



**Factors Influencing Safety Compliance Behaviour
(SCB) in Manufacturing Industry**

by

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A thesis submitted in fulfillment of the requirements for the degree of
Master of Science in Management

**School of Business Innovation and Technopreneurship
UNIVERSITI MALAYSIA PERLIS**

2018

ACKNOWLEDGEMENT

I thank God for giving me the opportunity and patience in completing this thesis. The completion of this research was made by the assistance and support of those who are willingly to share their knowledge and expertise in different ways. I am filled with huge gratitude to my supportive groups that consisted of the dissertation committee, colleagues, friends, and family.

I also would like to express my utmost gratitude and most sincere appreciation to my late supervisor Associate Professor Lt. Kol. (B) Dr. Azuddin Bahari for his valuable guidance, advice and encouragement in the planning and execution of this study. He had given me all the important information to complete this project successfully.

I would like to express my profound gratitude to my main supervisor, Dr. Muhammad Safizal Abdullah for his wisdom, support, and guidance throughout this study. His knowledge and commitment to the highest standard have inspired and motivated me. In fact, he is an expert in managing his time to share his knowledge and experience.

I also would like to express my sincere appreciation to my co-supervisor, Associate Professor Dr. Yoshifumi Harada who has read my work, and contributed to this thesis by giving insightful suggestions, encouragement and comments during the completion of this study.

Besides, I would like to take this opportunity to express my deepest gratefulness to the Dean of Business School, Dr. Tunku Salha Tunku Ahmad for her invaluable advice, teaching, support, and fruitful discussion throughout the project without which I would not have succeeded in carrying out this research.

Special thanks and appreciation to the oral examination committee members; Associate Prof. Dr. Idris Md. Noor, Prof. Dr. Rosni Bakar, Associate Prof. Ku Halim Ku Ariffin (Chairpersons); Dr. Norshahrizan Nordin, Dr. Mohammad Harith Amlus, Dr. Tunku Salha Tunku Ahmad, (Internal-examiners); Associate Prof. Dr. Norsiah Mat (External-examiner) for their valuable feedback and comments that have contributed enormously to this study. I was greatly indebted to them.

Further, I would like to extend my ultimate thankful to my parents, Mr. Sugumaran Retnam and Madam Selvi Velan, who are always there whenever I need their consistent emotional support. My utmost appreciation goes to my excellent sisters Mdm. Susashila, Mdm. Thubashini; brother-in-laws Mr. Vijay and Mr. Manimaran, who always having confidence in me and supporting me morally and financially from the beginning unto the end of the study. Here I would like to thank them for their patience, understand and prayers until I am able to complete this thesis successfully.

Finally yet importantly, I would like to extend my sincere thanks to all, those who have provided me with valuable information, pursue this including Selangor Manufacturing Employers, Invest Selangor, Federation of Malaysia Manufacturers (FMM) and Malaysian Investment Development Authority Selangor (MIDA).

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LIST OF ABBREVIATIONS

CEO	Chief Executive Officer
SCB	Safety Compliance Behaviour
DOSH	Department of Occupational Safety and Health
DSM	Department of Statistics Malaysia
FMM	Federation of Malaysian Manufacturers
FRDM	Fire and Rescue Department of Malaysia
ILO	International Labour Organization
ISB	Interactive Safety Behaviour
JDC	Job Demands-Control
JDR	Job Demands-Resources
MIDA	Malaysian Investment Development Authority
OSHA	Occupational Safety and Health Administration
OSH	Occupational Safety and Health
PBC	Perceived Behavioural Control
PPE	Personal Protective Equipment
PSB	Personal Safety Behaviour
SME	Small and Medium-sized Enterprises
SPSS	Statistical Package for Social Science
SSB	Structural Safety Behaviour
TRA	Theory of Reasoned Action

Faktor-Faktor yang Mempengaruhi Kelakuan Pemuatan Keselamatan (SCB) dalam Industri Pembuatan

ABSTRAK

Tingkah laku pemuatan keselamatan merupakan aspek penting yang memerlukan perhatian yang serius oleh pemain perindustri di Malaysia. Ketidakpatuhan terhadap tingkah laku keselamatan ini boleh membawa kepada kemalangan industri. Oleh itu kajian ini bertujuan untuk mengkaji factor-faktor yang mempengaruhi tingkah laku pemuatan keselamatan dalam sektor pembuatan. Faktor-faktor seperti sikap keselamatan, pengetahuan keselamatan, latihan keselamatan, pengawasan keselamatan, sokongan pengurusan dan peraturan keselamatan serta prosedur telah dikaji untuk mengetahui hubungan mereka dengan tingkah laku pemuatan keselamatan. Jumlah populasi firma-firma pembuatan di Selangor dicatatkan sebagai 1,042. Responden telah diambil daripada populasi kajian yang melibatkan 1042 syarikat pembuatan di Selangor. Populasi kajian dipilih secara rawak daripada syarikat perkilangan Selangor. Dalam kajian ini penyelia dari Jabatan Keselamatan dan Kesihatan berkhidmat sebagai responden. Responden kajian ini terdiri daripada 281 penyelia daripada firma-firma pembuatan di Selangor. Kajian ini menggunakan teknik persampelan pelbagai peringkat; dengan menggabungkan beberapa teknik persampelan seperti persampelan kluster, persampelan seimbang, dan persampelan rawak mudah untuk mencapai perwakilan populasi kajian yang lebih baik. Data dikumpulkan melalui soal selidik sendiri kepada pekerja. Responden diberi tempoh tertentu untuk menjawab soalan-soalan yang dirumuskan dan mengembalikan soal selidik yang lengkap selepas selesai menjawabnya. Process ini dijalankan untuk mengelakkan sebarang data daripada hilang. Data dianalisis dengan menggunakan perisian Statistical Package for Social Science (SPSS) Versi 21.0 setelah kesemua soal selidik berjaya dikumpulkan dari para pekerja. Keputusan, analisis regresi berganda menunjukkan bahawa sikap keselamatan, pengetahuan keselamatan, pengawasan keselamatan, latihan keselamatan, sokongan pengurusan dan keselamatan peraturan serta prosedur adalah factor-faktor yang positif dan signifikan terhadap tingkah laku pemuatan keselamatan dalam sektor pembuatan. Malahan, keputusan analisis regresi berganda juga menunjukkan bahawa pengetahuan keselamatan mempunyai impak yang paling tinggi terhadap tingkah laku pemuatan keselamatan jika dibandingkan dengan pemboleh ubah-ubah lain (sikap keselamatan, sokongan pengurusan, latihan keselamatan, pengawasan keselamatan dan peraturan keselamatan serta prosedur). Implikasi dan cadangan kajian telah dikemukakan. Melalui kajian ini, terdapat sumbangan dari segi aspek teori, dan praktikal kepada ahli akademik dan juga pengamal dalam sesebuah organisasi kerana faktor individu dan organisasi menyumbang kepada tingkah laku pemuatan keselamatan. Kajian ini memberikan bukti empirikal untuk hubungan teoretikal yang dikemukakan dalam rangka teori. Semua hipotesis disokong dalam kajian ini. Dengan menggunakan Teori Tindakan Bertindak (TRA) sebagai teori pendorong, dan daripada pandangan penyelia gelagat tingkah laku pemuatan pekerja dapat ditentukan dengan tingkah laku keselamatan. Dalam pada itu, dengan memperluaskan Teori Tindakan Teras yang asal; yang tidak hanya menyumbang dalam segi teori tetapi turut juga menyumbang dari segi pengetahuan dengan memperluas kesusasteraan kajian dalam konteks keselamatan di sektor pembuatan.

Factors Influencing Safety Compliance Behaviour (SCB) in Manufacturing Industry

ABSTRACT

Safety compliance behaviour is an important aspect which needs a serious attention by the industrial players in Malaysia. Non-compliance with safety behaviour could lead to industrial accidents. Therefore, this research aims to investigate factors influencing safety compliance behaviour in the manufacturing sector. Factors such as safety attitude, safety knowledge, safety training, safety supervision, management support and safety rules and procedures were examined in order to find out the relationship with safety compliance behaviour. The total population of manufacturing companies in Selangor was recorded as 1,042. The respondents were taken from the study population of 1042 manufacturing firms in Selangor. The population of the study was randomly selected from Selangor manufacturing companies. In this study, supervisors from Safety and Health Department served as the unit of respondents. Respondents of the study were 281 supervisors from the manufacturing firms in Selangor. The study utilised multistage sampling technique; a technique which the researcher combined several sampling techniques such as cluster sampling, stratified sampling, and simple random sampling in order to achieve a better representation of the study population. Data were collected through self-administered questionnaire to the employees. The respondents were given a particular time to respond to the formulated questions and to return the complete questionnaire instantly once the responses were completed. This process was adopted and applied in order to prevent any data from missing. All questionnaires were successfully collected from the employees. Data were analysed by using the Statistical Package for Social Science (SPSS) software Version 21.0. The multiple regression analysis revealed that the safety attitude, safety knowledge, safety supervision, safety training, management support and safety rules and procedures were factors that positively and significantly influence safety compliance behaviour in manufacturing sector. While, the multiple regression analysis also revealed that safety knowledge had the highest impact on the safety compliance behaviour if compared to other variables (safety attitude, management support, safety training, safety supervision and safety rules and procedures). Implications and recommendations of the study were forwarded. Through the present study, there is contribution in terms of the theory, and practices for the academicians, and practitioners in an organization since individual and organization factors contribute to the safety compliance behaviour. This study provides empirical proof for the theoretical relationships put forward in the theoretical framework. All hypotheses are supported in this study. By using the Theory of Reasoned Action (TRA) as an underpinning theory, from the view of supervisors' towards the workers' compliance can well be determined with safety behaviour. In the meantime, by extending the original Theory of Reasoned Action; it is not only contributes in term of the theory but also contributes in terms of knowledge by extending the literature of study in the context of safety in the manufacturing sector.

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Safety behaviour is subset of safety performance which, can be divided into two components, namely safety compliance and safety participation (Aryee and Hsiung, 2016; Guo et al., 2016; Seo et al., 2015; Lu and Kou, 2016; Griffin and Hu, 2013; Pearce, 2012; Khdair et al., 2011; Vinodkumar and Bhasi, 2010; Griffin and Neal, 2000; Zulkifly, 2014). Safety compliance is defined as behaviours of workers who are engaged with the safety aspects in their job like the compliance with organization safety rules, and procedures (Griffin and Hu, 2013) while safety participation is defined as workers' involvement in safety actions that are targeted at contributing to the expansion of a supportive safety atmosphere (Griffin and Hu, 2013). Nowadays, the safety compliance behaviour, and the problems related to it known as important issues that debated in this world by most of the researchers (Sangau, 2012).

The job-related accidents that happen due to non-compliance with safety behaviour have incurred huge expenses to the organization (Ali et al., 2009). The non-compliance with safety behaviours considered as a serious element since they reveal the individuals' actual actions to maintain a safe work surrounding (Lu and Kuo, 2016). Subramaniam (2013) finds that the occupational accident occurs because of the management and employees themselves. He suggests that organizations should identify the scope of risks in an effective scale in order to reduce specific hazards, and the rate of death at workplaces. International Labour Organization (2013), has identified type of

organizational hazards, namely are biological, chemical, machineries, physical and psychosocial hazards. Therefore, the International Labour Organization (2013) has suggested rules, and regulations to protect the employees' safety, health, and welfare as shown in Table 1.1.

Table 1.1: Type of organizational hazards in the organization

Specific hazards and risks	Regulation
Other hazardous substances	* Occupational Safety Health (OSH) Act 1994 (No. 514)
Biological hazards	* OSH Act 1994 (No.514) (S 66(1)(2)(k)) * Factories and Machinery Act 1967 (At 139)
Chemical hazards	* OSH (Use and Standards of Exposure of Chemicals * OSH Act 1994 (No. 514) (S 21)
Machineries	* Factories and Machinery Act 1967 (At 139) * Guarding of Machinery Convention, 1963 (No. 119) * OSH Act 1994 (No.514)
Physical hazards	* Pesticides Act 1974 * Factories and Machinery Act 1967 (At 139) * OSH Act 1994 (No.514)
Psychosocial hazards	* OSH Act 1994 (No.514)

(Source: International Labour Organization, 2013)

In most organizations, unsafe behaviour causes industrial accidents (Mansor et al., 2011 and Kamarrudin et al., 2009). Factor such as human, behavioural, economic, psychology, organization, individual, social, environmental, improper safety equipment, inappropriate usage of tools, inappropriate storage of equipment, dangerous job strategies, employees' involvement, co-workers' safety, lack of supervision, lack of

safety training, lack of safety attitude, safety rules and procedures, and knowledge of exchange systems contribute to unsafe behaviour (Hong et al., 2011; Bakar, 2013; Ibrahim, 2012; Surlenty et al., 2011; Subramaniam et al., 2014; Ganeson, 2014; Saidon, 2011; Gressgård, 2014; Khdair et al., 2011; Vinodkumar and Bhasi, 2010; Khdair et al., 2011). Previous studies prove that these factors were the main reasons that lead to industrial accidents, therefore the Department of Occupational Safety and Health (DOSH) established in Malaysia in 1994 to regulate, and impose penalties in order to reduce the accident rate. DOSH has the roles to set up rules and regulation in order to remove and reduce risks at workplace. It also plays an important role in protecting employees' safety and health as well as the well-being of those who engaged in the work process.

Yusof (2008) justifies that the ignorance of the workers on Occupational Safety Health (OSH) performance can lead to occupational accidents in an organization. However, the accident rates never decline and are even increasing. The occupational accident phenomenon does not only occur in other countries but it also showing an alarming trend in Malaysia. For example, Table 1.2 shows prosecution cases towards employers in Malaysia due to their negligence in providing a safe workplace. Table 1.2 also shows the penalties incurred by the employers due to neglecting the maintenance and safety aspect at their workplace. Hence, even though many factors lead to industrial accidents, if the employers are strict with safety working environment as well as aware with the level of employees' compliance, the safety behaviour among the employees could nurtured within the organizational context.

Table 1.2: The prosecution cases against the employer in the workplace

Date	Industry	Summary of case
27-10-2016	Sbn Industries Sdn. Bhd. (Johor)	*Failure to provide supervision and training equipment operator of power machine *Fine of RM35,000.00
26-08-2016	Uniplaster Industries Sdn. Bhd. (Selangor)	*Do not provide the perfect suit to the fibre machinery until cause the serious body injury to employee *Fine of RM25,000.00
08-08-2016	Ngan Yin Groundnut Factory Sdn. Bhd. (Perak)	*No safe work procedures while work in high place until cause fatal accidents *Fine of RM20,000.00 *Failed to report about the fatal accidents to Department of Occupational Safety and Health in Perak *Fine of RM50,000.00
20-06-2016	Jeng Huat Bahau Realty Sdn. Bhd. (Negeri Sembilan)	*Failed handling plant maintenance *Fine of RM30,000.00 *Fail to report accident *Fine of RM30,000.00
21-04-2016	Tasek Corporation Berhad. (Perak)	*Do not provide safe work procedure for maintenance working and blockage cleaning in drag chain until cause serious body injury to employee *Fine of RM40,000.00
11-03-2016	MCB Industries Sdn. Bhd. (Perak)	*Fail to prove safe work for the concept of work in convert knife in trapezium mills until cause serious body injury to employee *Fine of RM40,000.00
26-01-2015	Hantong Metal Component Sdn. Bhd. (Penang)	*Fail to maintained the power press machine *Fine of RM20,000.00

(Source: Department of Occupational Safety and Health Malaysia, 2016)

1.1.1 Overview of Industrial Accidents in Malaysia

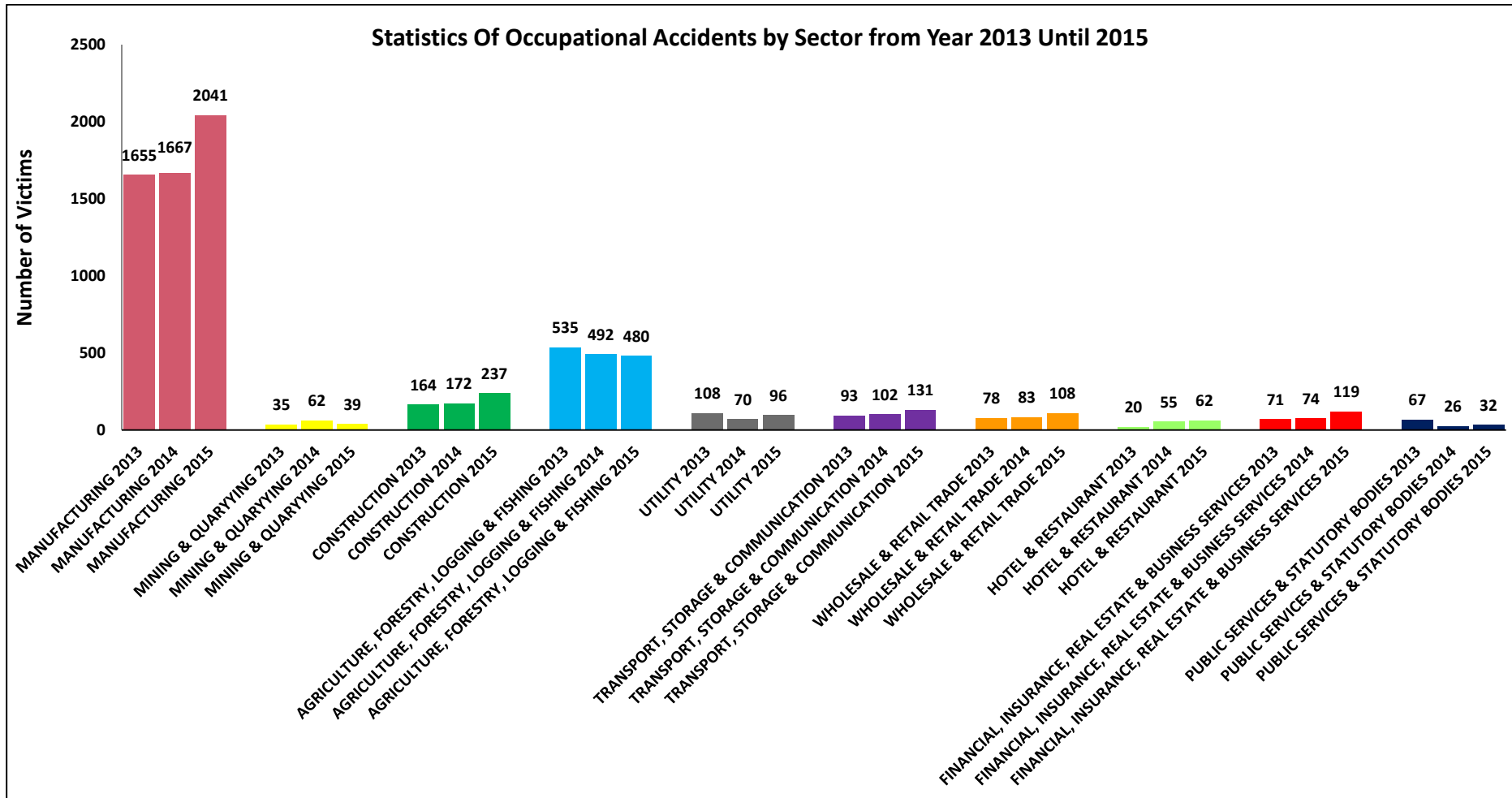
Based on Figure 1.1, the accidents' statistics in the manufacturing industry for the last three years in Malaysia showed that 1655, 1667, and 2041 cases reported for the years 2013, 2014, and 2015 respectively (Department of Occupational Safety and Health Malaysia, 2016). These statistics prove that the manufacturing sector had the highest number of industrial accidents (2013 until 2015) compared to other economic sectors (Department of Occupational Safety and Health Malaysia, 2016). The outcomes of occupational accidents are death, permanent disability, and non-permanent disability.

In Malaysia, Selangor is the most developed and progressive state. It is the country's primary port of entry and strategically located around the capital city of Kuala Lumpur. As Malaysia's largest economy, Selangor enjoys a highly developed infrastructure for major industry clusters and is a well-established investment haven backed by excellent state government support and an advanced commercial ecosystem (Invest Selangor, 2016). At the same time, the industrial accidents considered threatening and troublesome since it occurs almost every day. The major issue that needs attention is the organization itself (Hussain, 2009). Since industrial accidents is still a major issue in manufacturing industries in Malaysian.

Figure 1.2 shows that, there were five major states in Malaysia, which had seen an increase in the number of victims from year 2013 until 2015 such as Johor, Pulau Pinang, Pahang, Selangor, and Wilayah Persekutuan. Within these five states (Johor, Pulau Pinang, Pahang, Selangor, and Wilayah Persekutuan), Selangor was a leading

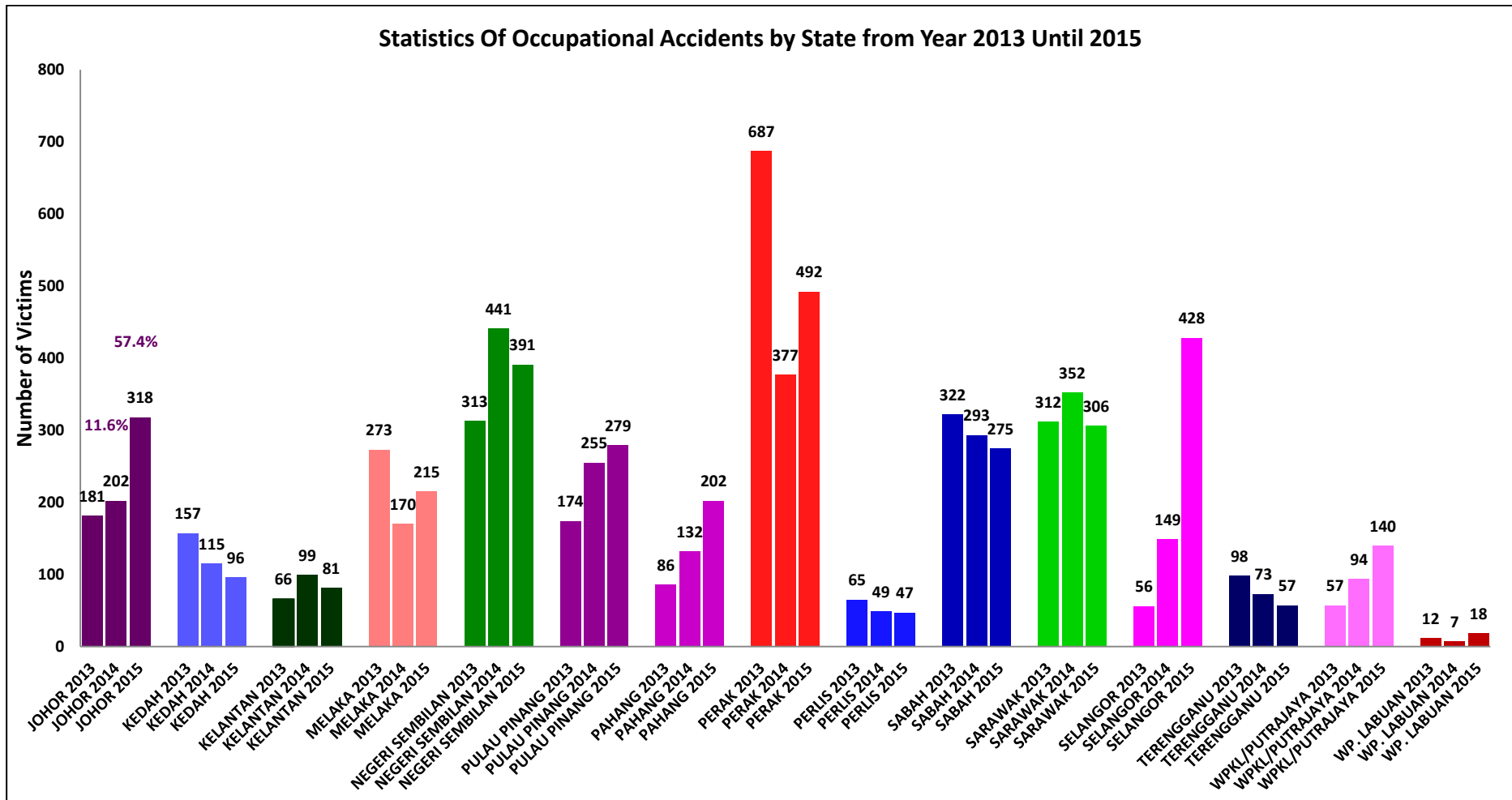
state and the number of victims who were involved in an industry accident has dramatically increased. In 2013, the number of industrial accident victims in Selangor recorded at 56 and increased to 149 victims in the year 2014 respectively (Figure 1.2). The percentage of the number of victims had increased by 166.1% from 2013 until 2014. In the year 2015, the number of victims in Selangor increased dramatically to 428 victims which recorded the highest percentage of victims by 187.2%. In addition, Figure 1.2 also shown that the number of victims in Selangor recorded at a higher percentage if compared to the other states in Malaysia. Thus, this study focus solely on manufacturing industry in which the result should be generalizable to other industrial states in the country.

Therefore, this present study focuses on the safety compliance behaviour in the manufacturing industry, which is among the major industry in Malaysia. In Malaysia, the manufacturing industry contributes to the nation's income as well as providing job opportunities (Yusof, 2008). In the development process, the industry will be adapted with new technologies such as sophisticated machines in order to increase the production output. With these new technologies, employees have to be skilful and knowledgeable at their working place (Yusof, 2008). However, the industrial accidents that happen had incurred high financial cost to the manufacturing firms in the industry (Ceylan, 2012).



(Source: Department of Occupational Safety and Health Malaysia, 2016)

Figure 1.1: Statistics of Occupational Accidents in Manufacturing Industry from year 2013 until 2015.



(Source: Department of Occupational Safety and Health Malaysia, 2016)

Figure 1.2: Statistics of Occupational Accidents in Selangor from year 2013 until 2015.

1.2 Problem Statement

In Malaysia, the Department of Occupational Safety and Health (2016), has classified the causes of industrial accidents such as employers' failure to provide safe work procedures and safe workplace, employees who fail to obey the safety rules and regulation, lack of supervision by leaders, poor safety knowledge and the lack of intensive training provided by the management. The main cause of industrial accidents is because of the employees who do not comply with safety behaviour (Guo et al., 2016; Liu et al., 2015; Bronkhorst, 2015; Muhammad, 2015; Seo et al., 2015). The non-compliance with safety behaviour among the workers at their working place became the primary factor, which led to occupational accidents (Kamarrudin et al., 2009). The job-related accidents that happen due to non-compliance with safety behaviour have incurred huge expenses to the organization (Ali et al., 2009). The non-compliance with safety behaviours considered as a serious issue since they reveal the individuals' actual actions to maintain a safe work surrounding (Lu and Kuo, 2016). Subramaniam (2013) finds that the occupational accident occurs because of the management and employees themselves. He suggests that organizations should identify the scope of risks in an effective scale in order to reduce specific hazards, and the rate of death at workplaces.

At the present time, safety and health at the workplace become one of the important issues in human resource management as they have been affected in all industries and businesses worldwide (Hussain, 2009). Globally, almost 2.3 million people die because of the work-related diseases and industrial accidents (Dhas, 2014). The Bhopal gas tragedy in India in 1984 happened because of the insufficiency of a specific plant management, which caused the lack of skilled operators, reduction of

safety management, insufficient maintenance, and inadequate emergency action plans (Eckerman, 2005). These occupational accidents can lead to death, permanent disability, and non-permanent disability (Rahman et al., 2014). In Malaysia, the manufacturing industry for the last three years showed that 1655, 1667, and 2041 cases were reported for the years 2013, 2014, and 2015 respectively (Department of Occupational Safety and Health Malaysia, 2016). Meanwhile, Selangor was a leading state and the number of victims who were involved in an industry accident has dramatically increased. In 2013, the number of industrial accident victims in Selangor recorded at 56 and increased to 149 victims in the year 2014 respectively. The percentage of the number of victims had increased by 166.1% from 2013 until 2014. In the year 2015, the number of victims in Selangor increased dramatically to 428 victims which recorded the highest percentage of victims by 187.2% (Department of Occupational Safety and Health, 2016).

The increase in accident rate across the industries will lead to economic loss, human tragedy, loss in production as well as negative impact on company's reputation (Ibrahim, 2012). Earlier works have indicated that the workers' absence in the workplace is due to occupational accidents, which cause death, and injuries (Takala, 1999). On the other hand, the reputation of the company, profits, as well as the productivity of the organization were considered as key factors that relate to occupational safety (Subramaniam, 2013). In fact, industrial accidents also cause direct, indirect or unseen costs to the entire society (Hämäläinen et al., 2009). Moreover, a high number of industrial accidents will lead to the increase in various unproductive expenses such as medical expenses, loss in production, administrative expenses as well as employer expenses (Hong et al., 2011). Other than that, employees' overtime,

training of replacement workers, and the salaries for the lost time of injured workers, as well as the repair of machinery may cause high amount of expenses, which may reduce the effectiveness of the organization (Hong et al., 2011). This occupational accident not only causes a critical problem in an organization, but it also causes monetary loss to the industry itself (Ali et al., 2009).

The heavy workload, high demand, lack of knowledge, social support, lack of management commitment, lack of safety supervision, perceived organizational support, and safety culture, co-worker safety, knowledge of exchange systems, employees' involvements, lack of safety attitude, lack of personal protective equipment (PPE), safety climate, job safety, management safety practices, safety programme, and job autonomy all contributed to the non-compliance with safety behaviour (Bronkhorst, 2015; Guo et al., 2016; Liu et al., 2015; Muhammad, 2015; Seo et al., 2015; Ganeson, 2014; Gressgård, 2014; Bakar 2013; Subramaniam, 2013; Pearce, 2012; Chang, 2012; Pakisamy, 2012; Ibrahim, 2012; Khdair et al., 2011; Mansor et al., 2011; Hong et al., 2011; Surlenty et al., 2011; Vinodkumar and Bhasi, 2010; Ali et al., 2009; Kamarrudin et al., 2009; Sadullah and Kantan, 2009; Hussain, 2009; Dhas, 2004; Parket et al., 2001). Hence, the safety compliance behaviour highlighted as a valid factor that needs investigating and improved by numerous researchers (Nadesan, 2013). Even though the factor of safety compliance behaviour tested as primary factor or dependent variable by numerous researchers, it still needs to test in Malaysia. This is because most of the studies done in other countries tend to look into different contexts of study.

The first factor that influences the safety compliance behaviour is safety attitude. Based on the Theory of Reasoned Action (TRA), (Fishbein and Ajzen, 1975) and