ANTECEDENTS AND OUTCOMES ON SAFETY BEHAVIOUR: EVIDENCE FROM MALAYSIAN LOGISTIC SECTOR

by

AU YONG HUI NEE

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LIST OF ABBREVIATION

CP: Compatibility

CT: Client Partnership

CX: Complexity

DTPB: Decomposed Theory of Planned Behaviour

EPPM: Extended Parallel Process Model

ETPB: Extended Theory of Planned Behaviour

FFM: Five Factor Model of Personality

FN: Family Norms

FT: Free from Fatigue and Somatic Complaints

GS: Government Support

JS: Job satisfaction

HBM: Health Belief Model

HPT: Health Promotion Theory

MM: Mass Media

MO: Moral Obligation

PB: Perceived Benefits

PBC: Perceived Behavioural Controls

PHB: Preventive-Health Behaviour

PMT: Protection Motivation Theory

PPM: Parallel Process Model

PR: Peer Culture

PS: Personal Commitment to Safety

PU: Perceived Usefulness

SCT: Social Cognitive Theory

SDT: Self-Determination Theory

SE: Self-Efficacy

SET: Self-Efficacy Theory

SEU: Subjective Expected Utility

SI: Safety Internalisation

SLT: Social Learning Theory

SN: Subjective Norms

SP: Safety Performance

SV: Supervisor Culture

TAM: Technology Acceptance Mode

TPB: Theory of Planned Behaviour

TRA: Theory of Reasoned Action

TS: Technological Support

TTM: Transtheoretical Model of Stages of Change

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ANTESEDEN DAN HASIL TINGKAHLAKU PEMATUHAN KESELAMATAN: BUKTI DARI SEKTOR LOGISTIK MALAYSIA

ABSTRAK

Kajian ini menentukan anteseden sikap, norma subjektif dan kawalan tingkahlaku yang dilihat ke arah pematuhan keselamatan dan juga untuk menerangkan bagaimana penguraian teori tingkahlaku terancang (DTPB) digunakan dari aspek logistik di Malaysia. Sumbangan teori utama kajian ini adalah untuk mempertimbangkan penentu baru bagi norma subjektif dan kawalan tingkahlaku yang dilihat. Kajian ini telah dianalisis menggunakan perisian SPSS 17.0 dan SmartPLS 3.0. Model telah diuji menggunakan data-data kajian yang dikumpul daripada 103 responden borang soal selidik. Kedua-dua model ukuran dan struktur mempamerkan model baik yang sepadan dengan data. Penaksiran laluan menunjukkan di antara lima hipotesis yang diuji, terdapat dua hipotesis yang disokong dengan sepenuhnya dan tiga hipotesis yang disokong sebahagiannya. Dapatan ini menunjukkan bahawa tanggungjawab moral adalah signifikan dan anteseden positif bagi komitmen peribadi (PS) kepada keselamatan dan internalisasi keselamatan (SI), dan sokongan kerajaan (GS) adalah signifikan dan anteseden positif bagi SI. PS dan SI berhubungkait secara signifikan dan positif terhadap prestasi keselamatan (SP) dan bebas daripada keletihan dan rungutan somatic (FT), manakala PS berhubungkait secara signifikan dan positif terhadap kepuasan kerja (JS). Keputusan kajian juga mendapati bahawa pengaruh media massa dan perkongsian pelanggan tidak signifikan. Dapat disimpulkan bahawa DTPB adalah sesuai untuk mendasari teori untuk menerangkan tingkahlaku pematuhan keselamatan.

ANTECEDENTS AND OUTCOMES ON SAFETY BEHAVIOUR: EVIDENCE FROM MALAYSIAN LOGISTIC SECTOR

ABSTRACT

This study seeks to determine the significant antecedents of attitude, subjective norm and perceived behaviour control toward safety behaviours as well as to explain how the theory of decomposed theory of planned behavior (DTPB) is being in Malaysian Logistics. The major theoretical contribution of this study will be to consider new determinants of subjective norms and perceived behavioural controls. The study was analysed using Statistical Package for Social Science (SPSS) 17.0 and SmartPLS 3.0 software. The model was tested using data collected from one hundred and three valid respondents. Both measurement and structural models exhibit good model fit to data. The paths estimations show that among five hypotheses tested, two are fully supported and three partially supported. The results show that moral obligation is significant and positive antecedents of personal commitment to safety (PS) and safety internalisation (SI), and government support (GS) is significant and positive antecedents of SI. PS and SI are significantly and positively related to safety performance (SP) and free from fatigue and somatic complaints (FT), while PS is significantly and positively related to job satisfaction (JS). Another finding is that influences of mass media and client partnerships are insignificant. It can be concluded that DTPB is found to be a suitable underlying theory to explain safety behaviour.

CHAPTER 1

INTRODUCTION

1.1 Introduction

In the ISO 9004:2009 standard, sustainability is defined as: "The sustained success of an organisation is demonstrated by its ability to satisfy needs and expectations of its customers and other interested parties over the long term and in a balanced way" (ISO, 2009). Among the interested parties or business stakeholders are customers/clients, shareholders, people in the organisation (management, employees), suppliers / partners (insurers, financial institutions/lenders,) and society (public / surrounding community/ government / regulatory bodies). ISO 9004:2009 provides guidance for the continual improvement of an organisation's overall performance, efficiency and effectiveness based on a process-based approach. It focuses on meeting the needs and expectations of customers and other relevant parties, over the long term, and in a balanced way.

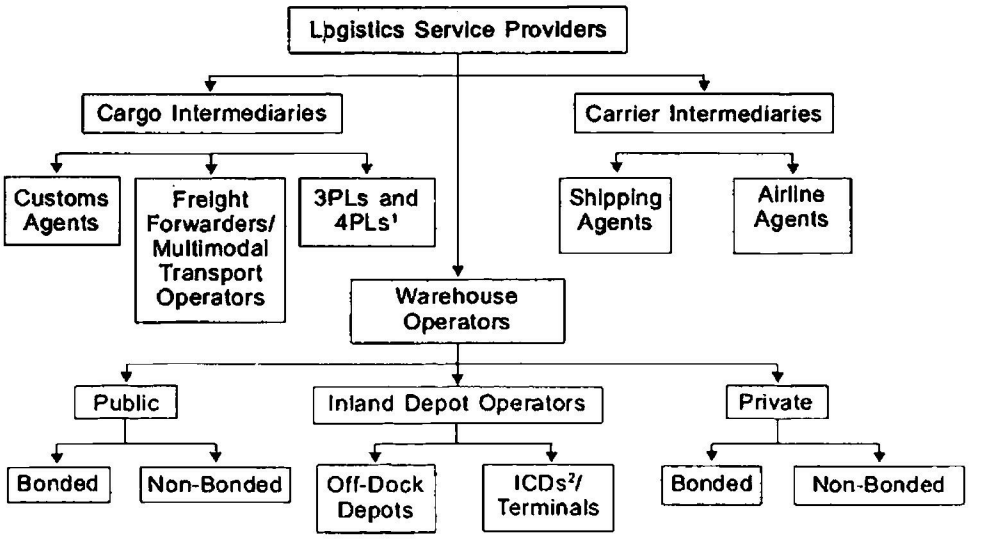
Occupational safety and health management system (OHSMS) is one of the ISO standards that promotes a safe and healthy working environment by providing a framework that allows an organisation to consistently identify and control its health and safety risks, reduce the potential for accidents, aid legislative compliance and improve overall performance (ISO, 2009). The standard has been updated to BS OHSAS 18001:2007 to parallel ISO 14001 and ISO 9000 for more consistency and to enable easier integration of environment, quality and health and safety management systems into one. One of the strengths of the effects of occupational safety and health interventions is its positive influence on workgroup safety

compliance behaviour (Schrandt, 2007). Another direct benefit from occupational safety and health interventions as outlined by Shearn (2003) is improved productivity. Promoting occupational safety and health in effect means adding value to the company's human capital. On the other hand, there is greater impetus to further understand the antecedents and mechanisms underpinning the safety behaviour. Researchers have started to turn to theoretical models developed by social psychologists in their search for ~~of~~ models to understand these influential factors and processes. This development forms the foundation for the present thesis, the broad context and research objectives of which are drawn and developed from the safety issues in the logistics industry are outlined in this chapter. A presentation of the current safety issues faced by the logistics industry serves to underscore their significance while a brief description of the background of the industry setting provides useful insights into the importance of the topic in the context of occupational safety and health. The chapter concludes with an outline of the structure of the remaining chapters.

1.2 Background of the Study

The Third Outline Perspective Plan (OPP3) was an initiative to develop the nation into a regional hub for sea and air transportation with the increase in participation and new strategic alliances with foreign interests in the sea and air transport sectors (EPU, 2001). It was also aimed to enhance logistics systems, a multimodal transportation in the Tenth Malaysia Plan (10MP) (EPU, 2010), specifically to attract investment to build transportation and logistics hubs in the New Economic for Malaysia Part I (PMO, 2010). BERNAMA reported quoting the Economic Planning Unit (EPU) of the Prime Minister's Department, in the Eleventh Malaysia

Plan (11MP) Malaysia aimed to be the preferred logistics gateway to Asia and improve its ranking in the World Bank Logistics Performance Index (LPI) to be among the top 10 by 2020 (BERNAMA, 21st May 2015). For instance, Malaysia will emphasise on the development and up-grading of the logistics industry. As stipulated in the NCER Blueprint, comprehensive connectivity systems, comprisinge of air, sea, rail and road, are part of the key enablers to economic development for NCER (NCIA, 2007). The possible impacts of the regional logistics hub initiative ~~to~~in Penang are the Second Penang Bridge, expansion of the First Penang Bridge, Penang International Airport expansion, Penang Port expansion, the Railway Double Tracking Project, Swettenham Pier redevelopment and Penang-Butterworth fast ferry.



Notes: 1 Refer to third party and fourth party logistics providers

2 Refer to inland container depots

Source: Third Industrial Master Plan (IMP3) (MITI, 2006).

Figure 1.1: **Structure of logistics service providers in Malaysia**

Supply Chain Management (SCM) is a network of raw material extraction companies, raw material suppliers, component manufacturers, final-product manufacturers, wholesalers, distributors, and retailers (Wisner, Tan and Keong Leong, 2008, p.6). Supply chain management is a key strategic factor for increasing organisational effectiveness and better realization of organisational goals. In the era of globalisation, companies select outsourcing of supply chain and logistics to manage their operations. The logistics industry in Malaysia comprises service providers such as freight forwarders, transport companies and warehousing companies as shown in the Figure 1.1 (MITI, 2006).

In addition to the components shown in the segmented view of the structure of the Malaysian logistics industry in Figure 1.1, the logistics operations of physical and information flows also include purchasing, distribution, the managing of inventories, and packaging, manufacturing and even customer services (Bowersox & Closs, 1996). Logistics defined as the technology for controlling physical and information flows (Colin & Fabbe-Costes, 1993) is a major contributor to performance development in large corporations, and in this context it is more commonly known as "logistics efficiency" (Chow, Heaver & Henriksson, 1994). A company becomes efficient with its partners and customers by reducing the cost of logistics activities: supply, warehousing, production, transportation, and delivery. Sink, Langley and Gibson (1996) identify the functions and activities of logistics service providers. The details are presented in Table 1.1.

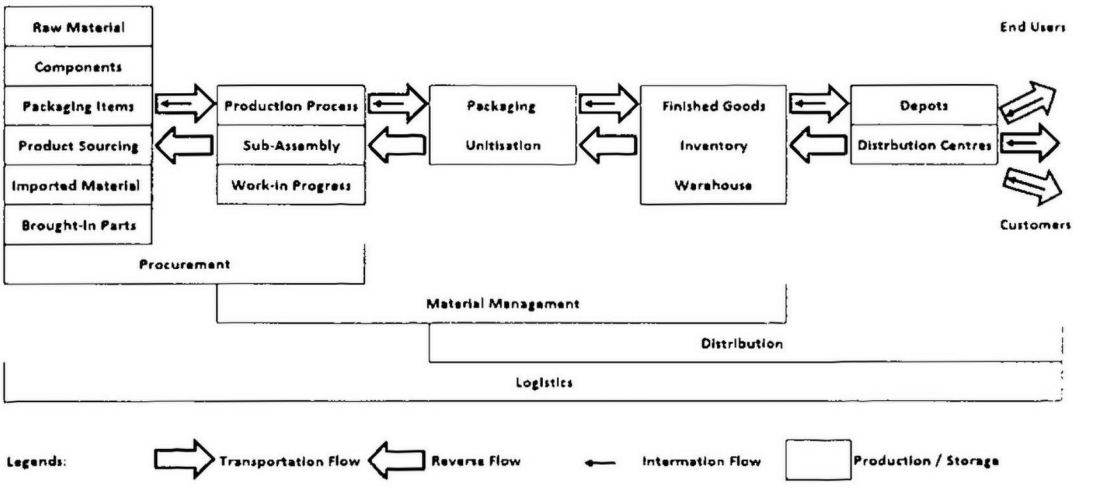
Table 1.1:

Activities of logistics service providers

Function	Activities
Transportation	Shipping, forwarding, (de)consolidation, contract delivery, freight bill payment/audit, household good, relocation, load tendering, brokering
Warehousing	Storing, receiving, assembling, returning goods, marking/labelling, knitting
Inventory management	Forecasting, location analysis, network consulting, slotting/layout design
Order processing	Order entry fulfilment
Information system	Electronic Data Interchange (EDI), e-commerce, Internet, world wide web (WWW), routing/scheduling, artificial intelligence (AI), and expert systems
Packaging	Designing, recycling

Source: Adapted from Sink et al., (1996)

The physical and information flows of logistics service providers from raw material to the final distribution of the finished products defined by Rushton, Oxley and Croucher (2001) is illustrated in the following Figure 1.2.



Source: Rushton, Oxley and Croucher (2001, page 512)

Figure 1.2: **Logistics Framework**

The logistics service providers involve physical and information flows. Logistics services span over sea, air, road and rail transport, and cover various areas of service, including facilitation services (e.g. customs brokers, freight forwarders, non-vessel operating common carriers [NVOCC], ship brokers, shipping agents), distribution (e.g. warehousing, inventory management, courier services), integrated

services (e.g. 3PLs) and business support services (e.g. information and communication technology, banking and insurance, education and training). Langley, Allen and Tyndall (2003) reported that among the logistics services the most commonly outsourced activities are warehousing, outbound transportation, customs brokerage, and inbound transportation.

1.3 Problem Statement

According to International Labour Organisation (ILO, 2003), an estimated 4% of gross domestic product (GDP) is lost with the costs of accidents and diseases through absenteeism, medical treatment, disabilities and survivor benefits. Reported by BERNAMA, Social Security Organisation (SOCSO) paid out RM1.549 billion in compensation for all industrial accidents and occupational diseases in 2010 (BERNAMA, 25th January 2011 . The annual total compensation payout crossed the one billion Ringgit Malaysia mark for the first time in 2007 (Figure 1.3).

The costs related to occupational accidents and diseases, be it on an individual level, organisational or national level, is huge. Preventing the occurrence of occupational accidents and diseases through effective occupational safety and health programme is, therefore, crucially important for employees, industry and society. Improving employee wellbeing will also contribute to sustained long term social relations.

A comprehensive occupational safety and health promotion programme has been identified as one of the most effective initiatives for managing employees' psychological and physiological problems (Ott et al., 2009). Furthermore, where there exist a more positive safety climate, employees are more likely to view safety

behaviours as a part of their formal role responsibilities in work contexts (Hofmann, Morgesin & Geros, 2003).

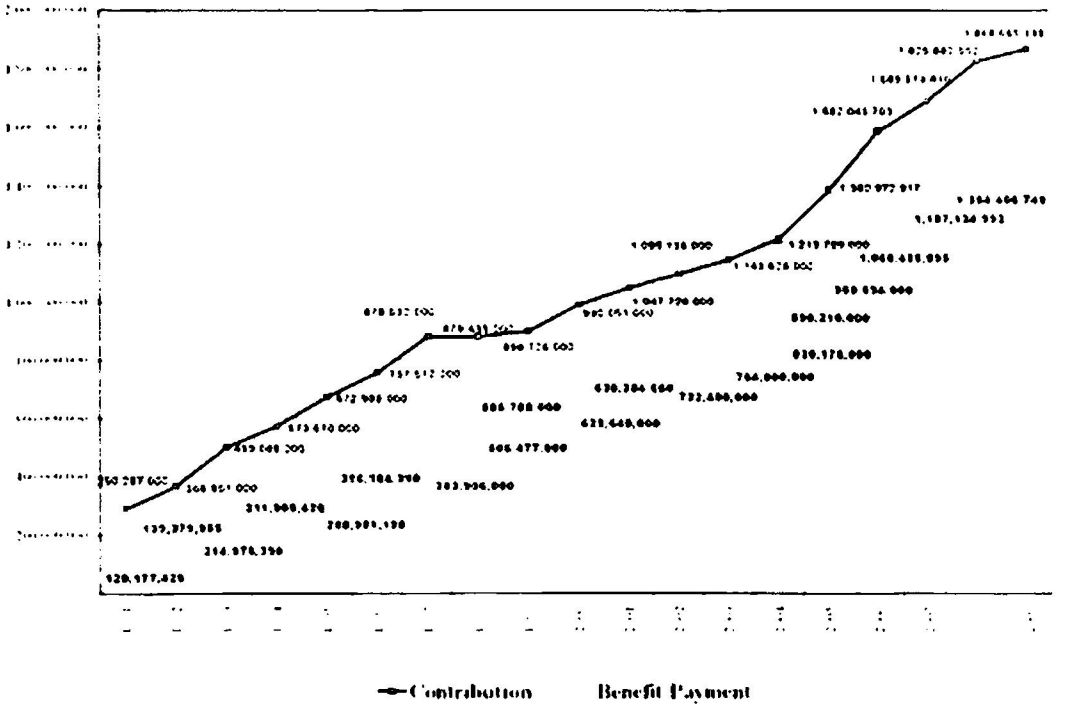


***Figure 1.3*: Total Contribution and Benefit Payment**

Source: SOCSO Annual Reports

According to the Productivity Report 2013/2014 (Malaysia Productivity Corporation, 2014), the transportation and storage services sub-sector recorded an expansion with the number of establishments increased to 42,538 in 2013 from 42,111 in 2012. The land transport industry consisting of two main segments, i.e.: passenger and freight services, represents 88.9% of this sub-sector.

Nevertheless, despite the input of efforts, development of the Malaysian logistics industry has not kept pace due to a number of factors. In addition, despite being listed as a major sea transport hub and placed ~~in~~ number twelve in the world, the logistics sector in Malaysia has not experienced significant success lately. As companies seek to maintain the bottom line, workers' safety behaviour is important.

This is to ensure efficiency and effectiveness of the programme that minimises supply chain disruption that may take a long time to recover and thus critical for the sustainability of the enterprise. The study of Pia (2010) found that while material damages make up 58% of unwanted events in the supply chain, occupational accidents account for as much as 26%.

The study by Wilson (2007) reported that the greatest impact occurs when transportation is disrupted between the tier 1 supplier and warehouse due to the traditional structure in which the retailer, warehouse, and tier 1 supplier experienced the greatest inventory fluctuations and the highest volume of goods in transit to their facilities. Therefore, Cantor (2008) urges that it is important that firms across all echelons of the supply chain improve their safety practices. Sullivan (2013) reporteds that fire risk is a burning supply chain issue. The Portal for Responsible Supply Chain Management (2011) advices that suppliers and buyers alike should provide a safe and healthy working environment. The Global Environmental Management Initiative (2004) reported environment safety and health case studies such as Abbott Laboratories and Dow Chemical.

Metro Vancouver (2009) shared a number of case studies of sustainable supply chain logistics. Consequently, changing the *'mind-sets'* of the suppliers by Corporate Social Responsibility (CSR) managers is important towards establishing long term strategic relation with their stakeholders and suppliers in particular. Ness (2005) states that CSR is the duty implied on a firm to behave responsibly and sustainably, and to be accountable to its stakeholders. Halldorsson et al. (2009) pointed out that the best way to describe a company's social responsibility is people. The findings from Kiathulthorn and Sathapornwanit (2012) demonstrated that CSR

is one of the considerations when selecting Third Party Logistics (TPL) providers as the buyer company applies CSR requirements to the suppliers.

Carter and Jennings (2002) argued that logistics providers should consider the quality of life of their drivers, such as operating schedules that permit drivers having adequate time at home, and paying adequate salaries. Carter and Jennings (2004) studied issues on the environment, safety, and human rights in logistics and supply chain and the interrelationships among these aspects of social responsibility. Hutchins and Sutherland (2008) proposed four social performances that businesses should establish. CSR Asia (2008) states thirteen indicators on workplace and people with the focus on how companies engage and treat their employees. Multinational companies are generally get intense pressure from groups monitoring these companies for their compliance with responsible supply chain management.

Porter (2011) identified opportunities in the inbound logistics, operations and outbound logistics activities included improving worker safety by minimising the use of hazardous materials in creating business value in a sustainable supply chain. As a result, the UN Global Compact Office (2010) developed a set of guidelines offering practical guidance on how to develop a sustainable supply chain programme by featuring numerous examples of good corporate practice, based on the values and principles of the Global Compact. For instance, sSafety issues related to transportation activities involve the requirement on the hours of service, driver qualifications, and maintenance; and those related to warehousing activities include training employees to safely operate forklifts and providing them with safety tools such as hardhats and goggles (Tong & Moussa, 2012).

New limits have been set on equipment operator working hours; meaning that those operating trains, planes and trucks must adhere to safety regulations that

restrict hours of work while at the same time, balance efficient scheduling (Albert Employment and Employment, 2008). Organisations such as Arizona Public Service (APS) adopted many of the sustainability metrics including worker safety statistics (Aerospace Industries Association, 2011). On the other hand, Adams (1995) proposed that individual's behavioural change confounded narrowly conceived policies.

This study aims to contribute additional information to the existing body of knowledge that evaluates the effects of the factors for safety behaviour that contribute to the outcomes of safety behaviour and help to improve the dismal situation of safety in the logistics sector in the country. The research findings will provide new insights into domain-sensitive attitudes, subjective norms and perceived behavioural control dimensions underlying safety behaviour.

This study proposes to explore the association between employee's perceptions of attitudes, subjective norms and perceived behavioural control dimensions towards safety behaviour. It is proposed that a research model developed from the decomposed theory of planned behaviour (DTPB), which is based on the extension of TPB, for combining the antecedents into one theoretical structure. DTPB enables the evaluation of dimensions (i.e. attitude, subjective norm, and perceived behavioural control) ~~to~~for safety behaviour and decomposes its antecedents (i.e. attitudinal beliefs, normative beliefs, and control beliefs). The theoretical aspects of the study offer a detailed understanding of the applicability of DTPB by proposing and testing the influences of the underlying factors on safety behaviour. This research attempts to formulate a research model based on the DTPB to measure the effects of possible factors that may be able to predict the individuals' safety behaviours in the logistics sector. The study also assesses the impacts of

safety behaviour towards safety outcomes at the~~an~~ individual level, as well as to consider any association with safety performance and pscychological outcome.

The safety behavioural beliefs consist of attitudes, subjective norms and perceived behavioural control, whereas the safety outcomes variables comprise of safety performance and psychological outcomes. In this regard, the intention is also to measure the robustness of associations between employees' perceptions of safety behaviour and safety performance and psychological outcome at the individual level.

1.4 Research Objectives

The intention of the study is also to assess measures related to important safety outcomes: safety performance and psychological outcomes free from fatigue and somatic complaints, and job satisfaction. In summary, objectives of the study are:

1. To determine the factors that affect behavioural beliefs towards personal commitment to safety.
2. To determine the factors that affect behavioural beliefs towards safety internalisation.
3. To investigate the effect of safety behaviour on safety performance.
4. To investigate the effect of safety behaviour on the alleviation of fatigue and somatic complaints.
5. To investigate the effect of safety behaviour on job satisfaction.

1.5 Research Questions

The fundamental problem that motivated this study is what factors determine safety behaviour. This aim translates into the following key research question: *"Why do*

people behave safely at workplace?" This study attempts to answer the following major research questions:

1. What are the factors that affect behavioural beliefs towards personal commitment to safety?
2. What are the factors that affect behavioural beliefs towards individual safety internalisation?
3. What are the factors that affect safety behaviour towards safety performance?
4. How does safety behaviour impact freedom from fatigue and somatic compliants?
5. How does safety behaviour impact job satisfaction?

1.6 Significance of the Study

The occurrence of occupational accidents or diseases will affect an employee's physiological and mental health as well as social well-being. Employees will also lose time (which eventually will affect wages) from work due to job-related injury or illness. Though affected employees are entitled to claim compensation benefits, they will have to adjust with their family on reduced income amidst mental frustrations during the injury or disease recovery period. The findings of this study have implications for theory construction and practical implementations of employees' safety behaviour.

First, this study will analyse the impacts of safety behaviour on the safety outcomes of sustainable logistics based on social psychology, an topic that has been widely examined in the scope of information technology. Safety culture describes shared attitudes, values and beliefs in relation to safety in an organisation. It

therefore stems from, and is operational at, an individual level. Studying the antecedents of safety behaviour among employees will be imperative. Therefore, this research is important as it contributes to the efforts of the country in improving the safety behaviour of employees. Employing logistics as the statisticalemployees as the statistical population, this study prospectively investigates the extent to which safety behaviour is associated with its antecedents and safety outcomes based on DTPB. With inclusion of specific constructs in DTPB, this study provides an empirical understanding between individual and social that affects employees' safety behaviour.

Second, this study on logistics employees prospectively examine the extent to which safety outcome is associated with safety performance, freedom from fatigue and somatic complaints as well as job satisfaction. Assessing safety outcomes is very important since gauging the achievement gained in the implementation of safety programmers provides as a source of information for the employees about the benefit in improving personal safety.

Third, the theoretical framework has added antecedents to on attitudes, subjective norms and perceived behavioural controls which are the factors influencing safety behaviour. Thus this study will help the industry in formulating effective occupational safety and health programmes for a sustainable logistics sector that will eventually stimulate the growth of the economy.

Fourth, this study explores the direct effect of behavioural beliefs on behaviour. Ajzen (1991) proposed that the perceived behavioural control under different situations when the behaviour might go beyond one's controllable aspects of predicting behaviour directly, and Bentler and Speckart's (1979) also proposed that attitude has a direct link to behaviour. The effect of behavioural beliefs on

behaviour can occur directly without the mediating effect of behavioural intention. Therefore, direct paths from antecedents of behavioural beliefs to behaviours will be tested.

The result of this study is expected to contribute to the understanding of the government, industry managers and academics on the determinants of safety behaviour of employees in the study area and may serve as an essential source of information towards improving safety level.

1.7 Contribution

This study attempts to contribute to the existing literature by identifying the antecedents of safety behaviour of logistics personnel from the perspective of social psychology and their significant effects on the safety outcomes. Specifically, this research contributes in both the theoretical and practical aspects.

1.7.1 Theoretical Contribution

The results from this study will make a positive contribution to the safety behaviour literature, providing an insight into employee's beliefs and how these beliefs affect and influence safety behaviour. The findings from this study will further enhance the knowledge of employers on the relevant factors that drive their employees ~~to~~ safety behaviour. Ceontributions to the understanding this basic supposition are attempted by empirically addressing measurement of the safety outcomes, the specific role that each constructs plays in safety behaviour, and the contribution of safety behaviour in terms of personal commitment to safety and safety internalisation, to safety outcomes, in terms of safety performance, psychology outcomes i.e. free from fatigue and somatic complaints, and job satisfaction. To-date research on

occupational safety and health programmes that attempts to study management of safety risk to create a sustainable logistics industry is still scarce.

The three dimensions that affect attitudinal beliefs are relative advantage, complexity, and compatibility (Taylor & Todd, 1995). Subjective norms comprise of normative beliefs which include significant referents like family and friends while factors such as facilitating conditions and self-efficacy are expected to have an effect on perceived behavioural control (Ajzen & Madden, 1986). Examples of key facilitating conditions are budget allocation, time and ~~or~~ other facilities that are required for the employment of a system. DTPB provides a comprehensive approach to understand how an individual's attitude, subjective norms and perceived behavioural control can influence the safety behaviour.

In this study, the theoretical framework is modified from the model of Taylor and Todd (1995), with the variable of perceived benefits included in the attitude dimension based on the recommendation that has been proposed by Tornatzky and Klein (1982), Becker (1988), Lunt and White (2005), Dauda et al. (2007), Vassallo et al. (2009), Lee (2009b), Al-Majali and Mat (2010) and Mussa (2011). The subjective norm dimension has added the variable of family culture based on Thomas, Anderson, Kool and James (2003), Linnan, LaMontagne, Stoddard, Emmons and Sorensen (2005), Clinton, Walton, Cairns, Reeve and Mahony (2008) and Al-Majali and Mat (2010). Following the suggestion proposed by Bhattacherjee (2000), Chan and Lu (2004), Ng and Rahim (2005) and Al-Majali and Mat (2010), the variable of mass media is also added to the subjective norm dimension. The perceived behavioural control dimension has added the variable of government support in line with the approach employed by Tan and Teo (2000), Al-Majali and Mat (2010) and Eagle et al. (2011), and also added the variable of moral obligation

based on the recommendation from Parker, Stradling and Manstead (1996) and Downey and Sharp (2007). This study is an attempt to address the problem caused by the absence of a comprehensive treatment of variables suggested by earlier studies. If these variables are simultaneously included within a single study, a more accurate assessment can be made of the relative impact of each of these variables on attitude, subjective norm and perceived behavioural control dimensions. The results will ultimately lead to a more informed understanding of the safety behaviour of logistics personnel.

Furthermore, Ajzen and Driver (1992) suggested that perceived behavioural control not only influences intention but also directly influences behaviour. Perceived behavioural control is also considered by Armitage and Conner (2001a) to have a direct impact on behaviour, especially when an individual's volitional control is low. Bagozzi, Baumgartner and Yi (1989) have reported that attitude directly influenced behaviour when little or no thought is employed in consideration of the behaviour. In addition, some studies e.g. Lawton et al. (2009), also indicate affective attitudes to directly predict behaviour independent of intentions. Hence, the study on the antecedents of behavioural beliefs on behaviour directly will enhance the application of DTPB.

Given the limited focus by previous studies on injuries and fatalities in the logistics sector, the current study attempts the challenge to extend the application of DTPB to bridge the resulting knowledge gap in this aspect. This study therefore conceptualised logistics safety behaviour within DTPB.

1.7.2 Practical Contribution

This study offers useful implications for the logistics industry. Safety is of utmost importance so as to protect people at work fromwork related accidents and mitigate disruptions, two critical elements for sustainability and growth of the industry. The issue of maintaining OSH legislation is to strike a balance between business development and safety outcomes. This study will identify the antecedents of safety behaviour, i.e. attitude, subjective norms and perceived behavioural control constructs, to understand the behaviour of logistics personel and describe how this safety behaviour is developed. The comparative impact of each of attitude contructs of perceived benefit, compatibility, perceived usefulness and complexity on safety behaviour will be explored. Additionally, this research will also investigate which construct/s among the subjective norm contructs of family norms, supervisor culture, peer culture, mass media and client partnership gives positive impact on safety behaviour and which are the significant perceived behavioural control contructs of self efficacy, technology support, government support and moral obligation that gives positive impact on safety behaviour.

The results from this study will provide valuable information for firms about the relevant factors that drive employees ~~to~~ safety behaviour. The information could help firms adapt their strategies to accommodate employees' needs and improve their morale which will attract and retain employees, and thus reducing turnover rate of the workforce. Therefore, understanding safety behaviour and what drives the employee are~~is~~ essential for companies to stay competitive.

The study also analyses how safety behavioural patterns predicts safety outcomes. The OSH programme not only improves safety but also enhances overall organisational performance for psychological strength with minimum fatigue and

somatic complaints, and job satisfaction. An overview of the OSH programmes and the significance of factors on desirable safety outcomes will be presented in the consclusion of this research. Recommendations focusing on the gap to improve OSH programme implementation and upgrade of knowledge and techniques of training participants concerning OSH in sustainable logistics will also be included.

To formulate successful occupational safety and health programmes, authorities and employers must focus on the elements of safety behaviour of workers. Favourable occupational safety and health programme with active involvement of employees will develop intrinsic motivation. Occupational Safety and health management system (OSHMS) is increasingly important to companies as they seek to improve their profits through minimisation of lost-time, medical and other costs attributed to occupational accidents and illnesses.

Pawłowska and Rzepecki (2000) suggested that the most common type of economic incentive used in the field of health and safety is experienced rating of insurance premiums. The impact of this incentive in terms of costs to the company can be analysed by comparing insurance costs with other occupational safety and health costs associated with inadequate working conditions, such as accident costs borne by ~~a~~ the company. For instance, accidents on the loading dock can be very expensive with direct costs due to ~~of~~ medical expenses, workers compensation costs, and fines imposed by the authority, while indirect costs include expenses due to equipment damage, cargo loss, loss in productivity, litigation and damaged customer relations (Trebilcock, 2010). On the hand the direct cost benefits resulting from the use of the safety manual in Transportes Luis Simoes will be reflected in the reduction in injuries and incapacities, cost savings because of fewer operational failures and lower training costs for new employees (IRU, 2002).

Kamardeen (2009) further explains that accidents inflict both direct and indirect costs on a business. The direct costs include: increased in workers' compensations insurance premiums, equipment repair and replacement costs, fines, fees and legal settlements, and damages to works and temporary structures. The indirect costs refer to the cost of production downtime and tarnished company image. Meanwhile, affected employees will suffer from the associated physical and mental pain while society as a whole will incur high costs. As a result, besides improving the bottomline of firms, proper attention to safety behaviour will also bring ~~has~~ extensive benefits to the employees.

Therefore, adoption of occupational safety and health management system can bring incentives to the business. The high reputation associated with a recognition scheme will motivate and encourage organisations to achieve the standards set out by the scheme which entails driving for improvements in OSH through business contracts and mentorship. These efforts will bring improved safety and health performance in the organisation. As a result, the health and well being of employees are assured which will reduce sickness absenteeism and other related expenses. This will ultimately translate into economic benefits for the organisation. Therefore, the findings and facts of this study are useful information to both industry players and policymakers and thus contribute to the sustainability and growth of logistics industry.

1.8 Scope of Study

This study will focus on personnel of the transportation and warehousing services of logistics supply chain management. Conventionally, the performance of logistics service providers focuses on service quality and cost effectiveness. From the

perspective of the third party logistics providers, these providers must seek to manage themselves strategically in order to maintain and earn an increasing share of the market of outsourcing. It will be of concern if safety standard is sacrificed with recruitment of local or foreign workers with low or limited safety awareness due to cultural or education background. The focus of this study is the logistics functions involved such as transportation and warehousing in Malaysia in relation with the occupational safety – industry sustainability nexus.

1.9 Definition of Terms

To clarify the language of this study, the following definitions of terminologies have been used:

Attitude: An individual's positive or negative feeling about performing the target behaviour (Fishbein & Ajzen, 1975).

Cliet or buyer - supplier relationship or partnership: A set of practices and routines that support economic exchanges between the two firms (Rashed, Azeem and Halim, 2010).

Compatibility: The degree to which an innovation is perceived to be consistent with existing norms and values, past experiences and needs of potential adopters (Moore & Benbasat, 1991).

Complexity: The degree to which an innovation is perceived as relatively difficult to understand and use (Thompson et al., 1991). Perceived complexity is the opposite of perceived ease-of-use) (van der Heijden, 2001).

Consultation: Management or the owners of a business/organisation must consult with employees about OHS matters that can directly affect them in the carrying out of their duties (Charles Sturt University, 2015).

Corrective action: Action to eliminate the cause of a detected nonconformity or other undesirable situation (BSI, 2007).

Engineering controls: Use of technical measures such as enclosure, ventilation and workplace design to minimise exposure (ILO, 2005).

Family: A group of people related by blood or marriage (Oxford University Press, 2015).

Fatigue: A lack of energy resources needed for daily functioning (Jason et al., 2011).

Facilitating conditions: The beliefs about availability of resources to facilitate that behaviour (Bhattacherjee, 2000).

Government: The federal government, the government of a state or a local government (Percetakan Nasional Malaysia Berhad, 2006).

Hazard: Source or situation with a potential for harm in terms of human injury or ill health, damage in property, damage to the workplace environment, or a combination of these (ILO, 2005).

Hazard identification: The systematic process of identifying hazards in the workplace (ILO, 2005).

Ill health: Identifiable, adverse physical or mental condition arising from and/or made worse by a work activity and/or work-related situation (BSI, 2007).

Incident: An unsafe occurrence arising out of or in the course of work where either injury or no personal injury is caused (ILO, 2005).

Job satisfaction: The pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values (Locke, 1976).

Logistics: The process of anticipating customer needs and wants; acquiring the capital, materials, people, technologies, and information necessary to meet those needs and wants; optimizing the goods- or service-producing network to fulfill customer requests; and utilising the network to fulfill customer requests in a timely way (CLM, 1991).

Mass media: The mediums of communication that form mass media include newspapers, radio, television, Internet, broadcast e-mails, official announcements made by authorities, etc. which are designed to reach the mass public (Édes, 2000).

Moral obligation: A motivating force to engage in moral judgment and to implement decisions (Johnson, 2014, p.236).

Near misses: Incidents at work that involves safety infractions but do not result in injury (ILO, 2005).

Nonconformity: Non-fulfilment of a requirement (BSI, 2007).

Occupational accident: An unexpected occurrence, including acts of violence, arising out of or in the course of work which results in a fatal or non-fatal occupational injury (ILO, 2005).

Occupational safety and health management system: A set of interrelated or interacting elements to establish occupational safety and health (OSH) policy and objectives, and to achieve those objectives (ILO, 2005).

Participation: All employees must have the opportunity to participate in or have access to an OHS committee so any concerns they have regarding their safety or the safety of others may be communicated upwards to management/owners (Charles Sturt University, 2015).

Peer: A person who is the same age or who has the same social status (Oxford University Press, 2015).

Perceived behavioural control: An individual's ability, the perceived ease or difficulty, of performing the particular behaviour (Ajzen, 1988).

Perceived benefits: The extent to which the individual believes that the various available actions are effective in reducing the threat (Klepp, Flisher and Kaaya, 2008).

Perceived ease of use: The degree to which using the technology is free of effort for the user (Davis, Bagozzi & Warshaw, 1989).

Perceived usefulness: The extent to which a person believes that using a particular technology will enhance his job performance (Davis, Bagozzi & Warshaw, 1989).

Personal commitment to safety: The extent of effort a person willing to make in order to achieve safety (Li, Song & Li, 2013).

Preventive action: Action to eliminate the cause of a potential nonconformity or other undesirable potential situation (BSI, 2007).

Risk: A combination of the likelihood of an occurrence of a hazardous event and the severity of injury or damage to the health of people caused by this event (ILO, 2005).

Risk assessment: The process of evaluating the risks to safety and health arising from hazards at work (ILO, 2005).

Safety and health committee: A committee with representation of workers' safety and health representatives and employers' representatives established and functioning at organisation level according to national laws, regulations and practice (ILO, 2005).

Safety behaviour: Behaviour that contributes to workplace safety and reduces the likelihood of incidents (Jebb, 2015). For this research, safety behaviour is considered to be comprised of personal commitment to safety and safety internalisation.

Safety internalisation: A (safety) learning process (Deci & Ryan, 1985) of values and beliefs (Patrick, H., 1999).

Safety performance: An individual metric related to safety behaviours of employees (Christian et al., 2009).

Self-efficacy: The belief in one's ability to perform a specific task through successfully executing the behaviour to produce the desired outcome (Bandura, 1977).

Somatic complaint: A psychiatric symptom (American Psychiatric Association, 1994) as a vehicle for emotional communication and social control (Kihlstrom & Kihlstrom, 1999).

Subjective norm: A person's perception that most people who are important to her or him should or should not perform the behaviour in question (Fishbein and Ajzen, 1975).

Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs, or environmental, economic, and social sustainability (United Nations, 1987).

Supervisor: A person who supervises a person or an activity (Oxford University Press, 2015).

Technology support: The effort of providing the suitable infrastructure, the needed appliances and software for using the technology (Goh, 1995).

Work-related injuries, ill health and diseases: Negative impacts on health arising from exposure to chemical, biological, physical, work-organisational and psychosocial factors at work. (ILO, 2005)