involvement with NGOs among Respondents

Factors	Frequency	%
Aware on existence of NGOs		
Yes	181	(96.3)
No	7	(3.7)
NGOs participation (as member)		
Yes	103	54.8
No	72	45.2
Period of joining NGOs (years)*		
≤ 1	102	53.4
> 1	86	45.7
NGOs [‡]		
Malaysian Society For Occupational Safety and Health (MSOSH)	30	16.0
Malaysian Occupational Health Practitioners Association (MOHPA)	14	7.5
Malaysian Occupational Safety and Health Practitioners Association (MOSHPA)	11	5.9
Malaysian Industrial Safety and Health Association (MISHA)	1	0.5
Malaysian Association of Environmental Health (MAEH)	4	2.1
Malaysian Federation of Occupational Safety and Health (MyFOSH)	7	3.7
Pahang Environment Safety and Health Association (PESHA)	3	1.6
Southern Region Group of occupational Safety and Health (SRGSHE)	3	1.6
Northern Region Group Safety Health Environment (NRGSHE)	8	4.3
East Malaysia Regional Group Safety and Health and Environment Practitioner Association (SWKRGSH)	2	1.1
Human Factors and Ergonomics Society Malaysia (HFEM)	8	4.3
Malaysian Industrial Hygiene Association (MIHA)	12	6.4
Malaysian Occupational Scaffolding Association (MOSA)	2	1.1
Malaysian Society of Occupational Health Doctors (MSOHD)	2	1.1
Academy of Occupational and Environmental Medicine Malaysia (AOEMM)	3	1.6
Society of Occupational and Environmental Medicine (SOEM)	2	1.1
Others	6	3.2
None	72	38.3
Participation in activity organize by NGOs		

Factors	Frequency	%
Yes	143	76.1
No	45	23.9
Frequency of participation		
Never	45	23.9
Very low (once a year)	56	29.8
Low (2 times a year)	31	16.5
Moderate (several times a year)	41	21.8
High (monthly)	8	4.3
Very high (weekly)	7	3.7
Reason joining activities‡		
Collect CEP point	91	19.9
Increase soft skills	83	18.1
Enhance the quality of Resume	45	9.8
Professional development	115	25.1
Improve social networking	106	23.1
Others	18	3.9

N=188

* Mean (SD) = 3.93 (6.93); Median (IQR) = 1 (4)

‡ Multiple response choice questions allow respondent to select more than 1 choices

4.2 SPECIFIC OBJECTIVE 2: PERCEPTIONS ON THE ROLES AND IMPORTANCE OF OSH-NGOs TO ENHANCE OSH PERFORMANCE AMONG SAFETY AND HEALTH PRACTITIONERS (SHP) IN MALAYSIA.

The sum score of the perceptions were obtained and was categorized into two groups: ≤ 44 (negative) and ≥ 45 (positive) as provided in Table 4.4(a). Most of the respondents (92.6%) had positive perceptions while 7.4% of the respondents perceived the roles and importance of OSH-NGOs to enhance OSH performances in Malaysia negatively.

Table 4.4(a) Sum Score of Perceptions among Respondents

Variable	Frequency	%
Sum score		
< 45 (Negative)	14	7.4
≥ 45 (Positive)	174	92.6
N=188		

Table 4.4(b) provides a detailed results of all the 15 questions on the perception of the SHP on the roles and contribution of OSH-NGOs in enhancing OSH performance in Malaysia. Most of the respondents (exceeding 90%) positive perception on the for Statement 1, 2, 3, 5, 6, 8, 12 and 13 respectively. This was followed by Statement 4, 7 and 9 which more than 80% of the respondents had positive perception. However, for question 10, 11, 14 and 15 had the lowest frequencies of respondents (albeit more than 70% of them) who had positive perception.

Table 4.4(b) Perceptions of Respondents towards OSH-NGOs

Perceptions	n (%)	
	Negative	Positive
Statement 1: I think that activities organize by OSH-NGOs increases the level of knowledge among employers and employees on OSH related laws and regulations in Malaysia.	10 (5.9)	160 (94.1)
Statement 2: I think that activities organize by OSH-NGOs increases the level of attitude among employers and employees on OSH related laws and regulations in Malaysia.	14 (8.7)	147 (91.3)
Statement 3: I think that activities organize by OSH-NGOs increases the level of practice among employers and employees on OSH related laws and regulations in Malaysia.	10 (5.8)	163 (94.2)
Statement 4: I think that activities organize by OSH-NGOs DOES NOT improve the compliance of occupational safety and health legislation in Malaysia.	22 (15.5)	120 (84.5)
Statement 5: I think that activities organize by OSH-NGOs can improve the reporting system for work-related accidents, injuries and fatality in Malaysia.	10 (6.6)	141 (93.4)
Statement 6: I think that activities organize by OSH-NGOs improve workplace safety in Malaysia	7 (4.4)	153 (95.6)
Statement 7: I think that activities organize by OSH-NGOs DOES NOT increase awareness among employers and employees on Malaysian Standard on Occupational Health and Safety Management Systems in Malaysia.	30 (19.0)	128 (81.0)
Statement 8: I think that activities organize by OSH-NGOs increases professional competency of OSH practitioners in Malaysia.	8 (5.1)	148 (94.9)
Statement 9: I think that activities organize by OSH-NGOs reduces accident rates at workplace	16 (12.5)	112 (87.5)
Statement 10: I think that activities organize by OSH-NGOs DOES NOT reduce the rate of occupational diseases	35 (28.2)	89 (71.8)

Perceptions	n (%)	
	Negative	Positive
in Malaysia.		
Statement 11: I think that activities organize by OSH-NGOs DOES NOT reduce the number of occupational poisoning cases in Malaysia.	34 (26.8)	93 (73.2)
Statement 12: I think that activities organize by OSH-NGOs reduces injuries rates at workplace in Malaysia.	13 (9.7)	121 (90.3)
Statement 13: I think that activities organize by OSH-NGOs reduce dangerous occurrence(s) at workplace.	14 (10.0)	126 (90.0)
Statement 14: I DO NOT think that OSH-NGOs achieved their objectives to improve OSH performances at workplace.	30 (20.7)	115 (79.3)
Statement 15: I think that goals set by OSH-NGOs are NOT RELEVANT to the current status of Occupational Safety and Health In Malaysia.	39 (27.5)	103 (72.5)
N=188		

4.3 SPECIFIC OBJECTIVE 3: ASSOCIATION BETWEEN SOCIODEMOGRAPHIC FACTORS, OCCUPATIONAL INFORMATION, AND INVOLVEMENT WITH OSH-NGOs AMONG SHP WITH THE PERCEPTIONS ON THE ROLES AND IMPORTANCE OF OSH-NGOs IN ENHANCING OSH PERFORMANCES IN MALAYSIA.

Table 4.5 provided the results for Chi-square tests analysis conducted to determine the association between the sociodemographic factors, occupational information, and involvement with NGOs among safety and health practitioners with the perceptions on the roles and importance of OSH-NGOs in enhancing OSH performances Malaysia. None of the factors were found to be significantly associated.

Table 4.5 Association between sociodemographic factors, occupational information and involvement with NGOs and perceptions

Variables	Perception		χ^2	df	p-value
	Negative n (%)	Positive n (%)			
Gender			0.110	1	0.740
Male	9 (8.0)	104 (92.0)			
Female	5 (6.7)	70 (93.3)			
Age (years)			0.027	1	0.868
≤ 33	7 (7.1)	91 (92.9)			
> 33	7 (7.8)	83 (92.9)			
Highest education level			4.714	2	0.097 [^]
Pre-University	1 (50.0)	1 (50.0)			
Undergraduate	11 (8.0)	126 (92.0)			
Postgraduate	2 (4.1)	47 (95.9)			
Marital status			0.262	2	0.835 [^]
Single	5 (8.3)	55 (91.7)			
Married	9 (7.3)	115 (92.7)			
Divorced	0 (0.0)	4 (100.0)			
Work experiences (years)			0.014	1	1.000 [^]
≤ 8	1 (6.7)	14 (93.3)			
> 8	13 (7.5)	160 (92.5)			
NGOs participation (Member)			0.869	1	0.351
Yes	6 (5.8)	97 (94.2)			

Variables	Perception		χ^2	df	p-value
	Negative n (%)	Positive n (%)			
No	8 (9.4)	77 (90.6)			
Period of joining NGOs			0.551	1	0.458
≤ 1	9 (8.7)	94 (91.3)			
> 1	5 (5.9)	80 (94.1)			
Participation in activity organize by NGOs			0.052	1	1.000 [^]
Yes	11 (7.7)	132 (92.3)			
No	3 (6.7)	42 (93.3)			

N=188

* variables significant with $p < 0.05$

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

[^] Fisher exact test

4.4 SPECIFIC OBJECTIVE 4: PREDICTORS OF PERCEPTIONS OF SAFETY AND HEALTH PRACTITIONERS ON THE ROLES AND IMPORTANCE OF OSH-NGOs IN ENHANCING OSH PERFORMANCE IN MALAYSIA.

Table 4.6 shows all factors associated with perceptions. Simple logistic regression was used to identify any associated factors. As was expected based on the results in sub-Chapter 4.3, none of the factors were significantly associated with perceptions. Based on simple logistics regression, age and education level which obtained a p-value less than < 0.25 were included in multiple logistics regression.

Based on the results in As stated in Table 4.7, there was a significant association with highest education level and the perceptions (OR = 0.043, 95% CI = 0.002, 0.956, $p = 0.047$).

Table 4.6 List of factors associated with perceptions

Variables	Crude OR	β	SE	Wald	95% CI (Lower, Upper)	p-value
Gender						
Female	1.000					
Male	0.919	-0.098	0.636	0.017	(0.264, 3.199)	0.895
Age (years)						
> 33	1.000					
≤ 33	2.657	0.718	0.728	1.802	(0.638, 11.066)	0.179
Highest education level						
Pre-University	1.000					
Undergraduate	0.040	-3.394	1.715	3.532	(0.001, 1.148)	0.060
Postgraduate	0.934	-0.714	0.682	0.010	(0.245, 3.559)	0.920
Marital status						
Single	1.000					
Married	0.001	-19.431	19175.533	0.001	(0.001)	0.999
Divorced	0.001	-18.800	19175.533	0.001	(0.001)	0.999
Work experiences (years)						
> 8	1.000					
≤ 8	1.286	0.251	1.123	0.050	(0.142, 11.618)	0.823
NGOs participation (Member)						
No	1.000					
Yes	1.680	0.519	0.561	0.854	(0.559, 5.046)	0.355

Variables	Crude OR	β	SE	Wald	95% CI (Lower, Upper)	p-value
Period of joining NGOs (years)						
> 1	1.000					
≤ 1	0.653	-0.427	0.578	0.544	(0.210, 2.027)	0.461
Participation in activities organized by NGOs						
No	1.000					
Yes	0.789	-0.238	0.815	0.085	(0.160, 3.898)	0.771

OR = Odds ratio

SE = Standard error

CI = Confidence interval

N = 188

* variables significant with $p < 0.05$

Table 4.7 Factor associated with perceptions, multiple logistics regression

Variables	Adjusted OR	Adjusted β	SE	Wald	95% CI (Lower, Upper)	p-value
Age (years)						
> 33	1.000					
\leq 33	0.452	-0.794	0.596	1.772	(0.141, 1.455)	0.183
Highest education level						
Postgraduate	1.000					
Undergraduate	0.487	-0.719	0.787	0.833	(0.104, 2.281)	0.361
Pre-university	0.043	-3.157	1.588	3.953	(0.002, 0.956)	0.047*

Model assumption are met. There was no interaction and multicollinearity problems.

Omnibust test was statistically significant ($X^2 = 3.595$, $df = 2$, $p < 0.166$).

Cox & Snell $R^2 = 0.024$, Nagelkerke $R^2 = 0.055$. Overall percentage = 91.5%.

The Hosmer-Lemeshow goodness of fitness test shows the model was fit ($X^2 = 0.001$, $df = 1$, $p = 1.000$).

Variable selection method = Forward (Likelihood Ratio); OR = Odd Ratio; SE = Standard Error; CI = Confidence Interval

* variables significant with $p < 0.05$

CHAPTER 5

DISCUSSION

The total number of respondents participated in this study was considered to be low with respect to the calculated sample size required. The age of most of the respondents were below 33 years old which probably explains the data collection approach via online questionnaire survey not being favored by older adults. Based on a study almost 2 decades ago by Kaplowitz et al. (2004), they found that older respondents preferred paper-based survey and were less comfortable with online surveys. More than half of the respondents were married, while some were single, and the rest were divorced.

Corresponding to a HSE Insight Survey from recruitment consultancy Acre in 2018 that showed the gender split in the HSE field at 3:1 (male: female) (Croner-i Ltd, 2021), the male accounted for 60.1% of the total respondents in this study which indicates that the Safety and Health is pretty much still a male-dominated sector. In terms of education level, most of the respondents possess a university level degree; undergraduate and postgraduate which was pretty much similar to the findings by Rozlina et al. (2012) despite being carried out almost a decade ago.

An occupational information presented by Rozlina et al. (2012) still stands valid where half of the respondents in this study were Safety and Health Officer (SHO) followed by Health, Safety and Environment Officer (HSE), and Environmental, Health and Safety Officer (EHS). However, the working experiences

of the respondents in this study had a significant gap compared to Rozlina et al. (2012) where their respondents were more experienced with 16-25 years of working experiences compared to 8 years in this study.

The industries where the respondents were employed were categorized based on Schedule 1 of the Occupational Safety and Health Act, 1994. However, a direct comparison cannot be made to the Labour Force Survey by the Department of Statistics, Malaysia (DOSM) due to the differences of classification and definition by the latter. Where most of the respondents were SHP working in manufacturing sectors, the said industry was only second in place after wholesale and retail trade, repair of motor vehicles and motorcycles in the recent labour force survey (DOSM, 2021).

Similarly, where construction industry had the second highest respondents working in the industry, the labour force survey put construction in fifth place. It was also surprising to note that the Agriculture, Forestry and Fishing as well as Wholesale and Retail industry had the lowest number of respondents working in these industries as SHP considering the labour force were respectively the highest (first) and third in rank in 2020 (DOSM, 2021).

This could be due to the legislative requirement of the Occupational Safety and Health (Safety and Health Officer) Rules 1997 which specify the requirement of a Safety and Health Officer (SHO) based on the risk of the industries instead of the labour force participation. Among specific examples of industries which requires a registered or certified SHO are construction industries where the project value

exceed certain threshold value, high risk oil and gas processing facilities, manufacturing industries which employ more than 500 employees, etc.

Most of the respondents in this study were aware of the existence of OSH-NGOs in Malaysia. However, the interpretation of this fact could be tricky considering that some of the data collection methodology employed in this study were partly via the OSH-NGOs social media platform. As such, the respondents who were not affiliated or being aware of the OSH-NGOs may be under-represented in this study.

By using social media, NGOs can show their activities to the outside world and can get support and participation from the people (Wieners, 2020). Most OSH-NGOs in Malaysia have their own social media account and few of them also have their own website like for example MSOSH and HFEM (MSOSH, 2021; HFEM, 2021). However, only half of the respondents participate by becoming a member of any NGOs.

Previous research has postulated that lack of participation in NGOs could be due to the lack of interest from the people, economic conditions and occupation where they have a busy schedule of work (Pimoljinda & Siriprasertchok, 2017). However, participation rate may also be affected by the lack of communication between NGOs and the people. Communication is an important tool to create and develop bonds between NGOs and the people. Information sharing related to activities organized are important as it can enhance participation (Mumtaz & David, 2014).

The participation among the respondents in the activities organized by OSH-NGOs in this study were not comparable due to the lack of previous data for comparison. While most frequent participation in activities organized by OSH-NGOs are once a year followed by several times a year and two times a year, some respondents were quite active with monthly and weekly participation. Even so, there were respondents who had never participated in any activities organized by NGOs.

Participation in activities organized by OSH-NGOs among respondents is beneficial for many reasons. One reason in particular is they are good investment for the future as the exercises help increase professional skills to meet current employment needs. Another reason for participation is to improve social networking which indirectly enhance the job prospect of an individual besides the legal requirement to collect CEP points for certified SHP to achieve a certain threshold to renew their certification every year. Furthermore, participation in the activities also indirectly improve soft skills such as leadership skills, teamwork, and punctuality are vital as they are employable skills, skills sought by employers (UKUNI, 2019).

Primarily, the results in this study showed overall positive perceptions towards the roles and contribution of OSH-NGOs among the respondents which indicates predominantly optimistic perception. The findings had some similarity with a study carried out among NGOs in Afghanistan despite in different context and population (Jelinek, 2006). However, a study conducted among NGOs at northwest Pakistan reported negative perceptions; where the respondents perceived the NGOs lack transparency and accountability (Jamal & Baldwin, 2017) as well as study by

Jelinek (2006) where some other perceptions towards NGO waste of resources and lack of action in some project implementation.

Study by Ritvo, Berdzenishvili, Khazalia, Khidesheli, Liqokeli & Samkharadze (2013), reveal mixed results with most of the respondents had negative perception. There were however some positive perceptions among the people in Georgia towards NGOs which perceived that the NGOs play an important role in the development of a particular sector where they were considered as innovators besides increasing governmental and corporate accountability, advocate for specific causes and became helpers in removing old mentality.

Nevertheless, this study did not find any significant association between sociodemographic factors, occupational information and involvement with NGOs among SHP with their perceptions. However, in the logistic regression, one factor were found to be a significant predictor which affect the perceptions towards the roles and contribution of OSH-NGOs in enhancing OSH performance in Malaysia.

Specifically, those who had lower education level (pre-university) were more likely to report negative perceptions (OR = 0.043, 95% CI = 0.002, 0.956, $p = 0.047$) compared to those with postgraduate level degree. Based on several studies on perceptions towards cybercrime, knowledge does not only affect perception but also awareness on cybercrime which indirectly affect their reaction (Perl, 2009; Bougaardt and Kyobe, 2011; Choi, 2008; Chawki, 2005; Levin et al., 2008).

CHAPTER 6

CONCLUSION

6.1 CONCLUSION

Most of the SHP in this study were male within the mean age of 33 years old with university level degrees and being married. The mean of years of working experiences were 8 years with most of them working in the manufacturing and construction industry. Although most of the respondents were aware of the existence of OSH-NGOs, only about half of them became a member for at least one OSH-NGOs with a considerably high number of participation in activities organized by OSH-NGOs among SHP.

Overall, the perceptions among the respondents were positive towards the roles and importance of OSH-NGOs in enhancing OSH performances in Malaysia. However, the perceptions were not significantly associated with any of the sociodemographic factors, occupational experiences or their involvement in the activities by the OSH-NGOs. Nevertheless, it was surprising to find that education level significantly predict their perceptions towards OSH-NGOs; lower education level (pre-university) were at higher odd of reporting negative perceptions.

6.2 LIMITATION

The limitation of this study was the low participation of SHP. In addition, due to the questionnaire being self-reported; the respondents may be providing non-accurate information, which will lead to systematic bias. There was also a lack of proper monitoring or surveillance tools to obtain the perceptions among respondents despite the questionnaire being validated and pre-tested.

In that, recall bias could have influenced the results of perceptions as there are possibilities that the respondents were unable to recall the fact or made a mistake in providing the information. The self-reported questionnaire also brought along another bias where different respondents may interpret the questions differently based on their knowledge and understanding.

Besides that, there were also limitation primarily the lack of established literature for references and comparison of the findings in this study. Therefore, the results were not directly comparable which would otherwise enriched the discussion of this study. In addition, the findings of this study were only based on the cross-sectional study whereby qualitative study is needed to support and verify the perceptions of SHP towards OSH-NGOs.

6.3 RECOMMENDATION

Among recommendations based on the results of this study was for the SHP to pursue higher education level in order to be able to develop objective perception. Besides that, the SHP should not only participate in OSH-NGOs considering the extensive benefits but also proactively communicate with them to provide feedback, advise, input or suggestion towards the improvement of OSH performance in the country.

The OSH-NGOs on the other hand should continue to not only carry out awareness and knowledge transfer activities but also make clear their vision, mission and strategic action plan that are in line with the Government's effort to improve OSH performance in Malaysia. In addition, OSH-NGOs should also consider developing a strategic partnership other stakeholders as part of branding or image uplifting or enhancement.

In order to boost the visibility and transparency of OSH-NGOs, social media plays a pivotal role to increase outreach where regular updates and communications is expected to build engagement and trust with their target population. As such, it would be essential to optimize the organization's profile on each social media site.

In terms of recommendation for future research, the study should consider a holistic improvement on methodology which includes qualitative studies such as via interviews, well-thought and developed a more robust and well-thought instruments

which takes into account the various aspects, factors and limitations. which affects perception.

It is also suggested that the scope of study broaden to include objective measures of OSH performance, involves other stakeholders such as employees, employers, academicians, and government representatives to obtain a wide-angle view for comparison.



REFERENCES

- Aday, L.A. & Cornelius, L.J (2006). *Designing and Conducting Health Survey* 3rd edition. USA : Jossey-Bass.
- Al-Ani, W. (2016). The Role of Non-Governmental Organizations in Activating Youth Volunteerism in the Sultanate of Oman (This research is a part of funded project from The Research Council TRC in Oman (RC/EDU/DEFA/13/01)).
- AllBusiness. (2021, March 8). *How Nonprofits Can Use Social Media To Increase Donations And Boost Visibility*. Forbes.
<https://www.forbes.com/sites/allbusiness/2021/03/06/how-nonprofits-can-use-social-media-to-increase-donations-and-boost-visibility/?sh=2be4d7782bb7>
- Amagoh, F. (2015). Improving the credibility and effectiveness of non-governmental organizations. *Progress in Development Studies*, 15(3), 221–239.
<https://doi.org/10.1177/1464993415578979>
- Arokiasamy, J. T., & Krishnan, R. (1994). Some epidemiological aspects and economic costs of injuries in Malaysia. *Asia-Pacific journal of public health*, 7(1), 16–20. <https://doi.org/10.1177/101053959400700103>
- Babbie, E. (1999). *The basics of social research*. New York, NY: Wadsworth.
- Bachok, N. (2011). Multivariable analyses regression. *Unit Biostatistik dan Metodologi Penyelidikan. Pusat Pengajian Sains Perubatan, Universiti Sains Malaysia, 16150*.
- Bayalieva-Jailobaeva, K. (2014). A new look: professionalization of NGOs in Kyrgyzstan. *Central Asian Survey*, 33(3), 360-374.
- Bedi, R. S., & Loh, J. (2009, November 22). All eyes on ROS - The Malaysian Bar. Bar Council Malaysia. <https://www.malaysianbar.org.my/article/about-us/committees/constitutional-law-committee/all-eyes-on-ros>
- Bogdan, R. C., & Biklen, S. K. (1982). *Qualitative research for education: An introduction to theory and methods*. Vol.
- Bougaardt, G. and M. Kyobe, 2011. Investigating the factors inhibiting SMEs from recognizing and measuring losses from cyber crime in South Africa. *Electr. J. Inform. Syst. Evaluat.*, 14: 167-178
- Britannica. (n.d.). *Malaysia - Economy*. Encyclopedia Britannica. Retrieved June 10, 2021, from <https://www.britannica.com/place/Malaysia/Economy>

- Charles, S. T., & Carstensen, L. L. (2010). Social and Emotional Aging. *Annual Review of Psychology*, 61(1), 383–409.
<https://doi.org/10.1146/annurev.psych.093008.100448>
- Chawki, M., 2005. A critical look at the regulation of cybercrime. *ICFAI J. Cyberlaw*, 3: 1-55
- Choi, K., 2008. Structural equation modeling assesment of key causal factors in computer crime victimization. Ph.D Dissertation, Indiana University of Pennsylvania, USA.
- Corbin, J., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage publications.
- Couth, S., Gowen, E., & Poliakoff, E. (2018). How does ageing affect grasp adaptation to a visual–haptic size conflict? *Experimental Brain Research*, 236(8), 2173–2184. <https://doi.org/10.1007/s00221-018-5288-1>
- Croner-i Ltd. (2021). *Women in safety*. Croner-i. <https://app.croneri.co.uk/feature-articles/women-safety>
- Dar, F. (2015). Emerging role of NGOs in the worlds socio-political affairs. *International Journal of Peace and Development Studies*, 6(1), 1-9.
- Department of Occupational Safety and Health (DOSH). (2011). *Garis panduan sistem mata program pendidikan berterusan*. Kementerian sumber manusia. <https://www.dosh.gov.my/index.php/list-of-documents/program-pendidikan-berterusan/100-2-garis-panduan-sistem-mata-program-pendidikan-berterusan/file>
- Department of Occupational Safety and Health (DOSH). (2020, November 26). *Occupational Accidents Statistics*. Retrieved from <https://www.dosh.gov.my/index.php/statistic-v/occupational-accident-statistics>
- Department of Occupational Safety and Health (DOSH). (n.d). Occupational Safety And Health Master Plan. Malaysia : Department of Occupational Safety and Health Ministry of Human Resources, Malaysia.
- Department of Occupational Safety and Health [DOSH Malaysia]. (2021, July 22). *Sidang Media Statistik Kemalangan Dan Penyakit Pekerjaan Negara 2020* [Video]. YouTube. <https://www.youtube.com/watch?v=t4HoCY8C4h0>
- Department of Statistics, Malaysia. (2021). *LABOUR FORCE SURVEY REPORT* (No. 2020).
- DOSM. (2020). *Department of Statistics Malaysia Official Portal*. Department Of Statistics Malaysia.
https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=453&bul_id=QmZ1cE4xRFAvYWQ0R05hTk1rWm5KQT09&menu_id=L0pheU43NWJwRWVVSZklWdzQ4TlhUUT09

- FMM. (2021). *Join Now*. Federation of Malaysian Manufacturers.
https://www.fmm.org.my/Join_FMM-@-Join_Now.aspx
- George, D., & Mallery, P. (2003). Reliability analysis. *SPSS for Windows, step by step: a simple guide and reference, 14th edn*. Boston: Allyn & Bacon, 222-232.
- Glaser, B. G., Strauss, A. L., & Strutzel, E. (1968). The discovery of grounded theory; strategies for qualitative research. *Nursing research, 17*(4), 364.
- Government of Singapore. (2021). *Workplace Injuries, Annual*. Data.Gov.Sg.
https://data.gov.sg/dataset/workplace-injuries-annual?resource_id=ef367274-b44d-4f8a-9f46-d17ec95d7c67
- Grødeland, Å. B. (2006). Public perceptions of non-governmental organisations in Serbia, Bosnia & Herzegovina, and Macedonia. *Communist and Post-Communist Studies, 39*(2), 221-246.
- Grundmeyer, T. A. (2012). A qualitative study of the perceptions of first year college students regarding technology and college readiness.
- Hall-Jones, P. (2006). The Rise and Rise of NGOs: Global Policy Forum. Retrieved from: <https://www.globalpolicy.org>.
- Hong Kong Polytechnic University (nd). *BRM Chapter 3*. Retrieved from <https://www.coursehero.com/file/13743894/BRM-Chapter-3-4-Answer2/#:~:text=Explain%20the%20preliminary%20data%20collection,to%20formulate%20the%20theoretical%20framework>.
- Human Factors and Ergonomics (HFEM). (2020). *Mission and vision of HFEM*. Retrieved from <https://hfem.org/>
- ILO Department of Statistics. (2021). *ILOSTAT data tools to find and download labour statistics*. ILOSTAT. <https://ilostat.ilo.org/data/>
- ILO. (2008, October 1). *Occupational Safety and Health in Asia and the Pacific*. International Labour Organization.
https://www.ilo.org/asia/projects/WCMS_099347/lang--en/index.htm
- ILO. (2015). International Cooperation in Occupational Health: The Role of International Organizations. Retrieved from <https://www.iloencyclopaedia.org/contents/part-iii-48230/resources-institutional-structural-and-legal/international-governmental-and-non-governmental-safety-and-health>
- International Labour Organization (ILO). (n.d). Useful links. Retrieved from <https://www.ilo.org/safework/info/links/lang--en/index.htm>
- International Network of safety and Health Professional Organizations (INSHPO). (2016, November). The Occupational Health and Safety (OHS) Professional

Capability Framework. Park Ridge, IL, USA : International Network of Safety and Health Practitioner Organizations.

- Jamal, A., & Baldwin, C. (2017). Angels of mercy or smiling western invaders? Community's perception of NGOs in northwest Pakistan. *International Social Work*, 62(1), 89–104. <https://doi.org/10.1177/0020872817711239>
- Japan, G. of. (2017, April 1). *Enhancing Occupational Safety and Health Standards in Construction Sector in Cambodia*. Occupational safety and health: Enhancing Occupational Safety and Health Standards in Construction Sector in Cambodia. [https://www.ilo.org/asia/projects/WCMS_577102/lang--en/index.htm](https://www.ilo.org/asia/projects/WCMS_577102/lang-en/index.htm).
- Jelinek, E. (2006). A study of NGO relations with government and communities in Afghanistan. *Agency Coordinating for Afghan Relief*.
- Kaplowitz, M. D., Hadlock, T. D., & Levine, R. (2004). A Comparison of Web and Mail Survey Response Rates. *Public Opinion Quarterly*, 68(1), 94–101. <https://doi.org/10.1093/poq/nfh006>
- Keng, T. C., & Razak, N. A. (2014). Case studies on the safety management at construction site.
- Khan, R. A., Liew, M. S., & Ghazali, Z. B. (2014). Malaysian Construction Sector and Malaysia Vision 2020: Developed Nation Status. *Procedia - Social and Behavioral Sciences*, 109, 507–513. <https://doi.org/10.1016/j.sbspro.2013.12.498>
- Kremelberg, D. (2011). An introduction to ibm® spss® statistics and stata. *In Practical statistics: A quick and easy guide to IBM® SPSS® statistics, STATA, and other statistical software* (pp. 12-56). SAGE Publications, Inc., <https://www.doi.org/10.4135/9781483385655>
- Kuzma, JW, SE Bohnenblust. 2005. *Basic Statistics for the Health Sciences*. McGraw Hill Companies, Inc., New York, NY. 196 pp.
- L. Irions, A., & Allen, M. (2017). Survey: Negative-Wording Questions. *The SAGE Encyclopedia of Communication Research Methods*. Published. <https://doi.org/10.4135/9781483381411.n607>
- Lambert, S. D., & Loiselle, C. G. (2007). Health information—seeking behavior. *Qualitative health research*, 17(8), 1006-1019.
- Levin, A., M. Foster, B. West, M.J. Nicholson and T. Hernandez et al., 2008. The next digital divide: Online social network privacy. Privacy and Cybercrime Institute, Ryerson University, Canada

- Lincoln, Y. S., & Guba, E. G. (1985). Establishing trustworthiness. *Naturalistic inquiry*, 289(331), 289-327.
- Logman Dictionary of Contemporary English (n.d). Perception. Retrieved from <https://www.ldoceonline.com/dictionary/perception>
- Malaysian Association of Environmental health (MAEH). (n.d). *Purpose of establishment*. Retrieved from <https://maeh4u.org.my/purpose-of-establishment/>
- Malaysian Industrial Hygiene Association (MIHA). (2015). *MIHA objective*. Retrieved from <https://miha2u.org/about-miha/miha-objective/>
- Malaysian Industrial Hygiene Association (MIHA). (2017). Industrial Hygiene Outreach Program. Malaysia : MIHA Digest.
- Malaysian Industrial Safety and Health and Association (MiSHA). (2020). *Information about the Malaysian Industrial Safety and Health and Association (MISHA)*. Retrieved from <http://malaysianindustrialsafety.blogspot.com/2013/07/information-about-malaysian-industrial.html>
- Malaysian Occupational Safety and Health Practitioners' Association (MOSHPA). (nd). *Malaysian Occupational Safety and Health Practitioners' Association*. Retrieved from <https://www.facebook.com/mymoshpa/about>
- Malaysian Steam & Internal Combustion Engine Engineer Association (MSIEA). (2016). What is MSIEA? Retrieved from <https://www.facebook.com/MSIEA/>
- Manaf, S. R. B. (2019). *Official Website Department of Occupational Safety and Health - Continuous Education Program (CEP) Point System*. Department of Occupational Safety and Health. <https://www.dosh.gov.my/index.php/competency-2/competent-training-centre/what-is-competent-training-centre/continuous-education-program-cep-point-system>
- Manaf, S. R. B. (2019b). Official Website Department of Occupational Safety and Health - DOSH Profile. DOSH. <https://www.dosh.gov.my/index.php/about-us/dosh-profile>
- Manaf, S. R. B. (2021, January 20). *DOSH Profile*. free statistics. <https://www.dosh.gov.my/index.php/about-us/dosh-profile>.
- Marshall, C., & Rossman, G. B. (2014). *Designing qualitative research*. Sage publications.
- MEF. (2021). *MEF | Membership*. Malaysian Employers Federation. <https://www.mef.org.my/membership/membershiptypes.aspx>

- Merriam, S. B. (1998). *Qualitative Research and Case Study Applications in Education. Revised and Expanded from " Case Study Research in Education. "* Jossey-Bass Publishers, 350 Sansome St, San Francisco, CA 94104
- Ministry of Economic Affairs. (2019). Shared Prosperity Vision 2030. Malaysia : Percetakan Nasional Malaysia Berhad.
- Morrison, K. W. (2014, May 23). *The ROI of Safety*. Retrieved from <https://www.safetyandhealthmagazine.com/articles/10414-the-roi-of-safety?page=2>
- Mumtaz, A., & David, M. (2014). COMMUNICATION ENHANCES COMMUNITY PARTICIPATION (CECP): A TESTIMONY OF A NGO IN MALAYSIA. *JATI : Journal of Southeast Asian Studies*. 18. 207-222.
- MYFOSH. (2019). Strategic Direction of OSH Federation In Malaysia [PowerPoint slides]. Retrieved from <http://www.boce.com.my/download/Slide-Presentation/PAPER%205%20BOCE%202019%20Slide%20Presentation%20NEW.pdf>
- Neiss, M. B., Leigland, L. A., Carlson, N. E., & Janowsky, J. S. (2009). Age differences in perception and awareness of emotion. *Neurobiology of Aging*, 30(8), 1305–1313. <https://doi.org/10.1016/j.neurobiolaging.2007.11.007>
- NIOSH. (2021). *Course Programmes*. National Institute of Occupational Safety and Health. <http://www.niosh.com.my/course-programmes>
- Occupational Safety and Health Act (OSHA). (1994). Department of Occupational Safety and Health Ministry of Human Resources Malaysia (2006); <http://dosh.mohr.gov.my/>
- Occupational Safety and Health Act (OSHA). (2016). Recommended Practices For Safety And Health Programs. Washington : United States Department of Labor.
- Oxford English Dictionary. (2016). The definitive record of the English language. UK : Oxford University Press.
- Perl, R., 2009. Reflections on emerging cyber threats and international co-operative responses. Proceedings of the 12th Annual NYS Cyber Security Conference, (CSC' 09), Empire State Plaza, Albany, USA.
- Pimoljinda, T., & Siriprasertchok, R. (2017). Failure of public participation for sustainable development: A case study of a NGO's development projects in Chonburi province. *Kasetsart Journal of Social Sciences*, 38(3), 331–336. <https://doi.org/10.1016/j.kjss.2016.08.016>
- Qiong, O. U. (2017). A brief introduction to perception. *Studies in Literature and Language*, 15(4), 18-28.

- Razeen, J. (2010). What are the Impacts of Non-Governmental Organizations on the Lives of the Citizens of Tanzania? Social Impact Research Experience (SIRE). 4. <http://repository.upenn.edu/sire/4>
- Registry of Societies (ROS). (2021). *Registry of Societies Electronic System (eROSES)*. Retrieved from <https://www.eroses.gov.my/>
- Ritvo, R. A., Berdzenishvili, G., Khazalia, N., Khidesheli, M., Liqokeli, A., & Samkharadze, S. (2013). Public attitudes toward non-governmental organizations (NGOs) in the Republic of Georgia. *International NGO Journal*, 8(1), 13-19.
- Rock, I. (1985). Perception and knowledge. *Acta Psychologica*, 59(1), 3–22. [https://doi.org/10.1016/0001-6918\(85\)90039-3](https://doi.org/10.1016/0001-6918(85)90039-3)
- Rozlina, M. S., Awaluddin, M. S., Hamid, S. H. S. A., & Norhayati, Z. (2012, July). Perceptions of ergonomics importance at workplace and safety culture amongst safety & health (SH) practitioners in Malaysia. In Proceedings of the world congress on engineering (Vol. 1, pp. 4-6).
- Ryan, F., Coughlan, M., & Cronin, P. (2009). Interviewing in qualitative research: The one-to-one interview. *International Journal of Therapy and Rehabilitation*, 16(6), 309-314.
- Saif Khalaf, A.K. (2018). *Risk Factors of Occupational Stress Among Nondestructive Testing Radiographers in Saudi Arabia* (Master Thesis, University Putra Malaysia, Selangor, Malaysia). Retrieved from <http://ethesis.upm.edu.my.ezadmin.upm.edu.my/id/eprint/10815/1/FPSK%28M%29%202018%202%20T.pdf>
- Sarantakos, S. (1998). Varieties of social research. In *Social Research* (pp. 31-71). Palgrave, London.
- Shaw, R. D., (2016, August 9). *H&S, OHS, HSE, HSSE, HSSEQ, HSSEQ/CSR . . . Alphabet Soupization*. Redlog Environmental Ltd. <http://www.redlogenv.com/general/alphabet-soupization>
- Societies Act (1966). The Commissioner Of Law Revision, Malaysia. Percetakan Nasional Malaysia Bhd. <https://mercy.org.my/wp-content/uploads/2015/05/Societies-Act-1966.pdf>
- Srinivas H. (2015). *Organizational Structure of a Typical NGO*, Hari Srinivas concept note series E104. Retrieved from <http://www.gdrc.org/ngo/orgchart.html#footnotes>
- Sullivan, G. M., & Artino, A. R. (2013). Analyzing and Interpreting Data From Likert-Type Scales. *Journal of Graduate Medical Education*, 5(4), 541–542. <https://doi.org/10.4300/jgme-5-4-18>

- Surienty, L., Hong, K. T., & Hung, D. K. M. (2011). Occupational safety and health (OSH) in SMEs in Malaysia: A preliminary investigation. *Journal of Global Entrepreneurship*, 1(1), 65-75.
- Taber, K. S. (2017). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- UKUNI. (2019). *10 reasons why you should join an NGO*. <https://www.ukuni.net/articles/10-reasons-why-you-should-join-ngo>
- Warmbrod, J. R. (2014). Reporting and Interpreting Scores Derived from Likert-type Scales. *Journal of Agricultural Education*, 55(5), 30–47. <https://doi.org/10.5032/jae.2014.05030>
- Wieners, E. (2020, June 22). *Social Media for NGOs – Why, How, and Which ones?* ProposalforNGOs. <https://proposalsforngos.com/social-media-for-ngos/>
- WSO. (2020, May 28). *WSO Professional Certifications*. World Safety Organization. <https://worldsafety.org/wso-professional-certifications/>
- Young, S., & Dhanda, K. (2013). Role of governments and nongovernmental organizations. In sustainability (pp. 214-242). SAGE Publications, Inc., <https://www.doi.org/10.4135/9781544308432.n10>
- ZoomInfo Technologies LLC. (2021). *Top 10 Energy, Utilities & Waste Treatment manufacturing companies in Malaysia by revenue for June 2021 | Zoominfo.com*. ZoomInfo. <https://www.zoominfo.com/top-lists/top-10-companies-from-energy-industry-in-MY-by-revenue>

APPENDIX 1 : QUESTIONNAIRE

Questionnaire / Soal Selidik

To the respondent : This questionnaire is intended to collect data on the Perceptions of Occupational Safety and Health (OSH) Practitioners on The Roles of OSH Related NGOs in Enhancing OSH Performance in Malaysia.

Kepada responden : Soal selidik ini bertujuan untuk mengumpul maklumat mengenai persepsi pengamal keselamatan dan kesihatan pekerjaan tentang Peranan NGO berkaitan keselamatan dan kesihatan pekerjaan dalam meningkatkan prestasi keselamatan dan kesihatan pekerjaan di Malaysia.

This questionnaire is divided into four sections; **Section A** (Sociodemographic information), **Section B** (Occupational Information), **Section C** (Awareness and Participation of OSH Related NGOs in Malaysia) and **Section D** (Perceptions on The Roles of OSH Related NGOs in Enhancing OSH performance in Malaysia).

*Soal selidik ini terdiri daripada 4 bahagian; **Bahagian A** (Maklumat Sosiodemografi), **Bahagian B** (Maklumat Pekerjaan), **Bahagian C** (Kesedaran dan Penyertaan terhadap NGO berkaitan keselamatan dan kesihatan pekerjaan) dan **Bahagian D** (Persepsi Terhadap NGO berkaitan keselamatan dan kesihatan pekerjaan dalam meningkatkan prestasi keselamatan dan kesihatan pekerjaan di Malaysia).*

All information provided will be treated as confidential and would be used only for the purpose of research. Thank You.

Semua maklumat yang diberikan adalah sulit dan hanya digunakan untuk tujuan penyelidikan sahaja. Terima kasih.

Section A - Sociodemographic Information / Maklumat Sosiodemografi

1. Gender : a) Male b) Female
 Jantina Lelaki Perempuan

2. Age / Umur : _____

3. Highest education level :

Tahap pendidikan

- a) SPM b) STPM/Matriculation c) Technical/Vocational d)
Diploma e) Degree f) Master g) PHD

4. Marital status : a) Single b) Married c) Divorced
Status perkahwinan Bujang Berkahwin Bercerai

Section B - Occupational Information / *Maklumat Pekerjaan*

1. Title of work / Position of work : _____

Jawatan / Posisi kerja

2. Industries you work in previously and currently and years of working (if none put 0 at years of working) :

Industri anda bekerja sebelum ini dan sekarang serta tempoh bekerja (bagi yang tidak berkenaan, sila tulis 0 pada Tahun Bekerja)

Industries <i>Industri</i>	No. of Years of Working <i>Tahun Bekerja</i>
Manufacturing <i>Pengilangan</i>	
Mining and Quarrying <i>Perlombongan dan Pengkuarian</i>	
Construction <i>Pembinaan</i>	
Hotels and Restaurant <i>Hotel dan Restoran</i>	
Agriculture, Forestry and Fishing <i>Pertanian, Perhutanan dan Perikanan</i>	
Transport, Storage and Communication <i>Pengangkutan, Penyimpanan dan Komunikasi</i>	
Public Services and Statutory Authorities <i>Perkhidmatan Awam dan Pihak Berkuasa Berkanun</i>	
Utilities - Gas, Electricity,	

Water and Sanitary Services <i>Kemudahan - Gas, Elektrik, Air dan Perkhidmatan Kebersihan</i>	
Finance, Insurance, Real Estate and Business Services <i>Kewangan, Insuran, Hartanah dan Perkhidmatan Perniagaan</i>	
Wholesale and Retail Trades <i>Perniagaan Borong dan Runcit</i>	

3. Have you ever worked in another field beside occupational safety and health?
Adakah anda pernah bekerja dalam bidang lain selain keselamatan dan kesihatan pekerjaan?

a) Yes / Ya b) No / Tidak

4. If yes, please state the other field and years of working in the field.
Sekiranya ya, sila nyatakan bidang tersebut serta tempoh bekerja dalam bidang tersebut.

Section C - Awareness and Participation of OSH Related NGOs in Malaysia /
Kesedaran dan Penyertaan terhadap NGO berkaitan keselamatan dan kesihatan pekerjaan

1. Are you aware on the existence of OSH Related NGOs in Malaysia?
Adakah anda menyedari tentang kewujudan NGO berkaitan Keselamatan dan Kesihatan Pekerjaan di Malaysia?

a) Yes / Ya b) No / Tidak

2. Are you a member of any OSH Related NGOs in Malaysia ?
Adakah anda ahli untuk mana-mana NGO berkaitan Keselamatan dan Kesihatan Pekerjaan di Malaysia?

a) Yes / Ya b) No / Tidak

3. If yes, which NGOs and how long have you become a member ? (For NGOs who have not participated, if none put 0 at years becoming member).

Sekiranya ya, sila nyatakan NGO dan tempoh menjadi ahli (Bagi yang tidak berkenaan sila tulis 0 di ruangan tempoh menjadi ahli).

NGO / NGO	Years becoming member <i>Tempoh menjadi ahli</i>
Malaysian Society For Occupational Safety and Health (MSOSH)	
Malaysian Occupational Health Practitioners Association (MOHPA)	
Malaysian Occupational Safety and Health Practitioners Association (MOSHPA)	
Malaysian Industrial Safety and Health Association (MISHA)	
Malaysian Association of Environmental Health (MAEH)	
Malaysian Federation of Occupational Safety and Health (MyFOSH)	
Pahang Environment Safety and Health Association (PESHA)	
Southern Region Group of occupational Safety and Health (SRGSHE)	
Northern Region Group Safety Health Environment (NRGSHE)	
East Malaysia Regional Group Safety and Health and Environment Practitioner Association (SWKRGSH)	
Human Factors and Ergonomics Society Malaysia (HFEM)	
Malaysian Industrial Hygiene Association (MIHA)	

Malaysian Occupational Scaffolding Association (MOSA)	
Malaysian Society of Occupational Health Doctors (MSOHD)	
Academy of Occupational and Environmental Medicine Malaysia (AOEMM)	
Society of Occupational and Environmental Medicine (SOEM)	
Others (Please state the name of the NGO) Example : Muslim Engineers Development Association (MINDA) - 5 years	

4. Have you ever participate in any activities organized by any OSH Related NGOs?
Pernahkan anda mengambil bahagian dalam aktiviti-aktiviti yang dianjurkan oleh mana-mana NGO berkaitan Keselamatan dan Kesihatan Pekerjaan?

a) Yes / Ya b) No / Tidak

5. How frequent do you participate in activities organized by any OSH Related NGOs (cumulatively)?
Berapakah kekerapan anda mengambil bahagian dalam aktiviti-aktiviti yang dianjurkan oleh mana-mana NGO berkaitan Keselamatan dan Kesihatan Pekerjaan (kumulatif)?

(1: Very low (once a year), 2: Low (twice a year), 3: Moderate (every quarterly – 4 times a year), 4: High (monthly), 5: Very high (weekly))

(1: Sangat rendah (setahun sekali), 2: Rendah (2 kali setahun), 3: Sederhana (beberapa kali setahun - 4 kali setahun), 4: Tinggi (bulanan), 5: Sangat tinggi (mingguan))

6. What is the reason for joining activities organized by OSH Related NGOs?

Apakah sebab anda menyertai aktiviti-aktiviti yang dianjurkan oleh NGO berkaitan Keselamatan dan Kesihatan Pekerjaan?

a) Collect CEP point / Mengumpul mata CEP

- b) Increase soft skills / *Meningkatkan kemahiran insaniah*
- c) Enhance the quality of Resume / *Meningkatkan kualiti Resume*
- d) Professional development / *Pembangunan profesional*
- e) Improve social networking / *Meningkatkan jaringan sosial*
- e) Others / *Lain-lain* : _____

Section D - Perceptions on The Roles of OSH Related NGOs in Enhancing OSH in Malaysia / *Persepsi Terhadap NGO berkaitan keselamatan dan kesihatan pekerjaan dalam meningkatkan prestasi keselamatan dan kesihatan pekerjaan di Malaysia*

The following statements describe perceptions toward Roles of OSH Related NGOs. Choose the extent of your agreement based on the scale (1: Strongly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly agree)

Pernyataan di bawah menggambarkan persepsi terhadap Peranan NGO berkaitan keselamatan dan kesihatan pekerjaan dalam meningkatkan prestasi keselamatan dan kesihatan pekerjaan di Malaysia. Pilih tahap persetujuan anda berdasarkan skala (1: Sangat tidak bersetuju, 2: Tidak setuju, 3: Neutral, 4: Setuju, 5: Sangat setuju)

Abbreviation : OSH NGOs = OSH Related NGOs

Singkatan : NGO KKP = NGO berkaitan Keselamatan dan Kesihatan Pekerjaan

Statement	Choice of Answer				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I think that activities organize by OSH NGOs increases the level of knowledge among employers and employees on OSH related laws and regulations in Malaysia. <i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP meningkatkan tahap pengetahuan dalam kalangan majikan dan pekerja mengenai undang-undang dan peraturan berkaitan Keselamatan dan Kesihatan Pekerjaan di Malaysia.</i>	1	2	3	4	5
2. I think that activities organize by OSH NGOs increases the level of attitude among employers and employees on	1	2	3	4	5

<p>OSH related laws and regulations in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP meningkatkan tahap sikap dalam kalangan majikan dan pekerja mengenai undang-undang dan peraturan berkaitan Keselamatan dan Kesihatan Pekerjaan di Malaysia.</i></p>					
<p>3. I think that activities organize by OSH NGOs increases the level of practice among employers and employees on OSH related laws and regulations in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP meningkatkan tahap amalan dalam kalangan majikan dan pekerja mengenai undang-undang dan peraturan berkaitan Keselamatan dan Kesihatan Pekerjaan di Malaysia.</i></p>	1	2	3	4	5
<p>4. I think that activities organize by OSH NGOs DOES NOT improve the compliance of occupational safety and health legislation in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP TIDAK DAPAT meningkatkan patuhan undang-undang keselamatan dan kesihatan pekerjaan di Malaysia.</i></p>	1	2	3	4	5
<p>5. I think that activities organize by OSH NGOs can improve the <u>reporting system</u> for work-related accidents, injuries and fatality in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP dapat meningkatkan sistem pelaporan kemalangan, kecederaan dan kematian yang berkaitan dengan pekerjaan di Malaysia.</i></p>	1	2	3	4	5
<p>6. I think that activities organize by OSH NGOs improves workplace safety in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP meningkatkan keselamatan tempat kerja di Malaysia.</i></p>	1	2	3	4	5
<p>7. I think that activities organize by OSH NGOs DOES</p>	1	2	3	4	5

<p>NOT increase awareness among employers and employees on Malaysian standard on Occupational Health and Safety Management Systems in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP TIDAK DAPAT meningkatkan kesedaran dalam kalangan majikan dan pekerja mengenai Standard Sistem Pengurusan Kesihatan dan Keselamatan Pekerjaan di Malaysia.</i></p>					
<p>8. I think that activities organize by OSH NGOs increases professional competency of OSH practitioners in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP meningkatkan kompetensi profesional pengamal Keselamatan dan Kesihatan Pekerjaan di Malaysia.</i></p>	1	2	3	4	5
<p>9. I think that activities organize by OSH NGOs reduces accident rates at workplace in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP mengurangkan kadar kemalangan di tempat kerja di Malaysia.</i></p>	1	2	3	4	5
<p>10. I think that activities organize by OSH NGOs DOES NOT reduce the rate of occupational diseases in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP TIDAK DAPAT mengurangkan kadar penyakit pekerjaan di Malaysia.</i></p>	1	2	3	4	5
<p>11. I think that activities organize by OSH NGOs DOES NOT reduce the number of occupational poisoning cases in Malaysia.</p> <p><i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP TIDAK DAPAT mengurangkan jumlah kes keracunan pekerjaan di Malaysia.</i></p>	1	2	3	4	5
<p>12. I think that activities organize by OSH NGOs reduces injuries rates at workplace in Malaysia.</p>	1	2	3	4	5

<i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP mengurangkan kadar kecederaan di tempat kerja di Malaysia.</i>					
13. I think that activities organize by OSH NGOs reduces dangerous occurrence(s) at workplace. <i>Saya berpendapat bahawa aktiviti yang dianjurkan oleh NGO KKP mengurangkan kejadian berbahaya di tempat kerja.</i>	1	2	3	4	5
14. I DO NOT think that OSH-Related NGOs achieved their objectives to improve OSH performances at workplace. <i>Saya TIDAK berpendapat bahawa NGO KKP mencapai objektif mereka untuk meningkatkan prestasi OSH di tempat kerja.</i>	1	2	3	4	5
15. I think that goals set by OSH NGOs are not relevant to to the current status of Occupational Safety and Health In Malaysia. <i>Saya berpendapat bahawa matlamat yang ditetapkan oleh NGO KPP tidak berkait dengan dengan status Keselamatan dan Kesihatan Pekerjaan di Malaysia sekarang.</i>	1	2	3	4	5

APPENDIX 2 : CVI CALCULATION

Table 7.1 Detail CVI Calculation

	Expert 1	Expert 2	Expert in Agreement	I-CVI	UA
Item					
Q1					
a	1	1	2	1	1
b	1	1	2	1	1
Q2	1	1	2	1	1
Q3	1	1	2	1	1
Q4					
a	1	1	2	1	1
b	1	1	2	1	1
c	1	1	2	1	1
d	1	1	2	1	1
e	1	1	2	1	1
f	1	1	2	1	1
g	1	1	2	1	1

	Expert 1	Expert 2		Expert in Agreement	I-CVI	UA
Q5						
a	1	1		2	1	1
b	1	1		2	1	1
c	1	1		2	1	1
Q6	1	1		2	1	1
Q7						
a	1	1		2	1	1
b	1	1		2	1	1
c	1	1		2	1	1
d	1	1		2	1	1
e	1	1		2	1	1
f	1	1		2	1	1
g	1	1		2	1	1
h	1	1		2	1	1
i	1	1		2	1	1
j	1	1		2	1	1
Q8						

	Expert 1	Expert 2		Expert in Agreement	I-CVI	UA
a	1	1		2	1	1
b	1	1		2	1	1
Q9	1	1		2	1	1
Q1						
a	1	1		2	1	1
b	1	1		2	1	1
Q2						
a	1	1		2	1	1
b	1	1		2	1	1
Q3						
a	1	1		2	1	1
b	1	1		2	1	1
c	1	1		2	1	1
d	1	1		2	1	1
e	1	1		2	1	1
f	1	0		1	0.5	0
g	1	1		2	1	1

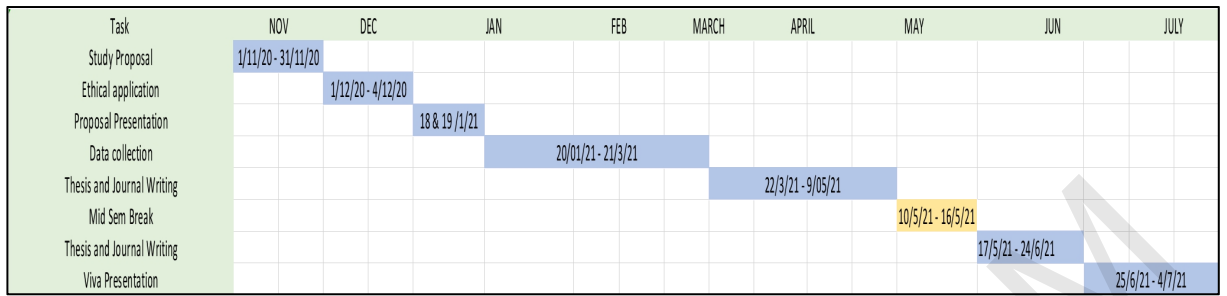
	Expert 1	Expert 2		Expert in Agreement	I-CVI	UA
h	1	1		2	1	1
i	1	1		2	1	1
j	1	1		2	1	1
k	1	1		2	1	1
l	1	1		2	1	1
m	1	1		2	1	1
n	1	1		2	1	1
o	1	1		2	1	1
p	1	1		2	1	1
q	1	1		2	1	1
Q4						
a	1	1		2	1	1
b	1	1		2	1	1
Q5						
a	1	1		2	1	1
b	1	1		2	1	1
c	1	1		2	1	1

	Expert 1	Expert 2		Expert in Agreement	I-CVI	UA
d	1	1		2	1	1
e	1	1		2	1	1
Q6						
a	1	1		2	1	1
b	1	1		2	1	1
c	1	1		2	1	1
d	1	1		2	1	1
e	1	1		2	1	1
Q1	1	1		2	1	1
Q2	1	1		2	1	1
Q3	1	1		2	1	1
Q4	1	1		2	1	1
Q5	0	1		1	0.5	0
Q6	1	1		2	1	1
Q7	1	1		2	1	1
Q8	1	1		2	1	1
Q9	1	1		2	1	1

	Expert 1	Expert 2		Expert in Agreement	I-CVI	UA
Q10	1	1		2	1	1
Q11	1	0		1	0.5	0
Q12	1	1		2	1	1
Q13	0	1		1	0.5	0
Q14	0	1		1	0.5	0
Q15	0	1		1	0.5	0
Q16	1	1		2	1	1
Q17	0	1		1	0.5	0
Q18	0	1		1	0.5	0
Q19	0	1		1	0.5	0
Q20	1	1		2	1	1
Q21	0	1		1	0.5	0
Q22	0	1		1	0.5	0
Q23	0	1		1	0.5	0
Q24	0	1		1	0.5	0
Q25	0	1		1	0.5	0
Q26	0	1		1	0.5	0

	Expert 1	Expert 2		Expert in Agreement	I-CVI	UA
				S-CVI/Ave (based on I-CVI)	1.8	
Proportion relevance	0.85	0.98		S-CVI/UA		0.83
S-CVI/Ave (based on proportion relevance)			0.91			

APPENDIX 4 : GANTT CHART



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