Understanding Safety Dimensions among Logistics Personnel in Malaysia: Approaches from Social Psychology

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Abstract

The Malaysian government has made efforts on executing safety and health policies. However, past record indicated that the present Occupational Safety and Health (OSH) situation in the workplace is still very much adverse and below expectation. Research into safety in logistics has provided information about approaches to logistics safety. This paper further examined the relationship between individual factors and workplace factors that contribute to the safety. This paper outlines conceptual approaches from social psychology which are applicable for studying logistics safety measures. Approaches described relate to self-efficacy, technology support, government support and moral obligation**.** This study was conducted in Malaysia involving the logistics personnel. Based on one hundred and three respondents, analysis was conducted at the survey. We concluded that technology support, government support and moral obligation dimensions. The result of the study expected to improve the level of awareness towards safety and health needs at workplace. In addition, the firms shall identify what are the common elements that contribute to the safety among their employees. The firm may also review the psychic, sociological and economic cost incurred. The firm shall further evaluate the occupational safety and health programs conducted to prevent accident at the workplace.

Keywords
Logistics, occupational safety and health programs, safety, safety internalization, social psychology

1. Introduction
According to the Minister of Human Recourses that there were 57,639 workplace accidents reported in 2010 with a 4% increase from 2009. Among these accidents, 22,036 cases happened during commuting to or from workplace, and 35,603 cases happened at the workplace. By industrial sectors, manufacturing recorded the (31%) highest number of accident, followed by public services and social security (18%), commercial (17%), real-estate, rental and business (8%), construction (7%), transportation (7%) and other sectors (12%) (SOCSO, 2010). The Number of occupational accidents is getting worse particularly since 2009 and known to be a major concerned to the firms involved. In order to survive the global economy downturn, the Lehman Shock related to sub-prime loan, some firms may have comprised safety measures to their workers. There have been great concerns on workplace accident among managers in manufacturing as well as at logistics. In daily operation especially within logistics industry that involved machinery handling including of forklifts and cranes, it is very much related with the issue of safety and health. Workers that have high level of safety and health awareness are able to conduct their work effectively. With adoption of occupational safety and health programs, ultimately accidents at the workplace should be prevented.

The OSHA (2004) Pocket Guide, the Worker Safety Series on Warehousing provides that the potential hazards related to the warehousing are unsafe use of forklifts, improper stacking of products, failure to use proper personal protective equipment, failure to follow proper lockout / tag out procedures, inadequate fire safety provisions, or repetitive motion injuries. The guide further provides that the main warehouse operations with hazards consideration are docks, forklifts, conveyors, materials storage, manual lifting / handling, hazard communication, charging stations and poor ergonomics.

Work-related driver safety has become the subject of increasing attention for road safety research in recent years (e.g. Downs, Keigan, Maycock, & Grayson, 1999; Haworth, Tingvall, & Kowadlo, 2000; Murray, Newnam, Watson, Davey, & Schonfeld, 2003; Wills, Watson, & Biggs, 2006; Banks, 2008; Rowland et al., 2008).

2. Problem Statement & Objective of Study

Workplace accident is a major issue affecting a firm, especially those firms using heavy machineries at the workplace. It has been recorded that the trend of accident numbers has been increasing from year to year thus resulted in huge cost to the society. For instance, Social Security Organization (SOCSO) paid out RM1.549 billion in compensation for all industrial accidents and occupational diseases in 2010 (BERNAMA, 25th January 2011). Therefore, it is important to identify the contributor to safety so that occupational accidents can be prevented in future and to reduce injury, ill health and also cost to the business. If there are no steps taken for prevention, accidents could be more severe and might badly affect the reputation of the firm and the industry. By identifying the elements of antecedent to safety at the workplace, it is essential to consider the occupational safety and health programs in reducing the risk of recurrence of occupational again. The main aim of this study is to identify factors that contribute to the dimension of safety to prevent workplace accident among workers.

3. Literature Review

Past studies elaborated on the roles of individual characteristics. Venkatesh, Morris, Davis and Davis (2003) posits moderators gender, age and experience of the key relationships of behaviour; Sulaiman, Lim and Wee (2005) found significant relationship of age and salary income with adoption of the behaviour, while Tolma, Reininger, Evans and Ureda (2006) found among predictors of intention were age and educational level. Mahmood, Isa, Mustafa, Aziz and Salleh (2010) found that employee education was significant related to commitment to safety behaviour. Bagozzi (1981) and Tonglet, Phillips and Read (2004) suggest that prior experience could influence of attitude to behaviour.

3.1 Perspectives from Social Psychology

Past studies tried to find solution using management approach by looking into occupational safety and health program, however there has not been adequate attention paid to behave in a safe manner or the intrinsic side of safe behaviour (Jeffries, 2011) using social psychology approach. Models of social psychology have the potential to predict and change safety behavior. Few studies have examined the impact of occupational safety behavior, while testing using social psychology has been limited. Given that work-related driving, this study discusses useful perspectives drawn from research in social psychology. This study attempts to identify the antecedents of safety behavior of logistics personnel from the insights of social psychology and their significant effects on the safety performance e.g. safety internalisation.

Theory of planned behavior (TPB) is an extension of the Theory of Reasoned Action (TRA). The TPB expands on the TRA in that it offers room to address those behaviors considered somewhat questionable with regard to being under volitional control of the individual (Ajzen, 1985, 1991). Attitude**,** subjective norm and perceived behavioral control **(**PBC) are related to the concept of theory of planned behavior (TPB). Decomposed Theory of Planned Behavior (DTPB) is an extended model of the TPB. Decomposition approach in the DTPB model provides several advantages to dimensional beliefs. It contributes to the theoretical body of knowledge on safety by providing a new dimension for solving the issues and looking at the safety issue from a managerial and psychological perspective (Taylor and Todd, 1995).

3.2 **Perceived Behavioral Control**

Perceived Behavioral Control (PBC) refers to control belief, a person's perceived presence or absence of resources and impediments and perceived impact of each resource (Pawlak et al., 2005). Perceived behavioral control was found the largest effect for compliance with road regulations by Evans and Norman (1998), Evans and Norman (2003) and Poulter et al. (2008).

3.2.1 **Self-Efficacy**

Self-efficacy is defined as the belief in one's ability to perform a specific task through successfully executing the behavior to produce the desired outcome (Bandura, 1977). Self-efficacy is an individual's self confidence in his or her ability to perform behavior (Hill, Smith & Mann, 1986). One of the basic tenets of the efficacy performance relationship is that positive efficacy views induce strong motivational tendencies toward the target performance (Bandura, 1977, 1986).

3.2.2 **Technology Support**
Facilitating conditions referred to the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system (Venkatesh et al., 2003). Previous research by, among others, Rodgers, Hunter and Rogers (1993), and Marsh, Davies, Phillips, Duff, Robertson, Weyman and Cooper (1998) have indicated management commitment correlation with safety internalisation.

3.2.3 **Government Support**
Behavior change interventions take place within a network of interrelated stakeholder interests e.g. the public / local communities, national government policy, general practitioner (GP) consortia / health professionals, local government health providers, social enterprises, etc., and the implication of this strategy is that provisions need to be put in place to ensure that agents of local government have adequate training and support to effect distributed leadership of the form desired (Eagle et al., 2011).

3.2.4 **Moral obligation**
Moral obligation (MO) is the personal moral norms or the sense of duty. Individuals seek to act in accordance with their self-identity to validate their status as a role member (Callero, 1985). Moral obligation was found to be associated significantly with safety or healthy behavior e.g. Downey and Sharp (2007).

3.3 **Safety Internalization**
According to TPB, if an employee has an intention to adopt safety behavior in the workplace, then he or she is likely to perform this behavior. The TPB hypothesizes that behavioral intentions to perform a specific behavior will be positively associated with performing the behavior. Culture governs expected behavior and it provides rules for how to behave. In internalized views of culture, culture is interlaced with every thoughts of the individual, and these thoughts in turn influence behavior, and the behavior then leads to culture-relevant customs and traditions. Crucial elements of the definition of culture are that it is a shared phenomenon, it is internalized, and that it shapes beliefs and behaviors (Khaled, 2008).

4. Research Methodology

The operationalization of the research construct considers four (4) major elements of perceived behavioral control that contributed to safety among workers; and variables of gender, age, ethnic, marital, education, years of work experience, income and safety internalization were investigated. The respondents were invited among the workers at logistics industry in Malaysia. Data were obtained by using personally administered questionnaire. In measuring the response, they are nominal scale, meanwhile for other sections had been measured by the likert scale.

5. Findings and Discussion

5.1 **Reliability of measure**
Following the rule of thumb as suggested by Hair et al., (1998) where the value is more then 0.6. Measures of safety internalization (Cronbach's alpha 0.638) have corrected-item total correlation value of over minimum recommended level 0.30 found to be good and reliable.

5.2 **Analysis of respondent's profile**

Findings on the profile of the sample is explained in **Table 1.**

Table 1: Frequency Table

Attributes	Description	Frequency	%
Gender	Female	52	50.5
	Male	51	49.5
Age	18-30 years	30	29.1
	31-40 years	29	28.1
	41 and above	44	42.7
Years of work in the enterprise	5 years and below	51	49.5
	6-10 years	19	18.4
	11-15 years	14	13.6
	16 years and above	19	18.4
Education	MCE/SPM/Cert. and below	26	25.3
	HSC/STPM/ Pre U./Diploma	31	30.1
	Bachelor degree and above	46	44.7
Income	RM3,000 and below	42	42.9
	RM3,001 and above	59	57.1

The sample was comprised of 50.5% female and 49.5% male and old employees aged 41 years and above (42.7%). Based on the years of working experience, majority of respondents comprised of the workers with below 5 years working experience that indicates 51 respondents or 49.5%. While 19 of respondents or 18.4% were having 6-10 years working experience. There were 14 respondents (13.6%) were those with 11-15 years working experience and 19 respondents (18.4%) were with more than 15 years working experience. Referring to education background, 25.3% were having secondary school (SPM) level, 30.1% were with diploma, while 44.7% were have attended degree or higher education. Based on respondents' monthly income, 43% earned less than RM3,000 while 57% earned over RM3,001 per month.

5.3 **Tests**

Table 2: Results of independent sample t-test

Variables	**n**	**Mean**	**SD**	**T**	**Sig-t**
Gender					
Female	52	3.88	0.855	-1.042	.186
Male	51	4.04	0.631	-1.045	

Table 2 shows the gender was **not associated** with safety internalisation. (Table 2)

Table 3: ANOVA Analysis of Age

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	1.045	2	.522	.920	.402
	Within Groups	56.800	100	.568		
	Total	57.845	102			

ANOVA test is employed as test of mean for more than three categories. Table 3 illustrates the proposed model is inadequate as the F-statistic is 0.920 with p-value 0.402. It indicated the overall model has statistically insignificant relationship between independent variable age group and dependent variables safety internalisation.

Table 4: ANOVA Analysis of Ethnic

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	.260	2	.130	.228	.797
	Within Groups	56.495	99	.571		
	Total	56.755	101			

ANOVA test is employed as test of mean for more than three categories. Table 4 illustrates the proposed model is inadequate as the F-statistic is 0.228 with p-value 0.797. It indicated the overall model has statistically insignificant relationship between independent variable ethnic and dependent variables safety internalisation.

Table 5: ANOVA Analysis of Education

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	1.345	2	.673	1.190	.308
	Within Groups	56.500	100	.565		
	Total	57.845	102			

ANOVA test is employed as test of mean for more than three categories. Table 5 illustrates the proposed model is inadequate as the F-statistic is 1.190 with p-value 0.308. It indicated the overall model has statistically insignificant relationship between independent variable education level and dependent variables safety internalisation.

Table 6: ANOVA Analysis of Working Experience

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	1.250	3	.417	.729	.537
	Within Groups	56.595	99	.572		
	Total	57.845	102			

ANOVA test is employed as test of mean for more than three categories. Table 6 illustrates the proposed model is inadequate as the F-statistic is 0.729 with p-value 0.537. It indicated the overall model has statistically insignificant relationship between independent variable work experience and dependent variables safety internalisation.

Table 7: ANOVA Analysis of Income

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	.921	1	.921	1.628	.205
	Within Groups	55.990	99	.566		
	Total	56.911	100			

ANOVA test is employed as test of mean for more than three categories. Table 7 illustrates the proposed model is inadequate as the F-statistic is 1.628 with p-value 0.205. It indicated the overall model has statistically insignificant relationship between independent variable income and dependent variables safety internalisation.

Results demonstrated the result of ANOVA between selected profiles to the safety internalisation. The result shows that there were no significant association between age, ethnic, education, working experience and income with safety internalisation among workers as depicted by the p-value of 0.402, 0.797, 0.308, 0.537 and 0.205 respectively. Thus, we can conclude that selected profiles did not demonstrate important impacts to the safety internalisation.

Table 8: Results of Multiple Regression (Enter Method) of Profiles

Variables	***b***	**Beta**	***t***	***p***
Constant	3.430		7.685	.000
Gender	.232	.155	1.451	.150
Marital	.178	.122	1.138	.258
Ethnic	-.074	-.070	-.692	.491
F = 1.017		*R = 0.175*		
Sig-F = 0.389		*R Square = 0.030*		

Enter multiple regression using selected profiles explains a statistically insignificant portion of variance (R Square = 0.030) for safety iternalisation. Table 9 shows the results of multiple regression.

Table 9: Results of Multiple Regression (Enter Method) of Safety Internalization

Variables	***b***	**Beta**	***t***	***p***
(Constant)	.537		1.031	.305
SE1: I am able to adopt safety programmes on my own.	.015	.015	.144	.886
SE2: I would feel comfortable adopting safety programs on my own.	-.062	-.069	-.717	.475
TS3: Safety is given high priority.	-.154	-.150	-1.163	.248
TS4: I am kept informed of hazards.	-.123	-.125	-1.043	.300
TS5: I have received adequate safety equipment.	-.014	-.016	-.135	.893
TS6: My company conducts safety inspections.	-.291	-.303	-2.050	.043
TS7: I am kept informed of the safety rules.	.135	.132	.816	.417
TS8: My company provides enough safety training programmes.	.037	.039	.322	.748
TS10: I have the adequate time allocated to adopt safety measures to complete assigned tasks.	.313	.278	2.611	.011
TS11: My company has emergency drills at least once a year.	.125	.149	1.308	.194
GS1: Government policy to promote safety programme affects my adoption of safety measures.	.094	.111	1.004	.318
GS3: I think companies inspected regularly by the authority are more likely to undertake safety improvements.	.281	.247	2.492	.015
MO1: I feel that adopting safety measures is an important part of who I am.	-.123	-.131	-.884	.379
MO2: I feel that it is important to maintain safety at all times.	.312	.291	2.260	.026
MO3: I feel guilty if I did not adopt safety measures.	-.102	-.109	-.860	.392
MO4: Even though short-cut may help to get a job done, I feel it is still a violation of safety procedures.	.285	.297	2.717	.008
MO5: I try to convince my family and friends to give up dangerous behaviours.	.177	.183	1.325	.189
F = 4.897		*R = 0.703*		
Sig-F =0 .000		*R Square = 0.495*		

Referring to Table 9, that attempted to compare the strength of each factor and in explaining their relationship, independent variables which are technology support: TS6 and TS10, government support: GS3 and moral obligation: MO2 and MO4, which were significant with the value of 0.043, 0.011; 0.015; 0.026 & 0.008 respectively. Further output through beta value of 0.297 and 0.291 suggested that moral obligation was the most contributing variables. While others like self-efficacy, government support and technology support even though indicated less impact but still needed to be addressed.

As a whole, the four variables (self-efficacy, technology support, government support and moral obligation) were able to explained 49.5% of the relationship with safety internalization. Even though 50.5% could not be explained but still the investigation demonstrated all the four factors as a whole were statistically significant at .000.
The purpose of this study was to investigate how PBC variables can impact safety internalization. The results of this study suggest that technology support, government support and moral obligation were related positively to safety internalization reported by the respondent.

6. Discussion

The aim of the study focused on the workplace safety among logistics workers resulted in some conclusions that were acceptable to the underlying theory. The authors further concluded that these three elements; technology support, government support and moral obligation contribute to the worker's workplace safety. The respondents' variables were found insignificant in relation to safety internalization. While there is relationship between technological support and safety internalization, workers are unable to handle the equipment safely if they are lack of training. Companies are obliged to establish safety rules and provide sufficient safety training for all their workers. It is important for workers to make inspection prior to their work. The company has to transfer the knowledge to the worker on how to use the equipment safely. Companies should provide training as it is important for the workers in establishing their safe working skills and also to produce safely without causing workplace accident or down time that will give greater return in profit. Therefore, addressing the issues on technological support is essential in avoiding workplace accident. Furthermore, the company should also give refresher training and safety drills regularly. Companies may not aware of their obligation to conduct safety inspections in all their premises. Government support seems to be part of a much larger picture, including items such as safety promotion program and safety inspection to affect safety internalization. Moral obligation (MO) is the sense of duty for which individuals seek to act in accordance with their self-identity to validate their status as a role member, causing them maintain safety at all times without considering getting a job via safety short-cut. Furthermore, these individuals will also convince their family and friends to work safely as well.

The effect of perceived behavioral control dimensions on safety internalization suggests that a stronger perception that workers' moral obligation would expect them to obey occupational safety and health programs leads to better safety internalization. Technical support and government support also increased the likelihood of higher safety internalization. These results are consistent with researchers Downey and Sharp (2007), Marsh et al. (1998) and Eagle et al. (2011) who found moral obligation, technology support and government support were significant. A possible explanation, respondents may feel that their moral norm predicts intentions to perform safety behaviors, and technology support enable seamless safety internalisation while government support is likely to have more influence on the employer's implementation of occupational safety and health programs.

7. Conclusion

These factors identified in the study can be applied through a systematic approach, of which when applied to the logistics suggests that safe behavior at workplace. This suggests that to develop strategies for managing safety, it is important to understand the roles of the workers' safety behavior towards safety performance. The occupational safety and health program must be effective to minimize supply chain disruption that may take a long time to recover. Lessons learnt from the logistics personnel will assist the understanding of behavior at workplace of employees in general. Improvement in occupational safety and health program eventually will contribute to sustainability of an enterprise. Future research may examine the extent of implementation of occupational safety and health management system that brings results of increased safety performance.

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Biography

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