

The Influence Factors Effect on the Insurance Behavior in the Container Terminal Operation Context

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Abstract: This study aimed to develop an insurance behavior model based on the theory of reasoned action (TRA) in order to discover the factors influencing this behavior as a means to facilitate better relationships between insurers and their insurance customers who are frontline workers. A questionnaire was used to collect the data. According to the factor analysis and reliability test conducted, the insurance TRA model had four dimensions: risk perception, need for the insurance, usefulness of the insurance and purpose of the insurance. Perceived control behavior was the strongest external influencing factor, while few social demographic characteristics were found to affect actual insurance behavior. The theoretical and management implications of this are discussed herein.

Keywords: Theory of Reasoned Action, Theory of Planned Behavior, Behavior, Insurance.

1. INTRODUCTION

Insurance is a contract between two parties whereby one party (the insurers) undertake, in exchange for a fixed sum (a premium), to pay the other party a sum of money on the occurrence of a certain event (Bodla and Verma, 2007). Life insurance protects against economic loss in the event of death, whereas accident insurance safeguards against loss through accidental bodily harm to the insured; these insurance policies guarantee that a sum of money will be paid out when such an accident occurs assuming their policy has not been contravened (London South East [LSE], 2015). The money received from an insurance claim can be used to replace the items destroyed or lost. The insurance sector plays a very important role in an economy as it provides long-term funds for infrastructure development and at the same time strengthens the risk-taking ability of organizations and individuals.

In Taiwan, public health insurance is available to all citizens, whatever their job, while various types of group insurance are available to members of various professions. Blue collar workers also receive labor insurance. However, the insurance system does not offer full compensation for workers who have accidents as is customary in developed countries such as

Germany, Austria and Japan. This obviously causes enormous problems for Taiwanese families, particularly when low-level frontline workers, such as those on container terminals, are affected. Kunreuther and Pauly (2005) indicate that when a laborer has a serious accident and cannot work, their public health insurance entitlement only covers basic medical provision and basic welfare benefits for the individual affected; their family does not receive any money, which is likely to be disastrous if they are the sole earner.

According to the Labor Insurance Bureau of Taiwan (2013), there is a greater incidence of accidents in the transportation and communication sector than in any other industry. This includes those working on container terminals. Such work is dangerous and serious accidents are not uncommon. This motivated the author to find out whether such workers purchased extra accident insurance and which factors affected the decision to do so.

The majority of the studies on this topic have focused on the measurement and magnitude of risk aversion and an empirical analysis of socio-demographic variables (Outreville, 2013). This study applied the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975) and the theory of planned behavior (TPB) to understand the relationship between the perception of risk and container terminal workers' insurance behavior. The current study also aimed to discover the factors affecting the insurance behaviors of these frontline workers with a view to considering how insurance marketers could target such customers.

This paper has five sections. The first is this introduction; the second reviews the relevant literature on insurance and behavior. The methodology is presented in the third section. The fourth section contains the results of the analysis. The study findings and discussions of the outcomes of the research are presented in the final section.

2. LITERATURE REVIEW

2.1 The Theory of Reasoned Action

Fishbein and Ajzen (1975) proposed the theory of reasoned action (TRA) to explain and predict the behavior of members of organizations in specific situations. The technology acceptance model (TAM) developed by Davis (1989) is based on the TRA and tests how information systems (IS) are used. The TAM comprises four primary dimensions including perceived usefulness (PU), the degree to which a person believes that using a particular system will enhance their job performance; perceived ease of use (PEU), the degree to which a person believes that a particular system will be easy to use; attitude towards use (ATU), how a user feels about a system and behavioral intention of use (BIU), how they will behave when using the system. The TRA and the TAM assume that there are no limitations on a

user's actions. In practice, constraints such as limited ability and time, or environmental or organizational limits and unconscious habits reduce the freedom to act. The theory of planned behavior (TPB) was developed by Ajzen (1991) to predict deliberate behavior, supposing that some behaviors are neither voluntary nor controllable. Accordingly, when a user considers something fits his needs and that they can benefit from it, they have an attitude to it as well as a behavioral intention. Thus, the author of the current research employed the concepts of the TRA and the TPB to explore the factors affecting frontline workers' insurance behavior. The concept of TRA relating to insurance had four dimensions: the perception of risk; the need for insurance; the usefulness of the insurance and the purpose of the insurance. The other external factors such as demographic characteristics and perceived control behavior were combined to form an insurance TPB model.

2.2 Insurance

Insurers who supply coverage to those at risk intend to profit from the premiums they collect. Most of people claims to purchase insurance to against their risk and compensate the loss in their life. However, purchasing insurance is a choice, and people often face budget constraints and other restrictions which influence their decision to buy it or to not do so. Some individuals will not purchase insurance if they are constrained by a lack of income or available liquidity and feel they are unlikely to need the insurance.

As long as people are risk-averse, they are often willing to pay a premium greater than or equal to the expected value of losses from a set of uncertain events against which they will be covered. Researchers (Fisher, 1973; Campbell, 1980; Lewis, 1989; Bernheim, 1991) have indicated that the demand for insurance is properly considered within the context of a consumer's lifetime allocation process. Demand is a function of wealth (or total assets), expected income, expected rate of returns on alternative choices and subjective discounting functions to evaluate these choices. Kogan and Wallach (1964) pointed that the differences in the behavior of individuals facing similar risky situations can be partially explained by their family background, education, occupation, experience and geographical location.

Burnett and Palmer (1984) examined psychographic and demographic factors determining life insurance ownership and found that ethics, religion and education, among other characteristics, are significant in this. Landskroner (1977) found only small variations in the relationship between insurance and occupation, and the type of industry in which an individual worked. The research conducted by (Binswanger, 1981; Mosley and Verschoor, 2005) found no significant association between insurance and wealth while Wik et al.'s (2004) and Yesuf and Bluffstone's (2009) studies suggested negative correlations between them. Studies found that characteristics such as gender, age, race and religion clearly affect risk aversion. Other studies explored the relationship between insurance and other characteristics,

such as level of education, marital status and family size. Jianakoplos and Bernasek (1998) looked for evidence of gender difference in financial risk-taking. Palsson (1996) studied Swedish households, finding evidence that women were more risk-averse than men; a similar result was found in the various studies by (Donkers et al, 2001; Hartog et al., 2002; Cohen and Einav, 2007; Dohmen et al., 2011; Lin, 2009). Namasivayam et al., (2006) examined the socioeconomic factors influencing the purchase of life insurance policies and the preference of the holders towards various types of policies; it was found that factors such as age, educational level and sex were insignificant but income level, occupation and family size were significant factors.

2.3 The Research Concept

According to the TRA and the results of studies on insurance, risk perception, the need for insurance and its usefulness were considered to affect the intention to purchase it. However, the author of this research wished to know whether other external factors and social demographic characteristics affected behavior related to insurance, in order to form a TPB insurance model. Therefore, the research concept of this study was as follows:

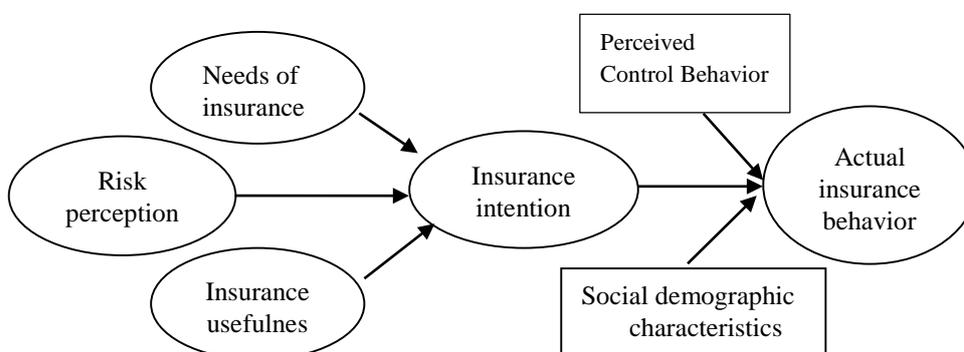


Figure 1: Research concept

3. METHODOLOGY

3.1 Questionnaire Design

The study used a questionnaire to collect data on workers' perceptions of insurance behavior. The items were used to construct a perception of work risk; the need for insurance and the usefulness of an insurance policy were based on Fishbein and Ajzen's scale (1980; 1985), with some modifications. Five items were used to evaluate the perceived risk for workers, five attributes referred to the usefulness of an insurance policy and five measures were used to

assess workers' need for insurance. Insurance intention was measured by the following attributes: *'to do this job, it is necessary to have extra accident insurance'* and *'to do this job, I should seek higher risk protection'*, according to the scale recommended by Ajzen and Fishbein (1980). The author also asked a question to determine respondents' knowledge of labor insurance and to ascertain whether they had purchased extra accident insurance and if not, why not (perceived control behavior). In June 2012, we conducted a pilot test and then modified the questionnaire for use in a container terminal operations context. The TRA insurance constructs were measured on a five-point Likert scale ranging from (1) "strongly disagree" to (5) "strongly agree".

3.2 Sampling

The study focused on exploring the factors affecting how frontline workers in the container terminal operations industry perceive insurance. Because the port of Kaohsiung is the largest port in Taiwan, it has six terminals with more than 20,000 workers. There are more than 10 million containers going through out the port every year. It used to be ranked at top 3 container ports in the world. The port authority has been taking effort to promote the port to be the regional center of container transportation. Therefore, the questionnaire was distributed to staff working on a container terminal in the Port of Kaohsiung in Taiwan. The questionnaire was delivered with a stamped addressed envelope so that the respondents could easily return them to the researcher. The survey was conducted from July to September 2012. 350 questionnaires were sent to staff in five container terminals in the port, and 213 were returned. Incomplete questionnaires were discarded. 179 were considered valid, giving a return rate of 51.14%.

3.3 Data Analysis Methodology

The questionnaire contained a large number of questions to detect the respondents' perceptions. The original responses resulted in too many variables to proceed with an analysis. An exploratory factor analysis can help a researcher to reduce a large set of variables to a smaller, manageable set of underlying dimensions, which helps to detect the presence of meaningful patterns among the original variables (Lu and Tsai, 2008). The Bartlett Test of Sphericity is significant and the Kaiser-Meyer-Olkin value of above 0.8 is employed to ensure the data is suitable for carrying out a factor analysis (Hair et al., 2006). A minimum of five subjects per variable or a sample of 100 is required for factor analysis (Coakes and Steed, 1999). The criteria which can be used to extract factors are: (a) eigenvalues over 1; (b) a minimum of 5% variance per factor and (c) examination of the scree plot. Lauder et al., (2000) and Nunnally (1978) suggested that factors with loadings of 0.40 or more are retained.

Reliability is defined as the ratio of true score variance to observed score variance (Segar, 1997). Litwin (1995) suggested that reliability could be assessed in three forms: test-retest, alternate-form and internal consistency. The latter is applied to groups of items. Generally, Cronbach's alpha is used to measure internal consistency reliability among a group of items combined to form a single scale; levels of 0.7 or more are considered reliable in basic research (Churchill and Peter, 1991; Litwin, 1995; Nunnally, 1978). Finally, in this study a regression analysis was conducted to examine the effects of independent variables on dependent variables.

4. EMPIRICAL RESULTS

4.1 Respondents

In this study, we aimed to explore the factors affecting container terminal workers' perception of, and behavior pertaining to insurance. The respondent profile (see Table 1) was 25.1% working in carrier organizations; 60.9% working in a collaborative company, while the other 25 (14%) respondents worked for a tally or manpower dispatch company. 164 (91.6%) of the respondents were male, with 15 (8.4%) being female. Relating to education level, most had completed high-school, with 106 respondents (59.2%) having qualifications up to this level, 65 at college or university level. The other eight respondents had gained a master's degree or a higher-level qualification. Regarding their employment, 25 respondents (13.9%) worked as supervisors, 75 (41.9%) as general staff and 79 (44.2%) as line workers.

Table 1: Respondents' Profile

Characteristics of respondents		Frequency	Percentage
Type of company	Carrier	45	25.1%
	Collaborative company	109	60.9%
	Tally or manpower dispatch	25	14.0%
Gender	Male	164	91.6%
	Female	15	8.4%
Age	20-25	6	3.4%
	25-30	24	13.4%
	30 -35	41	22.9%
	35-40	36	20.1%
	40 >	72	40.2%
Education level	High school or under	106	59.2%
	College/university	65	36.3%
	Master's degree or above	8	4.5%
Tenure	< Less than 3 years	35	19.6%
	3-6 years	46	25.7%
	6-9 years	23	12.8%
	9 years >	75	41.9%
Department	Document and management	37	20.6%
	Yard management	35	19.6%
	Operations	107	59.8%
Task	Manager/supervisor	25	13.9%
	General staff	75	41.9%
	Line worker	79	44.2%
Income (x NT\$1000)	< 30	43	24.0%
	30-40	68	38.0%
	40-50	47	26.3%
	50 >	21	11.7%

4.2 Factor Analysis

A factor analysis with a varimax rotation was employed to identify the key dimensions of employees' insurance behavior in the container terminal industry. The varimax rotation method has the following advantages. After the rotation, each original variable tends to be associated with one (or a small number) of factors, each representing only a small number of

variables. In addition, the factors can often be interpreted from the opposition of a small number of variables with positive loadings to a small number of variables with negative loadings and the original factors, in order to maximize the variance of the loadings (Abdi, 2003; Kaiser, 1958). The Kaiser-Meyer-Olkin value of 0.916 indicated that the data were suitable for conducting a factor analysis, and the Bartlett Test of Sphericity [$\chi^2= 3319.09$, $P < 0.00$] suggested that correlations existed between some of the response categories. Eigenvalues greater than one were used to determine the number of factors in each data set (Churchill and Iacobucci, 2004). The results presented in Table 3 reveal that three factors accounted for approximately 85.09% of the total variance. To enable an easy interpretation, only the factors with a loading of 0.50 or higher were extracted (Hair et al., 1998). Three dimensions were found to underlie the perceptions of the insurance TRA model based on the responses. These dimensions were labeled, and are described below.

Component 1, the usefulness of insurance dimension, comprised five items including V11, V12, V13, V14 and V15 (see Table 2) and these were related to perceptions of this. Therefore, this factor was labeled 'insurance usefulness', accounting for 30.25% of the total variance. The scale reliability of Component 1 had a Cronbach's alpha measurement of 0.965, greater than the recommended level of 0.7.

Component 2 was a risk perception dimension, including five measures of V1, V2, V3, V4 and V5. Therefore, this component was named 'risk perception' and accounted for 28.63% of the total variance. The Cronbach's alpha measurement for Component 2 was 0.948.

Component 3, the need for insurance dimension, contained five items: V6, V7, V8, V9 and V10. Therefore, Component 3 was labeled as 'need for insurance' and accounted for 26.21% of the total variance. Its Cronbach's alpha measurement was 0.948.

Table 2: Factor Analysis

Measures		Component		
		1	2	3
V11	I think that extra accident insurance is useful.	.848		
V12	I think that extra accident insurance can reduce my risk at work.	.875		
V13	I think that extra accident insurance can make up for lack of labor insurance.	.906		
V14	I think that extra accident insurance can protect workers when an accident occurs.	.887		
V15	I think the protection of extra accident insurance is reliable.	.859		
V1	My work is a high-risk job.		.829	
V2	I am at a high risk of falling from a high place at work.		.893	
V3	I am at a high risk of being hit by work objects.		.763	
V4	I am at high risk of being pinched by work apparatus.		.902	
V5	I am at a high risk of being hit by falling objects at work.		.897	
V6	Labor insurance is insufficient to against my work accident risk.			.754
V7	Universal health insurance is insufficient to against my work accident risk.			.770
V8	The company group insurance is insufficient to against my work accident risk.			.855
V9	The Union's group insurance is insufficient to against my work accident risk.			.769
V10	The company does not give me enough pension guarantees when an accident occurs.			.792
Eigenvalues		9.033	2.55	1.18
Percentages		30.25	28.63	26.21
Cumulative percentages		30.25	58.88	85.09
Cronbach's Alpha		0.965	0.948	0.948

Note: Component 1= Insurance usefulness (V11-V15); Component 2= Perceived risk (V1-V5); Component 3= Need for insurance (V6-V10).

4.3 Regression Analysis

The current study focused on exploring the factors influencing shipping workers' intentions and behaviors relating to the purchase and provision of insurance. A multi-regression analysis associated with the step-forward method was conducted to examine the effects of independent variables; it applied the TRA to the dependent variables, insurance intention and insurance behavior. We first examined the effects of dimensions of the TRA on the dependent variables related to insurance intention and then all the independent variables, social demographic characteristics and perceived control behavior on actual insurance behavior. The results are displayed in Table 3. All the models had a significant F-value at a level of 0.01. Model 1 in Table 3 shows that two insurance TRA dimensions, the need for insurance and the usefulness

of insurance, had a significant effect on the workers' intentions. All the significance influencing factors had a positive effect. The usefulness of insurance was the strongest influencing factor with a coefficient of 0.462 and a significance of 0.01, followed by the need for insurance ($\beta=0.314$, $p < 0.01$). The results for effects on actual insurance behavior are displayed in Models 2 and 3. In Model 2, actual insurance behavior is shown to be the dependent variable, the results conveying that three variables significantly affect it; of these, the need for insurance and insurance intention had a positive effect on actual insurance behavior whereas risk perception had a negative effect. All these variables were significant at a level of 0.001. Insurance intention was the strongest influencing factor.

When we applied an external variable of perceived control behavior into the examination model (see Model 3), the strongest influencing factor was the perceived control behavior with a coefficient value of 0.735 and a significance of 0.01; this was followed by insurance intention ($\beta=0.197$, $p < 0.01$). However, none of the insurance TRA dimensions: risk perception, need for insurance and usefulness of the insurance were found to significantly affect insurance behavior. In the examination on the effects of TRA dimensions and social demographic characteristics, including company type, gender, age, education level and income, on behavior related to insurance, the results revealed that perceived control behavior was still the strongest influencing factor, followed by intention. However, most the demographic characteristics – gender, income and education level – were not found to have a significant effect on actual insurance behavior. According to the comparison of the R-square change with Model 3, there was not a significant change at 0.1. Accordingly, the model was not considered acceptable.

Table 3: Results of Regression Analysis

Dependent variables	Model 1	Model 2	Model 3
	Insurance behavior: intention	Actual insurance behavior	
Independent variables			
Risk perception	0.101	-0.281***	-0.087
Need for insurance	0.314***	-0.105	-0.053
Insurance usefulness	0.462***	0.211**	0.087
Insurance intention		0.281**	0.197***
Perceived control behavior			0.735***
R ²	0.592	0.141	0.640
Adj R ²	0.585	0.121	0.630
F Value	84.61***	7.112***	61.519***

Note: * significant at 0.1; ** significant at 0.05; *** significant at 0.01.

5. CONCLUSIONS AND SUGGESTIONS

The aims of the current study were to develop an insurance TRA model, and then to discern the factors influencing insurance behavior with a view to considering how best to approach shipping workers as insurance customers. The data was collected from the perceptions of workers on container terminals through a questionnaire survey. Based on the results of the primary component factor analysis, three factors were extracted: risk perception, need for insurance and usefulness of insurance. An insurance TRA model was constructed by these three dimensions and the workers' intentions. A TPB model was formed from the TRA model, perceived control behavior and actual insurance behavior.

The results of the multi-regression analysis revealed that the dimensions of the insurance TRA model, the need for insurance and its usefulness, have a direct significance on intention; risk perception was not found to have a significant direct effect. Regarding the effects of external factors (perceived control behavior) and social demographic characteristics, the former plays the most important role to influence adopting extra accident insurance of line workers in the container terminal operation context. Most of the social demographic factors in this study were found to influence actual insurance behavior, and this result is partly in line with previous studies (Binswanger, 1981; Mosley and Verschoor, 2005; Donkers et al., 2001; Hartog et al., 2002; Cohen and Einav, 2007; Dohmen et al., 2011; Landskroner, 1977; Lin, 2009; Namasivayam et al., 2006).

According to the information derived from the questionnaire of the external factor

(perceived control behavior), most respondents expressed that they adopting extra insurance or not were constrained by economic budget. However, since the frontline work of container terminal operation is a kind of dangerous job with high risk, the container terminal operators should establish a compensate system to help employees against the risk or shoulder the responsibility to purchase extra accident insurance for the employees.

Based on the author's knowledge, this is the first study to employ the concept of the TRA to examine workers' insurance behavior, including intention and the behavior, and then to establish a relevant TPB model. The results reveal that the TRA approach is partly suitable for examining workers' insurance intentions, their perception of risk having an insignificant effect on their actual behavior, however. The workers' behavior in relation to insurance was strongly affected by perceived control behavior. The results help to clarify the difference between insurance intention and actual behavior. They may also help insurance companies to approach these potential customers, in order to optimize their performance.

Although this study has yielded many positive results, questionnaire surveys are never entirely free of limitations nor bias. The research included data concentrated on container-terminal operations employees in the Port of Kaohsiung; thus, it is very specific. Future research could extend the scope and the findings to other container terminals in other ports or to other industries.

According to the data of profile of the respondents, the workers at operation department and managers and staff in document and management department have different behavioral model as their working environment is fundamentally different. It worth trying to develop different model by personal attributes in the future research. The study employed regression to examine influence among the factors it employed; future research could conduct structural equation modelling (SEM) to yield a more detailed examination of their relationships.

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