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**THE RELATIONSHIP BETWEEN SAFETY PERFORMANCE AND SAFETY
CLIMATE IN UTILITIES INDUSTRY,
INDAH WATER KONSORTIUM SDN. BHD (NORTHERN REGIONAL).**

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MASTER OF SCIENCES (OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT)
UNIVERSITI UTARA MALAYSIA
AUGUST 2022

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CLIMATE IN UTILITIES INDUSTRY,
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By

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Thesis Submitted to
College of Business,
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Health Management)



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ABSTRACT

The utility industry is a field of work with a high risk of exposure to hazards. Work operations classified as dangerous, difficult and dirty have exposed workers to potential workplace accidents, bacterial infections and in worse situations resulting in death. Weak occupational health and safety management systems and ineffective risk controls are believed to be the cause of the decline in organizational safety performance. Creating a safety climate that covers all levels in the organization is the backbone of achieving excellent safety performance. Therefore, this study was conducted empirically to investigate safety climate elements that are believed to have a relationship with safety performance. Indah Water Konsortium Sdn. Bhd (Northern Region) is an organization that operates and maintains the national sewage system, has been selected as a research organization. Consisting of eleven (11) operational units, the research method was carried out quantitatively with a questionnaire survey distributed to 291 respondents consisting of IWK staff. Descriptive analysis and pearson correlation analysis were performed on the acquisition of research data through the Statistical Package for Social Science (SPSS) Version 27 software. The results of the analysis found all four (4) research hypotheses (management commitment, safety promotion policy, safety rules and procedures, and involvement workers) are supported or in other words accepted. These findings provide valuable guidance to researchers and practitioners to identify solutions that can improve safety and health in the workplace.

Keywords: Safety climate, safety performance, Indah Water Konsortium Sdn. Bhd. (IWK) Northern Regional employees.

ABSTRAK

Industri utiliti adalah bidang kerja dengan risiko pendedahan bahaya yang tinggi. Operasi kerja yang diklasifikasikan sebagai berbahaya, sukar dan kotor telah mendedahkan pekerja kepada potensi kemalangan di tempat kerja, jangkitan kuman dan dalam situasi yang lebih teruk yang mengakibatkan kematian. Sistem pengurusan kesihatan dan keselamatan pekerjaan yang lemah serta kawalan risiko yang tidak berkesan dipercayai menjadi punca kemerosotan prestasi keselamatan organisasi. Mewujudkan iklim keselamatan yang meliputi semua peringkat dalam organisasi adalah tulang belakang untuk mencapai prestasi keselamatan yang cemerlang. Oleh itu, kajian ini dijalankan secara empirikal untuk menyiasat elemen iklim keselamatan yang dipercayai mempunyai hubungan dengan prestasi keselamatan. Indah Water Consortium Sdn. Bhd (Rantau Utara) adalah sebuah organisasi yang mengendalikan dan menyelenggara sistem kumbahan nasional, telah dipilih sebagai organisasi penyelidikan. Terdiri daripada sebelas (11) unit operasi, kaedah kajian dijalankan secara kuantitatif dengan tinjauan soal selidik diedarkan kepada 291 responden yang terdiri daripada kakitangan IWK. Analisis deskriptif dan analisis korelasi pearson dilakukan terhadap pemerolehan data kajian melalui perisian Statistical Package for Social Science (SPSS) Versi 27. Hasil analisis mendapati keempat-empat (4) hipotesis kajian (komitmen pengurusan, polisi promosi keselamatan, peraturan dan prosedur keselamatan, dan penglibatan pekerja) adalah disokong atau dengan kata lain diterima. Penemuan ini memberikan panduan berharga kepada penyelidik dan pengamal untuk mengenal pasti penyelesaian yang boleh meningkatkan keselamatan dan kesihatan di tempat kerja.

Kata kunci: Iklim keselamatan, prestasi keselamatan, pekerja Indah Water Konsortium Sdn. Bhd. (IWK) Wilayah Utara.

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LIST OF ABBREVIATIONS

ILO	International Labour Organization.
USD	United States Dollars
WHO	World Health Organization.
IWK	Indah Water Konsorsrtium Sdn. Bhd.
DOSH	Department of Occupational Safety and Health.
SOP	Standard Operating Procedures.
OSHA	Occupational Safety and Health Act.
OSHMA	Occupational Safety and Health Management Systems.
FMA	Factories and Machinery Act.
ACSNI	Advisory Committee on Safety Nuclear Installations.
PPE	Personal Protective Equipment.
OSH	Occupational Safety and Health.
SPSS	Statistical Package for the Social Sciences.
MOH	Department of Health Malaysia.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study.

Occupational safety and health are critical issues and components of safe work practises. For establishing the efficacy of occupational hazard and risk surveillance, it is crucial to collect data on employee accidents and injuries. The International Labor Organization (ILO) estimates that over 2.78 million people die annually as a result of occupational accidents or work-related illnesses and that there are over 374 million non-fatal work-related injuries that result in more than four lost working days annually. It is projected that the failure to invest in occupational safety and health has resulted in a cost burden of 3.94 percent of the global gross domestic product, or 2.99 quadrillions of United States dollars (USD) (www.ilo.org).

According to the World Health Organization (WHO), an accident is an unexpected and unplanned event. While the ILO portrayed the disaster as a result of a series of tragic events, the calamity itself was the result of a single event. According to Ali, Kamarulzaman, and Sing (2010), an accident is an undesirable occurrence that may result in bodily harm or property loss. This situation occurs when an activity depletes the body's structural and maintenance capabilities. Some studies define an accident as any unplanned event that can result in public injury or disease, damage or loss of property and assets, the environment, or, if the situation deteriorates, loss of business opportunity (Animashaun & Odeku, 2014).

Occupational accidents can have immediate and fundamental causes. Immediate causes include potentially accident-producing dangerous acts and unsafe circumstances. It is essential to regulate the underlying reason that results in an immediate cause, where underlying causes include personal and occupational issues (González, Bonilla, Quintero, Reyes, & Chavarro, 2016). Academic research has demonstrated that dangerous worker conduct, unsafe working circumstances, and hazardous practices positively correlate with occupational diseases and disorders in the workplace (Umair, Shahrul, Zulkipli, and Naseebullah, 2015). According to Hamdi, Asmonib, Amir, and Nursyamimi (2015), the majority of work-related accidents are the result of risky activities, unsafe conditions, or a mix of the two, where both internal and external variables play a role.

Unsafe activities are inappropriate behaviors or actions that have the potential to cause accidents and injury in the future. Errors and violations are the two classifications of risky acts (Aksorn & Hadikusumo, 2007). Unsafe environments are a possible cause of employee injury or death. This condition is characterized as an inadequate physical condition at work, especially before an accident, contributing to the occurrence. Considering the nature of the industry and the work environment allows for a rigorous evaluation of harmful activities and working circumstances.

According to Feyer and Williamson (2011), occupational accidents are caused by a number of factors, with the human element being the most relevant. The Traditional Accidental Causes Model has a superficial focus on the human element. Error in the sequence of events that led to the accident is causally connected to this. Understanding how, why, and when human factors cause accidents can strengthen the ability to determine the involvement of human

factors and contribute to accident prevention. Sulastre and Faridah (2012) emphasised that human conduct is the primary cause of building accidents.

Based on the examination of the post-accident procedure, it is possible to explain that accidents may have multiple causes and may vary from incident to event. Numerous elements in the workplace contribute to accidents, and a good working environment can lower the risk of operational hazards that lead to work-related accidents (Hoaa, Nowobilskia, Iwona, & Szerb, 2017). In addition to human variables and workplace factors, organizational and managerial elements, as well as external factors, also contribute to occupational accidents at the building site (Ayuni, Rumaizah, Zulhabri and Julitta, n.d.).

Heinrich's Domino Theory provides credence for this argument. In general, 88 percent of accidents result from risky human behavior, 10 percent are the result of an unsafe psychological environment, and only 2 percent are the result of uncontrollable forces (Chen & Tiana, 2012). Heinrich has argued that the sequence of accidents comprises five components represented by dominoes in his model: ancestral and social environment, worker error, dangerous acts addition to physical and mechanical hazard, accident, and injury or damage. These dominoes are set in a sequence of accidents and then fall, signifying that an individual with undesirable or inherited characteristics may engage in risky behavior or generate a mechanical or physical hazard, resulting in injury (Abdelhamid & Everett, 2000).

Petersen believes that the situation of an accident can be traced to a multitude of contributing elements, causes, and sub-causes as the primary causes. He suggested that these variables were the focus of the investigation into workplace accidents (Raouf, 2011). The Many Causations Theory employs multiple questions of causation and environmental elements,

particularly management systems, to determine the causes of accidents. The answers to these questions and others will result in a more thorough and efficient research approach. In conclusion, Petersen believes that attempting to identify an insecure act or its condition is symptomatic, as the action or circumstance may be the immediate cause but not the core reason. Petersen noted that the root cause must be identified for lasting improvement, which is frequently related to the management system and may be attributable to management policies, procedures, supervision, and training, among other factors (Abdelhamid & Everett, 2000).

Along with the rise of the sector, the number of accidents and occupational events has increased, with frightening consequences, partly attributable to the workers' work environment and some personal characteristics (Rahmani, Khadem, Madreseh, Aghaei, Raei, & Karchani, 2013). Employee stress and insecure activities that affect the work environment will have a substantial impact on the health and well-being of employees, according to Global (Umair, Shahrul, Ghazali & Naseebullah, 2015).

In addition, a lack of supervision may expose workers to minor violations and professional carelessness, resulting in less severe injuries and worse outcomes (Sabet, Aadal, Jamshidi & Rad, 2013). According to studies, a lack of management commitment to resolving occupational safety and health issues is one of the leading causes of accidents, which are more severe when internal and external factors influence this condition (Hamdi, Asmonib, Amir, & Nursyamimi, 2015). According to Szóstak (2019), in workplace safety concerns, it is crucial to recognize that workers involved in an accident have three roles: decision-makers, accident-causers, and the injured or worse-off party, who is the victim.

Statistics on occupational accidents and diseases are rising in developing nations (Gizaw, Gebrehiwot, Teka, & Molla, 2012) and are an underappreciated factor in the global health care cost burden (Rauned, Harper, Shahani, & Schwarz, 2005). A workplace accident will incur both direct and indirect expenses, and there may be hidden costs that the entire community must bear in certain instances. There are numerous variances in cost, but the indirect cost component is often substantially greater than the direct cost component (Rauned, Harper, Shahani, & Schwarz, 2005). In order to explain and comprehend, direct costs are something that may be evaluated in the case of an accident, whereas indirect costs require meticulous calculation after an accident (Jafri, Fitri, Harun & Atan, 2015). On the other hand, direct costs can be quantified as medical and insurance administration charges. In contrast, indirect costs can be quantified and interpreted as the loss of income, loss of home production, and loss of employment and illness benefits (Rauned, Harper, Shahani, & Schwarz, 2005).

The repercussions of these accident expenses are shared by workers, businesses, and government authorities. Workers who sustain injuries on the job must endure various hardships, including income loss and a decline in quality of life. For corporate organizations, the expenses of accidents resulting in losses such as decreased production, faulty machinery and equipment, and the need to replace staff will be borne. In more dire circumstances, firms must contend with a decline in staff morale and motivation as well as a tarnished reputation (Rohani, Johari, Hamid, & Atan, 2015). Mazzolini (2012) highlighted in his study that, even though most industrial accidents result in minor injuries with low health repercussions, there are instances in which employees suffer from long-term injuries or permanent incapacity.

This issue must be treated seriously to encourage the development of a safe and healthy workplace since it is one of the important roles of companies and employees to conduct their

daily operations and activities safely and correctly. A high degree of safety and health knowledge enables workers to perform their duties more successfully and efficiently, which may help prevent workplace accidents (Huda, Norudin & Zalinawati, 2012). The financial component of an organization's success is not the only determinant of its success; the aspects of an accident affecting assets, disruption to productivity, injury or loss of life, and the organization's reputation are all considered (Amirrudin, Esa, Syaidan, Fadhilah & Norsyahidah, 2015). Consequently, it is required to identify the essential factors for the successful implementation of the specified occupational safety and health program (Ikramul, Shakil & Habibur, 2017).

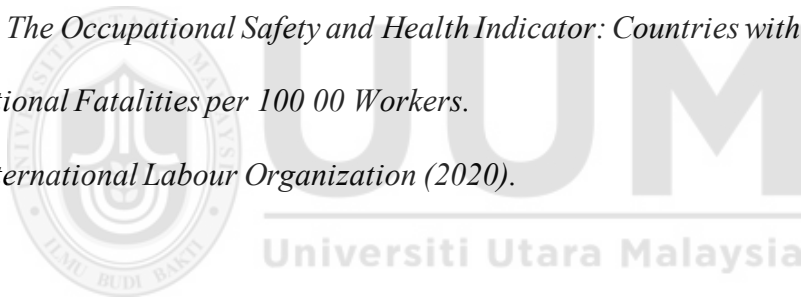
As a method for reducing the possibility of occupational accidents, the concept of safety climate is increasingly viewed from various perspectives. Despite various theories in safety management, the safety climate is gaining widespread acceptance due to its crucial role in attempts to enhance organizational safety. The success of the safety climate concept affects not only the rate of workplace accidents but also work practices, employee absence, quality, productivity, commitment, and job satisfaction (Teo & Feng, 2008).

Creating a safety climate inside a company is the most effective method for enhancing safety performance and lowering occupational accident rates. Good behavior will be fostered to replace patterns of risky behavior (Faridah, Ezanee, Zuriea, Hikmah, & Zarita, 2012). A company's success in implementing the Safety Management System results from its strong inclination and culture to control and adapt the related structure or system. Therefore, the organization's culture functions as a potent force that directs the behavior of its individuals in their everyday job (Cooper, 2016).

Country	Non-fatal occupational injuries per 100'000 workers	Reference year for injuries	Occupational fatalities per 100'000 workers *	Reference year for fatalities	Inspectors per 10'000 employed persons	Reference year for inspectors
Occupied Palestinian Territory	1,775	2015	38.4	2015	0.8	2017
Cuba	1,017	2010	25.0	2010	0.8	2010
Armenia	50	2018	13.6	2018	1.1	2010
Egypt	670	2016	10.7	2015		
Costa Rica	9,421	2016	9.7	2016	0.5	2015
Zimbabwe	480	2012	9.5	2012	0.1	2011
Uzbekistan	35	2018	8.1	2018		
Nicaragua	4,891	2010	8.0	2010		
Turkey	1,530	2016	7.5	2016	0.4	2019
Mexico	3,003	2017	7.5	2017	0.1	2018
Brazil	1,374	2017	7.4	2011	0.3	2013
Moldova, Republic of	72	2017	7.3	2017	0.5	2018
Thailand	321	2014	6.8	2014	0.3	2018
Belize	1,701	2017	6.7	2012	1.8	2012
Ukraine	54	2019	5.5	2019	0.3	2018
United States	900	2018	5.3	2018	0.1	2015
Russian Federation	113	2018	5.0	2018		
Seychelles	165	2018	4.8	2018	2.9	2018
Mongolia	25	2019	4.5	2019	0.5	2018
Kazakhstan	42	2017	4.3	2017		

Figure 1.1: *The Occupational Safety and Health Indicator: Countries with Higher Statistic of Occupational Fatalities per 100 00 Workers.*

Source: *International Labour Organization (2020).*



Country	Non-fatal occupational injuries per 100'000 workers	Reference year for injuries	Occupational fatalities per 100'000 workers	Reference year for fatalities	Inspectors per 10'000 employed persons	Reference year for inspectors
Costa Rica	9,421	2016	9.7	2016	0.5	2015
Netherlands	5,200	2016	0.5	2015		
Nicaragua	4,891	2010	8.0	2010		
Argentina	3,771	2018	3.7	2018	0.3	2017
Spain	3,393	2016	1.8	2016	1.0	2015
France	3,160	2015	2.6	2015	0.8	2014
Chile	3,142	2018	3.1	2018	0.6	2018
Mexico	3,003	2017	7.5	2017	0.1	2018
Portugal	2,954	2015	3.5	2015	0.6	2018
Uruguay	2,654	2018	3.7	2018	0.6	2018
Austria	1,952	2016	2.0	2016	0.8	2018
Switzerland	1,904	2014	1.3	2015	1.3	2015
Luxembourg	1,856	2015	3.3	2015		
Germany	1,811	2015	1.0	2015	1.4	2018
Denmark	1,794	2015	1.0	2015		
Finland	1,726	2015	1.4	2015	1.2	2018
Belize	1,701	2017	6.7	2012	1.8	2012
Turkey	1,530	2016	7.5	2016	0.4	2019
Slovenia	1,512	2015	2.8	2015	0.8	2018
Belgium	1,403	2015	1.6	2015	0.7	2018

Figure 1.2: The Occupational Safety and Health Indicator: Countries with Higher Statistic of Non-fatal Occupational Injuries per 100 00 Workers.

Source: International Labour Organization (2020).

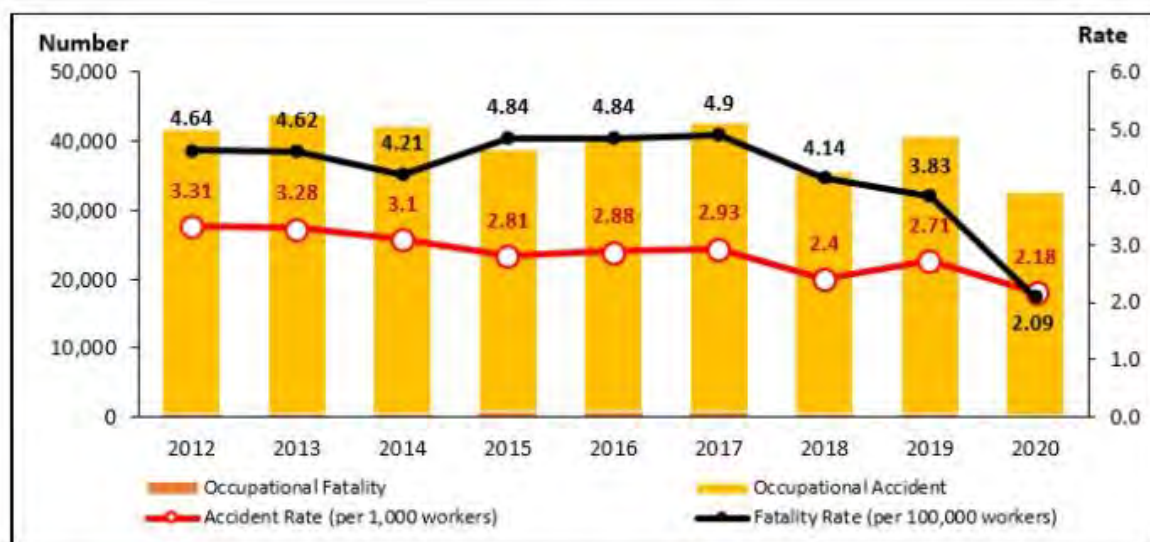


Figure 1.3: The Annual Occupational Accident and Fatality, 2012-2020.

Source: Department of Occupational Safety and Health (2021).

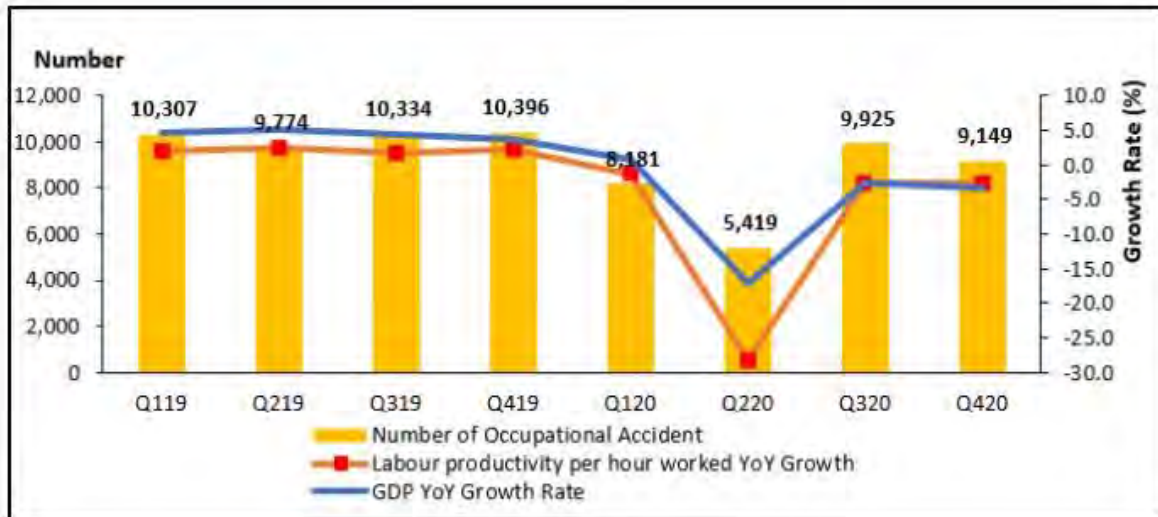


Figure 1.4: *The Occupational Accident Rate, GDP Growth, and Labour Productivity per hour worked Growth, Q119-Q420.*

Source: *Department of Occupational Safety and Health (2021).*

1.2 Problem Statement.

Over time, global utility industry, particularly sewage management services, has been transformed. Since the beginning of human civilization, the first group has lived scattered across wide plains, returning their waste to the earth for decomposition as part of the natural cycle (Lofrano & Brown, 2010). Prior to 10,000 years ago, a new period of human civilization blossomed after the human population stopped living a nomadic lifestyle. This solution influences the environment as a result of the community's new agricultural operations. This effect lasted until the establishment of the first human civilization, during which human waste disposal was controlled through underground holes and safeguarded after usage (Lofrano & Brown, 2010).

After the middle of the 19th century, modern sewage was adopted throughout Europe as a response to the increasing pollution generated by industrialization and urbanization (Angelakis & Snyder, 2015). The primary purpose of sewage treatment is to safeguard public health, and the second is to prevent environmental contamination (Hamid & Narendran, n.d.). According to Kazmia and Furumaib (2005), centralized sewerage systems were constructed in most cities to accommodate and process sewage. However, most sewage was deposited directly into rivers, lakes, and coastal waterways without treatment.

The United Nations reports that more than eighty percent of the sewage produced, particularly in developing nations, is discharged straight without treatment, damaging rivers, lakes, and coastlines (Mariani & Norhafizah, 2015). Lack of monitoring of sewage discharge into the river has caused a massive cholera epidemic (Amirrudin, Esa, Syaidan, Nik Fadhilah, & Norsyahidah, 2015). Sewage can pose a major threat to public health due to the presence of infectious organisms and biological and chemical compounds. E-coli and other organisms in sewage can cause various health problems, including diarrhea, colic, and vomiting (Pillay, 1994). London was infected with cholera in 1832, 1849, and 1855 due to a contaminated water supply, according to the works of Angelakis and Snyder (2015), resulting in tens of thousands of deaths. Other research demonstrates that sewage pollution damages and affects ecosystems. Eutrophication produced by nutrient enrichment and high nutrient content, such as phosphate and nitrite, affects rivers, lakes, and seas (Mariani & Norhafizah, 2015).

An essential feature of sewage treatment is the elimination of pathogens that threaten human health and the production of reusable or environmentally safe byproducts (Sabeen, Norzita, Zainura, Raheem, Agouillal, Mohammed, & Abdulkarim, 2018). The European Union has encouraged Anaerobic Digestion, a process for treating sludge in which pathogens are

eliminated to recycle the soil (Aldosari, Kassem, Baig, Muddassir & Mubushad, 2017). As anaerobic digestion is not yet widespread in Malaysia, competent engineers and technicians may be required to operate and maintain anaerobic digestion plants (Hanum, Yuan, Kamahara, Aziz, Atsuta, Yamada & Daimon, 2019).

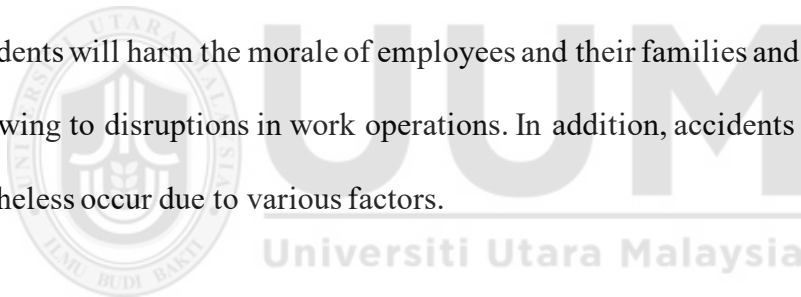
In Malaysia, sewage management and treatment technologies have likewise evolved during the past fifty years. The basic technology served as the foundation for the sewage infrastructure. Technological advancements in the sewage sector have resulted in a shift from the primary system to the secondary system for sewage treatment (Candiah, 2004).

Indah Water Konsortium Sdn. Bhd. (IWK) is a national sewerage company that has been responsible for developing and maintaining a modern and efficient sewerage system for all Malaysians. According to a sustainable report by IWK, it has been operating and maintaining 16,328 km of sewer pipelines, 5,997 sewerage treatment plants, and 926 network pump stations (Hanum, Yuan, Kamahara, Aziz, Atsuta, Yamada & Daimon, 2019).

To ensure the optimal operation of the sewage treatment plant, operators face the task of maintaining and operating processes and equipment that may offer a risk of injury and workplace accidents. Since the sewerage system is an essential infrastructure for sustaining public health, Kim (2018) believes that the necessity for periodic maintenance is increasing. Additionally, the technological revolution moved from non-mechanical to mechanical and automation-based systems (Hamid & Narendran, n.d.). Potential dangers associated with the design and operation of treatment facilities expose workers to the risk of health problems, accidents, and near misses (Magdalena & Anita, 2019).

Work in sewage treatment carries a high risk of fatality, particularly if it involves entering tight locations (Shafik, Saad, & Rania, 2019). According to the observations of Tiwari (2008), workers are typically exposed to gases including hydrogen sulfide, methane, ammonia, and carbon monoxide. This has occurred multiple times in the past due to chemical reactions in the sewer system, exposing personnel in the plant and its activities directly (Shafik, Saad, & Rania, 2019).

The Department of Occupational Safety and Health (DOSH) accident figures for 2020 indicate that 3.15 percent of reported instances (per 1000 workers) happened in the utility sector, including electricity, gas, water, and sanitary services. 1.87 percent of cases (per 1000 workers) involving the industry resulted in the death of workers. According to Auyong (2014), workplace accidents will harm the morale of employees and their families and the daily output of employers owing to disruptions in work operations. In addition, accidents can be avoided, but they nevertheless occur due to various factors.



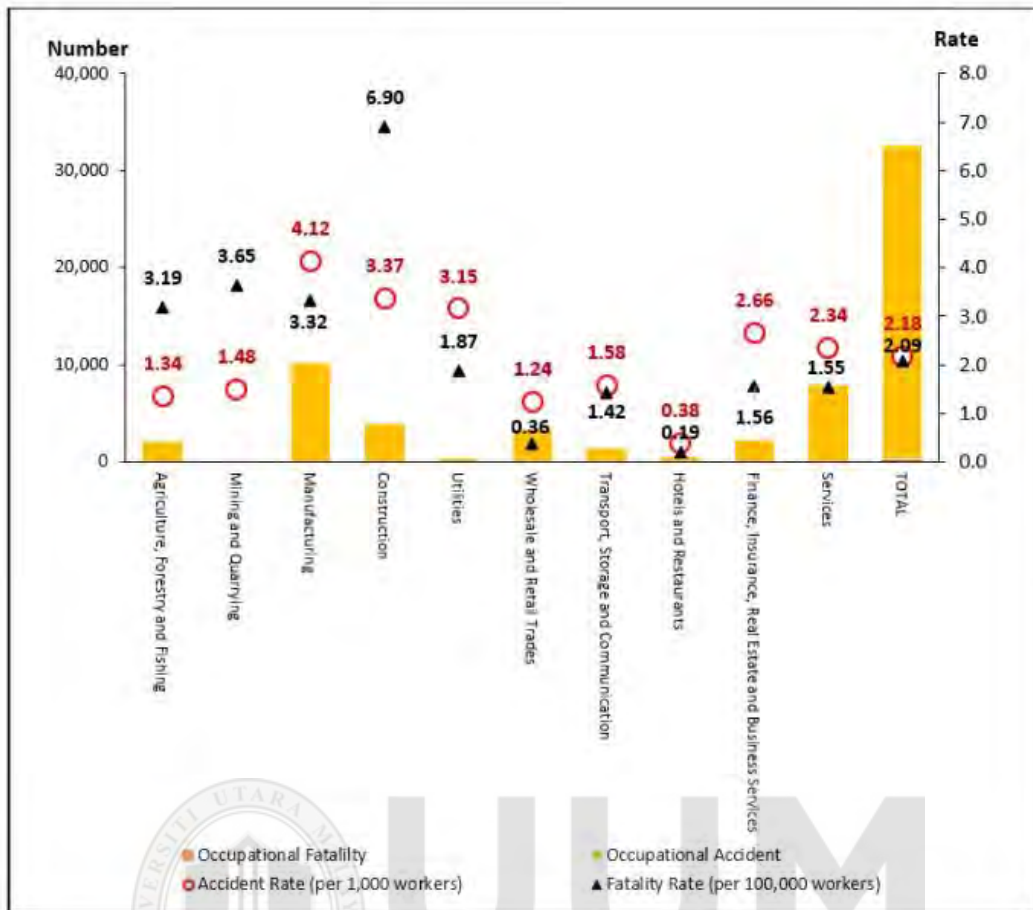


Figure 1.5: *The Occupational Accidents and Fatality by OSHA Sector, 2020.*

Source: *Department of Occupational Safety and Health (2021).*

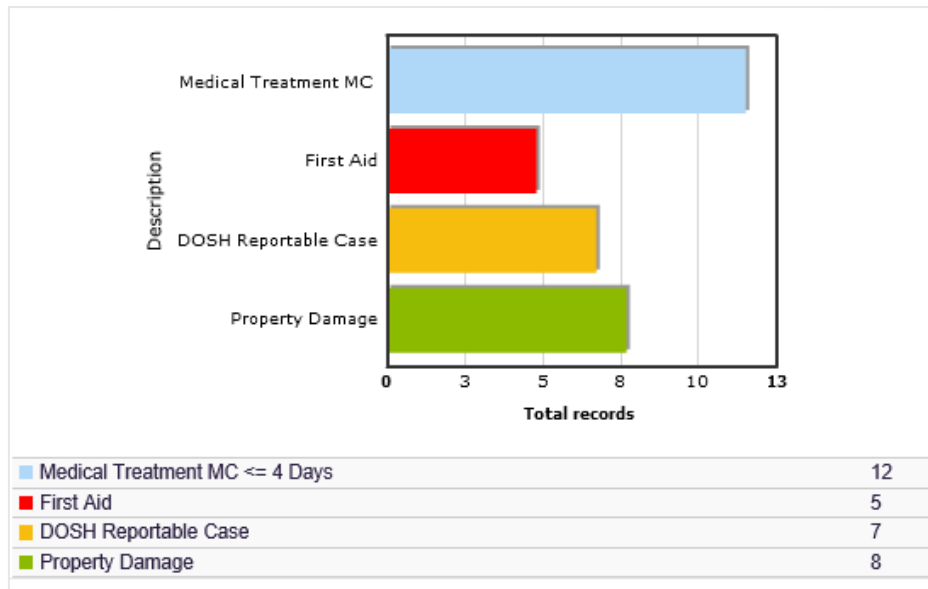


Figure 1.6: *Indah Water Konsortium: Incident by Classification Year 2020.*

Source: *Indah Water Konsortium Sdn. Bhd. (2020).*

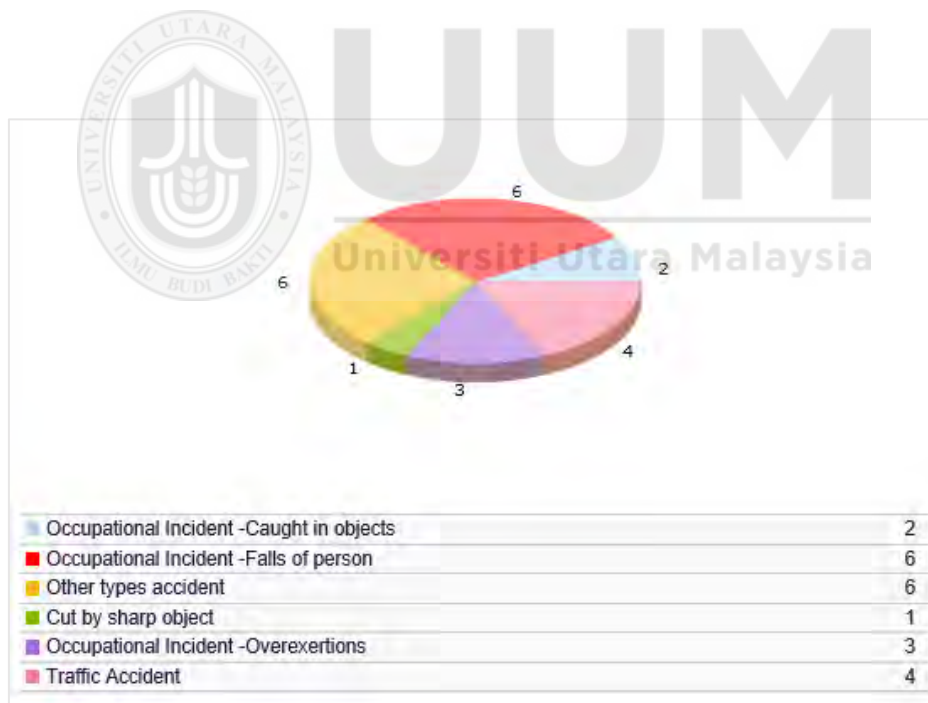


Figure 1.7: *Indah Water Konsortium: Incident by Category Year 2020.*

Source: *Indah Water Konsortium Sdn. Bhd. (2020).*

The enforcement of rules and legislation is insufficient to assure workplace safety and foster a culture of accident prevention. Only by developing a safety climate within a company can safety be improved. In their study, Abdelhamid and Everrtt (2000) claim that occupational accidents can be prevented and addressed by human capacity but that the increase in accidents is due to human irresponsibility. Research on human behavior management is the foundation of occupational accident prevention, as preventing an increase in accident statistics has been an essential objective.

Heinrich presented in his book titled "Industrial Accident Prevention: A Scientific Approach" that 88 percent of accidents result from "unsafe actions." He also presented what is known as the triangle or pyramid of Heinrich accidents, which is a group of 330 accidents recorded; 300 cases did not result in injury, 29 cases will result in minor injuries, and one case will likely result in serious injury. The vast majority of safety professionals concur that Heinrich's opinions substantially impact safety measures.

Taking the stance that accidents can be averted by regulating behavior, the notion of a safety climate is offered as a culture in which safety is easily understood and regarded as the highest priority. Corporate culture comprises the qualities of individuals, jobs, and organizations that affect and influence safety and health (Cooper, 2002). As both are interrelated and mutually reinforcing, the prevailing corporate culture within an organization will impact establishing a safety climate. Safety climate does not work alone; it influences and is influenced by the organization's operational processes and systems (Cooper, 2002).

Today, safety climate is crucial in determining an organization's safety performance. The International Labour Organization (ILO) has objectively demonstrated that safety climate influences safety performance. Numerous studies and comparisons have been undertaken to compare the features of organizations with below-average accident rates against those with accident rates above the norm. The results of the majority of studies indicate that firms with lower accident rates are influenced by the consistent personal participation of senior management, who structure safety management systems with an emphasis on employee safety as a subcomponent (the function that includes the use of financial and professional resources and policy and program-making).

Therefore, a safety climate should be the foundation of every firm as a means to manage risky employee behavior and establish a safe work environment. Theoretically, safety climate incorporates standards of attitudes, beliefs, roles, and social and technical practices that aim to minimize employees', managers', customers', and the public's exposure to situations deemed unsafe or damaging (Cooper, 2002).

Recognizing the importance of workplace safety, this study was conducted to investigate and identify the factors that influence an organization's safety performance and safety climate. The purpose of this study is to gain a better understanding of the significance of safety climate as a predictor of safety performance within sewage service companies. The outcomes of the study enable the organisation to establish effective preventative measures against future mishaps.

1.3 Research Questions.

This study raises concerns regarding the characteristics and determinants of safety climate's effect on safety performance, which must be clarified to reach the appropriate conclusions.

Here are the study-related questions:

- i. What is the safety performance level of sewage service employees?
- ii. How do elements of the safety climate, namely management commitment, safety promotion policies, safety rules and procedures, and employee participation, relates to safety performance of sewage service workers?

1.4 Research Objectives.

This study's objectives are premised on the characteristics and antecedents of safety climate that influence the safety performance of personnel providing sewage management services. The aims of the study are as follows:

- i. To determine the safety performance level of sewage management service personnel.
- ii. To investigate the relationship between management commitment with safety performance among sewage management service staff.
- iii. To investigate the relationship between safety promotion policies with safety performance among sewage management service staff.

- iv. To investigate the relationship between safety rules and procedures with safety performance among sewage management service staff.
- v. To investigate the relationship between employee involvement with safety performance among sewage management service staff.

1.5 Scope of the Study.

The study focuses on the known characteristics and components of safety climate (management commitment, safety promotion policy, safety regulations and procedures, and employee engagement) in order to determine the influence and effectiveness of safety performance. This study will detail the relationships between these two fundamental elements. Due to the significant danger of occupational accidents involving workers, the study's focus is restricted to the organisation of sewage management services. In this study, the convenience of data and information collecting was also evaluated. As a result, Indah Water Konsortium Sdn Bhd (IWK) (Northern Regional) has been selected as the focus of this study.

Malaysia's national sewage corporation, Indah Water Konsortium Sdn. Bhd., is in charge of creating and maintaining a modern and efficient sewerage system for all Malaysians. IWK operations encompass the entirety of Malaysia, excluding the states of Sabah and Sarawak. IWK's operations include 16,328 km of sewerage pipes, 5,997 sewerage treatment plants, and 926 network pump stations administered by 20 operating units and supervised by the company's headquarters in Damansara, Kuala Lumpur. The Operations and Maintenance Department plays a vital role in ensuring effective operation and maintenance.

Consequently, the assessment of accident risk favors employees who perform field labor. Using this methodology, the scope of the study will center on personnel of the Operations and Maintenance Department who are directly involved in field operations.

1.6 Significance of the Research.

Organizations spend considerable effort to identify solutions for lowering the incidence of workplace accidents attributable to human error and noncompliance with Standard Operating Procedures (SOPs). A small number of companies may have implemented safety awareness initiatives that are believed to address this issue. However, they have failed to reduce the accident rate, despite the fact that some firms have effectively implemented them and are striving to improve safety performance. The low accident rate contributes to the corporate culture and professional status of the organisation. Consequently, it is not uncommon for firms to gauge organisational excellence based on their safety atmosphere.

On a practical level, this study will assist firms, particularly those providing a large number of sewage management services, in identifying the elements of safety climate and how it might affect and aid in reducing workplace accident rates. This effort is significant because adopting a safety climate is a close and effective technique for groups or clusters ranging from the highest level of management to field-level employees. In contrast to other studies that emphasize the role of individual attitudes in affecting safety performance, this study focuses on the activities done by the organization's management to ensure that the mandated safety policy achieves the desired outcomes. In addition to serving as a subcomponent of corporate culture, safety climate can also serve as a platform for firms to establish safe work norms among their employees and as a conduit for meeting legal obligations.

In conclusion, this study is an empirical effort designed to serve as a reference and guide for the organisation in identifying the safety climate characteristics that influence organisational safety performance, specifically in sewage management services in Malaysia.

1.7 Limitation of the Study.

This study utilizes the participation of 291 employees of Indah Water Konsortium Sdn. Bhd. (IWK) Northern Regional as respondents to complete a questionnaire regarding the dimensions of safety climate (management commitment, safety promotion policy, safety rules and procedures, and employee involvement) and its impact on safety performance. Langkawi (6 respondents), Alor Setar (32 respondents), Sungai Petani (24 respondents), Perai (24 respondents), Penang (33 respondents), Taiping (25 respondents), Manjung (23 respondents), Ipoh (25 respondents), Kelantan (29 respondents), Terengganu (12 respondents), and Kuantan (40 respondents) are the eleven northern regions targeted.

Management and non-management levels were selected at random and voluntarily as respondents. However, the study was confined to the information provided by respondents; no follow-up observations were done for verification reasons. The scope of the study was determined by the enacted standards of the Occupational Safety and Health Act (OSHA, 1994).

1.8 Arrangement of the Research Paper.

Chapter 1 provides an overview of the conducted study. In this chapter, the background of the study, the problem statement, the research questions, the research objectives, the scope of the investigation, the significance of the study, and the constraints of the study are presented so that the reader may gain an initial understanding of the study. Chapter 2 focuses on the literature review, which consists of the results of prior studies with comparable or related issues that can be utilized for reference and comparison. The methodology of prior studies is also considered a fundamental guideline for this investigation. The reader is provided with an explanation of the framework and scope of the study on the fundamental elements of safety performance and safety climate. In this chapter, prescribed safety climate variables are also discussed.

The third chapter covers the research methodology by detailing the project's overall structure. Step-by-step explanations of the data collection and analysis processes, as well as discussions of the views and arguments resulting from previous research that have been compared to bolster the reliability of the methodology employed from the beginning of the study to the analysis of data collection, will be provided to the readership. The fourth chapter analyses and presents data collected using survey instruments or technologies. In order to increase the reader's understanding and perspective, statistical analysis comparisons are clarified using reasonable reasons. In addition to chapter 5, the conclusion compares the investigation's findings to those of previous investigations. As a guide for the reader, improvement recommendations and empirical viewpoints are provided.

1.9 Summary.

Due to the occurrence of workplace accidents caused by exposure to risks, Indah Water Konsortium (IWK) has developed and implemented a management system for occupational safety and health (OSHMS). This management system is used in accordance with the Occupational Safety and Health Act (OSHA) of 1994 for all operations involving IWK personnel, contractors, and the general public that occur on IWK premises.

In addition to operating as a management system, OSHMS strives to foster a safety climate and reduce IWK employment accident data. Annual monitoring is undertaken through internal audits to guarantee uniform compliance and execution in every operating unit. Implementing safety programs is to educate and inform employees and contractors about the significance of occupational safety and health management. Organizations utilize accident statistics to monitor their safety performance.

Consequently, the relevance of the study's title becomes the primary consideration for measuring the efficiency of safety climate factors in impacting organizational performance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction.

This chapter addresses the variety of literature on safety climate, the elements of a well-established safety climate, and the study's focal point, safety performance. A review and explanation of the empirical understanding of the safety climate components that contribute to improvements in organizational safety performance, particularly in sewage management services organizations, are also provided. Comparisons and discussions of earlier studies' literature serve as essential references and sources for this research. The chapter begins with a description and knowledge of safety performance, followed by a discussion of safety climate. At the end of this chapter, the elements of the safety climate variables set are reviewed.

2.2 An Overview of Related Legislation.

The importance of employee resources to the organization has prompted the Malaysian Parliament to gazette the Occupational Safety and Health Act (OSHA). Enacted on 15 February 1994, the purpose of this act is to ensure the safety, health, and welfare of employees working against the risks to safety or health that arise as a result of such work activities, protecting any individual or the public other than employees working for safety risks or health-related to the activities of such employees, promote a work environment that is in line with the physiological and psychological needs of the employee and, devise ways that by employee safety and health legislation, in other words, are intended to maintain or improve safety and health standards.

Section 15 of this act stipulates that each employer and self-employed individual is required to protect, to the greatest extent feasible, the safety, health, and welfare of all of its employees in the workplace. The standards for compliance with this section are consistent with requiring the organisation to evaluate each risk to employee safety and health. The effectiveness of this act's implementation is not limited to employers or organisations; section 24 provides for the general obligation of employees in the workplace that requires employees to take care of the safety and health of themselves and others who may be affected by their actions or negligence, the obligations or requirements to wearing or using the personal protective equipment provided, and complying with every instruction issued by the employer.

Compliance with the act is not limited to this act alone; the Factories and Machinery Act (FMA), which was promulgated in 1976 and revised in 1970, aimed to regulate factories in matters relating to the safety, health, and welfare of persons therein, as well as the registration and inspection of machinery, as well as for matters connected thereto. Section 10 of this legislation outlines the safety, health, and welfare requirements that an employer or organisation must meet.

These acts can be used as a guideline for compliance by employers and organizations to continuously monitor the risk of hazards that exist in the workplace.

2.3 Safety Performance.

The accomplishment of an organization's entire safety management system is safety performance. This achievement pertains to the operational effectiveness of the safety management system in ensuring the organization's safety objectives and policies are met (Maryam & Azadehdel, 2014). This tendency leads many businesses to evaluate organisational performance as a subsystem that includes safety performance (Chin Wua, Hsiang Chen & Chung Li, 2008). Almost every organisation, according to Karanikas (2016), creates criteria for measuring organisational performance achievement. Evaluation of safety performance is an essential management tool for defining best practises and generating high safety performance outcomes. Approaches such as assessing factors to meet the needs and requirements of the safety management system, exposure to weak management potential, proof of results through facts and statistics, and continuous monitoring of implementation provide the basis for organisations to evaluate the actual achievement of safety performance.

The desire for a positive corporate image has encouraged every firm to implement an effective safety management system. Clear safety policies and priorities may recruit and keep a skilled and safety-conscious workforce. This aspect is essential for the company to retain a competitive position through enhanced work performance, quality output, and efficiency. A positive corporate image can entice potential investors and clients to continue doing business with the organization (Akpan, 2011). This statement shows that organizational performance is built through the interaction between organizational and individual factors. The relationship between these two factors also determines the achievement of organizational safety performance.

The term "safety compliance behaviours" refers to safe work practises and employee pledges that supplement an organization's safety policy (Kapp & Parboteeah, 2008). To achieve a long-term increase in safety performance, it is necessary to modify human attitudes and conduct. Strong safety performance is unquestionably impacted by the relationship between human and organisational factors (Maryam & Azadehdel, 2014).

Several factors, including leadership and management commitment, staff participation and involvement, safety training and awareness, as well as implementation and compliance, can be used to evaluate safety performance characteristics. According to Wu, Shu, and Shiau (2007), organisational safety and management, hazard control and monitoring, safety training and education, accident research and statistics, motivation, and communication are among the elements of an organization's safety performance.

Evaluation of safety performance is a crucial component of a safety management system; this evaluation aims to provide information on the system's design, implementation, and outcomes (Sgourou, Katsakiori, Goutsos & Manatakis, 2010). This technique provides considerable advantages to the management system in implementing procedures and selecting the best outcomes, resulting in the highest safety outcomes (Karanikas, 2016). According to Prasad and Reghunath (2011), safety performance measurement is crucial for a number of reasons, including locating and identifying problem areas, comparing trends and statistics, describing the current safety situation of the organisation, evaluating the effectiveness of accident prevention programmes, establishing long-term accident control, and determining the potential risk of injury or other loss. Consequently, any safety-related action will affect the safety performance of an organisation.

2.3.1 Definition of Safety Performance.

There are different definitions of safety performance, which complicates assessing the efficacy of management through safety performance evaluation. According to the research literature, safety performance can be measured in employee engagement in safety behavior (Cheyne et al., 1998; Hofmann & Stetzer, 1996; Rundmo, 2000). Wu et al. (2008) see the performance of the safety system as a subsystem of organizational performance. Wang (2002) defines safety performance based on six variables: safety training, accident investigation and statistics, safety equipment, safety measures, safety management, and safety organization. Because it encompasses the organization's people and resources, safety performance is a delicate problem that is particularly challenging to manage (Enshassi et al., 2008).

Huang, Smith, and Chen (2006) defined it as self-reported workplace injuries and employee safety management. Siu, Phillips, and Leung (2004) defined it as the rate of self-reported accidents and workplace injuries. Safety performance is an international indicator of the effectiveness of contemporary safety management systems. Safety is measured through safety management, safety organisations, safety equipment, safety training evaluation, safety training practise, accident data, and accident investigations. According to Griffin and Neal (2000), safety-related work behaviour and job performance might be understood similarly. Consequently, the performance model is applicable to workplace safety performance.

In contrast to Campbell, Gasser, and Oswald (1996), the performance model of a recent study differentiates performance antecedents, performance components, and performance antecedents. These factors mirrored employees' actual behavior on the job. Burke et al. (2002) define safety performance as the job-related actions of individuals that improve the health and safety of employees, clients, the general public, and the environment.

Tharaldsen et al. (2010) demonstrate that when human factors and management techniques are integrated into the central system, improved safety performance can be attained. These safety performances can encourage workers to take precautions to prevent workplace injuries. Safety performance is defined in three dimensions by Yang et al. (2009): safety system, safety audit assessment, and accident investigation management. To make measuring safety performance in the health care industry more realistic, it has been changed into a self-reported questionnaire research.

According to the literature studied previously, the concept of safety performance differs, but employees' attitudes toward safety were discussed in all of the literature. Most commonly used definitions analyze workplace performance by correlating safety performance with injury rates and accident statistics. However, a recent survey reveals that organizations are now prioritizing safety performance to prevent workplace accidents and injuries.

2.3.2 Safety Performance Dimension.

The accomplishment of the organization's safety performance can evaluate the success of the organization's occupational safety and health management system. However, there are numerous perspectives regarding the definition of safety performance, making it more challenging for academics to establish benchmarks for evaluating genuine safety performance factors (Wu, 2000). According to previous research, there are numerous techniques for measuring organizational safety performance (Flin Mearns, O'Connor, and Bryden, 2000). According to Burke et al. (2000), safety performance is often an integrated and systematic inspection of safety elements; this is the safety performance idea. The concept of a distinction between task performance and contextual performance is supported by research released in 1993 by Borman and Motowildo. This view is reinforced by Burke et al. (2000), who contend that the safety performance factor is directly tied to safety knowledge and that this factor has affected safety performance.

Identifying relevant criteria and measurement methodologies is a major challenge in assessing safety efficacy (Tarrants, 1970). Researchers have offered concepts of safety performance dimensions, and these dimensions have been adopted as significant contributors to safety performance, citing prior research. The researcher's presentation on safety performance in the industry sector is seen from multiple perspectives. According to Mearns et al. (2003), the incidence of fatal accidents, significant injuries, and injuries resulting in time loss of more than three days is a factor in evaluating the safety performance of the offshore industry. Siu, Phillips, and Leung (2004) deem the necessity of self-reporting worker accidents on construction sites to be an effective safety

measure. According to Wu, Chang, Shu, Chen, and Wang (2011), safety performance in the petrochemical industry is determined by training, inspection, and motivational factors. Yang et al. (2009) analysed the safety performance of the Taiwanese healthcare industry from three perspectives: safety audit assessment, accident management investigation, and safety management system. According to Kao, Stewart, and Lee (2009), airline operator firms evaluate safety performance based on crew injuries, rule compliance and participation, and impartial accident investigation. Wu and Li (2006) have analysed university safety performance in Taiwan by incorporating organisation and administration, accident statistics, safety equipment and measures, accident investigation, and safety training evaluation.

Briefly, organisational safety performance comprises a number of components. According to Feng, Teo, Ling, and Low (2014), no single measure of safety performance is superior than the others. The selection of evaluation criteria is entirely determined by the evaluation's purpose and the availability of resources.

2.3.3 Safety Performance Instrument and Measurement.

This chapter outlines the instruments utilized in prior safety performance studies. The selection of instruments widely employed by researchers will be the primary focus of this investigation.

Singer et al. (2009) utilized a questionnaire survey to study hospital safety performance. The questionnaire contains questions regarding the safety climate and demographic information. Koa et al. (2009) followed the same methodology and focused

on safety performance in their investigation. The survey questions were addressed to the cabin staff of Taiwanese airlines. Shang et al. (2011) used a questionnaire to investigate the relationship between safety management and safety performance in container stevedoring operations. While Mc Fadden et al. (2009) have distributed questionnaires to nursing directors and risk officers in 200 hospitals to collect data on the factors influencing safety performance at the organisational level, Mc Fadden et al. (2009) have not distributed questionnaires to nursing directors and risk officers. Using a comparable methodology, Haimohammad and Vachon (2014) investigated the association between safety atmosphere and organisational safety performance in 251 Canadian manufacturing sites.

In conclusion, most studies employ questionnaires as a data-gathering strategy since they are easier and quicker. Additionally, questionnaires enable the researcher to formally describe the required data. Transparency of the data collected should be a top focus in this study so that the results can demonstrate the significance of the relationship between safety performance and safety climate.

2.4 Safety Climate.

There has been a growing awareness of the impact and significance of workplace safety climate on safety outcomes. The phrase "safety climate" initially appeared in the aftermath of the Chernobyl disaster in late 1980 and refers to the influence of organizational management and human characteristics on safety results. Safety climate, which is closely related but more specifically defined, is primarily concerned with employee attitudes toward safety (Kathryn M. et al., 2014). The safety climate of a business or organization is critical to examine.

The term "safety climate" refers to attitudes, conventions, social roles, and technical procedures that strive to minimize hazardous working circumstances for employees, supervisors, consumers, and the general public. Safety climate is a collection of shared values, attitudes, beliefs, and behavioral meanings developed by social group members through multiple generations. The group-level construction of culture is neither genetic nor behavioral. However, it does exist within the knowledge systems of individuals, which are developed from childhood and maintained throughout life.

In the late 1980s, academics and management practitioners were aware of and interested in cultural safety settings, according to Martyka and Lebecki (2014). Consequently, this is a relatively recent topic, brought to light by an IAEA examination of the tragedy's causes. Since then, inquiries into the causes of other important tragedies, such as the London Underground fire at King's Cross and the North Sea explosion at the Piper Alpha drilling platform, have included safety climate. In both of these instances, the investigations into the causes revealed a deficient safety climate.

As evidenced by the Bhopal disaster in India, the Fukushima disaster in Japan, the long-term radiation impact of Chernobyl, and the release of benzene during coking plant operations, resulting in high community cancer clusters, a lack of a safety climate can result in public health or occupational health problems (Martyka & Lebecki, 2014).

In this regard, it has been discovered that an organization's perspective on its safety atmosphere is a crucial factor in defining the business's safety status. The establishment of a safety culture and its actual application are two crucial parts of constructing a safe environment.

Pigeon's definition of safety climate is as follows: (a) a collection of meanings by which individuals, groups, or communities understand risk and hazard; and (b) a set of principles controlling behaviour in potentially hazardous situations. Typically, accidents are preceded by non-simultaneous (or sequential) errors in risk assessment and technology selection, operational errors, incorrectly performed technical procedures, other sorts of errors, or violations of safety rules. While none of these difficulties would certainly result in unpleasant terrible events, their accumulation increases the possibility that they may occur simultaneously, a required requirement for a disaster (Martyka & Lebecki, 2014).

Harvey et al. (2002) assert that while safety climate is a strong predictor of safety performance, it lacks a specific definition or measurement. It has frequently been used interchangeably with safety climate, even though the two terms are distinct. Climate refers to attitudes, perceptions, and beliefs and culture refers to values and norms and manifesting themselves in safety management practices. Additionally, he defines safety climate as "all forms of learned behavior that lead to a shared commitment to think and behave safely and believe in and trust the organization's safety protocols."

2.4.1 Safety Climate Dimension.

In the current literature, safety culture and climate concepts are commonly conflated, with many papers employing unique concepts for safety culture and climate (Swuste, 2008). Consequently, there is no agreement on the meaning of this notion, and there remains some ambiguity regarding the definition of safety climate (Antonsen, 2009).

Employees' impressions regarding the safety climate are influenced by organizational policy, personality, and attitude. It also affects safety performance since employees' opinions on organizational and environmental safety characteristics vary (Zohar, 1980). According to Hopkins (2006), different articles have varying perspectives on safety climates, with some stating that an organization may have a safety climate. However, it may be strong or weak, positive or negative, and others stating that a safety climate can only exist in an organization committed to safety.

We can agree, however, that most organizations have their own safety climates, but we are unsure of the extent to which they exist. Four characteristics define decent safety climates: senior management commitment to safety, adaptable and realistic practices for managing well-defined and ill-defined hazards, workforce concern for shared hazards, and ongoing organizational learning (Pidgeon, 1998). Clarke (1999) argues that safety climate is a subset of organizational culture that focuses on health and safety beliefs and values. The Advisory Committee on Safety Nuclear Installations (ACSNI) defines safety climate as the products of individual and group values, perceptions, attitudes, competencies, and behavior patterns that determine an organization's commitment to health and safety management.

Cox & Cox (1991) stated that safety climates reflect the employees' attitudes, beliefs, perceptions, and values regarding safety. As a result, employees play a critical role in establishing the organization's safety climate. Cooper (2000) asserts that safety performance affects an organization's staff attitude and behavior toward safety climate. Three layers can be used to describe safety climates. The central layer contains factors associated with culture, the middle layer contains factors associated with safety, and the

final outer layer contains what are referred to as artifacts. The central layer is the organization's fundamental assumptions, including those about human behavior, the nature of work, and relationships. The middle layer emphasizes the overt values and attitudes toward safety expressed through training methods, policies, formal communications, and procedures. Finally, the outermost layer is composed of what is known as artifacts, which include accidents and incidents, safety-related behavior, and the use of personal protective equipment (PPE) (Guldenmund, 2000).

From another angle, O'Toole's (2002) study on the relationship between employees' perceptions of safety and organizational culture resulted in the identification of six indicators of safety management: commitment, employee involvement, training, communication, and emergency response. However, Neal (2000) asserts that examining management values, safety practices, safety communication, and employee involvement in workplace safety can provide insight into the organization's safety climate. Cox and Cox (1991) offer five characteristics of safety climate after evaluating the structure of employee attitudes toward safety knowledge: safety attitude, managerial accountability and efficacy about safety, environmental safety, and personal exemption. In addition, the study presented a model of safety that differentiates four objects: hardware, software, people, and hazards. Hardware and software both incorporate procedures and rules, policies, and safety management. People refers to employees, management authority, supervisors, safety committees, specialists, and unions. Finally, hazards include workplace safety, risky behaviour, and legislation.

Yang et al. (2009) feel that high-level executives should create a safety climate to help employees recognize the relationship between individuals and groups. Many

high-level executives lack plans and goals for developing a safety climate. According to Wiegmann et al. (2004), safety climates share many critical characteristics, including shared values, member involvement, a focus on formal safety issues in close relation to management and supervisory systems, the impact on employee work behavior, the culture's reflection in the organization's willingness to learn from errors, incidents, and accidents, and a cult of pragmatism.

In conclusion, most definitions hold similar attitudes towards organizational safety, and organizations with a strong safety climate will make safety a top priority and value it in their daily operations.

2.4.2 Management Commitment.

Employee perceptions of management's safety commitment are recognised as a factor contributing to significant safety results (Micheal, Evans, Jansen & Haight, 2005). Management commitment to safety is an organization's insistence on safety programmes and the prevention of occupational accidents via employee training and management participation in safety outcomes and follow-up safety designs of work (Arbeleda et al., 2003). In addition, management commitment to safety is defined as employees' perceptions of management's attitude toward safety (Zohar, 1988) and a company's safety system (Cox & Flin, 1998).

In order to achieve organizational safety objectives, the commitment of management to safety is characterized by the leadership style and resources of senior management and line management (Cooper, 1998). Moreover, managerial commitment

to safety is vital to an organization's safety programs (Choudhry, Fang & Ahmed, 2008). In essence, managerial commitment is necessary for organizations to build and foster positive attitudes and behaviors in the workplace (Angle & Perry, 1981).

Management commitment to safety refers to the measures taken by senior management to ensure that all aspects of operations, including training, processes, selection, equipment, and work projects, are administratively evaluated and updated to enhance safety (Wiegmann et al., 2002). When management is committed to safety, it mobilises resources to fulfil safety goals (Hsu, Lee, Wu, and Takano, 2008). Unquestionably, the commitment of an organization's leadership has a significant impact on its safety culture (Dedobbeleer & Beland, 1998).

Michael et al. (2006) investigated the non-safety-related consequences of the safety climate. They found that employees' positive evaluations of management commitment to safety increased safety performance and affected job satisfaction, organizational commitment, and absenteeism. O'Toole (2002) discovered that employees' perceptions of safety issues were affected by management's commitment to safety.

Ali, Abdullah, and Subramaniam (2009) found that management commitment to safety affects the safety climate in Malaysian companies, hence reducing injury rates. Mearns and Yule (2009) examined the effects of globalisation on the beliefs, attitudes, and actions of diverse international workforces working for the same multinational corporation. Contrary to popular opinion, they found that proximal effects such as management commitment to safety influence employee behaviour and accident rates.

In conclusion, the previously cited literature demonstrates that management commitment to safety is a vital component of an organization's safety atmosphere and has a favourable impact on safety concerns. One may argue that when a company's management is committed to safety, employee knowledge of the importance of safety grows, resulting in improved safety performance.

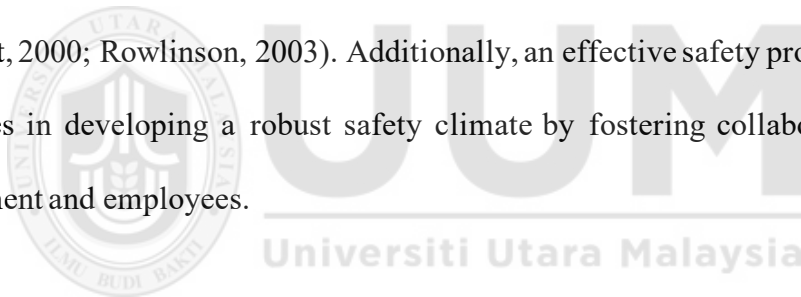
2.4.3 Safety Promotion Policies.

By establishing effective safety promotion programs, organizations should cultivate a culture of commitment among their employees, and these individuals will serve as a firm base. Promotional activities should consistently convey management's commitment to employee safety and health to improve workplace safety. Once a solid foundation has been formed, management can implement specific workplace safety policies without employee opposition or reluctance. The efforts will be considered favorably evidence of the senior management's dedication to providing continuous general assistance to its employees. Consequently, its staff will be more receptive to such concepts (Dejoy et al., 2010). As a result of safety promotion efforts, medical claims, hospital expenses, insurance premiums, and absenteeism have all decreased, resulting in employer cost savings (Forrester et al., 1996). According to Geldat et al. (2010), explicit regulations such as fostering career commitment, rewarding safety, and documenting accident occurrences can lower the workplace injury rate.

According to Vinodkumar and Bhasi (2011), safety promotion initiatives should be incorporated into management programs instead of being implemented independently.

Safety promotion policies should be integrated with other elements such as safety training, safety communication, safety legislation and procedures, employee participation in safety, and commitment from the top management. These attributes will benefit organizations in creating efficient and effective safety management systems, which will aid in preventing workplace injuries and illnesses (Parker et al., 2006; Paul & Maiti, 2008).

Implementing proactive safety measures is the most effective means of boosting site safety performance (Tam et al., 2004). Effective safety programs can contribute to the development of a safe working environment for employees and aid management in creating safer operation methods, which will substantially avert accidents (Abdelhamid & Everett, 2000; Rowlinson, 2003). Additionally, an effective safety program can assist businesses in developing a robust safety climate by fostering collaboration between management and employees.



2.4.4 Safety Rule and Procedure.

The term "organizational procedures" refers to policies associated with formal procedures and instructions. Procedures at the group level are specific instructions that pertain to the work group's functions. Individual-level procedures pertain to an individual's tasks and job instructions. Individuals' or employees' safety behavior is critical to the proper operation of an organization's system (Guldelmund, 2007). Employee conduct is not limited to adhering to the organization's policies and processes but also to a clear understanding of their unique position and contribution to promoting safety and health. In other words, the employee contributes to developing job-related safety regulations and procedures. This autonomy and authority must be granted by management. Glendon and Litherland (2001) reported that management's implementation of established safety rules and procedures could increase employees' safety behavior.

In their offshore safety studies, Cox and Cheyne (2000) and Mearns et al. (2003) discovered a strong association between safety regulations and procedures and accident rates. To attain a high level of safety performance, the business requires proactive personnel in safety and health activities and adhere to all safety regulations and procedures (Didla et al., 2009).

2.4.5 Employee Involvement.

Instances in which an employee participates in safety-related tasks and is involved in decision-making are referred to as employee involvement or employee participation (Seo et al., 2004). Employee engagement is a behavior-based technique that involves individuals and groups in the communication and decision-making processes of an organisation (Vinodkumar & Bhasi, 2010). Engagement is essential to a company's success since it increases employee satisfaction. Participation in workplace safety can be described as employee acts that contribute to a safe workplace. It include employees participating in the formulation of safety regulations, making decisions that promote safety, obtaining safety training, and submitting to health checks (Wu et al., 2010).

Seo et al. (2004) discovered a negative correlation between employee participation and accidents, near misses, and near-miss experiences. Hahn and Murphy (2006) found an association between employee job engagement and higher adherence to safe work practises, decreased exposure to environmental stressors, the availability of more safety rules and procedures, and lower accident rates.

Fernandez-Muniz et al. (2007) discovered that employee behaviour and safety involvement have a positive effect on managers' commitment to safety, which has a positive effect on safety performance. Aksorn and Hadikusumo (2008) determined, based on a survey of Thai construction workers, that worker participation is a crucial success element in determining the implementation of safety initiatives in the Thai construction industry. Ali et al. (2009) discovered a significant correlation between employee engagement and accident rates in Malaysian businesses.

Utilizing structural equation modelling, Vinodkumar et al. (2010) discovered a negative correlation between worker participation in safety and self-reported accident rates in the Indian chemical industry. Moreover, Boughaba, Hassane, and Roukia (2014) identified employee participation as a significant indication of a workplace's safety climate, which influences safety performance.

The safety culture is illustrated by management's commitment to safety and employee engagement. Therefore, this study defines a company's safety climate as a condition in which management are committed to safety, safety is emphasised as an organisational priority, and employees adhere to safety rules and procedures (Hajmohammed & Vachon, 2014). In light of the preceding definition, this study considers safety climate to be unidimensional; nonetheless, numerous studies on organisational safety climate have approached the idea of safety climate in a comparable fashion (for example, Hajmohammed & Vachon, 2014; McFadden et al., 2009).

2.4.6 Safety Climate Instrument and Measurement.

Researchers have devised several methods for evaluating the safety climate. Most often used research methods are observations, questionnaires, and interviews (Cole et al., 2013). According to (Cox & Flin, 1998), there is no universally accepted method for analysing the safety climate of a specific region. However, more solutions or tools have been provided. Quantitative and qualitative research methodologies exist. Choudhry et al. (2007) stated in a literature review that qualitative methods such as interviews and observations can be used to assess an organization's culture; however, Cooper (2000) stated that the psychological, situational, and behavioural dimensions of safety climate

can be assessed using a combination of quantitative and qualitative methods. According to him, an organization's structure, operating procedures, management systems, and rules are all reflective of its safety climate. Using self-reporting, outcome measurements, and peer observations, the behavioural components of the safety climate are assessed.

Cooper (2000) claimed that safe behaviours are documented on observational checklists and then regularly monitored by qualified observers, resulting in a proportion of safe scores that informs those being observed. On the other hand, psychological factors are assessed by questionnaires that analyse individuals' sense of safety. Wiegmann, Thaden, and Gibbons (2007) claim that quantitative methodologies quantify culture through the use of highly calibrated and standardised procedures, such as structured interviews, surveys, questionnaires, and Q-sorts. Respondents in quantitative research are often firm employees who respond to standard questions or sets of questions provided by the researcher (Rousseau, 1990).

Nonetheless, other scholars contend that safety climate cannot be fully assumed using typical quantitative approaches that aim to disrupt a phenomenon in order to investigate its components; rather, qualitative methods that capture the essence or source of observed events are more appropriate (Wiegmann et al., 2007).

Using questionnaires, focus groups, behavioural observations, and situational audits, Cox and Cheyne (2000) evaluated the offshore safety climate. Onshore and offshore personnel from three distinct organisations participated in focus group discussions at sixteen locations. In addition, O'Toole (2002) distributed 3,116 questionnaires to all employees in order to examine the relationship between employee

perceptions of safety and corporate culture. Each question required an affirmative or negative response. Fernandez-Muniz et al. (2007) explored the features of a safety climate using questionnaires. Moreover, Diaz-cabrera et al. (2007) used questionnaires issued to 299 workers to develop a technique for assessing the safety atmosphere.

Morrow et al. (2014) investigated the association between nuclear power plant safety climate and safety performance using a questionnaire. Biggs, Banks, Davey, and Freeman (2013), on the other hand, utilised both semi-structured interviews and questionnaires to analyse the perspectives of safety leaders regarding the safety atmosphere of an Australian construction company.

It may be stated that questionnaires and surveys are the most effective and dependable ways for measuring the safety climate in many industries, such as nuclear power, chemical processing, construction, aviation, transportation, and manufacturing. As a means of gathering information and data for the purposes of this study, questionnaires and field surveys were chosen. This method is said to yield more accurate data and a friendlier relationship between researchers and responders. However, the most significant part of a safety climate improvement programme is the development of effective measurements that can analyse existing safety environment circumstances and establish whether interventions have successfully brought about the desired cultural change. Consequently, both qualitative and quantitative methods can assist in achieving this purpose.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction.

This study seeks to uncover the safety climate-related characteristics that influence safety performance. The methodology chapter will outline the steps the researcher followed to collect data for the study. This chapter discusses the research methods used in this study, including the research design, sampling frame, population of the sampling technique, sample size, unit of analysis, survey instrument, instrument validity, data collection procedure, and data analysis.

3.2 Research Framework.

A literature study in the field of Occupational Safety and Health (OSH) shows that organizational safety climate reflects organizational safety performance. McFadden et al. (2009), Hajmohammad and Vacchon (2014), and Fernandez-Muniz et al. (2007) have provided arguments to support this point. In addition to the organization-wide study conducted, this study also conforms to that, focusing on the utility sector, including sewage treatment services.

In addition to studying the relationship between organisational safety climate and organisational safety performance, the purpose of this study is to illustrate that safety performance exists across all aspects of safety climate (management commitment, safety promotion policies, safety rules and procedures, and employee involvement). The previous study indicated that the implementation of an occupational safety and health management system (OSHMS) in a workplace fostered a strong safety culture (Stolzer et al., 2008). This

management system's effectiveness is the key empirical predictor of corporate safety performance (Naveh, Katz-navon & Stern, 2011).

As depicted in Figure 3.1, the research framework has been constructed in relation to the literature review and research challenges, and in pursuit of the study's objectives. The framework demonstrates that safety climate is a variable independent of management commitment, promotion policies, safety rules and procedures, and employee participation. While safety performance is listed as a dependent variable, the organization's ultimate objective is to eliminate workplace accidents and injuries.

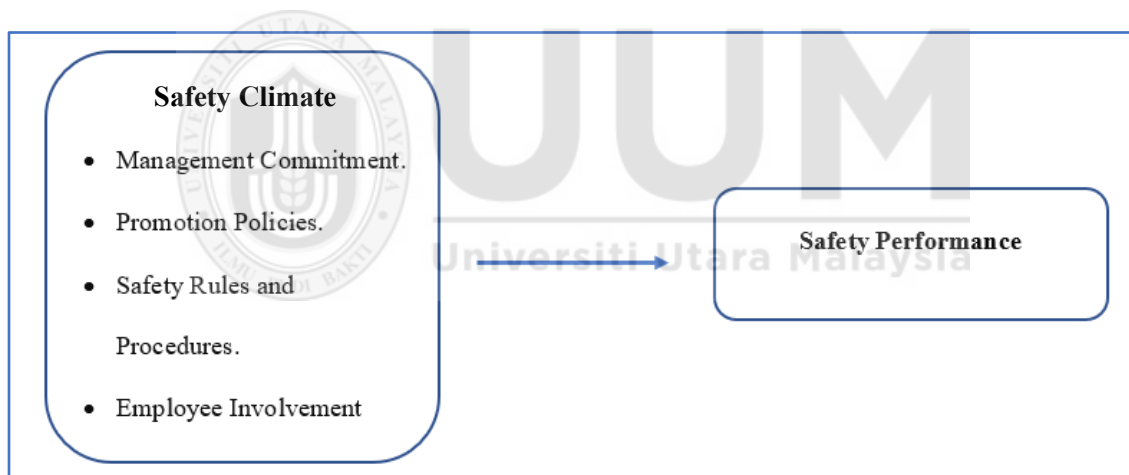


Figure 3.1: *Research Framework.*

3.3 Research Hypotheses.

Hypotheses are formal claims referring to the anticipated logical link between two or more variables based on framework theory that must be empirically examined to identify the expected answer to a problem statement (Sekaran & Bougie, 2010). This part will describe the hypotheses developed from the literature review and based on the study questions and objectives mentioned. Below is a list of the researchers who studied the hypothesis.

- i. Hypothesis 1 (H1): There is a significant relationship between management commitment and safety performance.
- ii. Hypothesis 2 (H2): There is a significant relationship between safety promotion policies and safety performance.
- iii. Hypothesis 3 (H3): There is a significant relationship between safety rules and procedures and safety performance.
- iv. Hypothesis 4 (H4): There is a significant relationship between employee involvement and safety performance.

3.4 Research Design.

Utilized systematically and fundamentally in research design, it tries to explain the general layout of the research in order to integrate it. According to Rowley, J. (2014), study design can motivate researchers to build surveys, generate enough response rates for small projects, conduct suitable data analysis, and publish findings in an accessible style.

The research design plays a significant role in assuring that the data collected matches with the study's objectives in order to adequately describe the research challenges and enhance comprehension. Figure 3.2 represents the research layout.

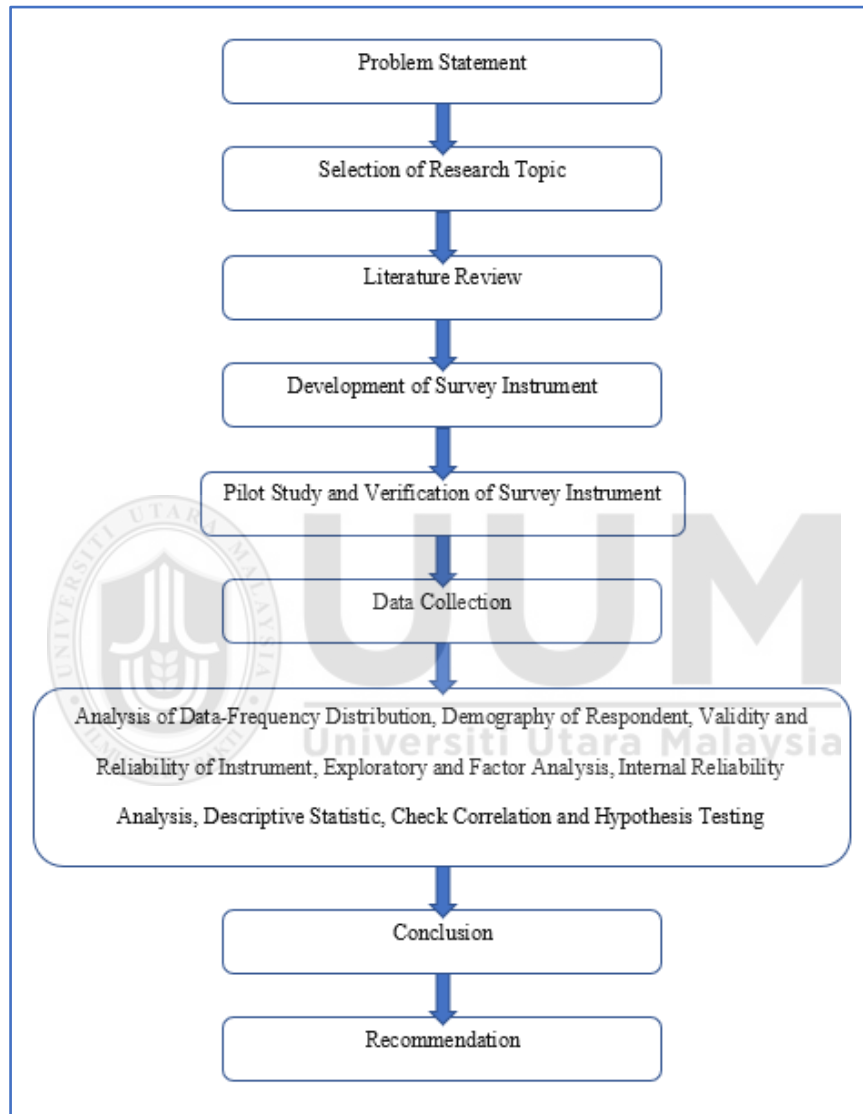


Figure 3.2: *Flow of Research Design.*

3.5 Population and Sampling.

A study population is a collection of people or things whose characteristics are commonly known to match to the variables of interest in the investigation (Zikmund, 2003). Researchers define a population as the number of notable individuals, events, or conditions (Sekaran & Bougie, 2010). Population is seen as a crucial factor influencing study outcomes. Castillo (2009) explained that the population is divided into the target group and the readily accessible population. The target population, also known as the theoretical population, is the total number of individuals. A population to which researchers can apply their results is considered accessible. In other words, it represents a subset of the investigated population or group.

Therefore, the population for this study consists of Indah Water Konsortium Sdn. Bhd. (IWK) Northern Regional personnel. Langkawi, Alor Setar, Sungai Petani, Perai, Penang, Taiping, Manjung, Ipoh, Kelantan, Terengganu, and Kuala Lumpur are among the eleven operational units that make up the Malaysian Federation.

3.6 Sampling Size.

Sample size refers to the proportion of the population expected to respond to this research. The sample size is determined by the size of the group of respondents. The sample size for this study was determined using Krejcie and Morgan's (1970) table. This research was conducted among employees of Indah Water Konsortium Sdn. Bhd. (IWK) comprises 11 Northern Region unit operations. The Northern Region unit operation population was identified as a total of 1180 employees. As a result of reference to Krejci and Morgan's tables, the researcher has identified 291 respondents ($n = 291$) required for the questionnaire process.

A stratified sampling calculator (<http://stratifiedsampling.orgfree.com/process.php>) was used to determine the number of questionnaires distributed, and the results are summarized in the table below (Table 3.2).

Table 3.1: *Sample Size for a Given Population Size.*

Source: *Krejcie & Morgan*

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

Source: *Krejcie & Morgan, 1970*

Table 3.2: *Sampling Size.*

No	Unit Operations	No. of Employees	No. of Questionnaire Distributed
1.	Langkawi	28	6
2.	Alor Setar	118	32
3.	Sungai Petani	95	24
4.	Prai	157	42
5.	Penang	124	33
6.	Taiping	96	25
7.	Manjung	90	23
8.	Ipoh	102	25
9.	Kuantan	144	40
10.	Terengganu	48	12
11.	Kelantan	116	29
Total:		1118	291

3.7 Sampling Technique.

Sampling strategies are essential to the research process since they can impact the outcome and acceptability. Researchers may ensure that knowledge is dispersed uniformly by selecting respondents using statistical methods. Sampling, according to Sekaran (2013), is the process of selecting a sufficient number of elements from a population and focusing primarily on the sample to gain a better understanding of the nature or characteristics of the population. Due to the variety of the population and the availability of numerous categories, this study

utilised a stratified random sample (Salkind, 2014). The random selection was performed by hand and on the field.

The information was then transferred to the Statistical Package for the Social Sciences (SPSS) system for statistical analysis. The most relevant platform for statistical analysis in SPSS, with the ability to interpret results in high sample sizes. However, statistical analysis should be relevant to the study's objectives, and it is the researcher's responsibility to identify the study population (Begum & Ahmed, 2015).

Alpha Cronbach is a tool for assessing the consistency of data; in this study, Alpha Cronbach is employed to evaluate the reliability and uncertainty of the scale. This instrument aids the researcher in determining the dependability of the score. It is utilized as a recommendation or assumption regarding the presence of facts as the basis for debate by the researcher who has several calculation items for the same basic hypothesis. Pearson Correlation is an instrument of correlation coefficients that describe the relationship between two variables measured on the same interval or ratio scale. It measures the strength of the association between two variables.

3.8 Data Collection Procedure.

There are two data gathering sources: primary and secondary data collection (Sekaran & Bougie, 2009). Primary data collection is a pilot test of the suggested variables that try to determine their reliability and scale. Secondary data collection is the acquisition of information directly from respondents.

The previous researcher applied for permission to conduct data collection in the field to the management of Indah Water Konsortium Sdn. Bhd. (IWK) Northern Regional. Preliminary notifications have been made to 11 unit operations for field preparation purposes. Data collection was done on a scheduled basis based on the distance factor between each distant location.

Respondents from management and non-management levels were picked at random and given a questionnaire along with a brief explanation of the study's purpose. For the sake of data openness, the exemplary respondents were told that the information they submitted was for academic reasons alone and would stay confidential.

Table 3.3: *Data collection Procedure Duration.*

No.	Activities	Duration
1.	Distribute the questionnaire to the respondents	Three weeks
2.	Respondents complete the questionnaire	Three weeks
3.	Questionnaire collected	Three weeks
4.	Data analysis	One week

3.9 Unit of Analysis.

As the degree of data aggregation gained during the data analysis phase, the unit of analysis is the unit by which researchers evaluate study variables (Sekaran, 2003). The researcher must explain the unit of study, which may be an individual, group, business unit, or organisation, in order to identify a solution to the problem statement.

This study seeks to comprehend the relationship between safety performance and safety climate in the utility industry, with a particular emphasis on the Indah Water Konsortium Sdn. Bhd. (IWK) Northern Regional organisation.

3.10 Instruments.

The instrument utilized in this investigation is a questionnaire. It reflects the aspects used to measure a well-founded idea or viewpoint, it is a crucial foundation for constructing questionnaire items with acceptable simplicity. The questionnaire's question items were developed based on discussing concepts incorporated from the literature in prior investigations. This study's questionnaire contains items with the capacity to address difficulties in comprehending the relationship between safety performance and safety climate. The scale items are listed in the Table 3.3 below.

Table 3.4: *Summary of Measurement and Scale.*

Construct	Items	Scale	Sources
Safety Climate			
i. Management Commitment	9 items	5 points	Vinodkumar Bhasi (2010)
ii. Safety Promotion Policies	5 items	5 points	Jaya Paul Arumai (2014)
iii. Safety Rules and Procedures	5 items	5 points	Vinodkumar Bhasi (2010)
iv. Employee Involvement	5 items	5 points	Jaya Paul Arumai (2014)
Safety Performance	12 items	5 points	Azman Aziz (2017)

3.11 Pilot Test.

Before starting with a larger-scale inquiry, it is necessary to conduct a pilot study to identify any potential problems (Alam, 2009; Doug, Burton, Cuthill, Festing, Hutton & Playle, 2006). According to Cooper and Schindler (2008), the recommended number of participants for a pilot study is between 25 and 100.

A pilot test including 40 respondents and a physically distributed questionnaire was done for this study. Using Cronbach's Alpha, the primary objective was to elicit a response and determine the reliability of the variable items. The internal consistency approach is used to establish dependability based on the capacity to quantify the amount to which items on a scale measure the underlying features of a variable. Alpha Cronbach is commonly used and regarded as a relevant coefficient (Cavaba et al., 2001; Sekaran, 2003).

Following Nunally's (1978) guideline, if the internal reliability or composite reliability is at least 0.70, this result is deemed extremely suitable for demonstrating the internal consistency of well-known scales. A significance level of 0.6 or above can be regarded for the study (Hair et al., 1998). Explain the Likert Scale according to Table 3.3.

Table 3.5: *Likert Scale*.

No.	Cronbach's Alpha	Internal Consistency
1.	$\alpha \geq 0.9$	Excellent
2.	$0.9 \geq \alpha \geq 0.8$	Good
3.	$0.8 \geq \alpha \geq 0.7$	Acceptable
4.	$0.7 \geq \alpha \geq 0.6$	Questionable
5.	$0.6 \geq \alpha \geq 0.5$	Poor
6.	$0.5 \geq \alpha$	Unacceptable

3.12 Summary.

Techniques for data collecting and analysis are vital for establishing whether a study's hypotheses are accepted or denied. Statistical analysis will also shed light on the relationship between the independent and dependent variables in the current investigation. In addition, the conclusion of the data analysis should explain whether or not the objectives of the study were achieved.

CHAPTER FOUR

ANALYSIS AND RESULTS

4.1 Introduction.

This chapter highlights the results of the statistical analysis performed on the collected data in order to achieve the objectives of the study. The collected data were analysed using Statistical Package for the Social Sciences version 27. (SPSS). Focus was placed on characteristics such as dependability, descriptive analysis, correlation, and regression in the data analysis. Likewise, the demographic information of respondents is particularly concerned with frequency analysis. In this study, the Pearson Correlation was used to determine any correlation between independent factors and dependent variables.

In conclusion, a regression analysis was conducted to find the most influential independent factors (safety climate) on safety performance in Indah Water Konsortium Sdn. Bhd. (IWK) Northern Regional.

4.2 Response Rate.

Northern Regional of Indah Water Konsortium Sdn. Bhd. (IWK) sent 291 questionnaires to respondents spanning 11 units of operation (Langkawi, Alor Setar, Sungai Petani, Perai, Penang, Taiping, Manjung, Ipoh, Kelantan, Terengganu, and Kuala Lumpur). There was a briefing on the goal of the study and an explanation of the questionnaire. Respondents were also informed of the assurance of confidentiality for answers and data utilised strictly for academic reasons.

Respondents were given ample time to complete the questionnaire without feeling rushed, and the questionnaire was collected once respondents had done replying. According to Table 4.1, the response rate to the survey was 100%.

Table 4.1: *Response Rate.*

Items	Total	Percentage (%)
Distributed Questionnaires	291	100
Collected Questionnaires	291	100
Unreturned Questionnaires	0	0
Completed Questionnaires	291	100

4.3 Respondent's Demographic Background.

This part discusses the respondents' demographic information and focuses on their responses to questions regarding gender, education level, position, and length of service at Indah Water Konsortium Sdn Bhd (IWK).

4.3.1 Gender.

Table 4.2: *Respondent's Gender. (n=291)*

Gender	Frequency	Percent (%)
Male	240	82.5
Female	51	17.5

Table 4.2 describes the gender analysis of the respondents. The analysis showed that male respondents represented 82.5 % or 240 respondents, while female respondents, recorded 17.5 % or a total of 51 respondents, were involved in this questionnaire session. Male respondents constitute the majority number, and the study results are mostly influenced by the views and opinions of male respondents.

4.3.2 Education.

Table 4.3: *Respondent's Education. (n=291)*

Education	Frequency	Percent (%)
Secondary School	113	45.7
Undergraduate	141	48.5
Postgraduate	17	5.8

The analysis of educational background is explained in Table 4.3. The largest group of respondents have an undergraduate degree and graduated with a bachelor's

degree, accounting for 48.5% of the total respondents or 141 respondents. The second-largest group of respondents was Secondary School graduates, registering 113 respondents or the equivalent of 45.7%. This is followed by a minority group, namely respondents who have a degree at the postgraduate level or have completed their studies at the degree level, representing 5.8% of the total number of respondents or the equivalent of 17 respondents.

4.3.3 Age.

Table 4.4: *Respondent's Age. (n=291)*

Age (years old)	Frequency	Percent (%)
20 - 34	62	21.3
35 - 54	197	67.7
55 above	32	11

In terms of age, it can be seen in Table 4.4. The age range of respondents is divided into three groups, namely the group of respondents with an age range between 20 to 34 years, 35 to 54 years, and the last respondent with an age range over 55 years. Respondents aged 35 to 54 years are the largest number of 197 respondents, or 67.7% of the total respondents. The second-largest group, with a record of 62 respondents, equivalent to 21.3%, are those aged between 20 to 34 years. A minority group is a group of respondents aged over 55 years, equivalent to 11% or 32 respondents. They are the ones who continue their service after reaching retirement age, and Indah Water Konsortium Sdn still needs their experience. Bhd. (IWK).

4.3.4 Position.

Table 4.5: *Respondent's Position. (n=291)*

Position	Frequency	Percent (%)
Staff	222	76.3
Manager	68	23.4
General Manager	1	0.3

Table 4.5 explains the breakdown of respondent positions. A total of 291 respondents who participated in the questionnaire consisted of management and non-management staff. The majority group was respondents from the non-management staff group or categorized as staff, with a record of 76.3% of 291 respondents, or a total of 222 respondents. Meanwhile, the management group consisting of a manager and executive positions recorded 68 respondents with a percentage breakdown of 23.4% of the total. Only 0.3% of respondents held the general manager position, or one respondent was involved in this questionnaire session. Technically, the results of the study are influenced by the opinion of non-management respondents (staff). This group determines the effectiveness of implementing the company's safety and health management system.

4.3.5 Length of Service.

Table 4.6: *Respondent's Length of Service. (n=291)*

Position	Frequency	Percent (%)
One year or less	9	3.1
1 – 5 years	46	15.8
Five years and above	236	81.1

The respondent's service period analysis can be summarized in Table 4.6. A total of 236 respondents have served more than five years, or 81.1% of the total respondents. The second-highest number is respondents who have served from one to five years, with a population of 46 respondents, equivalent to 15.8%. At the same time, the respondents who served between one year or less are nine respondents, which is 3.1% of 291 respondents.

4.4 Reliability Analysis.

Table 4.7: *Reliability Analysis Before and After Items Deleted.*

Variable	No. of Initial Items	Cronbach's Alpha	No. of Final Items	Cronbach's Alpha
Management Commitment	9	0.636	8	0.732
Safety Promotion Policies	5	0.529	4	0.687
Safety Rule and Procedures	5	0.565	4	0.722
Employee Involvement	5	0.546	4	0.807
Safety Performance	12	0.786	11	0.810
TOTAL	36		31	

The Cronbach's alpha coefficients for the Safety Performant and Management Commitment variables have recorded values between 0.60 and 0.80, per Table 4.6's reliability analysis. However, the range for the three variables comprised of Safety Promotion Policies, Employee Involvement, and Safety Rules and Procedures was between 0.50 and 0.60. There were 36 initial items, and their dependability ranged from 0.50 to 0.80.

After evaluating the first analysis, five items were removed from the variables: one item from the Management Commitment variable, one item from the Safety Promotion Policies variable, one item from the Safety Rules and Procedures variable, and one item from the Safety Performance variable. According to the results of the investigation, the reliability range of the studied variables recorded values between 0.60 and 0.81.

Referring to the view of Sekaran and Bougie (2010), who stated that the reliability coefficient having a value close to 1.0 is very good, and a reading of a value above 0.80 is considered good. For readings of 0.70 to 0.80, the level of reliability is considered acceptable. While the reading value is less than 0.60, the reliability is weak. Therefore, this study has produced a reliability reading range of 0.60 to 0.81 after ignoring five items from the overall variables.



4.5 Descriptive Analysis.

Table 4.8: *Descriptive Statistics for Main Variables.*

Variable	Mean	Std. Deviation	N
Management	3.7474	.43672	291
Commitment			
Safety Promotion	4.1921	.49384	291
Policies			
Safety Rule and	4.1203	.59680	291
Procedures			
Employee	4.0601	.54122	291
Involvement			
Safety Performance	3.8973	.35235	291

The descriptive analysis focuses on the mean and standard deviation of the independent and dependent variables for this study's respondents. The results of the descriptive analysis are reported in Table 4.8. The mean value is a measure of central tendency that provides an overview of the responses and perspectives of respondents to the selected variables without needing investigation of each individual data point (Sekaran & Bougie, 2010). The mean value is the average of each item in the variable chosen by the researcher. The standard deviation, in contrast, describes the quantity that indicates the group's total divergence from the mean value.

According to the analysis findings, the mean range of the variables is between 3.74 and 4.19, while the standard deviation range is between 0.352 and 0.596. The Management Commitment measure had the lowest mean value of 3.76 (SD = 0.735), indicating that most respondents nearly agreed that management commitment affects safety performance. At the same time, respondents' responses to other variables indicate that the variables are generally acceptable and adequate.

4.6 Pearson Correlation Analysis.

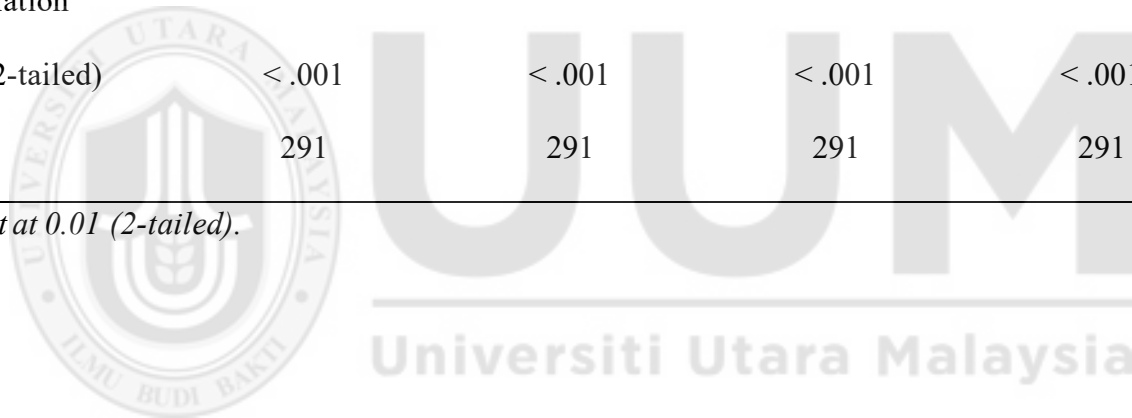
In non-experimental research, correlation is an often-adopted method. The Pearson correlation coefficient, represented by the letter r , quantifies the strength of the relationship (Pakisamy, 2012). According to Pakisamy (2012), correlation coefficients are primarily used to generate an index reflecting the degree to which two variables are related. The correlation study results between safety climate features and safety performance are presented in Table 4.9.

Table 4.9: *Pearson Correlation Analysis.*

		Management Commitment	Safety Promotion Policies	Safety Rules and Procedures	Employee Involvement	Safety Performance
Management Commitment	Pearson Correlation	1	.816**	.694**	.793**	.587**
	Sig. (2-tailed)		< .001	< .001	< .001	< .001
	N	291	291	291	291	291
Safety Promotion Policies	Pearson Correlation	.816**	1	.695**	.803**	.586**
	Sig. (2-tailed)	< .001		< .001	< .001	< .001
	N	291	291	291	291	291
Safety Rules and Procedures	Pearson Correlation	.694**	.695**	1	.774**	.632**
	Sig. (2-tailed)	< .001	< .001		< .001	< .001
	N	291	291	291	291	291

Employees	Pearson	.793**	.803**	.774**	1	.669**
Involvement	Correlation					
	Sig. (2-tailed)	< .001	< .001	< .001		< .001
	N	291	291	291	291	291
Safety	Pearson	.587**	.586**	.632**	.669**	1
Performance	Correlation					
	Sig. (2-tailed)	< .001	< .001	< .001	< .001	
	N	291	291	291	291	291

** Correlation is significant at 0.01 (2-tailed).



- i. (H1) Hypothesis 1: There is a significant relationship between management commitment and safety performance.

According to Table 4.9, hypothesis 1 (H1) demonstrates a substantial (positive) association between management commitment and safety performance. The correlation coefficient readings were $r = 0.587$ ($n = 291$), indicating that the intensity of force might be categorised as strong (Table 4.10). Based on the findings of this investigation, it can be concluded that the hypothesis is supported.

- ii. (H2) Hypothesis 2: There is a significant relationship between safety promotion policies and safety performance.

According to Table 4.9, hypothesis 2 (H2) demonstrates a significant (positive) association between safety promotion policies and safety performance. The correlation coefficient readings of $r = 0.586$ ($n = 291$) indicated that the level of force might be categorised as strong (Table 4.10). Based on the findings of this investigation, it can be concluded that the hypothesis is supported.

- iii. (H3) Hypothesis 3: There is a significant relationship between safety rules and procedures and safety performance.

According to Table 4.9, hypothesis 3 (H3) demonstrates a considerable (positive) association between safety regulations and procedures and safety performance. Correlation coefficient measurements indicated $r = 0.632$ ($n = 291$), and the strength level was deemed to be high (Table 4.10). Based on the findings of this investigation, it can be concluded that the hypothesis is supported.

- iv. (H4) Hypothesis 4: There is a significant relationship between employee involvement and safety performance.

According to Table 4.9, hypothesis 4 (H4) demonstrates a substantial (positive) association between employee involvement and safety performance. Correlation coefficient measurements indicated $r = 0.669$ ($n = 291$), and the strength level was deemed to be high (Table 4.10). Based on the findings of this investigation, it can be concluded that the hypothesis is supported.

Table 4.10: *Correlation Table*

Range	Level
0.10 to 0.29	Weak
0.30 to 0.49	Moderate
0.50 to 1.0	Strong

Source: *Pallant (2007)*.

Four parts of safety climate factors, namely management commitment, safety promotion policies, safety regulations and procedures, and staff involvement, have a substantial positive association ranging from 0.586 to 0.610 with safety performance, as determined by Pearson correlation analysis. This range might be interpreted as a strong indicator that is near to 1. The results of this study's hypotheses are simply reported in Table 4.11.

Table 4.11: *Hypothesis Result.*

	Hypothesis	Result
H1	There is a significant relationship between management commitment and safety performance.	Accepted
H2	There is a significant relationship between safety promotion policies and safety performance.	Accepted
H3	There is a significant relationship between safety rules and procedures and safety performance.	Accepted
H4	There is a significant relationship between employee involvement and safety performance.	Accepted

4.7 Summary.

This chapter has provided and elaborated on the results of the collected data analysis. At the beginning of the chapter, the response rate and respondent demographics were described in depth, followed by analyses of reliability, descriptive data, Pearson correlation, and hypothesis testing. In addition to presenting the results of data analysis, this chapter demonstrates that evidence supports two of the four hypotheses, namely, that safety rules and procedures and employee involvement have a major impact on safety performance.

CHAPTER FIVE
CONCLUSION AND SUGGESTION

5.1 Introduction.

This chapter will provide a comprehensive analysis of the research findings. The focus of the presentation will be the impact of safety climate variables on safety performance in the Northern Region of Indah Water Konsortium Sdn. Bhd. Before proposing a practical plan for building a safety climate among staff, this chapter will address the implications of the current study. This chapter finishes with a consideration of the limitations identified throughout this inquiry. The resulting study's conclusion is shown next.

5.2 Executive Summary.

This study's major objective was to examine the relationship between safety climate and safety performance via management commitment characteristics, safety promotion policies, safety rules and procedures, and employee involvement. 291 questionnaires were sent to employees in eleven (11) Unit Operation Indah Water Consortium Sdn. Bhd. (IWK) Northern Region using the questionnaire survey methodology. It comprises Alor Setar, Langkawi, Sungai Petani, Perai, Penang, Taiping, Manjung, Ipoh, Kelantan, Terengganu, and Kuala Lumpur as field locations. There was no record of the respondent's failure to return the completed questionnaire.

The questionnaire created contained questions pertaining to the investigation's variables. The collected and received data were subsequently analysed using version 27 of the Statistical Package for the Social Sciences (SPSS). SPSS helps researchers analyse reliability, descriptive,

correlation, and multiple regression to evaluate the level of significance between independent variables (safety climate) and dependent variables (safety performance). According to the findings of the analysis, safety rules and procedures and employee participation have a significant relationship with safety performance.

This study concludes that safety climate can influence a company's safety performance or Indah Water Konsortium Sdn Bhd. (IWK) in general by emphasizing safety regulations and procedures and employee participation. Compliance with safety and procedures is an organizational activity that can contribute to an effective safety climate. This must be complemented with staff participation to support the implemented safety and health programs.

5.3 Discussion.

This study investigates the relationship between safety climate and safety performance at Indah Water Konsortium Sdn Bhd. Comprises eleven operational units in the Northern Region. The following part will explain and describe the conclusions of the study based on theory and empirical evidence from earlier research.

5.3.1 Relationship Between Management Commitment with Safety Performance.

The researchers anticipated a significant association between management commitment and safety performance in the early stages of this experiment. According to the relevant literature study, management commitment elements have a beneficial impact on safety performance continuously. Yang, Wang, Chang, Guo, and Huang (2009) emphasized that top-level executives should be accountable for organizational

management and aid employees in understanding the connection between individual and collective performance through a safety climate.

To develop a proactive safety culture, senior management should prioritize the empowerment process by engaging employees' hearts and actively proving their commitment by giving the necessary leadership and resources to adopt improvement approaches (Cooper, 2001). The ability of management to actively and consistently promote safety at all organizational levels reflects management's commitment to safety (Havold, 2005).

The study's results indicate that management commitment substantially affects the organization's safety performance during unit operation. These findings support the primary hypothesis of the researchers, i.e., the significance of the link between these factors. According to Havold (2005), one essential indicator of management's commitment to safety and health is how employees perceive their supervisor's involvement in promoting safety and health and addressing employees' health and safety issues.

The management of Indah Water Konsortium Sdn. Bhd. (IWK) demonstrates a dedication that extends beyond the planning and implementation of occupational safety and health initiatives. This commitment involves participation in hazard identification and risk control, the development and execution of Safe Operating Procedures (SOPs), the provision of appropriate Personal Protective Equipment (PPE), and the resolution of occupational safety and health problems. It is believed that the appointment of an Occupational Safety and Health Officer (SHO) as a competent specialist in each

operating unit has helped the organization maintain its commitment by ensuring that each activity complies with the requirements of the Occupational Safety and Health Act of 1994 (OHSA). This trend is believed to have altered employees' perceptions and attitudes that safety and health are everyone's responsibilities within the firm. The continual commitment of management has enhanced employees' confidence in reporting possibly unintended dangers so that quick corrective action can be implemented.

5.3.2 Relationship Between Safety Promotion Policies with Safety Performance.

Based on the conclusion that a safety promotion policy is vital to reaching safety performance objectives, researchers have hypothesized that a safety promotion policy has a strong link with safety performance. According to Welander, Svanstrom, and Ekman (2004), safety promotion policies aim to create the safest possible conditions.

The study's findings indicate that the safety promotion policy considerably impacts Indah Water Konsortium Sdn. Bhd's safety performance. A survey by researchers revealed that safety promotion policy programmes are held annually and include programmes such as hazard identification, fire prevention, emergency action plans, chemical handling, first aid and medical care, safety inspections by management, and occupational safety. confined. The staff's level of comprehension can be regarded as fundamental.

Each year, Indah Water Konsortium (IWK) mandates all staff to complete eight hours of occupational safety and health training. Compliance with the safety and health management system at the workplace is demonstrated through attendance records and

training materials (OSHMS). The Department of Occupational Safety and Health (DOSH), the Malaysian Department of Health (MOH), the Department of Road Safety, and other occupational safety and health professional groups are also involved in safety promotion.

Nonetheless, operational units establish safety promotion strategy objectives with minor variations. This mismatch results from managing operational units using diverse methodologies and methods to determine the safety successes of each unit. Each operating unit continues to adhere to the approved occupational safety and health management plan.

Researchers believed the organization's senior leadership needed to create similar programme objectives for each operating unit and implement the programme throughout the year. This is essential to raise workplace safety and health awareness, transmit knowledge, and cultivate work abilities. This technique can develop a lasting safety culture and improve the organization's safety performance by reducing the statistical rate of workplace accidents.

5.3.3 Relationship Between Safety Rules and Procedures with Safety

Performance.

Researchers agreed at the onset of the study that safety rules and procedures have a strong association with and impact on safety performance. According to Smith and Wadsworth (2009), organisations utilise instructions, rules, and procedures as one of their key safety and health measures. According to Sherif (2003), rules and procedures are key

components of a safety management system. Copper (2001) asserts that a company is safe if it ensures that all employees are aware of their safety responsibilities, encourages and enables them to comply to safety standards and procedures, and connects words with actions.

As hypothesized at the outset of this study, safety rules and procedures substantially affect safety performance, as demonstrated by this research. The accreditation of ISO45001 certification required Indah Water Konsortium Sdn Bhd (IWK) to construct comprehensive rules and procedures governing the organization's whole operation. The auditing system has aided the business in ensuring that the safety and health management system is operating effectively Cooper (2001) states that an enterprise-wide safety management system audit aims to compare actual safety management practices with the organization's specified safety policies, rules, and procedures. In addition, auditing assists in streamlining the whole workflow process to reach a risk-reducing equilibrium between productivity and safety requirements, develop control systems, codify applicable rules and procedures, and establish responsibility (Cooper, 2001).

Indah Water Konsortium (IWK) personnel's awareness of the risks they confront while doing their responsibilities has prompted them to adhere to safety regulations and procedures. Employee behavior is not restricted to conformity with rules and processes; rather, a clear knowledge of the role and contribution of individuals in promoting safety and health has fostered the development of safe work habits among employees. Therefore, according to the study, businesses should constantly ensure that the existing

safety policies and procedures fulfill the requirements of work activities and legal requirements.

5.3.4 Relationship Between Employee Involvement with Safety Performance.

Employee participation in developing a safety climate inside a business will invariably benefit safety performance. According to Wharton (2003), safety performance increases when individuals are given decision-making duties and roles. Cooper (2001) emphasized that the management team's credibility will suffer if employees are kept in the dark about safety issues, and no action is made; this will negatively impact employee involvement. In order to increase safety, it is advisable to solicit input from employees, as they are the most knowledgeable and closest to the task at hand (Vredenburg, 1998).

The findings of this study demonstrate that the proposition that employee participation has a strong association with safety performance is applicable and substantiated. According to Khairiah (2008), employee participation in corporate safety policies is crucial. Vassie and Lucas (2001) discovered that firms that deploy supervisors to ensure workplace safety are more reliable than those that do not. Without a doubt, these essential linkages aid businesses in achieving great safety performance.

Through a field assessment, researchers determined that the Indah Water Konsortium (IWK) organization implements an effective two-way communication system between management and non-management personnel, particularly safety and health issues. There are no barriers preventing employees from voicing their opinions or remarks on workplace safety and health issues. The opinions of employees and the

prompt action of management can decrease and eliminate the risk of occupational accidents that employees face. In addition, employee participation in safety initiatives and training was well welcomed without any perception of coercion by the employer.

Researchers believe that employee engagement can be strengthened by inviting more employee representatives to safety and health committee meetings in addition to the chosen employee representatives. This can allow staff to express safety concerns directly to the unit operation's senior management of Indah Water Konsortium (IWK).

5.4 Implications.

This chapter explores the consequences of the relationship between safety performance variables and safety climate for businesses in the utility sector. The discussion will center on the study's theoretical and practical ramifications.

5.4.1 Theoretical Implication.

Indirectly, safety climate has a clear influence on safety performance. Numerous studies have been conducted on the same topic covering numerous economic sectors. This study adopts a similar methodology to examine the validity of the relationship between safety performance and safety climate in business-oriented service and utility companies. Safety performance variables consist of management commitment, safety promotion programmes, safety regulations and procedures, and employee participation as independent factors.

This research was conducted in eleven (11) unit operations of Indah Water Konsortium Sdn. Bhd. Each unit operation utilizes the same safety management system but has its management methods and approaches. According to the researchers, even if the safety management system is centralized, different methods and approaches to safety management would have varying effects on safety performance.

Theoretically, the results of the study will demonstrate that a safety climate that emphasises management commitment, safety promotion policies, safety rules and procedures, and employee involvement has a significant relationship to safety performance, even if the OSHMS is implemented in different locations. This theory is considered extremely pertinent and intuitive.

Researchers believe that a safety climate is a primary foundation among employees at all levels by highlighting the factors mentioned earlier. Each employee's safety responsibilities and functions must be understood, and their opinions should be acknowledged to enhance the organization's safety performance.

The study's findings are crucial for academics to evaluate the effectiveness of building a safety climate among employees and supporting firms in achieving improved safety performance.

5.4.2 Practical Implication.

Occupational safety policies in businesses begin with the individual attitudes of workers who place a premium on safety while performing their duties. This group's positive attitude will foster a positive work culture and practices. Maintaining a safety climate will affect the safety performance of an organization. The occupational safety and health management system (OSHMS) is intended to complement and facilitate businesses' efficient implementation of safety management. This study aims to present an empirical perspective on the safety climate aspects that have a strong link with safety performance. Thus, the organization might place a greater emphasis on these factors.

This is corroborated by the results of a literature assessment of prior investigations. However, safety regulations and procedures and employee participation have substantially impacted Indah Water Konsortium Sdn. Bhd. safety's performance (IWK). Therefore, academics propose that all four of these criteria should be encouraged to fundamentally improve safety performance.

The first variable is the dedication of management. The findings indicate that management commitment has a positive impact on safety performance; however, the influence of this factor is minimal and unsupported. According to earlier research, management's dedication is the foundation of an organization's safety climate. To demonstrate that the firm takes employee safety and health seriously, the involvement of upper management must be consistent. This involvement includes but is not limited to the formulation of corporate safety policies, the authoring of safety percentages and procedures, attendance at safety meetings, participation in safety programs, and the

implementation of routine safety inspections. The commitment of management must-win employees' hearts and enact the same safety compliance as employees. In addition to physical participation, the organization's management must demonstrate its commitment to safety by allocating an adequate budget to expedite the process of improving the safety and health of employees. The rapid response gives information and enhances the employees' perception of the organization's upper management.

The second variable is policies promoting safety. The reliability of safety promotion strategies rests on the fact that these aspects correlate with safety performance. Nonetheless, the results of this study demonstrate that the importance of this aspect is insufficient and unsupported in terms of its contribution to improving safety performance. The greatest way to introduce and expand employee awareness about occupational safety and health in a business is through safety promotion policies. Intervention through programs like safety training and awareness, accident investigations, routine safety inspections, and participation in safety committee meetings are effective approaches for ensuring an exceptional safety performance. The organization should establish a plan for a safety promotion program throughout the year and involve all levels. Management and appointed safety and health professionals should jointly discuss the precise aims and goals of safety promotion policies. Organizing each safety promotion campaign should also incorporate employee perspectives. In order to achieve the highest degree of safety performance, all departments and sections must implement identical plans.

The third variable is safety practices and regulations. This study's findings demonstrate that safety rules and procedures have a substantial relationship with and

influence safety performance. The firm has established effective and efficient safety processes and guidelines. Each work process is furnished with safe work instructions and standard operating procedures to reduce the likelihood of workplace accidents. Employees are aware that compliance with safety regulations and procedures carries significant risks and should not be taken lightly due to the risk of accidents. In addition to compliance, employees make it a habit and culture of their employment. Personal protection equipment (PPE) compliance has become a standard practice for Indah Water Konsortium Sdn. Bhd. staff, as observed by researchers (IWK). Employees are also attuned to the needs of activities that require specific credentials or abilities for a subset of the field's job activities. For instance, employees know that confined space work activities necessitate skilled individuals. Failure to comply with these directions can result in accidents or, even worse, death.

The fourth variable is employee participation. The outcomes of this study indicate that employee participation has a substantial relationship with and impact on safety performance. This statement is supported and relevant, as demonstrated by reviewing the relevant literature and past investigations. In other firms, it is customary for employees to play a vital role in supporting the safety policy that has been established. Employees are the heartbeat of any organization, and their ongoing participation in safety performance is essential to its success. According to a poll of researchers in the sector, employees are permitted to provide opinions and suggestions on safety issues. Without established boundaries, employees can assist the organization's senior management in discovering safety problems, indirectly impeding safety performance. This is not limited to safety concerns; employees can also suggest ways to enhance facilities to ensure employee welfare. According to academics, creating a culture of safety within an

organization necessitates the cooperation and participation of all levels, not only the accountability of safety practitioners within the business.

5.5 Limitation and Suggestions for Future Research.

The researcher met several limitations during the data gathering process, such as the time required to complete the questionnaires. It is difficult for the researcher to collect all of the data, let alone if there are unanswered questionnaires. There will be tremendous effort invested in data collection. This study also utilized hard copies and delivered them personally to employees, which is detrimental to the environment and costs the researcher a small amount of money. Suggestions for a future researcher include utilizing an internet strategy, such as constructing an online questionnaire and merely providing respondents with the link and distributing the URLs to respondents. The researcher will save time by avoiding in-person meetings with respondents. Additionally, money and the environment will be saved by not printing the hard copy.

This study is limited to a single Malaysian private enterprise. Researchers can duplicate the study on public businesses or other industries to assess the association between safety performance and safety climates. By increasing the size of the research population, we can acquire a deeper knowledge of other firms whose various safety climates impact their safety performance. Moreover, the sample size increases the precision and significance of the statistics; therefore, the number of respondents can be expanded to a huge scale. By conducting research at larger organizations, the researcher will receive a wide range of outcomes and aid future researchers.

Because the questionnaires are only available in English, it will be difficult for the workers to comprehend the questions. The questions will need to be translated or explained to and coached by respondents as they are filled out. Consequently, researchers must select their target respondents and translate the questionnaires into their local language to guarantee they are easily understood. It can also be employed in other nations' research, provided that the surveys are made available.

5.6 Conclusions.

This study demonstrates the validity and reliability of four safety climate dimensions on organisational safety performance. It is well established that safety regulations and procedures, as well as employee participation, have a direct effect on safety performance. To build a more effective safety climate and improve their safety performance, organisations must highlight management commitment and safety promotion policies on a consistent basis. The researchers of this study hope that it will be valuable in both the academic and industrial sectors as a guide and reference for developing insights regarding workplace safety and health empowerment. Researchers also believe that this study can benefit safety experts in developing effective methods for guaranteeing that the tasks entrusted to them can be carried out successfully.

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APPENDIX A



THE RELATIONSHIP BETWEEN SAFETY PERFORMANCE AND SAFETY CLIMATE IN UTILITIES INDUSTRY, INDAH WATER KONSORTIUM SDN BHD

Dear respondents,

I am a Masters student of Master of Science (Occupational Safety and Health Management) from Universiti Utara Malaysia. I am currently in the process of completing a research study title “The Relationship Between Safety Performance and Safety Climate in Utilities Industry, Indah Water Konsortium Sdn Bhd”. This questionnaire is part of the requirement for me to conduct this study to fulfil my Research Paper (BPMZ69912). It will assist me in getting information about the determinants of safety performance toward safety climate in utilities industry.

I hope that you can spend a few minutes to respond to this questionnaire. It is vital for me to obtain accurate responses and your cooperation is highly appreciated. All information obtained will be kept CONFIDENTIAL and will only be used for academic purposes.

Should you have any inquiries regarding this study, you may contact me +6019-65211120 or email at nuar_tikl02@yahoo.com.my. My research supervisor, Associate Prof. Dr Munawar bin Mustafa is also reachable via his mobile at +6019-4970253 or email at munawar@uum.edu.my.

I thank you for your time and cooperation.

Yours sincerely,

Khairul Anuar bin Abdul Hamid

Student

Master of Science (Occupational Safety and Health Management)

SECTION A: DEMOGRAPHIC PROFILE

Instruction: Please tick (✓) only one answer in the space provided

1. Gender	<input type="radio"/> Male	<input type="radio"/> Female	
2. Education	<input type="radio"/> Secondary School	<input type="radio"/> Undergraduate	<input type="radio"/> Postgraduate
3. Age (years old)	<input type="radio"/> 20-34	<input type="radio"/> 35-54	<input type="radio"/> 55 above
4. Position	<input type="radio"/> Staff	<input type="radio"/> Manager	<input type="radio"/> General Manager
5. Length of Service (years)	<input type="radio"/> 1 or less	<input type="radio"/> 1-5	<input type="radio"/> 5 above



SECTION B: SAFETY CLIMATE

Instruction: Please circle your answer in the following box based on the statement and scale given.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

No.	Management Commitment.	1	2	3	4	5
1.	Safety is given high priority by the management.	1	2	3	4	5
2.	Safety rules and procedures are strictly followed by the management.	1	2	3	4	5
3.	Corrective action is always taken when the management is told about unsafe practices.	1	2	3	4	5
4.	In my workplace manager/supervisor does not show interest in the safety of workers.	1	2	3	4	5
5.	Management consider safety to equally important as services.	1	2	3	4	5
6.	I feel the management is willing to compromise on safety for increasing services.	1	2	3	4	5
7.	When a near-miss accident is reported, my management acts quickly to solve the problems.	1	2	3	4	5
8.	My management does not attend a safety meeting.	1	2	3	4	5
9.	My management provide sufficient protective equipment for the workers.	1	2	3	4	5

No.	Safety Promotion Policies.					
1.	In my company safe conduct is considered as a positive factor job promotion.	1	2	3	4	5
2.	In my company employees are reward for reporting safety hazarded for reporting safety hazards.	1	2	3	4	5
3.	In my company safety week celebration and other safety promotional activities arranged by the management are very effective in creating safety awareness among the workers.	1	2	3	4	5
4.	There exists very healthy competition among the employees to find out and report unsafe condition and acts.	1	2	3	4	5
5.	Our supervisor becomes very unhappy and angry when employees find out and report unsafe conditions and acts in our section.	1	2	3	4	5

No.	Safety Rule and Procedures.					
1.	The safety rules and procedures followed in my company are sufficient to prevent incidents occurring.	1	2	3	4	5
2.	The facilities in the safety department are adequate to meet the needs of my organizations.	1	2	3	4	5
3.	My supervisor and manager are always trying to enforce safety working procedures.	1	2	3	4	5
4.	Safety procedures are carried out regularly.	1	2	3	4	5
5.	The safety procedures and practices in the organization are useful and effective.	1	2	3	4	5

No.	Employee Involvement					
1.	Management always welcomes opinions from the employee before making a final decision on safety-related matters.	1	2	3	4	5
2.	My operation unit have safety committees consisting of representatives of management and employee.	1	2	3	4	5
3.	Management promotes employee's involvement in safety-related matters.	1	2	3	4	5
4.	Management consults with the employee regularly about workplace safety and health issues.	1	2	3	4	5
5.	Employee does not sincerely participate in identifying safety problems.	1	2	3	4	5



SECTION C: SAFETY PERFORMANCE

Instruction: Please circle your answer in the following box based on the statement and scale given.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

No.	Safety Performance.	1	2	3	4	5
1.	I use all necessary safety equipment to do my job.	1	2	3	4	5
2.	I carry out my work in a safe manner.	1	2	3	4	5
3.	I follow correct safety rules and procedures while carrying out my job.	1	2	3	4	5
4.	I ensure the highest levels of safety when I carry out my job.	1	2	3	4	5
5.	Occasionally due to lack of time, I deviate from correct and safe work procedures	1	2	3	4	5
6.	Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures.	1	2	3	4	5
7.	It is not always practical to follow all safety rules and procedures while doing a job.	1	2	3	4	5
8.	I help my co-workers when they are working under risky or hazardous conditions	1	2	3	4	5
9.	I always point out to the management if any safety related matters are noticed in Kulliyah/ my work area	1	2	3	4	5
10.	I put extra effort to improve the safety of the workplace.	1	2	3	4	5
11.	I voluntarily carryout tasks or activities that help to improve workplace safety.	1	2	3	4	5
12.	I encourage my co-workers to work safely.	1	2	3	4	5

End of questions. Thank you for your responses.

APPENDIX B



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Date: 19th January 2022

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NO. 44, JALAN DUNGUN, BUKIT DAMANSARA,
50490 KUALA LUMPUR, WILAYAH PERSEKUTUAN KUALA LUMPUR.

COLLECTION OF DATA FOR RESEARCH PURPOSE

We are pleased to inform you that the following student is from Universiti Utara Malaysia Kuala Lumpur and is presently pursuing his Master of Science (Occupational Safety and Health Management). He are required to collect data from your organization as requirement for the thesis title: "The Relationship Between Safety Performance and Safety Culture in Utilities Industries: Indah Water Konsortium Sdn. Bhd. (Northern Regional)" this semester.

No.	Name	Matric No.	ID No.
1.	KHAIRUL ANUAR B/N ABDUL HAMID	823613	8503140/5365

Please be informed that the data collected is purely for academic purposes and we assure you that all information will be kept strictly confidential.

We really appreciate your kindness and cooperation in the above matter.

Thank you.

"KEDAH SEJAHTERA – NIKMAT UNTUK SEMUA"
"KNOWLEDGE, VIRTUE AND SERVICE"
"ACADEMIC EXCELLENCE UUM EMINENCE"

Sincerely yours,

NUR ARQAH BINTI ABU BAKAR
Assistant Registrar
Universiti Utara Malaysia
Kuala Lumpur Campus (UUMKL)

Universiti Pengurusan Terkemuka
The Finest Management University

