



## ATTITUDE MODEL ON THE INTERNATIONAL SAFETY MANAGEMENT CODE IMPLEMENTATION FOR SHIPPING ON INDONESIA BASED ON THE THEORY OF PLANNED BEHAVIOR

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### ABSTRACT

*International Safety Management (ISM) Code was developed since July 1, 1998 by the International Maritime Organization (IMO) as a reaction of the increase in the number of accidents and the demands on shipping and insurance industries are the subject of international attention. The purpose of this code is to provide international standards for the management and safe operation of ships and pollution prevention. Indonesia which is the largest archipelago country in the world, becoming an international shipping densest traffic flow is traversed by ships from various countries. In the analysis of National Transportation Safety Committee expressed safety recommendations to be implemented by manajamen/operators in the summary results of the investigation of maritime transport accidents in 2007 is to conduct a comprehensive implementation of the ISM code and consequently to prevent the loading process that does not fit with the company's commitment regarding the safety of the vessel and also improve understanding and implementation of the ISM Code for the crew. To find out the attitude of the crew in carrying out the rules of the ISM Code used the approach of The Theory of Planned Behavior. Study has found that the basic variables of the Theory of Planned Behavior significantly influence to intention in ISM Code compliance. In the other hand, the crew trust will affect to the attitudes toward behavior and perceived behavioral control before they determine the behavioral intentions.*

*Keywords: Attitude Toward Behavior, ISM Code*

## 1. INTRODUCTION

### 1.1. Background

The Theory of planned behavior is the development of the theory of reason action. The theory of reasoned action was first coined by Ajzen in 1980. The theory of reasoned action developed using the basic assumption that people behave in a way that consciously and consider all available information. Ajzen argued that the intention to do or not do certain behaviors are influenced by two basic determinants, the first is the attitude towards behavior and the other related to the norms of social influence opinion (subjective norms).

In contrast to the theory of reasoned action, the theory of planned behavior added a variable construct that does not exist in the theory of reasoned action in the form of perceived behavioral control. A major factor in the theory of planned behavior is intention to indicate a given behavior. Intention is assumed to stimulate the motivational factors that influence behavior. It can be shown through one's effort to try, plan and showed behavior. In addition to the motivation, behavior is also influenced by non-motivational factors such as the fulfillment of resources and opportunities, time, money, expertise, and cooperation with others (Ajzen, 1991).

In practice the theory of planned behavior is needed to study the attitudes and behavior in areas such as marketing, health, education, politics and so forth. One is in terms of compliance. International Safety Management (ISM) Code is one of the rules that concern important enough in the world, especially the world of maritime. This regulation was developed since July 1, 1998 by the International Maritime Organization (IMO) as a reaction to the increase in the number of accidents and claims the shipping and insurance industries are the international point of view. The purpose of these rules is to provide an international standard for managing and operating safe ships and pollution prevention.

Based on the fact some passenger vessel accidents during 2003 to 2011 to prove that the safety of ship governance is still weak. At least

there were 30 ships accident during those period in Indonesia such as collision, fire, explosion, sinking and overturned.

The journal aims to understand the shift in attitude towards the implementation of the compliance of the crew of the ISM Code for shipping in Indonesia based on the Theory of Planned Behaviour.

### 1.2. Objectives

Develop a model that links the relationship between the factors that build the theory of planned behavior involving trust, perceived risk, benefits and perceived knowledge to determine its contribution to the intention crew ship in complying with the rules set by the ISM Code.

## 2. Literature Review

### 2.1. *International Safety Management Code (ISM Code)*

*International Maritime Organization (IMO)* on a periodic basis to discuss issues of international maritime safety has resulted conventions such as the International Safety Management (ISM) Code, 1998 and the International Ship and Port Security (ISPS) Code. International Safety Management (ISM) Code is an international standard of safety management in the operation of the vessel as well as the prevention and control of environmental pollution that regulate the organization of shipping, vessel, and crew.

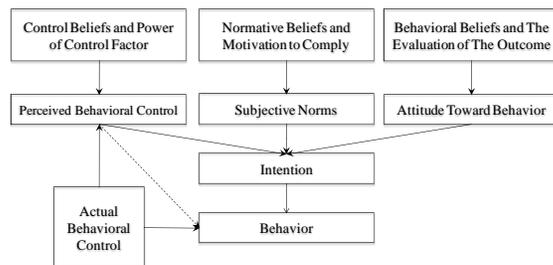
### 2.2. Consumer Behavior

Engel *et al.* (1994) define consumer behavior as actions directly involved in obtaining, consuming, and spent products and services, including behavioral processes that precede and follow the action. Understanding consumer behavior is not easy for the consumer to decide certain purchase different and vary greatly in age, income, education level, and appetite. It is the duty of marketers to examine the factors underlying consumers to choose one or more of the range of products offered by the company.

### 2.3. The Theory of Planned Behavior

The theory of planned behavior was developed to predict the behavior that has complete

control of the will, i.e. behavior that is not fully controlled by an attitude toward behavior and subjective norms. To balance this observation, Ajzen added a third element in the form of perceived behavioral control. The addition of these elements produces a new theory known as the theory of planned behavior.



Source: Sumarwan (2011)

Picture 1. The Theory of Planned Behavior

### 3. Methodology

#### 3.1. Time and Location

Research is conducted on the crew that was in the Port of Priok Jakarta and Merak Banten. Data collection was carried out for 2 months, while the data processing and analysis as well for 2 months.

#### 3.2. Research Approach

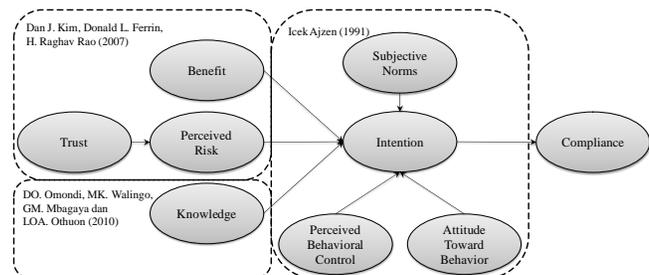
The study was conducted using a survey approach by distributing questionnaires to the crew (respondents) from different hierarchy. Respondents were asked to fill out questionnaires about the intentions of the respondents in the implementation and compliance with the ISM Code safety rules for shipping.

#### 3.3. Sampling Technique

The primary data used in this study were obtained by a structured interview to the crew of ships. Selection of ships done by purposive method, which the selected ship types was transporting passengers and carrying the commodities. While the selection is done by the crew konvenien method which is one form of non-random sampling methods or non probabilistic unrestricted (unrestricted). The selection of the crew carried out when the ship was leaning/docked in the port of Tanjung Priok Jakarta and Merak port in Banten.

#### 3.4. Research Model

The research model can be seen in the picture below. The model is the collaboration between the basic theory of planned behavior (Ajzen, 1991) with new model developed by Kim et al. (2007) and Omondi et al. (2010).



Picture 2. Research Model

#### 3.5. Data Processing and Analysis

##### 3.5.1. Hypothesis

The hypothesis for this study is:

- H1 : Intention has an influence on Compliance
- H2 : Attitudes Toward Behavior has influence on Intention
- H3 : Subjective norms have an influence on Intention
- H4 : Perceived Behavioral Control has an influence on Intention
- H5 : Perceived risk has an influence on Intention
- H6 : Benefit has an influence on Intention
- H7 : Knowledge has an influence on Intention
- H8 : Trust has an influence on Perceived Risk

##### 3.5.2. Structural Equation Modeling (SEM)

SEM is a combination of factor analysis and path analysis. SEM is usually used in the field of social psychology.

##### 3.5.3. Reliability Test

Reliability is a measure of the internal consistency of the indicators of a construct. Reliability was tested by construct reliability and variance extracted.

Construct reliability and variance extracted is calculated by the following formula:

$$\text{Construct Reliability } \gamma = \frac{(\sum \text{standardize loading})^2}{(\sum \text{standardize loading})^2 + \sum \epsilon_j}$$

$$\text{Variance Extracted} = \frac{(\sum \text{standardize loading}^2)}{(\sum \text{standardize loading}^2) + \sum \epsilon_j}$$

While  $\epsilon_j$  can be calculated with the formula  $\epsilon_j = 1 - [\text{standardize loading}]$ . In general, the value of acceptable *construct reliability* was  $\geq 0.7$  and *variance extracted*  $\geq 0.5$  (Hair *et al*, 1998).

#### 4. Analysis

##### 4.1. Proposed Model

In the proposed model turned out to produce a very low value of eligibility criteria under the limit.

Table 1. Goodness of Fit Test of Proposed Model

Indicators	Criteria	Value	Evaluation
AGFI	$\geq 0,90$	0,043	Low
GFI	$\geq 0,90$	0,23	Low
CFI	$\geq 0,90$	0,00	Low
CMIN/DF	$\leq 2,00$	204,11	Low

In the table above, we see that the value of i.e. Adjusted Goodness of Fit Index (AGFI), Goodness of Fit Index (GFI), Comparative Fit Index (CFI) and Cmin / DF show the feasibility of a low value so that the initial model can not be used.

##### 4.2. Best Model

The results of processing the data using LISREL version 8.3 produced the best model with the value model in accordance with the eligibility criteria.

Table 2. Goodness of Fit of Best Model

Indicators	Criteria	Value	Evaluation
AGFI	$\geq 0,90$	0,82	Marginal Fit
GFI	$\geq 0,90$	0,90	Good
CFI	$\geq 0,90$	0,94	Good
CMIN/DF	$\leq 2,00$	1,96	Good

Goodness of fit test of model used is adjusted Goodness of Fit Index (AGFI), Goodness of Fit Index (GFI), Comparative Fit Index (CFI) and

Chi-Square/Degree of Freedom Ratio (Cmin / DF) with a value above the criterion that indicates Model fit for use.

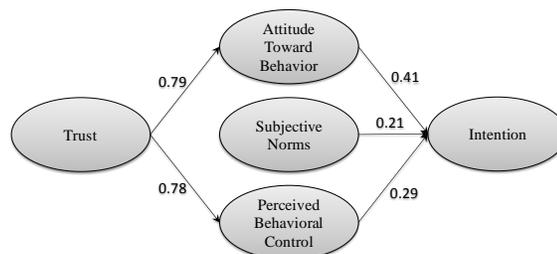
While the reliability of the questionnaire as a measure of reliability values can be seen in the table below.

Table 3. Loading Factor of Latent Variables

Variabel	CR	VE
Attitude Toward Behavior	0,85	0,65
Subjective Norms	0,87	0,63
Perceived Behavioral Control	0,83	0,62
Trust	0,89	0,74
Intention	0,95	0,90

Based on the table, it appears that the value of CR and VE all latent variables were above the limit value set, each variable has a CR value above 0.7 and VE above 0.5 so that it can be stated that the values above are eligible. It can be concluded that the indicators that are used as latent variables can be said to have been able to explain the formation of the latent variables.

This study used five latent variables, namely the attitude toward behavior, subjective norms, perceived behavioral control, trust and intention. The model was also built by the 15 indicators.



Picture 3. Path Diagram With Loading Factor

Table 4. Loading Factor of Latent Variables

Latent Variable Relationship	t-value
Intention $\leftarrow$ Attitude Toward Behavior	4,22
Intention $\leftarrow$ Subjective Norms	2,17
Intention $\leftarrow$ Perceived Behavioral Control	2,99
Attitude Toward Behavior $\leftarrow$ Trust	7,10
Perceived Behavioral Control $\leftarrow$ Trust	7,12

The results of LISREL 8.3 output can be answered hypotheses 2, 3 and 4. While hypothesis 1, 5, 6, 7 and 8 can not be accommodated due to variables such as compliance, perceived risk, benefits and knowledge of the model generate lower goodness of fit. The interesting thing is found a significant relationship between trust in the attitude toward behavior and perceived behavioral control, hereinafter referred to as the hypothesis hypothesis 9 and 10.

*H2 : Attitudes Toward Behavior has influence on Intention*

Latent variable behavioral attitudes seem significant effect on intentions. The relationship between attitude with behavioral intentions is positive. This is indicated by the value of loading factor of 0:41. This value is considered the greatest among other variables in giving effect to intentions. This means that the better level of attitude will affect the behavioral intention higher to comply the ISM Code. According to Gagne and Briggs (1974) attitude is an internal state that affect the individual's choice of action to the object, person or event.

*H3 : Subjective norms have an influence on Intention*

Latent variable subjective norms significantly influence intention. The relationship between subjective norm with behavioral intention is a positive. This is indicated by the value of loading factor of 0:21. This means that the better the level of subjective norm will affect the behavioral intention higher to comply the ISM Code. Subjective norm is defined as factors outside the individual that contains a person's perception of whether others will approve or disapprove of a behavior that is displayed (Baron & Byrne, 2000).

*H4 : Perceived Behavioral Control has an influence on Intention*

Latent variables perceived behavioral control has significant effect on intentions. The relationship between perceived behavioral control with behavioral intention is positive. This is indicated by the value of loading factor 0.29. This means that the better level of perceived behavioral control will affect the behavioral intention higher to

comply with the ISM Code. Perceived behavioral control is a person's perception about the ease or difficulty to display behavior.

*H9 : Trust has an influence on Attitude Toward Behavior*

Latent variables of trust has significant affect to the attitude toward behavior. The relationship between trust with attitude is a positive. This is indicated by the value of loading factor of 0.79. This means that the better the level of trust will affect the level of behavioral attitude higher. Trust is a common belief that there is the maker of rules, the rules themselves in meeting the expectations of the rules of attraction.

*H10 : Trust has an influence on Perceived Behavioral Control*

Latent variables of trust has significant influence to perceived behavioral control. The relationship between trust with perceived behavioral control is positive. This is indicated by the value of loading factor of 0.78. This means that the better level of trust to the level perceived behavioral control higher.

## 5. Summary

Referring to the hypothesis of the study and based on the results of data processing by LISREL 8.3 found that behavioral intentions of a crew in implementing the ISM Code is influenced by the beliefs and expectations of the individual are represented by variable attitudes toward behavior (hypothesis 2), social pressure in the form of advice, direction and appeal of individual another and agencies represented by the subjective norms variable (hypothesis 3) and all the constraints faced by individual crew such as the availability of the training, the tools that support the safety of shipping, safety standards are met by the ship represented by the perceived of behavioral control variables (hypothesis 4). However, the influence on behavior intention, attitude toward behavior (hypothesis 9) and perceived behavioral control (hypothesis 10) is affected by the trust. Trust means that efforts to comply with the crews on the ISM Code can prevent ship accidents, in addition to the rules and complete enough to be considered the main reference for the safety of shipping will affect

the level of attitude toward behavior and perceived behavioral control before they determine behavioral intentions in implementing the ISM Code.

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