THE PREVENTIVE MEASURES TO REDUCE THE IMPACT OF ACCIDENTS IN CARGO TRANSPORT OPERATIONS

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Abstract— This research is a qualitative research focused to bring knowledge to good use in the study of the behavior of the driver and find ways to reduce accidents. From all riders in the group of 76 people, 13 drivers who have experienced the accidents were interviewed to analyze the nature of the accident to transport beer, the gender of the driver, the age range of people driving, experience of the driver at the time of the accident, the nature of the accident, the nature of the accident and road conditions as well as other environment-related accident. Data from interviews with riders found that the drivers perform are all male. This is because of the skills needed in driving a truck, the obligations and duties of drivers as well as the time and route of driving that does not allow women to become truck drivers. Data from interviews with riders also found that 10 motorists aged between 25-55 years old. The collected data by interviewing truck drivers who had accidents showed that rider's experiences are between 1-22 years, the survey shows that motorists with driving experience between 0-5 years are accounted for most accidents, followed by drivers with experience of driving between 6-10 years, 11-15 years, 16-20 years and over 20 years' experience, respectively so it can be seen that the experience of driving a truck affected the result of an accident. The less experienced would inevitably cause an accident rather than the highly experienced ones because of expertise with the vehicle and the accessories of vehicles. For the time of the incident, the result can be seen that percentage of most accidents occurs between 06:01 to 12:00 hrs. The second is the period between 00:01 to 06:00 hrs. and 12:01 to 18:00 hrs. Less is at 18:01 - 24:00 hrs. It is seen that the time of the accident is during the day so daylight may result due to the volume of traffic during the day, resulting in the likelihood of high accidents compared to the period of nighttime.

Index Terms— accident, protective measures, reduce their impact, the operating carrier.

I. INTRODUCTION

The problem of this private company is that the truck is often flipped upside down on the road. Most of the causes are from the drivers by falling asleep because of insufficient rest, work over-time as prescribed by law, and therefore resulting in high risks of accidents and road traffic accidents. Intensified from the past to the present, the situation of road traffic accidents in developing countries has increased. The damage and intensification has increased from the past to the present, and is likely to increase further for a number of reasons, such as the increase in population, the increase in the number of vehicles, increasing the volume of travel, habits and behavior of the driver, etc. In addition to the impact on the physical and mental conditions of the accident victims and relatives, the economic loss in each year is a great value too. This is particularly true for developing countries that require both human resources and financial resources to be used in their development. Thailand, which are part of the Group of developing countries has serious road traffic accidents. The traffic accident statistics of the Information Center of the Police Office In the year (2006), it was found that in 2005, there were 122,040 traffic accidents, 12,858 deaths, 94,364 injuries or an average of 1.47 deaths per hour. As a result of traffic accidents, the accident of the truck is a part of the problem. When there is a cargo truck accident and then it affects both directly and indirectly with people, property and the environment depending on the type of the hazardous substance, whether in the short or long term of the accident. Investigating the causes and factors that affect the accident is essential and it is found that the cause of accident is based on 3 main factors: people, vehicles, roads and environment. Analyzing the cause of the accident of the truck in order to understand the problem and cause of the problem clearly and the results of the study can be used in the implementation. Modify and prevent, including measures to reduce cargo truck accidents systematically and effectively. Therefore, the researcher must study the solution of the risk of this private company to improve and solve in order to reduce the accident and risk on the road of this private company.

For this reason, the researcher has studied this issue because of the personal behavior of the driver and sought to find ways to reduce accidents to gain competitive advantage and increase business value.

II. LITERATURE REVIEW

Prakwipisak Srisri (2004) has studied the factors that predict the driving behavior of car drivers of Passenger Transportation Co., Ltd. The purpose is to study the relationship between personality and adaptation to excellence in social support quality of life in work awareness of safety in traffic accidents with safe driving behavior of bus drivers and study the power of forecasting factors. The study is to develop a public bus safety assessment system in

Thailand for safe driving of the bus drivers. The sample group was the 342 bus drivers in North and Northeastern Bus Routes and data are collected using the questionnaire. The results showed that the personality, the adaptation to excellence, social support, quality of life in work, awareness of traffic safety have positive relationship with driving behavior. The personality, the adaptation to excellence, social support, quality of life in work, awareness of traffic safety can forecast the behavior of safe driving of the bus drivers.

The study of the factors influencing the decision to use the daily air condition bus service Eastern Line was conducted by Wanlop Prakobkit (2000). The purpose of this study was to investigate the factors affecting the choice of air-conditioned bus service by interviewing the sample of 400 people using questionnaire. The results showed that the sample group placed emphasis on bus employees and service factors, the safety of travel, accident insurance for passengers, punctuality, no parking for passengers en route, bus factors in seat comfort, clean exterior and interior, the cooling of the air conditioner, the cleanliness and comfort of the toilet, lifetime of the car usage. The location factors are station security and parking are also included. For the fare and sales promotion, the respondents gave moderate attention. So the guidelines for determining the accident reduction in order reduce the risk of the three main factors above are as follows:

1. The use of the employee screening section is defective. (Domino 2), screening drivers who have a tendency to commit insecure behavior (Domino 3), which may look at multiple components, such as attitude, belief, experience, personality. Health and wellbeing in a good way. It may require expert or well-designed tests to measure or evaluate.

2. Targeting and Monitoring to set the operation. Targeting and assessment should be made in order to know the progress and success of the operation. The plan can be adjusted in a timely manner.

Rattanachote (2007) studied the factors that contributed to the accident and the accident reduction approach of bus transport between Sukhothai and other provinces. This is a survey research. The purpose is to study the accident factors caused by bus transportation between Sukhothai and other provinces and find the ways to reduce the accident of transport by bus. The survey is composed of the group bus operators between the Sukhothai Province and other provinces. There were 60 bus drivers in Sukhothai province using sampling method of 150 people in Sukhothai province who used the bus service. The data were collected by questionnaire. The results of the study were as follows. The accident has 5 factors.

1) The use of road- Vehicles are faster than the speed limit prescribed by the law such as overtaking other vehicles in critical situations, the vehicles do not slow down or give the signal when turning, drinking alcohol or stimulant while driving. Not enough sleeping and the familiarity with the road condition. These make it negligible.

2) Environmental factors such as passenger volume (overload), brightness of the route at night Traffic signs are unclear and weather

3) Factors related to knowledge and behavior of the driver, such as the description, the equipment is unclear, using the device Communication between drivers, lack of knowledge on traffic signage, eating while driving and the conversation between the drivers.

4) Condition of the bus, brakes, tires and vehicle's signal system.

5) Bus Facility Factors; Installation of audio and television and air conditioning, etc.

Source: Road Defects, TDRC, University of Technology King Thon Buri

III. METHODOLOGY

This research is a survey research to investigate causal factors causing accidents. It is a case study in Nakhon Chaisri, Nakhon Pathom province primarily surveyed from experienced respondents by both formal and informal interviews with relevant stakeholders; Police Chief of the Police Station, Nakhon Chaisri District Police Station, Lan Takhwa Community Leader, safety Officer, and drivers and performed secondary data analysis to clarify the issue.

- Internal secondary data is based on data from the insurance of the accident because information related to the accident investigation report is not available.
- External secondary data by studying literature and documents related to research topics in order to use as a guideline to the questionnaire production. This sets out the educational guidelines, conceptual framework for the study, variables to be used in the study (Puimoontri,2011). The variables include age, family status, education, age, driving license. The method of conducting research will be presented in the following order; population and sample size 170 persons, research tool, data gathering and data analysis.

IV. RESULTS OF DATA ANALYSIS

A study is of the working behavior of truck drivers by analysis of personal data of drivers and personal behavior information during work. Most of the employees were 31-35 years old (28.8%). Most of them (159) have families, accounted for 93.5%. 148 or 87.1% of them have children. 48 drivers or 28.2%

have 10 year-driver's license, while 48 have the experience of driving 7-9 years, representing 28.2%. Most of them (72) worked with the company for 1-2 years. Most of them (50 drivers or 29.4%) drive a trailer, 3 axles, 12 meters. The appearance of a driver is a direct result of putting the qualifications of the desired driver ensuring easy follow up of drivers and driving experience.

Most of the work is from Nakhon Chaisri, Nakhon Pathom province. Staffing will focus in the district of Phutthamonthon, Nakhon Pathom and neighborhood and have a driver's license type 3 and have experience in driving for a long time. It is found that most of these drivers are from poor families finishing only grade 6 and had to work to help his family from a young age without studying. And because of job nature of driver, workers must be healthy. Most of the employees are in their 30s or older and in order to ensure that their drivers are qualified and responsible, the recruitment emphasis is on car drivers with families and children.

According to data, most drivers work with the company for only one to two years. One reason is that the company recently increased the number of new trucks at that time. Prior to this period, there were a large number of entry and exit staff, as there was no improvement in the remuneration model. The car must be able to carry a lot of weight. Most of the vehicles used by the company were 3-axle trailer, 12 meters. Personal data were analyzed during the work. 45 drivers or 26,5% drank alcohol once a week, and 39 alcohol drinks once a month representing 22.9%, 30% or 51 drivers drink beer.

There are 50.6% of drivers having their children and their wives while driving. This may be due to the fact that most of the company's drivers are employees who are domiciled in Prachuap Khiri Khan and nearby provinces and the main route will run through the province. In addition, it may be viewed from the viewpoint that most drivers are self-employed and mostly live with their wives. In some cases, 34.7% of the respondents have assistants. The reason may be because the driver has enough income. It is possible to hire assistants to ease the burden of driving, including moving equipment during transportation. It also helps to get a lot of work to earn more. For assistant driver, the driver will share some revenue or as agreed. The assistant also has the opportunity to learn and experience driving. Such commissioning is an act other than the Company's order. The company was not involved. In addition, 51.2% of all male drivers reported drinking alcohol or beer, 26.5% drinking once a week, 22.9% drinking once a month. The most popular drink was beer, 30 percent, followed by liquor, 11.8 percent. It can come from the values of social and Drinking preferences affect the choice of drink type.

Based on the hypothesis testing of drivers who had previously experienced an accident and their behavior, traffic, drinking, driving time, the most common cause of road accidents are people,cars and the environment. This leads to unsafe acts (Unsafe Acts) and the occurrence of unsafe conditions (accidental conditions) resulting in accidents, which may be caused by one or more elements in combination. Guidelines for determining accident reduction in order lower the risk of the three main factors above. Use of Personnel Screening Criteria (Domino 2) is to screening drivers who have a tendency to commit insecure behavior (Domino 3), which may look at multiple components, such as attitude, belief, experience, personality, health and wellbeing. It may require expert or well-designed tests to measure or evaluate, knowledge test to assess the knowledge or ability to drive to ensure it is sufficient to work to reduce the risk of work or driving without knowing or misunderstanding to cause incidents. Employee training is also needed to teach the drivers to have the knowledge to protect themselves from accidents as well as safety regulations consciousness and attitude continuous training regulation and punishment to prevent accidents and punish them if they do not act or violate the rules to be effective. In practice it is important to understand if the staff follows the regulation by installing the device to check. The use of communication technology such as GPS system installed on the car to determine the location of the car and driving habits of the driver can be introduced. However, this method requires the cost of rent. Educating the drivers to avoid resistance including the value in use is essential. Organizing safety staff to monitor and evaluate. It may be used randomly to determine if the driver's driving behavior is in compliance with regulations.

Safe and convenient resting place must be provided and the driver can rest fully since having trouble keeping things from stolen makes it impossible to rest. Assigning work properly can be performed to avoid fatigue from overwork and the risk of accidents as some 4.1 percent of the respondents indicated that they had too much work. Some of the drivers also have a preference for drinking. Therefore, annual health check to continuously monitor the health of the driver, to assess the strength of the body that is ready to work is also required in order to reduce the risk of accidents due to impaired driver health. Car routing is also critical and need an eye on as some routes are risky to an accident and the company must avoid such a route. Good coordination with customers should be taken into account since 94.7% of drivers have been experiencing problems waiting for unloading cargo a long time. Car maintenance;

the company must keep the equipment in the car in perfect condition, to be in use at any time. It can be done in terms of periodic maintenance by maintenance technicians and self-maintenance of the driver. For car inspection, the implementation of the initial condition, The driver can do it manually.

V. DISCUSSIONS & SUGGESTIONS

The result of the questionnaire was concluded that most of the drivers were knowledgeable about the cause of the accident. It also found that the problem of air conditioning prevent the car ready to operate in the hot summer weather. However, that does not affect the drivers much.

Factors related to people. Most of the causes are unsafe acts (Unsafe Acts), which more than 85 percent that caused the accident. The Domino theory will find that the action is not safe. Those actions come from the social background of the individual and defects of the person. It causes insecurity. But fixing the flaws of both cases is a difficult or irreversible solution. Accident prevention in this way must eliminate the act or condition which is not appropriate.

So the researcher can suggest that this study was conducted in only one part of provincial area. The whole area of the province or region should be studied to cover and compare the differences. The next study can find out the other hidden factors that make it a problem and obstacle in driving to avoid risk and also the ways in which to improve, develop and plan transportation strategies to ensure safety.

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