ANTECEDENTS OF SAFETY BEHAVIOUR AMONG OPERATORS AT LIGHT RAIL TRANSIT AND KL MONORAIL SERVICES IN MALAYSIA

By

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ABSTRACT

Safety behaviour is one of the area concern in reducing incident and accidents in services and non-services industries. This bottom-up approach becomes favourable since the work systems and associated technologies are improved. There are two dimensions of safety behaviours viz safety compliance and safety citizenship behaviours (SCBs). The safety compliance refers to employees' compliances behaviours to organization safety requirements accordance to organization and related regulatory bodies. Meanwhile, SCBs refers to employees' extra-role behaviours in achieving higher safety standard in organizational level. By considering individual and leadership factors which are safety knowledge, safety motivation, safety-specific transformational leadership (SSTL) and safety consciousness, this determines the level of safety behaviour among operators at LRT and KL Monorail service. 326 sets of questionnaire survey were distributed at rail maintenance and rail operation departments of LRT and KL Monorail. According to the survey, 98 data were collected by presenting 30 percent of respondents' rate. Data was analysed by using Statistical Package for the Social Science (SPSS) version 23.0. The results of the study revealed, that only three variables exerted significant correlation with safety behaviour viz safety knowledge, safety motivation and SSTL whereby the correlation between safety consciousness and safety behaviours is not significant. Contributions, limitations, and implications of the study are discussed.

Keywords: safety behaviour, safety compliances, safety citizenship behaviours, safety knowledge, safety motivation, safety-specific transformational leadership, safety consciousness

ABSTRAK

Tingkah laku keselamatan merupakan suatu penekanan dalam mengurangkan kejadian dan kemalangan di dalam industri-industri perkhidmatan dan bukan perkhidmatan. Pendekatan dari bawah ke atas atau "bottom-up" ini menjadi pilihan semenjak penambahbaikan sistem kerja dan teknologi-teknologi berkaitan. Terdapat dua dimensi tingkah laku keselamatan iaitu pematuhan keselamatan dan tingkah laku kerakyatan keselamatan atau "safety citizenship behaviours" (SCBs). Pematuhan keselamatan merujuk kepada tingkah laku pematuhan pekerja terhadap keperluan-keperluan keselamatan organisasi selaras dengan keperluan-keperluan keselamatan yang ditetapkan oleh organisasi dan badan-badan penguatkuasa. Sementara itu, SCBs merujuk kepada tingkah laku peranan-tambahan atau "extra-role behaviour" dalam mencapai piawaian keselamatan yang lebih tinggi diperingkat organisasi. Tahap tingkah laku keselamatan dikalangan pengendali-pengendali perkhidmatan LRT dan KL Monorail ditentukan dengan mengambil kira faktor-faktor individu dan kepimpinan (pengetahuan keselamatan, motivasi keselamatan, transformasi kepimpinan dalam keselamatan-spesifik (SSTL) dan kesedaran keselamatan). 326 set soalan kaji selidik telah diagihkan di jabatan-jabatan penyenggaraan dan operasi rel LRT dan KL Monorail. Berdasarkan kaji selidik tersebut, 98 data telah dikumpul dengan kadar respondan sebanyak 30 peratus. Data di analisis dengan menggunakan perisian "Statistical Package for the Social Science (SPSS)" versi 23.0. Hasil kajian mendedahkan bahawa hanya tiga pembolehubah menggunakan korelasi signifikan dengan tingkah laku keselamatan iaitu pengetahuan keselamatan, motivasi keselamatan dan SSTL di mana korelasi di antara kesedaran keselamatan dan tingkah laku keselamatan adalah tidak signifikan. Sumbangan, limitasi, dan implikasi kajian turut dibincangkan dalam penyelidikan ini.

Katakunci: tingkah laku keselamatan, pematuhan keselamatan, tingkah laku kerakyatan keselamatan, pengetahuan keselamatan, motivasi keselamatan, transformasi kepimpinan dalam keselamatan-spesifik, kesedaran keselamatan

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LIST OF ABBREVIATION

SPAD	Suruhanjaya Pengangkutan Awam Darat
SSTL	Safety-Specific Transformational Leadership
SCBs	Safety Citizenship Behaviours
OSHA	Occupational Safety and Health Act
OSH	Occupational Safety and Health
SOCSO	Social Security Organization
LRT	Light Rail Transit
KLJ	Kelana Jaya
CBD	Central Business District
MRT1	Mass Rapid Transit Line 1
LRT3	Light Rail Transit 3
MRT2	Mass Rapid Transit Line 2
MRT3	Mass Rapid Transit Line 3
RTS	Malaysia-Singapore Rapid Transit System
HSR	High Speed Rail
ECRL	East Cost Rail Line
STP	Safety Task Performance
SCP	Safety Contextual Performance
CMV	Common Method Variance
TNM	Track Network Maintenance
WEES	Wayside Electrical and Electronic System
HOM	Head of Maintenance
HOO	Head of Operation Department
SPSS	Statistical Package for the Social Science
SD	Standard Deviation
VIF	Variance Inflation Factor
ERP	Emergency Response Plan First Aid and
CPR	Cardio Pulmonary Resuscitation

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Malaysia aims to build a safe, healthy and productive pool of human capital by creating, cultivating and sustaining safe and healthy work culture in all organizations (*OSH-Master Plan* 2016-2020, 2016). Thru this plan, the organizations are objectively needed to increase awareness and knowledge in occupational safety and health (OSH) and commitment to OSH in all undertakings as well as to reduce workplace accident.

Workplace accidents considered as common occurrence in Malaysia's workplace. Based on the data published in Social Security Organization (SOCSO) Annual Report, the relative frequency of workplace accidents reported (Refer Table 1.1), in 2006 was 40,617 cases and it decreased by 4.83 percent to 38,657 in 2007. These records continue decreased by 9.22 percent to 36,092 cases in 2008. In 2009, these records decreased by 2.04 percent to 34,376 cases. However, the industrial accident cases increased in 2010 by 3.57 percent to 35,603 cases and the pattern of industrial accident cases keep fluctuating until 2015.

Table 1.1
Relative Frequency of Accidents Reported, 2006 – 2015

Year	Number of Accidents Reported	Number of Industrial Accidents Reported
2006	58,321	40,617
2007	56,339	38,657
2008	54,133	35,092
2009	55,186	34,376

Table 1.1 (Continued)

Year	Number of Accidents Reported	Number of Industrial Accidents Reported
2010	57,639	35,603
2011	59,897	35,088
2012	61,552	35,296
2013	63,557	35,898
2014	63,331	35,294
2015	62,837	34,258

Source: Social Security Organization (SOCSO) Annual Report

Workplace safety is of paramount importance in the rail industry, where accidents involving the movement of people and goods can result in serious injury, lost time, delays in service, and even death (Morrow et al., 2010). According to data captured by SOCSO Annual Report, it shows that the railway accident cases in 2011 was increased by 18.18 percent and decreased by 52.56 percent in year 2012 and keeps decreased by 9.46 percent in year 2013. In 2014, the number of railway accident cases started to increase by 9.46 percent and it continues to increase in 2015 by 14.86 percent. This data also shows that, the majority of accidents reported are involving male compared to female.

Rail service industries are unique due to its nature of movement and it designs. Rail safety research and management has until recently lagged behind other safety-critical industries in the development and use of domain-specific error and contributory factor identification methods and tools (Baysari, Mcintosh, & Wilson, 2008).

In September 2016, The Star online reported that Light Rail Transit (LRT) Kelana Jaya Line had stranded due to glitch in the signaling and communication system between the Ampang Park and Dang Wangi Station. According to Shahrudin (2015),

in 30th March 2015, Monorail catches fire at Titiwangsa Station. The monorail services encountered a glitch and one of rubber tyres for a four-car-train caught fire. These frequent of accidents were happened in recent years and affected customers trust and satisfaction, organizational financial, image and reputation. This such accidents are caused by human factors and according to Reinach & Viale (2006), human factor-related train accidents make up a significant proportion of all train accidents, including those that occur in switching yards. In many organizations, safe behavior is an important goal because of the human and financial costs associated with unsafe behavior, accidents and injuries (Hofmann, Morgeson, & Gerras, 2003).

The concept of Malaysia Occupational Safety and Health Act (OSHA) 1994 was based on the self-regulation which emphasized the responsibilities of employers and employees to manage the risks at the workplace. According to Zin & Ismail (2012), the OSHA 1994 is identified as an approach providing legislative framework to enforce human behaviour towards safety compliance by practicing high standards of safety and health at work to eliminate workplace accidents. According to Didla, Mearns, & Flin (2010), compliances with safety rules and regulations is influential in lowering the risk of accident.

Nowadays, an organisation prefers employees' proactively approach towards safety compliances and initiates safety to achieve a higher safety level and prevent occupational accident and these types of behaviour are known as safety citizenship behaviours (SCBs). Thus, this study intends to investigate the reasons behind the creation SCBs with focusing on various human behaviors such as helping, voice,

stewardship, whistle blowing, civic virtue (keeping informed) and initiating safety-related change.

1.2 Problem Statement

A safety behaviours approach was adopted in organizations in order to manage safety functions effectively to prevent workplace accident and achieve better safety performance. The early study on the industrial accident prevention was first introduced by W.F. Heinrich in 1931 and it was known as Heinrich Domino Theory. This theory explains the sequence of incident and/or accident is like a series of dominos and each domino represents a factor. According to Heinrich's who analyzed 75,000 accidents, found that 88 percent were caused by unsafe acts, 10 percent by unsafe conditions and 2 percent by unpreventable causes (Brauer, 2006). In 1976, Bird and Loftus were updated Heinrich Domino Theory and find out that management is responsible for the safety and health of the employees. Then, Bowander (1987) observed that three types of errors namely human error, technological error and system error occurred simultaneously to trigger off the incident.

Incident reports of disasters like Chernobyl (1986) and Piper Alpha (1988) have consistently shown that human error is the leading cause of such accidents and most on-the-job injuries appear to result from employees' unsafe acts (Didla et al., 2010). According to Gyekye (2010), safety behaviour of the workers is the main fundamentals which cause occupational accident besides working environment. In high risk organizations, safety behaviors are important since lack of safety behaviors are the direct antecedents of accidents and injuries (Neal & Griffin,

2006). Thus, safety related behaviour could be a key element in the prevention of accidents and requires close attention.

Understanding in employees' safety behaviours is valuable to the railway industry because the occurrence of work-related illness and accidents can prove quite costly in terms of the potential for loss of equipment, man-hours and even human life (Morrow et al., 2010). Malaysia railway services are classified as land public transport and bonded over Suruhanjaya Pengangkutan Awam Darat (SPAD) of Malaysia. According to Malaysia Land And Public Transport Act (Act 715) (2010), railway accident means an accident attended by loss of human life or grievous hurt to any member of the public, railway passenger or person engaged in the working or driving of railway trains or by serious damage to goods carried on the railway or property or an accident of such a description as is usually attended by such loss, hurt or damage. The early accident involving LRT which was caused by human factors was reported on 28th October 2006 where the LRT overshot the end of its tracks, crashed into the buffer stop and parapet wall of the elevated concrete guideway and ended up dangling about 25 m above the ground near the Sentul Timur Station (Lourdes & Singh, 2006). The implication of such accident was resulted in a train and equipment damages, disrupted services, company financial loss as well as damage to the company's reputation.

In association with workplace accidents, determining the antecedents of employees' safety behaviours is essential in order to prevent an accident or recurrence of accident to happen in railway service industries. Malaysia railway accidents was recorded by SOCSO and based on the data captured, the pattern of railway accidents were

inconsistent where the total number of rail accident was decreased from year 2010 until year 2013 and increase gradually in year 2014 until the year 2015. A model developed by Neal & Griffin (2002); Vinodkumar & Bhasi (2010) are theoretically shown that safety knowledge and safety motivation are determinants of safety performance while the components of safety performance represent the behaviours that individual perform at work (Neal & Griffin, 2002). Finding from the study conducted by Koster, Stam, & Balk (2011) indicates that safety-specific transformational leadership (SSTL) is a strong predictor of safety performance and this safety performance is the extent to which companies are able to prevent accidents and errors. A previous study conducted by Westaby & Lee (2003) has shown that safety consciousness were negatively related to injury and he mention that those individuals with high levels of safety consciousness were less likely to have injuries than individuals with low levels of safety consciousness.

Knowing the importance of workplace accident prevention through employees' safety behaviours, this study is carried out to investigate the relationship between safety knowledge, safety motivation, safety-specific transformational leadership (SSTL), safety consciousness and safety behaviours (i.e. safety compliance and safety citizenship behaviours (SCBs)). The finding of this study will help the employer to get a better understanding on the importance of managing safety behaviours in order to prevent an accident to happen and recurrence of accidents in the future. Hence, it will enable employers to enhance safety performance at their workplace, improve transport service quality, gain customer trust and increase business growth in line with international standards.

1.3 Research Objectives

This study is carried out to determine whether safety knowledge, safety motivation, safety-specific transformational and safety consciousness can affect employees' safety compliance behaviours and safety citizenship behaviours (SCBs) among operators at LRT and KL Monorail services industries. This study intends to address the following objectives:-

1.3.1 To determine the level of safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.3.2 To examine the relationship between safety knowledge and safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.3.3 To examine the relationship between safety motivation and safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.3.4 To examine the relationship between safety-specific transformational leadership (SSTL) and safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.3.5 To examine the relationship between safety consciousness and safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.4 Research Questions

The research questions are developed in this study to determine the relationship between four (4) independent variables (i.e. safety knowledge, safety motivation, safety-specific transformational leadership (SSTL) safety consciousness) and safety behaviours (i.e. safety compliance and safety citizenship behaviours (SCBs)) among

operators at LRT and KL Monorail services in Malaysia. The study intends to answer the following research questions;

1.4.1 What are the antecedents of safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.4.2 How would safety knowledge influence safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.4.3 How would safety motivation influence safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.4.4 How would safety-specific transformational leadership (SSTL) influence safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.4.5 How would safety consciousness influence safety behaviours among operators at LRT and KL Monorail services in Malaysia.

1.5 Significance of the Study

The significance of the study includes both theoretical and practical aspects. Theoretically, most of the previous studies on safety behaviours focused on high risk industries such as oil and gas, manufacturing and construction industries (Ismail et al., 2012; Osman, Awang, Syed Hassan, & Mohammad Yusof, 2015; Zin & Ismail, 2012). However, there are limited studies on employees' safety behaviours in service industries such as railway industries. The studies in safety behaviours at railway industries are essential due to its nature of rail transport, frequencies of accident and the consequences are often severe. The consequences of rail accidents may result passengers and employees injury, property damages and the environment (Elms,

2001). Since human factors are important in railway industries, this study will directly emphasize on the behavioural aspects of the operators at LRT and KL Monorail. Based on 2015 Greater KL/Klang Valley Land Public Transport Survey (GKL LPT), the total number of ridership for rail-based public transportation was 702, 561 passenger daily (*SPAD Annual report*, 2015) and the majority of rail passenger are on the two (2) LRT lines, Kelana Jaya Line and Ampang Line (*Greater Kuala Lumpur/Klang Valley Land Public Transport Master Plan*, 2016).

LRT in Malaysia is a public-centric commuting within Kuala Lumpur whereas KL Monorail is an intra-city public transit system and both are elevated railway. Currently, there are two (2) lines of LRT services known as LRT Kelana Jaya (KLJ) Line and LRT Ampang (AMG) Line. LRT KLJ Line runs from Gombak to Putra Height with estimated total distances of 46 km and pass through 37 stations. LRT Ampang Line runs from Sentul Timur to Ampang with estimated total distances of 14.8 km and passing through 18 stations. Whereas, Sentul Timur to Putra Height with estimated total distances of 37 km and passing through 31 stations (PRASARANA, 2017). The KL Monorail runs across 11 stations from KL central to Central Business District (CBD) of Kuala Lumpur and ends at Titiwangsa Station with total estimated distances of 8.6 km (SPAD, 2017).

As the news spread on media, railway industries have been growing rapidly in these few years. The new completed projects such as Kelana Jaya and Ampang Line Extension Project, Klang Valley Mass Rapid Transit Line 1 (MRT1) and other upcoming projects such as Light Rail Transit 3 (LRT3), Klang Valley Mass Rapid Transit Line 2 (MRT2), Klang Valley Mass Rapid Transit Line 3 (MRT3), Malaysia-

Singapore Rapid Transit System (RTS), High Speed Rail (HSR) and East Cost Rail Line (ECRL) (SPAD, 2017) have shown their fast growth. The rapid growth of the rail network will tremendously increase population and attract more workers in a wide range of job categories in railway industries hence prone to affect accident cases in this industry.

In practical aspects, this study will be useful for LRT and KL Monorail services to understand the influencing factors towards safety behaviours. According to Brown, Subramaniam, & Ali (2017), the antecedents of safety behaviours indicates safety compliance and safety participation and also lead to a reduction in risk-taking behaviours and/or displaying unsafe behaviours. The findings gathered in this study will generally become a benchmark of employees' safety behaviours at Malaysia railway industries. It specifically provides information to the employer to enhance safety behaviours through safety knowledge, safety motivation, safety-specific transformational leadership (SSTL) and safety consciousness. This study also will enhance organizational safety performance as well as to improve the quality of train services which in turn enlarge business growth in line with international standards.

Finally, the findings of this study will be useful to the Malaysian government agencies to identify key factors of contributing safety knowledge, safety motivation, SSTL and safety consciousness that influences safety compliance and SCBs among employees involved in LRT and KL Monorail services industries and further enhance Malaysia public transport services in term of safety and quality.

1.6 Summary

This chapter focuses on the overall view of the current study. It discusses the importance and the necessity to study safety behaviours viz safety compliances and SCBs in organizations. This chapter also highlighted safety knowledge, safety motivation, safety-specific transformational leadership (SSTL) together with safety consciousness that have been identified as antecedents of safety behaviours. However, the field research on the relationship between these variables with SCBs and safety compliance is limited especially in services industries. Thus, the present study will examine the relationship between safety knowledge, safety motivation, safety consciousness, SSTL and safety behaviours viz safety compliance and SCBs in LRT and Monorail service provider. The next chapter will provide a review of the main variables that are proposed in the present study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will discuss on the overview of relevant literatures related to safety behaviours. Then, the factors affected safety behaviours was differentiated based on organizational factor, individual factor as well as leadership factor. Finally, the literature will focus on selected variables which are highly influenced to safety behaviours in the field of study viz safety knowledge, safety motivation, safety-specific transformational leadership (SSTL) and safety consciousness.

2.2 Empirical Studies on Safety Behaviours

Behaviours are actions or reactions of person or things in response to external or internal stimuli (Choudhry, 2014). Meanwhile, safety behaviours are considered as positive or negative action expressed by the employees during engaging workplace activities. Safety behaviours was classified as a leading indicator of safety performance and it can be used as a tool to access future levels of safety performance and safety records (Chen & Chen, 2014; Hinze, Thurman, & Wehle, 2013). As stated by Christian, Bradley, Wallace, & Burke (2009), the terms of safety performance refer to two (2) different concepts. The first concept of safety performance refers to organizational outcomes such as number of injuries. Meanwhile, the second concept of safety performance refers to employees' safety behaviours. In this context, safety behaviours was categorized into two (2) dimensions; safety compliance behaviours and safety participation behaviours (Neal & Griffin, 2002). This approach relates

safety task performance (STP) and safety contextual performance (SCP) introduced by Borman & Motowidlo (1997) in safety performance. The study conducted by Choudhry (2014) indicates that the overall safety performance at construction site can be improved through employees' safety behaviours. This concept was known as behavioural-based safety (BBS). BBS is a systematic application of human behaviours which focuses on the identification and modification of critical safety behaviours and emphasizes how such behaviours are linked to work related injuries and losses Cooper (1994) and Unnikrishnan, Iqbal, Singh, & Nimkar (2014). Kaila (2007) mention that BBS is a bottom-up approach and emphasizes employees to take ownership of their safe and unsafe behaviours.

Safety behaviour is the key to reduce injuries in the workplace and indirectly influencing the outcomes of the event before the injuries or accidents occurred (Johnson, 2003). Therefore, in order to prevent future accidents Mohammadfam, Ghasemi, Kalatpour, & Moghimbeigi (2017) have suggested that monitoring employees' safety behaviours over time will be useful to evaluate the effectiveness of safety programs, identify areas with deficiencies and develop strategies. Prati & Pietrantoni (2012) used safety behaviours as determinants of job related accident among Italian emergency responders operating in highways.

In order to prevent future accidents, safety behaviours was used as indicator for work environments such as management practices and safety climate (Neal, Griffin & Hart, 2000; Neal & Griffin, 2002; Vinodkumar & Bhasi, 2010).

Safety behaviours was considered as a method to decrease human error or incidents in container terminal operations of Taiwan (Lu & Yang, 2010). According to Reason (2000), human error can be contributed by persons or system approach. Person approach focuses on unsafe acts and procedural violation. Whereas, system approach focuses on consequences of unsafe conditions due to organizational systemic factors.

Based on the literature, it can be concluded that safety behaviours affected organizational safety performance, reducing and preventing future incident or accident at organizational and individual levels. Oliver, Cheyne, Tomas, & Cox (2002) have initiated accidents prevention by considering the characteristics of the work and organization environments and also in psychological and behavioural characteristic of the individual.

2.2.1 Organizational Factors

According to Andel, Hutchinson, & Spector (2015), organizational factors are one (1) of the environmental factor components that possible to affect employees' safety behaviours. Whereby, organizational factor is determines as an effective factors of preventing accidents (Oliver et al., 2002). The organizational factors are mostly focuses on organizational commitment and involvement towards work environments termed as safety climate, safety culture and management commitment or management practices.

Safety climate refers to employees' perceptions on the value of safety in the work environment, attitudes and beliefs about risk and safety (Mearns & Flin, 1999; Neal,

Griffin, & Hart, 2000). As Zohar (1980) was identified eight (8) elements of safety climate viz safety training, management attitudes, effects of safe conduct on promotion, level of risk, work pace, status of safety officer, effects of safe conduct on social status and status of safety committee. However Brown & Holmes (1986) point out three (3) elements rather than eight (8) elements hypothesized by Zohar (1980) namely management concern, management action and physical risk. Dedobbeleer & Beland (1991) identified only two elements in psychological climate viz management commitment to safety and worker involvement in safety activities.

According to Neal & Griffin (2000); Neal, Griffin & Hart (2000); Neal & Griffin (2002), the relationship between safety climate and employees' safety behaviours is influenced by individual factors viz safety knowledge and safety motivation. Thus, it was believed that safety knowledge and safety motivation are important determinant of employees' safety behaviours (Neal, Griffin & Hart, 2000).

These literatures showed that management commitment and involvement towards safety is most preferable to be selected as safety climate elements. According to Jaafar, Choong, & Mohamed (2017), safety management is a method of controlling safety policy, procedures and practices within an organization and it used to predict safety performance (Mearns, Whitaker, & Flin, 2003). There is another similar concept with safety management known as safety management practices. Safety management practices are defined as the policies, strategies, procedures and activities implemented or followed by the management of an organization targeting safety of their employees (Vinodkumar & Bhasi, 2010). Both concepts of safety management and safety management practices can be implemented in an organization to integrate

the overall business process systematically and comprehensively. The element of safety management practices may vary depending on the complexity of the operations in the organizations and it should be tailored to meet the organization's needs and objectives (Jaafar et al., 2017). The research conducted by Vinodkumar & Bhasi (2010) were investigated six (6) elements of safety management practices and safety performance namely safety compliance and safety participation by considering safety knowledge and safety motivation as determinants of safety performance. According to Mearns, Whitaker, & Flin (2003), safety management practices was associated with lower official accident rates and fewer respondents reporting accidents.

The terms of safety culture emerged in 1987 after Chernobyl nuclear power plant disaster on April 1986. Safety culture is a sub-facet of organizational culture, which is thought to affect employees' attitude and behaviours in relation to an organization's ongoing health and safety performance (Cooper, 2000). Research conducted by Choudhry, Fang, & Mohamed (2007) have summarized eight (8) definitions of safety culture (Refer Table 2.1) and the definition adopted by Hale (2000) and Cooper (2000) are the most practical, as they explicitly outline the contents of safety culture.

There are no universal accepted model has been established to enable the profession of quantify and analyze safety culture (Cooper, 2002). However, the Reciprocal Safety Culture model which was adapted from Bandura's model of Reciprocal Determinism was believed reflected the concept of safety culture (Cooper, 2000). Bandura's model of Reciprocal Determinism is a psychological model presence the dynamic reciprocal relationship between psychological, behavioural and situational factors (Cooper, 2002). The Reciprocal Safety Culture model comprises of three (3)

elements namely internal psychological factors (i.e. attitude and perception), external observable factors (safety-related behaviours) and situational factors. According to this model, individuals' behaviours will influence both internal psychological factors and situational factors.

Table 2.1
Source of Safety Culture Definitions

Reference	Definition of Safety Culture
Kennedy and Kirwan (1998)	An abstract concept, which is underpinned by the amalgamation of individual and group perceptions, thought processes, feelings and behaviours, which in turn gives rise to the particular way of doing things in the organization. It is a sub-element of the overall organizational culture
Hale (2000)	Refers to 'the attitudes, beliefs and perceptions shared by natural groups as defining norms and values, which determine how they act and react in relation to risks and risk control systems'
Glendon and Stanton (2000)	Comprises attitudes, behaviours, norms and values, personal responsibilities as well as human resources features such as training and development
Guldenmund (2000)	Those aspects of the organizational culture which will impact on attitudes and behaviour related to increasing or decreasing risk
Cooper (2000)	Culture is 'the product of multiple goal-directed interactions between people (psychological), jobs (behavioural) and the organization (situational); while safety culture is 'that observable degree of effort by which all organizational members directs their attention and actions toward improving safety on a daily basis'
Mohamed (2003)	A sub-facet of organizational culture, which affects workers' attitudes and behaviour in relation to an organization's on-going safety performance
Richter and Koch (2004)	Shared and learned meanings, experiences and interpretations of work and safety - expressed partially symbolically – which guide people's actions towards risk, accidents and prevention
Fang et al. (2006)	A set of prevailing indicators, beliefs and values that the organization owns in safety

Source : Choudhry et al. (2007)

The research conducted by Ali, Abdullah, & Subramaniam (2009) explored six (6) dimensions of safety culture which are reward system, training, management commitment, communication and feedback, hiring practices, and employee participation in reducing workplace injuries. However, only two (2) dimensions viz feedback and employee participation was significantly predicting the injury rates in a major industrial zone in Malaysia.

2.2.2 Individual Factors

Individual factors has been concerned as one (1) of the factors that contribute to occupational accident since work systems and associated technology improved (Oliver et al., 2002). Zakaria, Mansor & Abdullah (2012) investigated individual factors (i.e. stress and fatigue) as one of the elements that contributed to the accident among workers in Pangkalan Bekalan Kemaman Sdn. Bhd., Malaysia. Whereas, Larsson, Pousette, & Torner (2008) have measured safety knowledge and safety motivation as two (2) individual attitudes towards safety. The study conducted by Wu, Liu, & Lu (2007) was considered gender, age, job tenure, title, accident experience, safety training and work site as an individual factors that affected safety climate at universities and college laboratories in Taiwan. All these studies indicate individual factors perform the behaviours that will reflect safety outcomes. According to Andel et al. (2015) individual antecedents of safety viz attitude, individual differences and personality were affected employees' safety behaviours which in turn affected safety performance that ultimately leads to quantifiable safety outcomes such as injuries, illnesses, and fatalities.

2.2.3 Leadership

The early study on the relationship between safety leadership and human behaviours was conducted by industrial psychologist in 1990s (Flin & Yule, 2004). According to Unnikrishnan, Iqbal, Singh, & Nimkar (2015), developing and sustaining safety leadership is important to reduce accidents and to promote safety among managers and general employees. Safety leadership was defined as the process of interaction between leaders and followers to achieve organizational safety goals under the circumstances of organizational and individual factors (Wu, 2005). The research to examine the link between safety leadership and safety behaviours was conducted by Inness, Turner, Barling & Stride (2010); Neal & Griffin (2002); O'Dea & Flin (2001).

Safety leadership styles have been classified into two (2) types namely safety transformational leadership and safety transactional leadership Clarke (2013) and Lu & Yang (2010). Safety transformational leadership focuses on future and is essential developmental where leaders act as a role model to inspire and motivate employees to act above and beyond their self-interest towards safety. It has also been called relationship-oriented, charismatic or inspirational leadership. While, safety transactional leadership focuses on the link between performance and rewards which was also known as task-oriented leadership and can be either active or passive (Krause, 2005).

The relationship between safety transformational, safety transactional leadership and safety performance (i.e. safety compliance and safety participation) was demonstrated by previous researchers. The study conducted by Christian, Bradley, Wallace, & Burke (2009); Jiang & Probst (2016) had found that safety transformational

leadership was positively related to safety participation. Whereas, Clarke (2013) demonstrated that safety transformational leadership was positively related to safety participation and safety compliance (safety behaviours). Apart from that, the relationship between transformational leadership and safety performance was extended by emphasized on safety-specific transformational leadership (SSTL) (Koster, Stam, & Balk, 2011).

Barling, Loughlin, & Kelloway (2002); Kelloway, Mullen, & Francis (2006) were demonstrated a model linked safety-specific transformational leadership (SSTL) and safety behaviours. Further research was conducted by Koster, Stam, & Balk (2011) to investigate the relationship between SSTL and safety behaviours by considering safety consciousness.

2.3 Present Study

This study was designed by considering leadership and individual factors on safety behaviours as demonstrated by Koster et al. (2011); Griffin & Neal (2000); Neal, Griffin & Hart (2000); Vinodkumar & Bhasi (2010). The classification of safety behaviours dimensions was reflected safety performance approach introduced by Borman & Motowidlo (1997) viz safety compliance and safety participation. Besides, this study will consider other factor which was similar in concept with safety participation term as safety citizenship behaviours (SCBs). SCB approach was introduced to achieve higher safety standards at organizational level. Since workplace safety is a vital importance in railway industries, the purpose of this study is to investigate safety behaviours which in turn to prevent human error and workplace

accident. There are four (4) factors identified to influence safety behaviours in this field of study viz safety knowledge, safety motivation, safety leadership specifically safety-specific transformational leadership (SSTL) and safety consciousness. These four (4) factors are estimated to influence safety behaviours at LRT and KL Monorail services in Malaysia.

2.3.1 Relationship between Safety Knowledge and Safety Behaviours

Safety knowledge is defined as the understanding of safety operating procedures (SOPs) and sufficient safety training and instructions (Hofmann, Jacobs, & Landy, 1995). Employees' understanding of safety will lead employee's to navigate potential dangerous situations successfully (Westaby & Lee, 2003). According to Christian et al. (2009), safety knowledge was strongly related to safety compliance and safety participation behaviours. This statement was reflected Neal, Griffin & Halt (2000) explanation that safety knowledge is an important determinant of safety behaviours.

The relationship between safety knowledge and safety behaviours was shown by previous research in various industries. As Griffin & Neal (2000) was investigated employees' perceptions of safety at manufacturing industries in Australia towards safety performance. The results of the study demonstrated that safety knowledge was positively and significantly related to employees' safety behaviours (i.e. safety compliance, safety participation). The study also indicates that safety knowledge was strongly related to safety participation compared to safety compliance.

The study conducted by Vinodkumar & Bhasi (2010) at Kerala, India revealed that safety knowledge exerted positive and significant relationship with safety compliance and safety participation. However, the relationship between safety knowledge and safety compliance is higher than the relationship between safety knowledge and safety participation.

Neal, Griffin & Hart (2000) was investigated the relationship between safety knowledge and safety behaviours (i.e. safety compliance and safety participation) among employees in hospital services industry in Australia. According to the results obtained, safety knowledge is positively related to safety behaviours. The result also shows that the relationship between safety knowledge and safety compliance was stronger than the relationship between safety knowledge and safety participation.

2.3.2 Relationship between Safety Motivation and Safety Behaviours

Safety motivation is refers to an individual's willingness to exert effort to enact safety behaviours and the valence associated with those behaviours. A positive perception on work environment (safety climate) influenced employees' motivational level to comply with safe working practices and participate in safety activities (Neal & Griffin, 2006). According to Chen & Chen (2014); Hofmann, Jacobs, & Landy (1995); Neal & Griffin (2006); Probst & Brubaker (2001), safety motivation effected employees' to perform a job in a safe manner, comply with safe working practices (SOPs), participate in safety activities, complying with organization's safety regulation and engage in safety behaviours. Christian et al. (2009) mention that safety motivation is a proximal antecedent to safety behaviours. While, Neal, Griffin & Halt

(2000) have found that safety motivation is an important determinant of safety behaviours.

The relationship between safety motivation and safety behaviours (i.e. safety compliance and safety participation) was investigated by Griffin & Neal (2000), who tested employees' perceptions of safety at manufacturing industries in Australia towards safety performance. The study was categorized safety motivation into two (2) dimensions namely compliance motivation and participation motivation. According to this study, compliance motivation is positively and significantly related to safety compliance but negatively related to safety participation. Meanwhile, participation motivation is positively and significantly related to safety participation.

Neal, Griffin & Halt (2000) was investigated the relationship between safety motivation and safety behaviours at hospital services industry in Australia. The result of the study indicates that safety motivation was positively related to safety compliance and safety participation. They also found the relationship between safety motivation and safety compliance is stronger than the relationship between safety motivation and safety participation.

The study conducted by Vinodkumar & Bhasi (2010) was investigated employees' perceptions on six (6) safety management practices and self-reported safety knowledge, safety motivation, safety compliance and safety participation involving eight major accident hazard process at industrial units in Kerala. According to the study, safety motivation is positively and significantly related to safety compliance behaviours and safety participation behaviours. It also revealed that the relationship

between safety motivation and safety participation is stronger than the relationship between safety motivation and safety compliance.

2.3.3 Relationship between safety-specific transformational leadership (SSTL) and safety behaviours

Safety-specific transformational leadership (SSTL) was defined as transformational leadership tactic and strategies gained through leaders' inspirational and motivational efforts towards occupational safety as well as encouraging others to work in a safe manner (Barling, Loughlin & Kelloway, 2002; Koster et al., 2011; Kelloway, Mullen, & Francis, 2006). The term of SSTL confounds safety and transformational leadership (Barling, Loughlin & Kelloway, 2002; Inness, Turner, Barling, & Stride, 2010). According to Barling, Laughlin & Kelloway (2002); Jiang & Probst (2016), transformational leadership encompasses a complex behaviours comprises four (4) leader behaviours viz idealized influence, inspirational motivation, intellectual stimulation and individualized consideration.

Mullen, Kelloway, & Teed (2011) had investigated the effects of safety-specific leadership on the prediction of safety behaviours (compliance and participation). The study obtained data from two (2) samples. Sample A was collected among 241 young workers ages approximately 20 years old. The sample consisted of 122 women and 119 men from business and psychology university programmes in Canada. Meanwhile, Sample B collected from health care workers recruited from 66 long term healthcare organizations in Canada. A total of 1822 employees were identified and invited to participate. However, only 494 employees participated in the study resulted

in a 27.2 percent response rate. The results of the study revealed that SSTL is positively predicted both safety compliance and safety participation at both samples.

Further research was conducted by Smith, Eldridge & Dejoy (2016) who explored the relationships between safety-specific leadership (i.e. safety-specific transformational leadership, safety-specific passive leadership), safety climate and safety behaviours within fire services industry. The sample of data was collected among 398 fulltime, professional fire fighters at three (3) different fire departments in the south-eastern United States in north-eastern Georgia. According to the study, the results show that there are positive and significant relationships between SSTL and safety behaviours (i.e. safety compliance and safety participation).

2.3.4 Relationship between safety consciousness and safety behaviours

Safety consciousness is defined as a positive attitude and awareness toward acting safely in general (Westaby & Lee, 2003). It has been found to be an important predictor of employee safety behaviours (Neal & Griffin, 2002). Koster, Stam, & Balk (2011); Unnikrishnan, Iqbal, Singh, & Nimkar (2014) were elaborated safety consciousness affected both a cognitive and a behavioural level. Cognitively, safety consciousness means being mentally aware of safety in workplace and knowing what behaviours foster operational safety. Behaviourally, safety consciousness enacts the behaviours that foster operational safety. According to Christian et al., 2009, a conscientious individuals are more likely to set, commit to and strive for personal goals; they also are more dependable and responsible than less conscientious individuals.

Westaby & Lee (2003) was investigated the "Antecedents of injury among youth in agricultural settings: A longitudinal examination of safety consciousness, dangerous risk taking, and safety knowledge" relates safety consciousness and injuries. The purpose of this study is to examine the antecedents of injury among youths at potential risk in agricultural settings. The study was conducted among members of the National FFA (formerly known as Future Farmers of America), the largest youth serving organization in the United States. The sample of data collected is 117 out of 1,565 members of FFA which were randomly selected from the following 10 states: California, Iowa, Kansas, Kentucky, Minnesota, Ohio, Oklahoma, Tennessee, Texas, and Wisconsin. According to the study, safety consciousness is negatively related to injury. It was explained that those individuals with high levels of safety consciousness were less likely to have injuries than individuals with low levels of safety consciousness.

The similar study was conducted by Koster et al. (2011) who investigated the relationship between safety consciousness and safety performance on warehouse accidents. The sample of the study was collected among 1,033 employees and 78 warehouse managers in 78 Dutch warehouses thru a survey. According to the result obtained, safety consciousness was positively but not significantly related to safety performance.

The concept of these two (2) studies was reflected the first concept of safety performance which refers to organizational outcomes viz injuries. However, it was assumed that safety consciousness relationship with safety performance reflected as

similar results on the relationship between safety consciousness and safety behaviours (i.e. safety compliance and safety participation).

2.4 Summary

The literature indicates there is a strong and significant relationship between safety knowledge, safety motivation, SSTL, safety consciousness and employees' safety behaviours. The conceptual framework was designed based on the literature and will be discussed in the next chapter.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this chapter is to discuss on the methodological aspects applied in this study, which cover the collection of empirical evidence, procedures, data and information. The dependent and independent variables will be defined and explained operationally. Further information will be given on the research approach and design, instruments scale, population and target group, unit of analysis and data analysis of the study.

3.2 Theoretical Framework

A comprehensive theoretical framework was developed based on the findings of Barling, Loughlin, & Kelloway (2002); Koster, Stam, & Balk (2011); Hofmann et al. (2003); Vinodkumar & Bhasi (2010) which consider the organizational, individual and leadership factors of safety behaviour. This study will investigate the relationship between four (4) dimensions of independent variables (i.e. safety knowledge, safety motivation, SSTL, safety consciousness) and safety behaviour as dependent variables viz safety compliance and SCBs (Refer Figure 3.1).

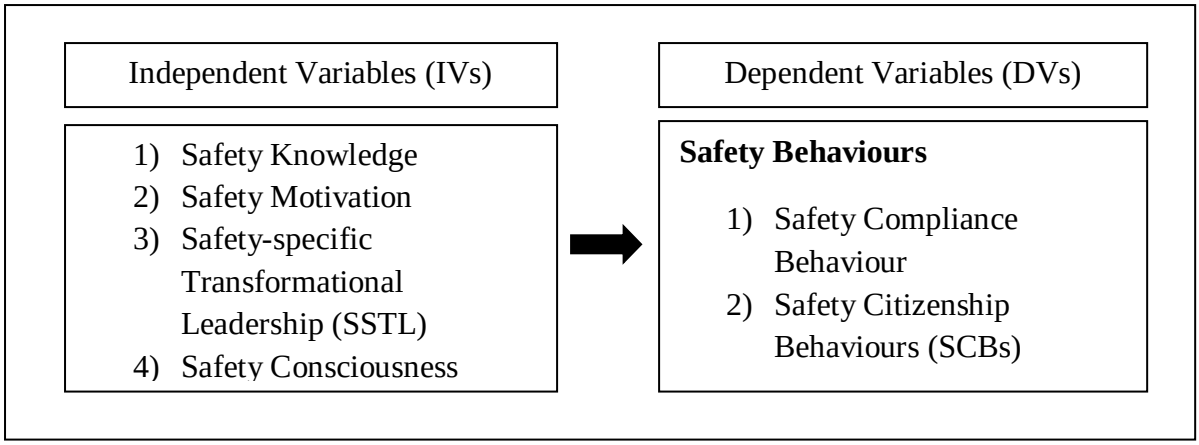

Figure 3.1
Theoretical Framework

3.3 Operational Definitions

The operational definitions of each variable viz safety behaviours, safety knowledge, safety motivation, safety-specific transformational leadership (SSTL) and safety consciousness are as follows:

The theory of job performance introduced by Borman & Motowidlo (1997) was adopted into safety performance by Griffin & Neal (2000) to extend the interrelation between organizational, individual and safety leadership factors on safety behaviours. Safety performance represents actual behaviours of employees during performing work. It was classified into two (2) dimensions viz safety task performance (STP) and safety contextual performance (SCP). However, the extended model developed by Neal, Griffin & Hart (2000); Neal & Griffin (2002) had relates STP and SCP into safety compliance behaviour and safety participation behaviours.

Safety compliance represents employees' safety behaviour in ways that increase their personal safety and health such as adhering standard work procedures and wearing

personal protective equipment, following rules and regulation, wearing protective clothing, avoiding risky practices (Didla et al., 2010; Neal & Griffin, 2006; Vinodkumar & Bhasi, 2010). In many organizations especially high risk industries, employees' safety compliance is very crucial and it considered to be a central component of safety behaviours at work (Clarke, 2006). According to Neal & Griffin (2002), safety compliance is used to describe the core activities to be carried out by individuals to maintain workplace safety. Whereas, the term of STP refers to the effectiveness of employees to perform core activities which will affect organization's technical core either directly by implementing a part of its technological process or indirectly by providing it with needed materials or services (Borman & Motowidlo, 1997). The reflection between safety compliance and STP was traced by understanding it's operational.

SCP is a behaviour that support the social, organizational and psychological environment in which task behaviour are performed (LePine, Hanson, Borman, & Motowidlo, 2000). Whereas, safety participation represents employees' behaviour in ways that increase the safety and health of co-workers and that support an organization's stated goals and objectives (Vinodkumar & Bhasi, 2010). The concept of safety participation was further elaborated by Dyne, Graham, Dienesch, Graham, & Dienesch (1994); Dyne, Lepine, & Lepine (1998); Hofmann et al. (2003) in different term known as safety citizenship behaviours (SCBs). SCBs is defined as behaviours that are discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promote the effective functioning of the organization (Didla et al., 2010; Xuesheng & Xintao, 2011). By understanding these concepts, SCBs was reflected safety participation and SCP. The concept of citizenship

behaviours is based on the principle of reciprocity (i.e. employees tend to reciprocate a high quality relationship with their supervisor). This relationship is based on trust, support and fairness by engaging in behaviours valuable to the organization (Hofmann et al., 2003).

Knowledge is an essential ingredient in learning (Brauer, 2006). Knowing to work safely (e.g. transport the train vehicles, maintaining the train and track fitness, handling equipments, handling chemicals and handling with high voltage power) will enact employees to perform a safe behaviour. Therefore, it is believed that safety knowledge encourages employees' to behave safely which in turn enhance safety performance. However, employees exhibit safety behaviours either positively or negatively depending on their knowledge and understanding. Safety motivation is defines as employees' motivation to perform job in a safe manner and at the same time to perform safety behaviours (Hofmann et al., 1995; Neal, Griffin & Hart, 2000). According to Probst & Brubaker (2001), safety motivation was measured using expectancy-valence motivational approach which was adopted from valence-instrumentality-expectancy theory introduced by Victor Vroom in 1964. There are three concepts in Vroom's expectancy theory viz attractiveness of outcome (valence outcome), a person's believe on a link between an action and the outcome (instrumentality perception) and a person's believe on the effort required in an activity and the likelihood of successful completion of the activity (expectancy perception) (Brauer, 2006). According to Neal & Griffin (2006), Vroom's expectancy theory predicts that employees will be motivated to comply with safety procedures and participate in safety activities if they believe that these behaviour will lead to valued outcomes.

The study conducted by Neal et al. (2000); Vinodkumar & Bhasi (2010) was considered safety knowledge and safety motivation as determinants of safety performance and safety compliance and safety participation as components of safety performance. In other study conducted by (Pousette, Larsson, & Torner, 2008) investigated safety knowledge and safety motivation as individual attitudes to safety. Whereas, the study conducted by Christian et al. (2009) demonstrated that safety knowledge and safety motivation are a strong antecedents of safety performance behaviours where safety compliance and safety participation as dimensions of safety performance behaviours.

Barling, Loughlin, & Kelloway (2002) in their study mentioned that transformational leadership specifically safety-specific transformational leadership (SSTL) encompasses four (4) behaviours viz idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. First, leaders' idealized influence means that the leader act as a role model through their actions and behaviours to inspire and increase employees' safety awareness (Koster et al., 2011; Jiang & Probst, 2016). Second, leaders' inspirational motivation refers to leader communicating an inspiring vision to transcend employees' interests for the collective benefit (Koster et al., 2011; Jiang & Probst, 2016). Third, leaders' intellectual stimulation is the leaders encourages employees to challenge organization norm that benefit operational safety through voicing out safety concern, idealized safety approaches and provide better ideas for improvement (Koster et al., 2011; Inness, Turner, Barling, & Stride, 2010; Jiang & Probst, 2016). Finally, leaders' individualized consideration refers to leaders act as mentors which showed their interest to employees' safety, development and well being (Koster et al., 2011; Inness

et al., 2010; Jiang & Probst, 2016). The study conducted by Smith et al. (2016) was investigated the impact of SSTL and safety outcomes where safety compliance behaviour and safety participation behaviour are the dimensions of safety outcomes. In other study conducted by Mullen, Kelloway, & Teed (2011) was examined the effect of SSTL and safety behaviour (safety compliance and safety participation).

Safety consciousness refers to an "individual's own awareness of safety issues" (Barling et al., 2002). As stated by Koster et al. (2011), this awareness works on both a cognitive and a behavioural level. Cognitively, safety consciousness means being mentally aware of safety in workplace and knowing what behaviours foster operational safety. Behaviourally, safety consciousness enacts the behaviours that foster operational safety. It was understood that safety consciousness behaviour is dependent on individual insight and beliefs and it reflected individual responsibilities towards operational safety. Westaby & Lee (2003) conducted a study to examine the effect of safety consciousness and workplace injury (safety performance). The study conducted by Koster et al. (2011) investigated safety consciousness as an antecedent of safety performance (accidents).

3.4 Measurement of Variables or Instrumentation

A questionnaire consisting sixty one (61) items was used to assess safety knowledge, safety motivation, SSTL, safety consciousness and employees' safety behaviours. All items in these instruments were combined together to avoid common method variance (CMV) effects. CMV refers to variance that is attributable to the measurement method rather than to the construct of interest. All statements were measured on five

(5) point Likert-type, ranging from "1" "strongly disagree" to "5" "strongly agree". This scale indicates the extent to which respondents agree with each of the statements.

The measures of six (6) items of safety knowledge, eight (8) items of safety motivation and seven (7) items of safety compliance was assessed by adapted from Vinodkumar & Bhasi (2010) with acceptable reliability, Cronbach's alpha (α) values (i.e. 0.77 (safety knowledge), 0.72 (safety motivation), 0.76 (safety compliance)). Sample items included "I know how to perform my job in a safe manner" (safety knowledge), "I believe that safety that can be compromised for increasing production" (safety motivation) and "I follow correct safety rules and procedures while carrying out my job" (safety compliance behaviour).

Eight (8) items of SSTL and seven (7) items of safety consciousness was assessed by adopted from Barling et al. (2002). The instrument was also used by Koster et al. (2011) who investigated the antecedents of workplace injury in warehouses and found the acceptable reliability, Cronbach's alpha (α) value (i.e. 0.97 (SSTL) and 0.91 (safety consciousness)). The SSTL consist of four (4) sub-dimensions of SSTL (i.e. idealized influence, inspirational motivation, intellectual stimulation and individualized consideration). Sample items included "My manager shows determination to maintain a safe work environment" (idealized influence of SSTL), "My manager talks about his/her values and beliefs of the importance of safety" (inspirational motivation of SSTL), "My manager suggests new ways of doing our jobs more safely" (intellectual stimulation of SSTL), "My manager spends time showing me the safest way to do things at work" (individualized consideration of

SSTL) and "I know what protective equipment and/or clothing is required for my job" (safety consciousness).

Safety citizenship behaviours (SCBs) was measures by using safety citizenship role definition developed by Hofmann, Jacobs, & Landy (1995), who modified the instruments from several organizational citizenship behaviour. The instrument consists of twenty seven (27) items in total and considers six (6) sub-dimensions of SCBs (i.e. helping, voice, stewardship, whistle-blowing, civic virtue (keeping informed) and initiating safety-related change). All sub-dimensions were combined and measured the reliability where the result for internal consistency reliability indicates 0.98. An example items was "I volunteer for safety committees" (helping), "I make safety-related recommendations about work activities" (voice), "I will be champion to protect fellow working colleagues from safety hazards" (stewardship), "I prefer to explain to other working colleagues that I will report safety violations" (whistle-blowing), "I will be champion to attend safety meetings" (civic virtue-keeping informed) and "I try to improve safety procedures" (initiating safety-related change). The summary of all variables and instruments information can be retrieved under Table 3.1 below.

Table 3.1
Summary of Instruments Information

No	Variables measures	Reference	Cronbach' s alpha (α)
1	Safety knowledge	Vinodkumar & Bhasi (2010)	0.77
2	Safety motivation	Vinodkumar & Bhasi (2010)	0.72
3	Safety-specific transformational leadership (SSTL)	Barling et al. (2002)	0.97

Table 3.1 (Continued)

No	Variables measures	Reference	Cronbach' s alpha (α)
4	Safety consciousness	Barling et al. (2002)	0.91
5	Safety compliance	Vinodkumar & Bhasi (2010)	0.76
6	Safety citizenship behaviours (SCBs)	Hofmann, Jacobs & Landy (1995)	0.98

The questionnaires were prepared in English and Malay language because the majority of participants are familiar with both languages. The original instruments (English language) were translated into the Malay language by academic experts who are able to ensure the questions are match between the original and the English and Malay language versions (Brislin, 1970).

3.5 List of Hypotheses

The hypotheses of this study were developed to determine the relationship between independent variables and dependent variables. The proposed hypotheses are as follow;

H1a: There is a positive relationship between safety knowledge and safety compliance behaviours among workers in LRT and KL Monorail services in, Malaysia.

H1b: There is a positive relationship between safety knowledge and safety citizenship behaviours (SCBs) among workers in LRT and KL Monorail services in Malaysia.

H2a: There is a positive relationship between safety motivation and safety compliance behaviours among workers in LRT and KL Monorail services in Malaysia.

H2b: There is a positive relationship between safety motivation and safety citizenship behaviours (SCBs) among workers in LRT and KL Monorail services in Malaysia.

H3a: There is a positive relationship between safety-specific transformational leadership (SSTL) and safety compliance behaviours among workers in LRT and KL Monorail services in Malaysia.

H3b: There is a positive relationship between safety-specific transformational leadership (SSTL) and safety citizenship behaviours (SCBs) among workers in LRT and KL Monorail services in Malaysia.

H4a: There is a positive relationship between safety consciousness and safety compliance behaviours among workers in LRT and KL Monorail services in Malaysia.

H4b: There is a positive relationship between safety consciousness and safety citizenship behaviours (SCBs) among workers in LRT and KL Monorail services in Malaysia.

3.6 Research Approach and Design

By referring to the Figure 3.1, this study is classified as a descriptive study and will adopt a cross-sectional approach in data gathering appropriately designed to meet the objectives of the study and assist towards the findings. Subsequently it will determine

the relationship between independence and dependence variables either directly or indirectly influence to the employees' safety behaviours in organizations.

In descriptive study, it will describe the characteristics of variables that affected employees' safety behaviours in LRT and KL Monorail services industries. The antecedents of employees' safety behaviours were identified as independent variables (Refer Figure 3.1). According to Cavana, Delahaye & Sekaran (2001), the independent variables is a variable that influences the dependent or criterion variable and explains some of its variance. The independent variable can influence dependent variable either positively or negatively.

The next step is to identify the characteristics of target groups. The selected target groups are rail maintenance and rail operation operators who exposed directly to occupational hazards and risks. The information received by interviewing managers of rail academy who familiar and expert in rail works.

The selected target groups involved at three (3) different rail lines namely LRT Kelana Jaya Line, LRT Ampang Line and KL Monorail Line. Hence, the data will be gathered at three (3) different locations where the rail maintenance and rail operation department located.

3.7 Sampling and Sampling Procedure

Sampling is the process of selecting a sufficient number of elements from the population, so that a study of the sample and an understanding of its properties or characteristics would make it possible for us to generalize such properties or characteristics to the population elements (Cavana, Delahaye & Sekaran, 2001). In this study, unrestricted probability sampling method known as simple random sampling was used to select samples from selected population. This sampling method has the least bias (each population has an equal chance of being chosen as sample) and offers the most generalisability of findings.

The samples of this study are employees of LRT Kelana Jaya, LRT Ampang and KL Monorail services company specifically in rail maintenance and operation department which divided into their job levels or position namely Manager, Executive, Non-Executive (Technical) and Non-Executive (Administrative). The target respondents are technical people who performing rail-related duties such as hostlers (train drivers), rail maintenance and repairing its equipment, rail operation (supervising, monitoring and controlling train services) who was directly exposed to the workplace hazards and risks.

According to the Human Capital Department updates, the total population of LRT Kelana Jaya Line, LRT Ampang Line and KL Monorail until December 2016 is 2190. Kjercie & Morgan (1970) was provided a table to simplify suggested sample size by given population. The suggested sample size for the given population of 2190 is approximately 327 respondents.

Therefore, the other sampling method was used to compare the numbers of sample size known as G*Power. The G*Power is a computer program that can perform a high-precision statistical power analyses in behavioural research. The G*Power computer program offers easy-to apply power analyses for a much larger variety of common statistical tests (Faul, Erdfelder, Lang, & Buchner, 2007). According to Erdfelder, Faul, & Buchner (1996), G*Power was designed as a general stand-alone power analysis program for statistical tests commonly used in social and behavioural research. The suggested sample size using G*Power version 3 in this study by considering four (4) predictors (i.e. safety knowledge, safety motivation, SSTL and safety consciousness) indicate that the numbers of the total sample size is 129 respondents.

Thus, 327 samples will be selected randomly from 2190 population where 327 set of questionnaires was distributed within LRT Kelana Jaya, LRT Ampang and KL Monorail maintenance and operation department. This sampling process will take about three (3) months for completion.

3.8 Questionnaire

A structured survey questions (Refer Appendix A) was developed to investigate the relationship between selected independent variables and dependent variables which contained seventy eight (78) questions in total. The survey questions were divided into two (2) sections. Section A consist of twelve (12) statements on demographic information which was set up to obtain the employees' demographic information and work-related particulars such as age, gender, race, marital status, education level,

work level, years of working experience from previous and current companies, any occupational accidents experience, attended safety training and the frequency of attended safety training.

Meanwhile, Section B contained six (6) items comprises of safety knowledge, safety motivation, SSTL, safety consciousness, safety compliance and SCBs. This Section will estimate the level of employees' safety behaviours in organization which was considered as part of their job or task and responsibilities towards each selected variable.

All statements in Section B were measured on five (5) point Likert-type, ranging from "1" "strongly disagree" to "5" "strongly agree". This type of scale indicates the extent to which respondents agree with each of the statements.

3.9 Data Collection

In data collection, a questionnaires survey was distributed among employees in rail maintenance and rail operation department of LRT & KL Monorail which represents a broad spectrum of rail works. Rail maintenance department for both LRT and KL Monorail comprise of three (3) sections (i.e. Track Network Maintenance (TNM), Wayside Electrical and Electronic System (WEES) and Rolling Stock). Whereby, WEES section consists of three (3) sub-section (i.e. Signalling, Communication and Power).

The first step is to obtain permission from Head of Maintenance (HOM) Department and Head of Operation (HOO) Department of LRT Kelana Jaya, LRT Ampang and KL Monorail. Secondly, conduct a short briefing to HOM's and HOO's representative to complete the questionnaires. Thirdly, the representative will assist in distributing the survey questions. Fourthly, collect the completed survey questions from each respective department.

3.10 Proposed Data Analysis

The collected data will be analyzed by utilizing the Statistical Package for the Social Science (SPSS) version 23.0 in order to organize and interpret the data. SPSS software also eases the process of determining appropriate statistical techniques to test the list of hypotheses. There are four (4) types of statistical analysis required to be performed viz reliability analysis, descriptive analysis, correlation analysis and regression analysis (Refer Figure 3.2).

Firstly, the data will performs reliability analysis to indicate the stability and consistency in measurement across time and cross the various items in the instrument or in other words, to check the dependency of the data. According to Landmann, Kmiotek-Meier, Lachmann, & Lorenz (2015), reliability analysis of empirical data can hint at a wrongly specified theoretical model underlying the development of a scale or point to items that are not suitable to represent a theoretical construct. The most popular test of consistency reliability is Cronbach's Alpha (α) reliability coefficients and it was acceptable in social science research. The Cronbach's Alpha value varies from 0 to 1.0 and the closer Cronbach's alpha is to 1, the higher the

internal consistency reliability. Cronbach's Alpha (α) value 0.7 or greater indicates satisfactory internal consistency reliability (Nunally & Bernstein, 1994).

Secondly, both demographic and variables data will be performed descriptive analysis in order to describe the characteristic of the samples. The descriptive analysis enables to describe each sample through the frequencies of sample test as well as mean, average and standard deviation of the data collected for each item.

Thirdly, the data will be performed correlation analysis to access the level of association (or co-variation) between variables. The analysis findings will present the correlation coefficient in number between -1 and +1 that reflects the level of association between two (or more) variables. The most common correlation analysis in social science research is Pearson Correlation.

Finally, the data will be performed multiple regression analysis to develop equations that relates independent variables and dependent variables. The regression and equation developed to indicate the direction and the degree of the relationship between independent variables and dependent variables.

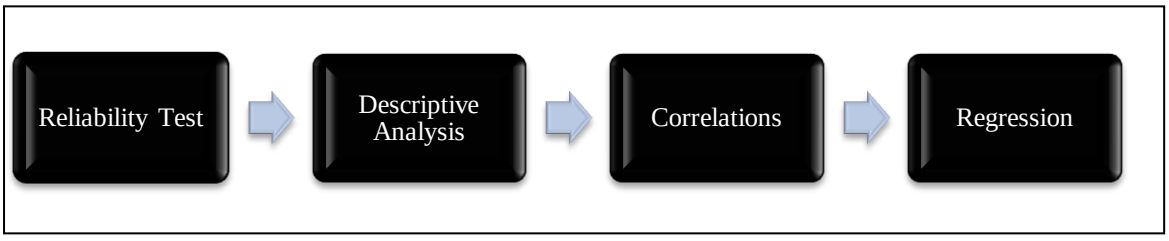

Figure 3.2
Data Analysis Processes

3.11 Summary

This chapter discuss on the methodology of this research. The theoretical framework is clearly identified and illustrated for better understanding. Then, it discusses further on the conceptual and operational definition of selected variables, the instrumentation of variables measurement and developed proposed hypotheses in order to determine the relationship between independent variables and dependent variables. This chapter also brief on the data collection process and data analysis to answer research objective, research questions and to determine whether proposed hypotheses is supported or rejected.

CHAPTER 4

FINDING OF THE STUDY

4.1 Introduction

This chapter comprises the analysis, presentation and interpretation of the finding resulted in this research. All data gathered was analyzed through statistical data analysis performed by computer program known as Statistical Package for the Social Science (SPSS) Version 23.0. The statistical data analysis processes were examined for reliability, descriptive analysis, correlation and regression. The results obtained are important to explain research questions guided in this study.

4.2 Response Rate

A total of 327 questionnaires were distributed by hand to Rail Maintenance and Operation Department for LRT Kelana Jaya, LRT Ampang and KL Monorail. However, only 98 questionnaires were returned and used for data analysis which representing 30 percent of response rate. The low response rate may be attributed due to insufficient information received by the respondents. The setting of the respondents' feedback was made due the respondents committed with shift working hours and the workplace was restricted from visitors whether internal or external visitors. The response rate of the survey is summarized as per Table 4.1.

Table 4.1
Response Rate

Items	Total	Percentage (%)
Distributed Questionnaires	327	100
Collected Questionnaires	98	30
Unreturned Questionnaires	229	70
Completed Questionnaires	98	30

4.3 Respondents' Demographic Background

The respondents in this study were identified based on the personnel exposure to the workplace hazards and risks. The respondents' demographic characteristics are summarized as per Table 4.2 below.

Table 4.2 indicates that the majority of the respondents who worked at Rail Engineering and Maintenance Department (i.e. LRT Kelana Jaya, LRT Ampang and KL Monorail) are male which constitute of 83.7 percent compared to 16.3 percent of female. All respondents' ages were categorized into four (4) groups and the highest respondent comes from group ages between 26 to 35 years old which contribute 53.1 percent. There are only two (2) races participated in this research viz Malay and Chinese with the ratio 99:1. Among all respondents involved, 65.3 percent are married and 34.7 percent are single. In term of education, most of the respondents are Diploma whiles the highest and least is with Master and Secondary School.

Since the target group in this research is personnel who directly exposed with workplace hazards and risks, the majority of respondents come from non-managerial level. Most of the respondents have a working experience both total and experience at present organization is between 0 to 5 years and the more working experience, the

less percentage of respondents' exposure to workplace hazards and risks. Among all respondents, 86.5 percent have an occupational accident history with the frequency between 1 to 3 times.

In term of training records, 80.4 percent of the respondents have attended safety training. The frequency of respondents attended safety training is varies. However, most of the respondents were attended safety training once a year with constituted to 49.5 percent meanwhile least of them attended safety training every three (3) months with constituted 1.1 percent.

Table 4.2
Demographic Characteristics of the Respondents

Demographics	Frequency	Percentage (%)
Age		
15-25 years	25	25.5
26-35 years	52	53.1
36-45 years	17	17.3
46-55 years	4	4.1
Gender		
Male	77	83.7
Female	15	16.3
Race		
Malay	94	98.9
Chinese	1	1.1
Marital Status		
Married	64	65.3
Single	34	34.7
Highest Education Level		
Secondary School	6	6.1
Certificate	17	17.3
Diploma	68	69.4
Degree	6	6.1
Master and above	1	1.0

Table 4.2 (Continued)

Demographics	Frequency	Percentage (%)
Work Level		
Manager	1	1.0
Executive	4	4.1
Non-Executive (Technical)	91	93.0
Non-Executive (Administrative)	2	2.0
Work Experience (Total)		
0-5 years	47	48.0
6-10 years	29	29.6
11-15 years	17	17.3
16 years and above	5	5.1
Work Experience (Present)		
0-5 years	47	48.0
6-10 years	32	32.7
11-15 years	16	16.3
16 years and above	3	3.1
Occupational Accident History		
Yes	13	13.4
No	84	86.5
Occupational Accident History (If Yes)		
1-3 Times	16	88.9
4-8 Times	1	5.6
Over 15 Times	1	5.6
Safety Training Record		
Yes	78	80.4
No	19	19.6
Frequency of Safety Training		
Every month	9	9.9
Once in 3 months	1	1.1
Once in 6 months	18	19.8
One a year	45	49.5
Not at all	18	19.8

4.4 Reliability Analysis

Table 4.3 provides the summary of reliability analysis for all variables involved in determining employees' safety behaviours among Malaysia LRT and KL Monorail

services industries. It shows the Cronbach' Alpha (α) reliability coefficient for all variables are ranges above 0.70. The closest α coefficient to 1.0 is safety-specific transformational leadership (SSTL) with α value 0.966. The conceptual of safety citizenship behaviours (SCBs) and safety participation was similar. However, the operational of SCBs and safety participation was different. The SCBs approach was constructed to achieve higher safety level which consider proactive behaviours in participating and initiate improvement in employees' safety behaviours. The five (5) items of safety participation were removed and the total numbers of items in this research reduced to sixty one (61).

Table 4.3
Reliability Analysis

Variables	**Numbers of Items**	**Cronbach's Alpha (α)**
Safety Knowledge	6	0.767
Safety Motivation	6	0.723
Safety-Specific Transformational Leadership (SSTL)	8	0.966
Safety Consciousness	7	0.893
Safety Compliance	7	0.772
Safety Citizenship Behaviours (SCBs)	27	0.971
TOTAL	61	

4.5 Descriptive Analysis

All variables in this study were measured on five (5) point Likert-type, ranging from "1" "*strongly disagree*" to "5" "*strongly agree*". Table 4.4 provides the results of descriptive analysis performed and the majority of respondents were agreed with sixty

one (61) items measured and the variance between all variables measured ranges between 0.5 to 0.9. As shown in Table 4.4, the highest Mean (M) value is safety motivation (M = 4.192) with the Standard Deviation (SD) value, 0.574 meanwhile the least Mean value is safety citizenship behaviours (SCBs) (M = 3.615) with the SD value, 0.682.

Table 4.4
Means and Standard Deviation Value of Safety Knowledge, Safety Motivation, SSTL, Safety Consciousness and Safety Behaviours

Variables	Mean (M)	Standard Deviation (SD)
Safety Knowledge	3.976	0.588
Safety Motivation	4.192	0.574
Safety-Specific Transformational Leadership (SSTL)	3.654	0.905
Safety Consciousness	4.042	0.597
Safety Compliance	3.683	0.641
Safety Citizenship Behaviours (SCBs)	3.615	0.682

4.6 Pearson Correlation Analysis

The summary of the Pearson Correlation coefficient (r) is summarised as per Table 4.5. Based on Table 4.5, all variables involved have a positive correlation between employees' safety behaviours. All relationships are significant ($p<0.01$) and the highest Pearson Correlation coefficient for safety compliance is safety knowledge, ($r = 0.642$, $p<0.01$). Likewise, based on Table 4.5, all variables involved have a positive correlation with SCBs. The highest Pearson Correlation coefficient for SCBs is SSTL ($r = 0.638$, $p<0.01$).

Table 4.5
Pearson Correlation Analysis

		Safety Knowledge	Safety Motivation	Safety-specific Transformational Leadership (SSTL)	Safety Consciousness	Safety Compliance	Safety Citizenship Behaviours (SCBs)
Safety Knowledge	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	98					
Safety Motivation	Pearson Correlation	.707**	1				
	Sig. (2-tailed)	.000					
	N	98	98				
Safety-specific Transformational Leadership (SSTL)	Pearson Correlation	.502**	.424**	1			
	Sig. (2-tailed)	.000	.000				
	N	98	98	98			
Safety Consciousness	Pearson Correlation	.777**	.712**	.603**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	98	98	98	98		
Safety Compliance	Pearson Correlation	.642**	.613**	.504**	.551**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	98	98	98	98	98	
Safety Citizenship Behaviours (SCBs)	Pearson Correlation	.618**	.584**	.638**	.612**	.771**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	98	98	98	98	98	98

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

There is an indication of multi-collinearity detected in this Pearson Correlation analysis where the independent variables are highly correlated with each other and it can be determined when the Pearson Correlation coefficient is more than 0.75. However, it will be confirmed once the regression analysis completed through Tolerance/Variance Inflation Factor (VIF).

4.7 Hypotheses Testing

A multiple regression analysis was carried out to determine to what extent safety knowledge, safety motivation, safety specific transformational leadership (SSTL) and safety consciousness describe the employees' safety behaviours in LRT and KL Monorail services industry. Table 4.6 and Table 4.7 shows the results of multiple regression analysis for safety compliance whereas, Table 4.8 and 4.9 shows the multiple regression analysis for SCBs among employees in the organization.

4.7.1 Hypotheses Testing for Independent Variables and Safety Behaviours

Table 4.6 indicated that all independent variables have significance prediction on the safety compliance ($R = 0.709$). Meanwhile, the R^2 value was 0.503 which indicates that 50.3 percent of the variation in safety compliance is explained by safety knowledge, safety motivation, SSTL and safety consciousness while the rest of 49.7 percent is explained by others variables. Table 4.7 shows the F value was 23.542 with $p<0.01$ which indicates that the models are fit of the regression equation. The results shows that there was a positive relationship between safety knowledge ($\beta = 0.391$), safety motivation ($\beta = 0.327$), SSTL ($\beta = 0.251$) and safety compliance except safety consciousness ($\beta = -0.137$). The relationship between safety knowledge, safety

motivation, SSTL and safety compliance were significant ($p<0.01$). However, the relationship between safety consciousness and safety compliance was not significant ($p>0.05$). These findings supported H1a (there is a positive relationship between safety knowledge and safety compliance behaviours), H2a (there is a positive relationship between safety motivation and safety compliance behaviours) and H3a (there is a positive relationship between safety-specific transformational leadership (SSTL) and safety compliance behaviours) except H4a (there is a positive relationship between safety consciousness and safety compliance behaviours).

Table 4.6
Model Summary A

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.709[a]	.503	.482	.462

a. Predictors: (Constant), Safety knowledge, safety motivation, safety-specific transformational leadership (SSTL), safety consciousness

Table 4.7
Regression Analysis of Safety Knowledge, Safety Motivation, SSTL, Safety Consciousness and Safety Compliance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.402	.365		1.099	.274		
Safety Knowledge	.426	.135	.391	3.151	.002	0.346	2.886
Safety Motivation	.365	.124	.327	2.945	.004	0.433	2.310
Safety-specific Transformational Leadership (SSTL)	.178	.065	.251	2.735	.007	0.633	1.579
Safety Consciousness	-.147	.145	-.137	-1.017	.312	0.295	3.390

Note:
F Value : 23.542 at $p < 0.05$

Independent/constant variables : Safety knowledge, safety motivation, SSTL and safety consciousness
Dependent variable : Safety compliance

Table 4.8 indicated that all independent variables have significance prediction on the safety compliance (R = 0.744). Meanwhile, the R^2 value was 0.553 which indicates that 55.3 percent of the variation in SCBs is explained by safety knowledge, safety motivation, SSTL and safety consciousness while the rest of 44.7 percent is explained by others variables. Table 4.9 shows the F value was 28.768 with $p<0.01$ which indicates that the models are fit of the regression equation. The results shows that there was a positive relationship between safety knowledge ($\beta = 0.234$, $p<0.05$), safety motivation ($\beta = 0.231$, $p<0.05$), SSTL ($\beta = 0.412$, $p<0.01$), safety consciousness ($\beta = 0.019$, $p>0.05$) and SCBs. The relationship between safety knowledge, safety motivation, SSTL and SCBs was significant. However, the relationship between safety consciousness and SCBs was not significant ($p>0.05$). Based on the findings, it can be concluded that H1b (there is a positive relationship between safety knowledge and SCBs), H2b (there is a positive relationship between safety motivation and SCBs), H3b (there is a positive relationship between SSTL and SCBs) are supported while H4b (there is a positive relationship between safety consciousness and SCBs) was not supported. The summary of hypotheses results is presented in Table 4.10.

The Tolerance/Variance Inflation Factor (VIF) in regression analysis is carried out to detect multi-collinearity through correlation analysis. Highly correlated independent variables could indicate multi-collinearity that can cause severe computational problems. Based on Table 4.7 and 4.9, the Tolerance values for all independent variables are more than 0.1 (or VIF <10).Based on Von Eye & Schuster (1998), there is no multi-collinearity effect if VIF is less than 10.

Table 4.8
Model Summary B

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.744[a]	.553	.534	.466

b. Predictors: (Constant), Safety knowledge, safety motivation, safety-specific transformational leadership (SSTL), safety consciousness

Table 4.9
Regression Analysis of Safety Knowledge, Safety Motivation, SSTL, Safety Consciousness and SCBs

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.168	.369		.454	.651		
Safety Knowledge	.271	.137	.234	1.986	.050	0.346	2.886
Safety Motivation	.274	.125	.231	2.189	0.031	0.433	2.310
Safety-specific Transformational Leadership (SSTL)	.310	.066	.412	4.723	.000	0.633	1.579
Safety Consciousness	.021	.146	.019	.145	.885	0.295	3.390

Note:
F Value : 28.768 at $p < 0.05$

Independent/constant variables : Safety knowledge, safety motivation, SSTL and safety consciousness
Dependent variable : Safety citizenship behaviours (SCBs)

Table 4.10
Hypotheses Results

	Hypotheses	Result
H1a:	There is a positive relationship between safety knowledge and safety compliance behaviours among operators at LRT and KL Monorail services in Malaysia.	Supported
H1b:	There is a positive relationship between safety knowledge and safety citizenship behaviours (SCBs) among operators at LRT and KL Monorail services in Malaysia.	Supported
H2a	There is a positive relationship between safety motivation and safety compliance behaviours among operators at LRT and KL Monorail services in Malaysia.	Supported
H2b:	There is a positive relationship between safety motivation and safety citizenship behaviours (SCBs) among operators at LRT and KL Monorail services in Malaysia.	Supported
H3a:	There is a positive relationship between safety-specific transformational leadership (SSTL) and safety compliance behaviours among operators at LRT and KL Monorail services in Malaysia.	Supported
H3b:	There is a positive relationship between safety-specific transformational leadership (SSTL) and safety citizenship behaviours (SCBs)) among operators at LRT and KL Monorail services in Malaysia.	Supported
H4a:	There is a positive relationship between safety consciousness and safety compliance behaviours among operators at LRT and KL Monorail services in Malaysia.	Not Supported
H4b:	There is a positive relationship between safety consciousness and safety citizenship behaviours (SCBs) among operators at LRT and KL Monorail services in Malaysia.	Not Supported

4.8 Summary

This chapter had discussed the finding of the data analysis. The results of data analysed indicates all hypotheses were supported except H4a (there is a positive relationship between safety consciousness and safety compliance behaviours) and H4b (there is a positive relationship between safety consciousness and SCBs) among operators at LRT and KL Monorail services. The complete results of data analysis using SPSS version 23.0 can be retrieved in Appendix B.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter will discuss the results obtained from the present study which examines the relationship between safety knowledge, safety motivation, safety-specific transformational leadership (SSTL), safety consciousness and safety behaviour (i.e. safety compliance and safety citizenship behaviours) among employees of LRT and KL Monorail services industries. Then, it would discuss the implication of current study followed by suggesting the realistic approach to improve the level of safety compliance and SCBs among the employees. After discussion on its implications, this chapter will highlight the limitation confronted during the current study. Finally, the conclusion of this study will be discussed in this chapter.

5.2 Recaptulization of Findings

Previous chapter revealed the results of eight hypotheses which related to safety knowledge, safety motivation, SSTL and safety consciousness towards safety behaviour (i.e. safety compliance and SCBs). Based on the result obtained, the relationship between safety knowledge, safety motivation and SSTL exerted a significant and positive relationship on both dimensions of safety behaviour. However, the relationship between safety consciousness and SCBs are positive but not significantly related. Meanwhile, the relationship between safety consciousness and safety compliance are negative and not significant.

5.3 Discussion

The result obtained in this study will be discussed according to the hypotheses developed by considering the theories and previous empirical evidences.

5.3.1 Safety Knowledge and Safety Behaviours

In this study, the hypotheses showed that there is a positive relationship between safety knowledge and safety behaviour dimensions namely safety compliance behaviours and safety citizenship behaviours (SCBs) among workers in LRT and KL Monorail services. The result of this study revealed that safety knowledge is positively and significantly related to safety compliance behaviours and SCBs. The findings are consistent with the previous empirical studies conducted by Christian, Bradley, Wallace, & Burke (2009); Griffin & Neal (2000); Neal, Griffin & Hart (2000); Vinodkumar & Bhasi (2010).

The significant relationship exists due to the frequent skill-based training and retraining program including safety training conducted by competent trainers from Rail Academy. This training provides railway technical and safety related knowledge to all rail operators in order to enhance employees' knowledge as well as updating new information from time to time. According to Mohammadfam et al. (2017), training courses are to increase knowledge of employees about the hazards posed by the working environment and benefits of following safe work practices or using PPEs. This evidence can be seen in the demographic characteristics of operators where 78.0 percent have attended safety related training at least once a year (Refer Table 4.2). As demonstrated by Vinodkumar & Bhasi (2010), safety training can enhance safety

knowledge. According to Cooper (1994), knowledgeable employees' towards safety will automatically encourage employees to works in a safe manner for extended period of time.

Secondly, safety knowledge is an indicator of workplace accidents and injuries (Christian et al., 2009). It was believed that safety knowledge can reduce workplace accident cases. According to the demographic characteristics of the respondents, only 13.0 percent of the respondents have had workplace accidents since the respondents started working in the organization (Refer Table 4.2). This finding pointed out that workplace incident and accidents at LRT and KL Monorail is still low.

This finding also indicates that safety knowledge is strongly related to safety compliance rather than SCBs. It was demonstrated that employees' commitments to comply with safety requirements in railway industries are higher than proactively initiate and participate in safety. Since safety is a major concern in railway industries, the LRT and KL Monorail required to comply both technical and safety standard strictly as stipulated by relevant regulatory bodies. According to Vinodkumar & Bhasi (2010), better compliance with safety rules and procedures is due to better safety knowledge.

5.3.2 Safety Motivation and Safety Behaviours

The present study exerted positive and significant relationship between safety motivation and both safety behaviours dimensions viz safety compliance and safety citizenship behaviours (SCBs) as hypothesized earlier. The findings was reflected the

study conducted by Griffin & Neal (2000); Neal, Griffin & Hart (2000); Vinodkumar & Bhasi, (2010) who found that safety motivation is positively and significantly related to safety compliance and SCBs. This result indicates that safety behaviours (safety compliance and SCBs) at LRT and KL Monorail operators can be enhanced through safety motivation.

With the understanding that employees' safety motivation leads to employees' safety behaviours, safety motivation represents a ''will do'' behavioural determinant that lead in predicting safety performance (Beus, McCord, & Zohar, 2016). As Christian et al. (2009); Vinodkumar & Bhasi (2010), it was believed that trained and supported through positive work environment can maximize employees' safety motivation. Since the organization provides competence based training and retraining program to all LRT and KL Monorail operators, this is believed can enhance employees' safety motivational level which in turn affected their safety compliance and SCBs.

Mohammadfam et al. (2017) discovered that safety management system affected employees' safety motivation. Therefore, Vredenburgh (2002) was identified reward system as one (1) of the components of management practices. According to Vredenburgh (2002), by implementing the safety incentive program, organization can reinforce the reporting of a hazard or an unsafe act that leads to an injury while giving bonuses for fewer lost-time accidents. Due to this reasons, the business owner had introduced a program known as "PEARL" starting from November 2016. This program was carried out to appreciate and recognize excellent employees while performing their jobs based on several values, namely integrity and honesty, freedom in responsibility, openness, resourcefulness and mutual respect. This initiative leads to

enhance employees' safety motivation which in turn reflected safety behaviours (safety compliance and SCBs).

This study also indicates that at individual level, the relationship between safety motivation and safety compliance is stronger than the relationship between safety motivation and SCBs. According to Dahl (2013), motivation are important for reducing the number of intentional violations of rules and procedures. In other words, safety motivation can enhance compliances on safety rules and procedures. As resulted in the present study, safety motivation strongly affects employees' compliance behaviour rather than proactively participates and initiate in safety activities.

5.3.3 Safety-Specific Transformational Leadership (SSTL) and Safety Behaviours

As hypothesized in this study, the result indicates that SSTL exerted positive and significant relationship on both dimensions of safety behaviours (i.e. safety compliance and SCBs). The findings of this study was reflected the results obtained by Mullen, Kelloway, & Teed (2011); Smith, Eldridge, & Dejoy (2016), in which SSTL predicted both safety compliance and SCBs in both samples. According to the results obtained, it was understood that safety behaviours in LRT and KL Monorail operators can be enhanced by SSTL.

The reason behind this findings are probably, the leaders provide guidance to their subordinates in order to encourage employees takes an initiative to promote safety in

their workplace and exert effort to make the workplace a safe environment (Mullen et al., 2011). Leaders in organization are referring to managers which differentiate by their level and scope covered. According to Wu, Lin, & Shiau (2010), managers are classified into three (3) levels viz higher level manager, middle level manager and low level manager. Higher level managers generally deal with safety policy and strategy, middle level managers mainly take care of safety procedure and tactics and low level managers work on safety practice and operations. By understanding the overall LRT and KL Monorail organizational structure, it is believed that the roles of manager are not limited to enforce compliances towards safety only, but also encourage employees to proactively participate and initiate safety in order to achieve higher safety standards.

The results of the study also demonstrated that SSTL exhibit higher correlation with SCBs than safety compliance. It is believed that managers in LRT and KL Monorail focuses more on encouraging employees' to proactively participate and initiate safety than enforcing safety rules and regulations. According to Mullen et al. (2011), leaders encourage employees who want to participate in safety activities by showing their concern for the safety and well-being of employees and promote their personal values and beliefs about the importance of safety ultimately.

5.3.4 Safety Consciousness and Safety Behaviours

The present study hypothesized that safety consciousness is positively related to safety behaviours (safety compliance and SCBs). However, the findings of the study revealed that safety consciousness does not significantly influence safety behaviours among operators at LRT and KL Monorail services.

Previous studies done by Barling et al. (2002); Kelloway et al. (2006) demonstrated that safety consciousness foster safety. Meanwhile, based on Subramaniam, Mohd. Shamsudin, Mohd Zin, Sri Ramalu, & Hassan (2016), a conscious decision of employees may prevent workplace accidents. However, the contrary findings in this study is probably due to the difference in research settings and the difference in population (Koster, Stam, & Balk, 2011). The early research on safety was focused on high risk or high consequence industries such as oil and gas, nuclear and hazardous chemicals. The risk in railway industries may vary depending on numbers of accident and incident cases. According to An, Chen, & Baker (2011), risk in railway industry can be defined in relation to accidents and incidents leading to fatalities or injuries of passengers and employees. According to the statistic captured by SOCSO which was discuss previously, railway industry in Malaysia can be classified as low risk industries. Therefore, the different in the industrial risk level as well as the population of research may influence the relationship between safety consciousness and employees' safety behaviours (safety compliance and SCBs).

Forcier, Walters, Eric, & Jones (2001) have explored the concept of safety consciousness for creating a safer working environment. According to the concept, employees' safety consciousness consists of three (3) components viz safety locus of control, risk avoidance and stress tolerance. First, the locus of control concept refers to the degree to which individuals believe self-determination operates in their lives (Forcier et al., 2001). Second, risk avoidance is employees who prefer to structure and less susceptible to boredom (Forcier et al., 2001). Third, stress tolerance refers to an individual's ability to contend with stress of a situational and temporary nature

(Forcier et al., 2001). Since railway industries are relatively low in risks, there is a possibility that employees develop low stress tolerance which would have led to the relationship with safety behaviour to be not manifested.

The similar situation would have also taken place when there are possibility of employees in the railway industry to have low risk avoidance and low locus of control. For instance the concept introduced by Forcier et al. (2001) also highlighted the elements of attitude towards employees' safety consciousness. According to the theory, employees tend to behave safely when they preferred to follow established safety requirements thereby reflect their risk avoidance level. The individual perception of safety also differs depending on their self-determination, whether they personally feel that they are responsible for their own safety (internal locus) or they feel that they do not have the power to control safety (external locus). The external locus was reflected Vredenburgh (2002) concerned about employees' perception where employees cannot behave in a safety-conscious manner unless they have the authority to change their own actions to improve their work conditions. Whereby, the internal locus reflected Vinodkumar & Bhasi (2010) concerned about employee, who are predisposed to exhibit a safety conscious attitude in their work which was assessed during recruiting new personnel. Thus, the level of locus of control among the railway workers could be a possible reason why safety consciousness could not manifest its influence on safety behaviours. However it needs to be interpreted with caution and future studies could look into examining the influence of locus of control, risk avoidance and stress tolerance on safety behaviour dimension.

5.4 Implication

In this section, the implications resulting from the outcome on both theoretical and practical will be elaborated.

5.4.1 Theoretical Implication

Several theoretical implications of this study can be drawn based on the results obtained. First, the consideration of safety citizenship behaviours (SCBs) as one (1) of safety behaviour dimensions. By continuing safety behaviour approach introduced by Borman & Motowidlo (1997), this study was considered SCBs as to achieve higher standard of employees' safety participation. The new approach of safety behaviour dimensions namely safety compliance and SCBs was reflected the previous studies resulted from the original safety behaviour dimensions introduced by Borman & Motowidlo (1997) viz safety compliance and safety participation (Griffin & Neal, 2000; Neal et al., 2000; Vinodkumar & Bhasi, 2010).

Secondly, the antecedents of safety behaviours at LRT and KL Monorail services industry are determined. As the results obtained, it was found that safety knowledge, safety motivation and SSTL exerted effects on safety behaviours at LRT and KL Monorail services industry. In order to cultivate employee' compliances to safety requirements and employees' SCBs in achieving a higher safety performance, the organization should emphasize on enhancing employees' knowledge, motivation and SSTL of all levels of managers. Thus, the objectives of this study are achieved.

Finally, by identifying the factors that influence safety compliance and SCBs at LRT and KL Monorail services, this study could assist the organization to enhance employees' safety behaviours among LRT and KL Monorail operators and safe guard them.

5.4.2 Practical Implication

The study findings have practical implications for LRT and KL Monorail safety behaviour which in turn reflected organizational safety performance. Therefore, this study will highlight several suggestions in order to enhance organizational safety performance. The results from this study demonstrated that safety knowledge, safety motivation and safety leadership, specifically safety-specific transformational leadership (SSTL) are strong antecedents of safety behaviours at LRT and KL Monorail services industry.

Since the implementation of enhancing safety knowledge, safety motivation and safety leadership at the organizational level are involving managerial decision making, safety management could be one (1) factor to be highlighted. Safety management has been defined as controlling safety policies, procedures and practices, tangible practices, responsibility and performance related to safety, management systems that were designed to control the hazards, integrated mechanisms to control risk, and a series of activities to avoid unsafe activities and hazards (Cheng, Ryan, & Kelly, 2012; Fernandez-Muniz et al., 2009; Labodova, 2004; Mearns et al., 2003; Wilson & Koehn, 2000). Based on Subramaniam et al. (2016) assessment, the most widely components of safety management practices are management commitment,

safety training, safety rules and procedures, workers' involvement, safety promotion policies and safety communication and feedback.

According to Vinodkumar & Bhasi (2010), at organizational level, safety training influence employees' safety knowledge and safety motivation. As Baysari, Mcintosh, & Wilson (2008), most of the employees' unsafe behaviour were associated with inadequate safety training. Therefore, the effective safety training is important to educate employees on potential of accidents, how to prevent accidents and potential hazards involved in their jobs (Zin & Ismail, 2012). By understanding both competence and safety trainings are factors that can enhance employees' safety knowledge and safety motivation, it is suggested that the business owner to enhance their internal trainer competencies from the perspective of knowledge, skill and motivation in order to deliver effective training and retraining program.

The "Rule Book", emergency response plan (ERP) and "First Aid and Cardio Pulmonary Resuscitation (CPR)" training are considered as compulsory training for LRT and KL Monorail operators. The "rule books" training provides basic information on rail vehicles, rail safety, system and components. Whereas, the ERP training provides information on standard operating procedures (SOPs) during emergency situations. First Aid and Cardio Pulmonary Resuscitation (CPR) training provides the knowledge and skills to enable participants to initiate assistance or treatment to a casualty in the event of an injury or sudden illness before the arrival of specialist medical assistance. The First aid training also have a positive effect on certain occupational safety and health behaviour (Lingard, 2001). Due to this reason, the present study demonstrated that safety knowledge influences better

compliance to organization safety requirements rather than exhibit extra-role behaviours in LRT and KL Monorail services industry. According to Hofmann, Morgeson, & Gerras (2003) safe behaviour is an important goal because of the human and financial costs associated with unsafe behaviour, accidents and injuries. Therefore, to enhance employees' extra-role behaviours in the organization, focuses should be given to train all employees on the importance of carrying out these extra-role behaviours either at the individual or organizational level.

Second, safety-specific transformational leadership (SSTL) is an important factor influencing employees' safety behaviours of LRT and KL Monorail operators. Therefore, managers of related department must consider this factor in order to encourage their employees to act more than is formally expected from them. According to Jaafar et al. (2017), management commitment and leadership are the most important components of successful safety-related program in any organization. The effectiveness of safety management or safety management practices implementation can be achieved through leaders' support and commitment from the management. The committed management will give priority to safety issues and any corrective action, attend safety meeting, conduct an investigation if any accident or near miss occurred and provide adequate safety protection equipment at workplace (Jaafar et al., 2017).

5.5 Limitation and Suggestion for Further Study

The present study was identified various limitations and highlighted a few suggestions to provide meaningful directions for future research. The first limitation is related to

the data collection process which gathered from survey questions. This process involved a lengthy process for the administration, distribution and collection of data with the effect of several factors such as internal communication process. Other factors that affected the process of data collection are respondents' co-operation. As discussed, all operators worked in shift working hours and long shifts may outcome employees' burnout. Thus, it was believed that employee burnout affected employees' interest to voluntarily participate in this study. Since operator's workstation is restricted to visitor, future research could be done by considering an online survey where internet becomes a research tool. The research questionnaire can be accessed via e-mail link or link shared in social media. This method is considered as environmental friendly (paperless), easily implementable, cost effective and reduces time of data collection.

In addition, the antecedents of safety behaviours (safety compliance and SCBs) may be varying depending on the business of organizations involving services and non-services sectors. As the present study focuses at LRT and KL Monorail services industries and considered as profitable sector, there may be some skepticism in term of generalizability. It is suggested that future research may focus on high risk industries or activities such as oil and gas, construction and manufacturing industries as an initiative in enhancing the literature in safety performance.

5.6 Conclusion

The results of this study indicate some interesting findings with respect to safety behaviours by enhancing the employees' compliances and extra-roles behaviour in

participating safety at both organizational and individual level. At organizational level, safety leadership specifically safety-specific transformational leadership (SSTL) can influence operators' safety behaviours at LRT and KL Monorail services. Meanwhile at individual level, safety knowledge and safety motivation can affect operators' safety behaviours at LRT and KL Monorail services. Thus, implying these SSTL, safety knowledge and safety motivation can enhance operators' safety behaviour at LRT and a KL Monorail operators as well as enhancing safety performance. The understanding of operators' safety behaviours also valuable for railway industries to prevent workplace incident or accident as well as to prevent equipment loss, man-hours worked and loss of life.

The roles of LRT and KL Monorail are to provide services in railway industries by achieving a safe, reliable, efficient, responsive, accessible, planned, integrated, affordable and sustainable railway system and enhance socio-economic development for better quality of life. However, despite their crucial role, much is needed to enhance their business survival and one area that can be done is by focusing on operational safety. Since the work systems and associated technologies improved, business owner apparently can rely on their employees through "bottom-up" approach by inculcating individual safety among organization members especially rail operators who expose directly with hazards and risk. However, considering this individual factor only is merely insufficient without considering organization and leadership factors as a whole.

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APPENDIX A

Date :

Dear Respondent,

I am a Postgraduate student from Universiti Utara Malaysia and carrying out a survey regarding Safety Citizenship Behaviours (SCBs), in order to fulfil the Master Degree requirements. The research objective is to determine the relationship between safety knowledge, safety motivation, safety compliances, safety participation, safety consciousness, safety-specific transformational leadership (SSTL) and safety definition role definition towards safety citizenship behaviour (SCB).

Attached with this letter is a questionnaire that addresses the SCB among employee in an organisation. I realize that your time is priceless and very precious. However, your involvement in this survey, will contribute to the success of this study.

There is no right or wrong answer to the statements listed in the questionnaire. Your sincerity and honesty is highly required in answering these statements. Please be rest assured that all your responses will be kept confidential and will be strictly used for the academic research purposes only.
With this, I highly appreciate your cooperation and participation in this study and wish to convey my thanks in advance.

If you are interested in this study and its outcome, please do not hesitate to contact me via email at ruzilawati.isnin@gmail.com or call me at 019-3821562.

Thank you for your time and attention

Yours sincerely,

Tuan/Puan,

Saya merupakan pelajar Sarjana dari Universiti Utara Malaysia yang sedang menjalankan satu kajian mengenai "Safety Citizenship Behavior"bagi memenuhi pra-syarat Sarjana dari Universiti Utara Malaysia. Objektif kajian ini adalah untuk menentukan hubungan antara pengetahuan keselamatan, motivasi keselamatan, pematuhan keselamatan, penglibatan keselamatan, kesedaran keselamatan, transformasi kepimpinan dalam keselamatan-spesifik (SSTL) dan peranan tingkah laku dalam keselamatan terhadap tingkah laku kerakyatan dalam "Safety Citizenship Behavior" (SCB).

Bersama-sama ini disertakan soal selidik yang berkaitan SCBs dikalangan pekerja di dalam organisasi ini. Saya sedar bahawa masa anda sangat berharga dan bermakna, namun begitu penglibatan anda dalam tinjauan ini, akan menyumbang kepada kejayaan kajian ini.

Tidak ada jawapan yang betul atau salah dalam soal selidik ini.Hanya keikhlasan dan kejujuran anda diperlukan dalam menjawab soalan. Untuk makluman, semua maklumbalas anda akan dirahsiakan dan hanya digunakan bagi tujuan penyelidikan akademik sahaja.

Dengan ini, saya sangat menghargai kerjasama dan penglibatan anda dalam kajian ini dan saya dahului dengan ucapan terima kasih.

Jika anda berminat dengan kajian ini dan dapatannya, sila hubungi saya melalui e-mel di ruzilawati.isnin@gmail.com atau menghubungi saya di talian 019-3821562.

Terima kasih atas kerjasama dan perhatian anda.

Yang benar;

RUZILAWATI BINTI ISNIN (818747)
Universiti Utara Malaysia, Kuala Lumpur.

SECTION A : DEMOGRAPHIC STATEMENTS
BAHAGIAN A : PERNYATAAN DEMOGRAFI

Please fill in blank and tick (√) in the appropriate boxes that corresponds to your answer to each of the following questions below.
Sila isikan tempat kosong dan tandakan (√) untuk mewakili jawapan anda pada semua soalan di bawah.

1. Age/ *Umur* :
   - ☐ 15-25 years/ tahun
   - ☐ 26-35 years/ tahun
   - ☐ 36-45 years/ tahun
   - ☐ 46-55 years/tahun
   - ☐ 56 years and above/ tahun dan ke atas
2. Gender/ *Jantina* : ☐ Male/ *Lelaki* ☐ Female/ *Perempuan*
3. Race :
   - ☐ Malay/ Melayu
   - ☐ Chinese/ Cina
   - ☐ Indian/ India
   - ☐ Others/ Lain-lain
4. Marital status/ *Status perkahwinan* :
   ☐ Married/ *Berkahwin* ☐ Single/ *Bujang* ☐ Divorced/ Bercerai
5. Highest Educational level/ *Tahap pendidikan tertinggi* :
   - ☐ Secondary school/ *Sekolah Menengah*
   - ☐ Certificate/ *Sijil*
   - ☐ Master andabove/ *Master ke atas*
   - ☐ Diploma/ *Diploma*
   - ☐ Degree/ *Ijazah*
   - ☐ Others/ *Lain-lain*……
6. Work Level/ *Jawatan* :
   - ☐ Manager/ Pengurus
   - ☐ Executive, Eksekutif
   - ☐ Non-Executive (technical / operation) / Bukan Eksekutif (teknikal / operasi)
   - ☐ Non-Executive (Administrative) / Bukan Eksekutif (Pentadbiran)
7. How long have you been working?/*Berapa lama anda telah bekerja?* :
   - ☐ 0-5 years/ tahun
   - ☐ 6-10 years/ tahun
   - ☐ 11-15 years/ tahun
   - ☐ 16 years and above/ tahun dan ke atas

8. How long have you been working with the present organisation?/
Berapa lama anda sudah bekerja dengan organisasi sekarang? : _____
years/ tahun

9. Have you ever had any occupational accident ever since you started working in this organisation/
Adakah anda pernah mengalami kemalangan di tempat kerja sepanjang bekerja di organisasi ini?
☐ Yes/ Ya ☐ No/ Tidak

10. If yes, how many accidents have you had while working in this organisation?/
Jika ya, berapakah bilangan kemalangan yang pernah dialami sepanjang bekerja di organisasi ini?
☐ 1 - 3 ☐ 4 – 8
☐ 9 - 15 ☐ Over 15 / *Melebihi 15*

11. Have you attended any occupational safety training?
Pernahkah anda pernah menghadiri latihan keselamatan?
☐ Yes/ *Ya* ☐ No/ *Tidak*

12. How often do you have to attend safety training?
Berapa kekerapan latihan keselamatan yang anda perlu hadiri?
☐ Every month/ *Setiap bulan*
☐ Once in three month/ *Sekali dalam tempoh tiga bulan*
☐ Once in six month/*Sekali dalam tempoh enam bulan*
☐ Once a year/ Sekali setahun
☐ Not at all/ *Tiada langsung*

SECTION B : MAIN STUDY
BAHAGIAN B : KAJIAN UTAMA

Considering only your perception, please circle the most appropriate answer to you based on the scale below:
Dengan hanya mengambil kira pandangan anda, bulatkan jawapan yang paling tepat kepada anda berpandukan pada skala jawapan di bawah:

1	2	3	4	5
Strongly Disagree *Sangat Tidak Setuju*	Disagree *Tidak Setuju*	Neutral *Neutral*	Agree *Setuju*	Strongly Agree *Sangat Setuju*

No.	Statements/Pernyataan					
1	I know how to perform my job in a safe manner. *Saya tahu bagaimana untuk melakukan pekerjaan saya dengan cara yang selamat.*	**1**	**2**	**3**	**4**	**5**
2	I know how to use safety equipment's and standard work procedures. *Saya tahu bagaimana untuk menggunakan peralatan-peralatandan prosedur-prosedur keselamatan standard.*	**1**	**2**	**3**	**4**	**5**
3	I know how to maintain or improve workplace health and safety. *Saya tahu bagaimana untuk mengekalkan atau meningkatkan kesihatan dan keselamatan tempat kerja.*	**1**	**2**	**3**	**4**	**5**
4	I know how to reduce the risk of accidents and incidents in the workplace. *Saya tahu bagaimana untuk mengurangkan risiko kemalangan dan insiden di tempat kerja.*	**1**	**2**	**3**	**4**	**5**
5	I know what are the hazards associated with my jobs and the necessary precautions to be taken while doing my job. *Saya tahu apakah bahaya/hazad dikaitkan dengan pekerjaan saya dan langkah berjaga-jaga yang perlu diambil semasa melakukan pekerjaan saya.*	**1**	**2**	**3**	**4**	**5**
6	I don't know what to do and whom to report if a potential hazard is noticed in my workplace. *Saya tidak tahu apa yang perlu dilakukan dan kepada siapa perlu dilaporkan jika suatu potensi bahaya/hazad diperhatikan dalam tempat kerja saya.*	**1**	**2**	**3**	**4**	**5**
7	I feel that it is important to maintain safety at all times. *Saya rasa adalah penting untuk mengekalkan keselamatan pada sepanjang masa.*	**1**	**2**	**3**	**4**	**5**
8	I believe that safety at workplace is a very important issue. *Saya percaya bahawa keselamatan di tempat kerja merupakan isu yang sangat penting.*	**1**	**2**	**3**	**4**	**5**
9	I feel that it is necessary to put efforts to reduce accidents and incidents at workplace. *Saya rasa adalah perlu untuk meletakkan usaha dalam mengurangkan kemalangan dan insiden di tempat kerja.*	**1**	**2**	**3**	**4**	**5**
10	I believe that safety that can be compromised for increasing production. *Saya percaya bahawa keselamatan itu boleh dikompromikan/ditolak-ansurkan untuk meningkatkan pengeluaran.*	**1**	**2**	**3**	**4**	**5**
11	I feel that it is important to encourage others to use safe practices. *Saya rasa adalah penting untuk menggalakkan orang lain untuk mangamalkan amalan-amalan selamat.*	**1**	**2**	**3**	**4**	**5**
12	I feel that it is important to promote safety programmes. *Saya rasa adalah penting untuk mempromosikan program-program keselamatan.*	**1**	**2**	**3**	**4**	**5**

No.	Statements/Pernyataan					
13	I know what protective equipment and/or clothing is required for my job. *Saya tahu apakah peralatan perlindungan dan/ atau pakaian yang diperlukan untuk pekerjaan saya.*	**1**	**2**	**3**	**4**	**5**
14	I am well aware of the safety risks involved in my job. *Saya sangat menyedari risiko keselamatan terlibat dalam pekerjaan saya.*	**1**	**2**	**3**	**4**	**5**
15	I know where the fire extinguishers are located in my workplace. *Saya tahu di mana pemadam api diletakkan di tempat kerja saya.*	**1**	**2**	**3**	**4**	**5**
16	I know what equipment is safe to use for my particular job(s). *Saya tahu apakah peralatan yang selamat untuk digunakan untuk kerja khusus saya.*	**1**	**2**	**3**	**4**	**5**
17	I know how to inform management about any potential hazards I notice on the job. *Saya tahu bagaimana untuk memaklumkan kepada pengurusan tentang mana-mana kemungkinan hazad/bahaya yang saya perhatikan semasa bekerja.*	**1**	**2**	**3**	**4**	**5**
18	I know what procedures to follow if injured on my shift. *Saya tahu apakah prosedur-prosedur yang perlu diikuti sekiranya cedera semasa shift saya*.	**1**	**2**	**3**	**4**	**5**
19	I would know what to do if an emergency occurred on my shift (e.g. fire). *Saya akan tahu apa yang perlu dilakukan sekiranya kecemasan berlaku semasa syif saya (Contoh : kebakaran)*	**1**	**2**	**3**	**4**	**5**
20	My manager shows determination to maintain a safe work environment. *Pengurus saya menunjukkan kesungguhan untuk mengekalkan persekitaran kerja yang selamat.*	**1**	**2**	**3**	**4**	**5**
21	My manager behaves in a way that displays commitment to a safe workplace. *Pengurus saya bertindak dengan cara menunjukkan komitmen terhadap tempat kerja selamat.*	**1**	**2**	**3**	**4**	**5**
22	My manager talks about his/her values and beliefs of the importance of safety. *Pengurus saya bercakap tentang nilai-nilai dan kepercayaannya bagi kepentingan keselamatan.*	**1**	**2**	**3**	**4**	**5**
23	My manager provides continuous encouragement to do our jobs safely. *Pengurus saya menyediakan galakan yang berterusan untuk melaksanakan kerja-kerja dengan selamat.*	**1**	**2**	**3**	**4**	**5**
24	My manager suggests new ways of doing our jobs more safely. *Pengurus saya mencadangkan kaedah baru bagi melaksanakan kerja dengan selamat.*	**1**	**2**	**3**	**4**	**5**
25	My manager encourages me to express my ideas and opinions about safety at work. *Pengurus saya mendorong saya untuk menyatakan idea dan pendapat saya tentang keselamatan di tempat kerja.*	**1**	**2**	**3**	**4**	**5**
26	My manager spends time showing me the safest way to do things at work. *Pengurus saya meluangkan masa menunjukkan saya cara paling selamat melakukan perkara-perkara di tempat kerja.*	**1**	**2**	**3**	**4**	**5**
27	My manager listens to my concerns about safety on the job. *Pengurus saya mendengar pendapat keprihatinan saya tentang keselamatan semasa kerja.*	**1**	**2**	**3**	**4**	**5**
28	I use all necessary safety equipment's to do my job. *Saya menggunakan semua peralatan keselamatan yang perlu bagi melakukan pekerjaan saya.*	**1**	**2**	**3**	**4**	**5**

No.	Statements/Pernyataan					
29	I carry out my work in a safe manner. *Saya melaksanakan kerja saya dengan cara yang selamat.*	**1**	**2**	**3**	**4**	**5**
30	I follow correct safety rules and procedures while carrying out my job. *Saya mengikut peraturan-peraturan dan prosedur-prosedur keselamatanyang betul semasa melaksanakan kerja saya.*	**1**	**2**	**3**	**4**	**5**
31	I ensure the highest levels of safety when I carry out my job. *Saya memastikan tahap keselamatan paling tinggi apabila saya melaksanakan kerjasaya.*	**1**	**2**	**3**	**4**	**5**
32	Occasionally due to lack of time, I deviate from correct and safe work procedures. *Disebabkan kekurangan masa, kadang-kadang saya menyimpang daripada prosedur-prosedur kerja yang betul dan selamat.*	**1**	**2**	**3**	**4**	**5**
33	Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures. *Disebabkan kebiasaan/kelaziman dengan kerja, kadang-kadang saya menyimpangdaripada prosedur-prosedur kerja yang betul dan selamat.*	**1**	**2**	**3**	**4**	**5**
34	It is not always practical to follow all safety rules and procedures while doing a job. *Ia tidak selalunya praktikal untuk mengikut semuaperaturan dan prosedur keselamatan ketika melakukan sesuatu kerja.*	**1**	**2**	**3**	**4**	**5**
35	I help my co-workers when they are working under risky or hazardous conditions. *Saya membantu rakan sekerja apabila mereka bekerja di bawah keadaan-keadaan berbahaya atau berisiko.*	**1**	**2**	**3**	**4**	**5**
36	I always point out to the management if any safety related matters are noticed in my company. *Saya selalu menunjukkan kepada pengurusan jika terperasan sebarang hal-hal berkaitan keselamatan dalam syarikat saya.*	**1**	**2**	**3**	**4**	**5**
37	I put extra effort to improve the safety of the workplace. *Saya meletakkan usaha lebih bagi meningkatkan keselamatan tempat kerja.*	**1**	**2**	**3**	**4**	**5**
38	I voluntarily carryout tasks or activities that help to improve workplace safety. *Saya sukarela melaksanakan tugas atau aktiviti yang membantu untuk meningkatkan keselamatan tempat kerja.*	**1**	**2**	**3**	**4**	**5**
39	I encourage my co-workers to work safely. *Saya menggalakkan rakan sekerja saya bekerja dengan selamat.*	**1**	**2**	**3**	**4**	**5**
40	I volunteer for safety committees. *Saya secara sukarela menyertai jawatankuasa keselamatan.*	**1**	**2**	**3**	**4**	**5**
41	I help teach safety procedures to new crew members. *Saya membantu dalam mengajar prosedur keselamatan kepada petugas-petugas baru.*	**1**	**2**	**3**	**4**	**5**
42	I assist others to make sure they perform their work safely. *Saya membantu orang lainbagi pastikan mereka melaksanakan kerja dengan selamat.*	**1**	**2**	**3**	**4**	**5**
43	I get involved in safety activities to help my crew work more safely. *Saya melibatkan diri dalam aktiviti-aktiviti keselamatan bagi membantu rakan sekerja saya bekerja dengan lebih selamat.*	**1**	**2**	**3**	**4**	**5**
44	I help other working colleagues learn about safe work practices. *Saya membantu rakan sekerja lain belajar tentang amalan kerja selamat.*	**1**	**2**	**3**	**4**	**5**

No.	Statements/Pernyataan					
45	I help others with safety related responsibilities. *Saya membantu orang lain dengan tanggungjawab berkaitan keselamatan.*	**1**	**2**	**3**	**4**	**5**
46	I make safety-related recommendations about work activities. *Saya membuat cadangan berkaitan keselamatan tentang aktiviti-aktiviti kerja.*	**1**	**2**	**3**	**4**	**5**
47	I speak up and encouraging others to get involved in safety issues. *Saya menyuarakan dan menggalakkan orang lain terlibat dalam isu-isu keselamatan.*	**1**	**2**	**3**	**4**	**5**
48	I express opinions on safety matters even if others disagree. *Saya menyuarakan pendapat dalam hal-hal keselamatan sekalipun orang lain tidak bersetuju.*	**1**	**2**	**3**	**4**	**5**
49	I raise safety concerns during planning sessions. *Saya membangkitkan isu-isu keselamatan semasa sesi perancangan.*	**1**	**2**	**3**	**4**	**5**
50	I will be champion to protect fellow working colleagues from safety hazards. *Saya akan menjadi ketua dalam melindungi rakan sekerja daripada bahaya-bahaya keselamatan.*	**1**	**2**	**3**	**4**	**5**
51	I will be champion to look out for the safety of other working colleagues. *Saya akan menjadi ketua untuk keselamatan bagi rakan sekerja yang lain.*	**1**	**2**	**3**	**4**	**5**
52	I will be a champion to protect other working colleagues from risky situations. *Saya akan menjadi ketua untuk melindungi rakan skerja lain daripada situasi-situasi berbahaya.*	**1**	**2**	**3**	**4**	**5**
53	I will be champion to prevent other working colleagues from being injured on the job. *Saya akan menjadi ketua bagi menghalang rakan sekerja lain daripada dicederakan semasa bekerja.*	**1**	**2**	**3**	**4**	**5**
54	I prefer to take action to stop safety violations in order to protect the well-being of other working colleagues. *Saya lebih suka untuk mengambil tindakan menghentikan pelanggaran keselamatan dalam melindungi kesejahteraan rakan sekerja lain.*	**1**	**2**	**3**	**4**	**5**
55	I prefer to explain to other working colleagues that I will report safety violations. *Saya lebih suka untuk menjelaskan kepada rakan sekerja lain yang saya akan melaporkan ketidakpatuhan keselamatan di tempat kerja.*	**1**	**2**	**3**	**4**	**5**
56	I will be champion to inform other working colleagues, to follow safe working procedures. *Saya akan menjadi ketua bagi memberitahu rakan sekerja lain untuk mengikut prosedur-prosedur kerja selamat.*	**1**	**2**	**3**	**4**	**5**
57	I will be champion to monitor new working colleagues to ensure they are performing safely. *Saya akan menjadi ketua bagi memantau rakan sekerja baharu untuk memastikan mereka melaksanakan kerja dengan selamat.*	**1**	**2**	**3**	**4**	**5**
58	I will be champion to report working colleagues who violate safety procedures. *Saya akan menjadi ketua bagi melaporkan rakan sekerja yang melanggar prosedur-prosedur keselamatan.*	**1**	**2**	**3**	**4**	**5**
59	I will be champion to inform new working colleagues that violations on safety procedures is cannot be tolerated. *Saya akan menjadi ketua bagi memberitahu rakan sekerja baharu bahawa perlanggaran prosedur keselamatan tidak akan dipertimbangkan.*	**1**	**2**	**3**	**4**	**5**
60	I will be champion to attend safety meetings. *Saya akan menjadi ketua bagi menghadiri mesyuarat-mesyuarat keselamatan.*	**1**	**2**	**3**	**4**	**5**

No.	Statements/Pernyataan					
61	I will be champion to attend non-mandatory safety-oriented meetings *Saya akan menjadi ketua dalam menghadiri mesyuarat-mesyuarat bukan wajib yang berorientasikan keselamatan.*	**1**	**2**	**3**	**4**	**5**
62	I will be champion to inform of the changes in safety policies and procedures. *Saya akan menjadi ketua bagi memaklumkan tentang perubahan-perubahan dalam dasar dan prosedur keselamatan.*	**1**	**2**	**3**	**4**	**5**
63	I try to improve safety procedures. *Saya cuba memperbaiki prosedur keselamatan.*	**1**	**2**	**3**	**4**	**5**
64	I prefer to change the way the job is done to make it safer. *Saya lebih suka untuk mengubah cara kerja yang dilakukan bagi menjadikannya lebih selamat.*	**1**	**2**	**3**	**4**	**5**
65	I prefer to change policies and procedures to make them safer. *Saya lebih suka untuk mengubah polisi dan prosedur-prosedur bagi menjadikan ia lebih selamat.*	**1**	**2**	**3**	**4**	**5**
66	I prefer to make suggestions to improve the safety of a mission. *Saya lebih suka untuk memberi cadangan-cadangan bagi meningkatkan misi keselamatan.*	**1**	**2**	**3**	**4**	**5**

-THANK YOU*/ TERIMA KASIH* -

APPENDIX B

Reliability Test

1) Safety Knowledge

Case Processing Summary

		N	%
Cases	Valid	98	100.0
	Excluded[a]	0	.0
	Total	98	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.767	6

Item Statistics

	Mean	Std. Deviation	N
Safety Knowledge 1	4.27	.711	98
Safety Knowledge 2	4.13	.683	98
Safety Knowledge 3	4.11	.758	98
Safety Knowledge 4	4.00	.837	98
Safety Knowledge 5	4.08	.728	98
Safety Knowledge 6	3.27	1.313	98

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Safety Knowledge 1	19.59	9.337	.605	.715
Safety Knowledge 2	19.72	8.841	.779	.680
Safety Knowledge 3	19.74	8.501	.769	.673
Safety Knowledge 4	19.86	8.474	.677	.689
Safety Knowledge 5	19.78	9.124	.642	.706
Safety Knowledge 6	20.59	10.120	.076	.907

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
23.86	12.474	3.532	6

2) Safety Motivation

Case Processing Summary

		N	%
Cases	Valid	98	100.0
	Excluded[a]	0	.0
	Total	98	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.723	6

Item Statistics

	Mean	Std. Deviation	N
Safety Motivation 1	4.40	.714	98
Safety Motivation2	4.44	.704	98
Safety Motivation 3	4.38	.696	98
Safety Motivation 4	3.41	1.398	98
Safety Motivation 5	4.30	.789	98
Safety Motivation 6	4.23	.810	98

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Safety Motivation 1	20.76	8.826	.600	.653
Safety Motivation2	20.71	8.845	.607	.652
Safety Motivation 3	20.78	8.650	.671	.637
Safety Motivation 4	21.74	9.347	.068	.880
Safety Motivation 5	20.86	8.206	.676	.625
Safety Motivation 6	20.92	8.385	.606	.643

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
25.15	11.884	3.447	6

3) Safety Specific-transformational leadership (SSTL)

Case Processing Summary

		N	%
Cases	Valid	98	100.0
	Excluded[a]	0	.0
	Total	98	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.966	8

Item Statistics

	Mean	Std. Deviation	N
Safety-Specific Transformational Leadership (SSTL) 1	3.77	.972	98
Safety-Specific Transformational Leadership (SSTL) 2	3.71	.984	98
Safety-Specific Transformational Leadership (SSTL) 3	3.65	.985	98
Safety-Specific Transformational Leadership (SSTL) 4	3.72	.950	98
Safety-Specific Transformational Leadership (SSTL) 5	3.65	.985	98
Safety-Specific Transformational Leadership (SSTL) 6	3.63	.978	98
Safety-Specific Transformational Leadership (SSTL) 7	3.53	1.057	98
Safety-Specific Transformational Leadership (SSTL) 8	3.56	1.140	98

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Safety-Specific Transformational Leadership (SSTL) 1	25.47	41.344	.811	.964
Safety-Specific Transformational Leadership (SSTL) 2	25.52	40.603	.865	.961
Safety-Specific Transformational Leadership (SSTL) 3	25.58	40.390	.884	.960
Safety-Specific Transformational Leadership (SSTL) 4	25.51	40.789	.885	.960
Safety-Specific Transformational Leadership (SSTL) 5	25.58	40.205	.900	.959
Safety-Specific Transformational Leadership (SSTL) 6	25.60	40.304	.899	.959
Safety-Specific Transformational Leadership (SSTL) 7	25.70	39.736	.868	.961
Safety-Specific Transformational Leadership (SSTL) 8	25.67	39.336	.824	.964

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
29.23	52.429	7.241	8

4) Safety Consciousness

Case Processing Summary

		N	%
Cases	Valid	98	100.0
	Excluded[a]	0	.0
	Total	98	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.893	7

Item Statistics

	Mean	Std. Deviation	N
Safety Consciousness 1	4.19	.755	98
Safety Consciousness 2	4.18	.737	98
Safety Consciousness 3	4.05	.751	98
Safety Consciousness 4	4.09	.788	98
Safety Consciousness 5	3.90	.766	98
Safety Consciousness 6	3.90	.793	98
Safety Consciousness 7	3.98	.760	98

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Safety Consciousness 1	24.10	13.309	.651	.883
Safety Consciousness 2	24.11	13.482	.636	.884
Safety Consciousness 3	24.24	13.506	.615	.887
Safety Consciousness 4	24.20	12.576	.765	.869
Safety Consciousness 5	24.40	13.252	.650	.883
Safety Consciousness 6	24.40	12.634	.746	.871
Safety Consciousness 7	24.32	12.672	.780	.867

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
28.30	17.468	4.180	7

5) Safety Compliance

Case Processing Summary

		N	%
Cases	Valid	98	100.0
	Excluded[a]	0	.0
	Total	98	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.772	7

Item Statistics

	Mean	Std. Deviation	N
Safety Compliance 1	3.90	.914	98
Safety Compliance 2	4.04	.702	98
Safety Compliance 3	4.08	.699	98
Safety Compliance 4	4.05	.723	98
Safety Compliance 5	3.27	1.206	98
Safety Compliance 6	3.17	1.252	98
Safety Compliance 7	3.28	1.208	98

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Safety Compliance 1	21.89	16.307	.408	.759
Safety Compliance 2	21.74	17.347	.395	.762
Safety Compliance 3	21.70	17.159	.432	.757
Safety Compliance 4	21.73	17.166	.411	.760
Safety Compliance 5	22.52	13.221	.624	.713
Safety Compliance 6	22.61	13.147	.599	.721
Safety Compliance 7	22.51	13.222	.622	.713

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
25.79	20.149	4.489	7

6) Safety Citizenship Behaviours (SCBs)

Case Processing Summary

		N	%
Cases	Valid	98	100.0
	Excluded[a]	0	.0
	Total	98	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.971	27

Item Statistics

	Mean	Std. Deviation	N
Safety Definition Role Behaviour-Helping 1	3.53	.997	98
Safety Definition Role Behaviour-Helping 2	3.57	1.025	98
Safety Definition Role Behaviour-Helping 3	3.88	.790	98
Safety Definition Role Behaviour-Helping 4	3.77	.822	98
Safety Definition Role Behaviour-Helping 5	3.87	.795	98
Safety Definition Role Behaviour-Helping 6	3.76	.719	98
Safety Definition Role Behaviour-Voice 1	3.68	.781	98
Safety Definition Role Behaviour-Voice 2	3.67	.871	98
Safety Definition Role Behaviour-Voice 3	3.61	.869	98
Safety Definition Role Behaviour-Voice 4	3.62	.856	98
Safety Definition Role Behaviour-Stewardship 1	3.52	.922	98
Safety Definition Role Behaviour-Stewardship 2	3.53	.933	98
Safety Definition Role Behaviour-Stewardship 3	3.59	.993	98
Safety Definition Role Behaviour-Stewardship 4	3.59	.895	98

Item Statistics (Continued)

	Mean	Std. Deviation	N
Safety Definition Role Behaviour-Stewardship 5	3.81	.893	98
Safety Definition Role Behaviour-Whistleblowing 1	3.61	.970	98
Safety Definition Role Behaviour-Whistleblowing 2	3.56	.850	98
Safety Definition Role Behaviour-Whistleblowing 3	3.61	.820	98
Safety Definition Role Behaviour-Whistleblowing 4	3.46	1.007	98
Safety Definition Role Behaviour-Whistleblowing 5	3.50	.865	98
Safety Definition Role Behaviour-Civic Virtue (Keeping Informed) 1	3.31	1.088	98
Safety Definition Role Behaviour-Civic Virtue (Keeping Informed) 2	3.30	1.047	98
Safety Definition Role Behaviour-Civic Virtue (Keeping Informed) 3	3.28	1.043	98
Safety Definition Role Behaviour-Initiating Safety-Related Change 1	3.63	.935	98
Safety Definition Role Behaviour-Initiating Safety-Related Change 2	3.79	.876	98
Safety Definition Role Behaviour-Initiating Safety-Related Change 3	3.80	.861	98
Safety Definition Role Behaviour-Initiating Safety-Related Change 4	3.78	.856	98

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Safety Definition Role Behaviour-Helping 1	94.08	313.127	.729	.969
Safety Definition Role Behaviour-Helping 2	94.04	310.741	.775	.969
Safety Definition Role Behaviour-Helping 3	93.73	318.671	.728	.969
Safety Definition Role Behaviour-Helping 4	93.85	315.368	.814	.969
Safety Definition Role Behaviour-Helping 5	93.74	318.068	.745	.969
Safety Definition Role Behaviour-Helping 6	93.86	320.825	.718	.970
Safety Definition Role Behaviour-Voice 1	93.93	319.057	.722	.970
Safety Definition Role Behaviour-Voice 2	93.94	316.120	.741	.969
Safety Definition Role Behaviour-Voice 3	94.00	318.392	.667	.970
Safety Definition Role Behaviour-Voice 4	93.99	315.783	.767	.969
Safety Definition Role Behaviour-Stewardship 1	94.09	314.002	.764	.969
Safety Definition Role Behaviour-Stewardship 2	94.08	313.478	.771	.969
Safety Definition Role Behaviour-Stewardship 3	94.02	311.031	.794	.969
Safety Definition Role Behaviour-Stewardship 4	94.02	316.989	.692	.970
Safety Definition Role Behaviour-Stewardship 5	93.81	319.251	.620	.970
Safety Definition Role Behaviour-Whistleblowing 1	94.00	313.959	.725	.969
Safety Definition Role Behaviour-Whistleblowing 2	94.05	315.100	.795	.969
Safety Definition Role Behaviour-Whistleblowing 3	94.00	316.082	.791	.969
Safety Definition Role Behaviour-Whistleblowing 4	94.15	311.945	.755	.969

Item-Total Statistics (Continued)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Safety Definition Role Behaviour-Whistleblowing 5	94.11	317.049	.716	.970
Safety Definition Role Behaviour-Civic Virtue (Keeping Informed) 1	94.31	307.802	.808	.969
Safety Definition Role Behaviour-Civic Virtue (Keeping Informed) 2	94.32	308.651	.817	.969
Safety Definition Role Behaviour-Civic Virtue (Keeping Informed) 3	94.34	308.349	.829	.969
Safety Definition Role Behaviour-Initiating Safety-Related Change 1	93.98	316.577	.673	.970
Safety Definition Role Behaviour-Initiating Safety-Related Change 2	93.83	320.578	.589	.970
Safety Definition Role Behaviour-Initiating Safety-Related Change 3	93.82	323.286	.510	.971
Safety Definition Role Behaviour-Initiating Safety-Related Change 4	93.84	317.643	.703	.970

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
97.61	339.827	18.434	27

Frequencies

		Respondent	Age	Gender	Race	Merital Status	Highest Education Level	Highest Education Level Others	Work Level	Work Experience	Working Experience-present	Occupational Accident History	Occupational Accident History-Yes	Safety Training Record	Frequency of Safety Training
N	Valid	98	98	92	95	98	98	98	98	98	98	97	18	97	91
	Missing	0	0	6	3	0	0	0	0	0	0	1	80	1	7
Mean		49.39	2.00	1.16	1.01	1.35	2.79		2.96	1.80	1.74	1.87	1.22	1.20	3.68
Std. Deviation		28.270	.773	.371	.103	.478	.692		.318	.908	.841	.342	.732	.399	1.114
Minimum		1	1	1	1	1	1		1	1	1	1	1	1	1
Maximum		98	4	2	2	2	5		4	4	4	2	4	2	5

Frequency Table

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-25 years	25	25.5	25.5	25.5
	26-35 years	52	53.1	53.1	78.6
	36-45 years	17	17.3	17.3	95.9
	46-55 years	4	4.1	4.1	100.0
	Total	98	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	77	78.6	83.7	83.7
	Female	15	15.3	16.3	100.0
	Total	92	93.9	100.0	
Missing	System	6	6.1		
Total		98	100.0		

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	94	95.9	98.9	98.9
	Chinise	1	1.0	1.1	100.0
	Total	95	96.9	100.0	
Missing	System	3	3.1		
Total		98	100.0		

Merital Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	64	65.3	65.3	65.3
	Single	34	34.7	34.7	100.0
	Total	98	100.0	100.0	

Highest Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Secondary School	6	6.1	6.1	6.1
	Certificate	17	17.3	17.3	23.5
	Diploma	68	69.4	69.4	92.9
	Degree	6	6.1	6.1	99.0
	Master and above	1	1.0	1.0	100.0
	Total	98	100.0	100.0	

Highest Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Secondary School	6	6.1	6.1	6.1
	Certificate	17	17.3	17.3	23.5
	Diploma	68	69.4	69.4	92.9
	Degree	6	6.1	6.1	99.0
	Master and above	1	1.0	1.0	100.0
	Total	98	100.0	100.0	

Highest Education Level Others

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	98	100.0	100.0	100.0

Work Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manager	1	1.0	1.0	1.0
	Executive	4	4.1	4.1	5.1
	Non-Executive (Technical)	91	92.9	92.9	98.0
	Non-Executive (Administrative)	2	2.0	2.0	100.0
	Total	98	100.0	100.0	

Work Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 years	47	48.0	48.0	48.0
	6-10 years	29	29.6	29.6	77.6
	11-15 years	17	17.3	17.3	94.9
	16 years and above	5	5.1	5.1	100.0
	Total	98	100.0	100.0	

Working Experience-present

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 years	47	48.0	48.0	48.0
	6-10 years	32	32.7	32.7	80.6
	11-15 years	16	16.3	16.3	96.9
	16 years and above	3	3.1	3.1	100.0
	Total	98	100.0	100.0	

Occupational Accident History

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	13.3	13.4	13.4
	No	84	85.7	86.6	100.0
	Total	97	99.0	100.0	
Missing	System	1	1.0		
Total		98	100.0		

Occupational Accident History-Yes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-3 times	16	16.3	88.9	88.9
	4-8 times	1	1.0	5.6	94.4
	Over 15 times	1	1.0	5.6	100.0
	Total	18	18.4	100.0	
Missing	System	80	81.6		
Total		98	100.0		

Safety Training Record

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	78	79.6	80.4	80.4
	No	19	19.4	19.6	100.0
	Total	97	99.0	100.0	
Missing	System	1	1.0		
Total		98	100.0		

Frequency of Safety Training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Every month	9	9.2	9.9	9.9
	Once in 3 month	1	1.0	1.1	11.0
	Once in six month	18	18.4	19.8	30.8
	Once a year	45	45.9	49.5	80.2
	Not at all	18	18.4	19.8	100.0
	Total	91	92.9	100.0	
Missing	System	7	7.1		
Total		98	100.0		

Frequencies

Statistics

		SafetyKnowledge	SafetyMotivation	SafetyConciousness	SST	SafetyCompliance	SafetyParticipation	SCB	SCBHelping	SCBVoice	SCBStewardship	SCBWhistleblowing	SCBCivicvirtue	SCBInitiatingchange
N	Valid	98	98	98	98	98	98	98	98	98	98	98	98	98
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		3.9762	4.1922	4.0423	3.6543	3.6837	3.8449	3.6153	3.7279	3.6480	3.6082	3.5490	3.2925	3.7474
Std. Deviation		.58865	.57454	.59707	.90510	.64126	.69965	.68276	.73194	.73203	.77588	.76915	1.01112	.73874
Minimum		2.67	2.67	2.57	1.00	2.43	2.00	2.22	1.67	2.25	1.20	1.80	1.00	2.00
Maximum		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

Frequency Table

Safety Knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.67	3	3.1	3.1	3.1
	3.00	3	3.1	3.1	6.1
	3.17	3	3.1	3.1	9.2
	3.33	4	4.1	4.1	13.3
	3.50	10	10.2	10.2	23.5
	3.67	17	17.3	17.3	40.8
	3.83	11	11.2	11.2	52.0
	4.00	8	8.2	8.2	60.2
	4.17	8	8.2	8.2	68.4
	4.33	7	7.1	7.1	75.5
	4.50	8	8.2	8.2	83.7
	4.67	4	4.1	4.1	87.8
	5.00	12	12.2	12.2	100.0
	Total	98	100.0	100.0	

Safety Motivation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.67	1	1.0	1.0	1.0
	2.83	1	1.0	1.0	2.0
	3.00	1	1.0	1.0	3.1
	3.17	2	2.0	2.0	5.1
	3.33	6	6.1	6.1	11.2
	3.50	5	5.1	5.1	16.3
	3.67	5	5.1	5.1	21.4
	3.83	7	7.1	7.1	28.6
	4.00	14	14.3	14.3	42.9
	4.17	8	8.2	8.2	51.0
	4.33	15	15.3	15.3	66.3
	4.50	8	8.2	8.2	74.5
	4.67	4	4.1	4.1	78.6
	4.83	4	4.1	4.1	82.7
	5.00	17	17.3	17.3	100.0
	Total	98	100.0	100.0	

Safety Consciousness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.57	1	1.0	1.0	1.0
	2.71	1	1.0	1.0	2.0
	2.86	2	2.0	2.0	4.1
	3.00	1	1.0	1.0	5.1
	3.14	1	1.0	1.0	6.1
	3.29	6	6.1	6.1	12.2
	3.43	9	9.2	9.2	21.4
	3.57	5	5.1	5.1	26.5
	3.71	3	3.1	3.1	29.6
	3.86	10	10.2	10.2	39.8
	4.00	19	19.4	19.4	59.2
	4.14	5	5.1	5.1	64.3
	4.29	5	5.1	5.1	69.4
	4.43	6	6.1	6.1	75.5
	4.57	6	6.1	6.1	81.6
	4.71	4	4.1	4.1	85.7
	4.86	1	1.0	1.0	86.7
	5.00	13	13.3	13.3	100.0
	Total	98	100.0	100.0	

SSTL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	3.1	3.1	3.1
	1.25	1	1.0	1.0	4.1
	1.88	1	1.0	1.0	5.1
	2.00	2	2.0	2.0	7.1
	2.38	1	1.0	1.0	8.2
	2.50	2	2.0	2.0	10.2
	2.63	2	2.0	2.0	12.2
	2.75	1	1.0	1.0	13.3
	2.88	1	1.0	1.0	14.3
	3.00	3	3.1	3.1	17.3
	3.13	9	9.2	9.2	26.5
	3.25	4	4.1	4.1	30.6

SSTL (Continued)

		Frequency	Percent	Valid Percent	Cumulative Percent
	3.38	5	5.1	5.1	35.7
	3.50	4	4.1	4.1	39.8
	3.63	6	6.1	6.1	45.9
	3.75	7	7.1	7.1	53.1
	3.88	3	3.1	3.1	56.1
	4.00	16	16.3	16.3	72.4
	4.13	2	2.0	2.0	74.5
	4.25	5	5.1	5.1	79.6
	4.38	4	4.1	4.1	83.7
	4.50	2	2.0	2.0	85.7
	4.63	1	1.0	1.0	86.7
	4.75	2	2.0	2.0	88.8
	5.00	11	11.2	11.2	100.0
	Total	98	100.0	100.0	

Safety Compliance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.43	2	2.0	2.0	2.0
	2.71	1	1.0	1.0	3.1
	2.86	5	5.1	5.1	8.2
	3.00	5	5.1	5.1	13.3
	3.14	14	14.3	14.3	27.6
	3.29	6	6.1	6.1	33.7
	3.43	11	11.2	11.2	44.9
	3.57	12	12.2	12.2	57.1
	3.71	6	6.1	6.1	63.3
	3.86	2	2.0	2.0	65.3
	4.00	12	12.2	12.2	77.6
	4.14	5	5.1	5.1	82.7
	4.29	3	3.1	3.1	85.7
	4.43	3	3.1	3.1	88.8
	5.00	11	11.2	11.2	100.0
	Total	98	100.0	100.0	

SCB

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.22	1	1.0	1.0	1.0
	2.41	1	1.0	1.0	2.0
	2.44	1	1.0	1.0	3.1
	2.52	1	1.0	1.0	4.1
	2.56	1	1.0	1.0	5.1
	2.67	3	3.1	3.1	8.2
	2.74	2	2.0	2.0	10.2
	2.81	1	1.0	1.0	11.2
	2.89	1	1.0	1.0	12.2
	2.93	3	3.1	3.1	15.3
	2.96	1	1.0	1.0	16.3
	3.00	4	4.1	4.1	20.4
	3.07	2	2.0	2.0	22.4
	3.11	2	2.0	2.0	24.5
	3.15	5	5.1	5.1	29.6
	3.22	5	5.1	5.1	34.7
	3.26	1	1.0	1.0	35.7
	3.37	1	1.0	1.0	36.7
	3.41	2	2.0	2.0	38.8
	3.44	6	6.1	6.1	44.9
	3.48	2	2.0	2.0	46.9
	3.52	1	1.0	1.0	48.0
	3.56	4	4.1	4.1	52.0
	3.59	4	4.1	4.1	56.1
	3.63	4	4.1	4.1	60.2
	3.67	2	2.0	2.0	62.2
	3.70	1	1.0	1.0	63.3
	3.74	1	1.0	1.0	64.3
	3.78	1	1.0	1.0	65.3
	3.85	3	3.1	3.1	68.4
	3.89	2	2.0	2.0	70.4
	3.93	2	2.0	2.0	72.4
	4.00	3	3.1	3.1	75.5
	4.07	2	2.0	2.0	77.6

SCB (Continued)

	Frequency	Percent	Valid Percent	Cumulative Percent
4.11	1	1.0	1.0	78.6
4.15	1	1.0	1.0	79.6
4.19	1	1.0	1.0	80.6
4.22	1	1.0	1.0	81.6
4.26	1	1.0	1.0	82.7
4.30	1	1.0	1.0	83.7
4.33	1	1.0	1.0	84.7
4.37	2	2.0	2.0	86.7
4.41	2	2.0	2.0	88.8
4.48	1	1.0	1.0	89.8
4.81	1	1.0	1.0	90.8
5.00	9	9.2	9.2	100.0
Total	98	100.0	100.0	

Correlations

Correlations

		Safety Knowledge	Safety Motivation	Safety Consciousness	SST	Safety Compliance	Safety Participation	SCB
Safety Knowledge	Pearson Correlation	1	.707**	.777**	.502**	.642**	.702**	.618**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	98	98	98	98	98	98	98
Safety Motivation	Pearson Correlation	.707**	1	.712**	.424**	.613**	.725**	.584**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	98	98	98	98	98	98	98
Safety Consciousness	Pearson Correlation	.777**	.712**	1	.603**	.551**	.655**	.612**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	98	98	98	98	98	98	98
SST	Pearson Correlation	.502**	.424**	.603**	1	.504**	.555**	.638**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	98	98	98	98	98	98	98
Safety Compliance	Pearson Correlation	.642**	.613**	.551**	.504**	1	.694**	.771**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	98	98	98	98	98	98	98
Safety Participation	Pearson Correlation	.702**	.725**	.655**	.555**	.694**	1	.755**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	98	98	98	98	98	98	98
SCB	Pearson Correlation	.618**	.584**	.612**	.638**	.771**	.755**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	98	98	98	98	98	98	98

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

Regression 1

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SST, Safety Motivation, Safety Knowledge, Safety Consciousness[b]	.	Enter

a. Dependent Variable: Safety Compliance

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.709[a]	.503	.482	.46164

a. Predictors: (Constant), SST, Safety Motivation, Safety Knowledge, Safety Consciousness

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.069	4	5.017	23.542	.000[b]
	Residual	19.819	93	.213		
	Total	39.888	97			

a. Dependent Variable: Safety Compliance

b. Predictors: (Constant), SST, Safety Motivation, Safety Knowledge, Safety Consciousness

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.402	.365		1.099	.274		
	Safety Knowledge	.426	.135	.391	3.151	.002	.346	2.886
	Safety Motivation	.365	.124	.327	2.945	.004	.433	2.310
	Safety Consciousness	-.147	.145	-.137	-1.017	.312	.295	3.390
	SST	.178	.065	.251	2.735	.007	.633	1.579

a. Dependent Variable: Safety Compliance

Collinearity Diagnostics[a]

Model	Dimension	Eigen value	Condition Index	Variance Proportions (Constant)	Safety Knowledge	Safety Motivation	Safety Consciousness	SST
1	1	4.944	1.000	.00	.00	.00	.00	.00
	2	.034	12.059	.07	.01	.02	.00	.81
	3	.012	20.431	.88	.11	.04	.06	.10
	4	.006	29.410	.05	.35	.91	.05	.03
	5	.004	33.194	.00	.54	.04	.89	.07

a. Dependent Variable: Safety Compliance

Regression 2

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SST, Safety Motivation, Safety Knowledge, Safety Consciousness[b]	.	Enter

a. Dependent Variable: SCB

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.744[a]	.553	.534	.46617

a. Predictors: (Constant), SST, Safety Motivation, Safety Knowledge, Safety Consciousness

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.007	4	6.252	28.768	.000[b]
	Residual	20.210	93	.217		
	Total	45.217	97			

a. Dependent Variable: SCB

b. Predictors: (Constant), SST, Safety Motivation, Safety Knowledge, Safety Consciousness

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.168	.369		.454	.651		
	Safety Knowledge	.271	.137	.234	1.986	.050	.346	2.886
	Safety Motivation	.274	.125	.231	2.189	.031	.433	2.310
	Safety Consciousness	.021	.146	.019	.145	.885	.295	3.390
	SST	.310	.066	.412	4.723	.000	.633	1.579

a. Dependent Variable: SCB

Collinearity Diagnostics[a]

Model	Dimension	Eigen value	Condition Index	Variance Proportions				
				(Constant)	Safety Knowledge	Safety Motivation	Safety Consciousness	SST
1	1	4.944	1.000	.00	.00	.00	.00	.00
	2	.034	12.059	.07	.01	.02	.00	.81
	3	.012	20.431	.88	.11	.04	.06	.10
	4	.006	29.410	.05	.35	.91	.05	.03
	5	.004	33.194	.00	.54	.04	.89	.07

a. Dependent Variable: SCB