

# The Behavioural-Based Safety System for Commuting Accident in Syarikat Bekalan Air Selangor Sdn. Bhd.

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**ABSTRACT:** *Motorcycle accidents are common among employees whose working nature is mostly outdoors. According to the statistics, the frequency of motorcycle accidents increases every year. In Syarikat Bekalan Air Selangor (SYABAS), a substantial number of motorcycle accidents occurred between the year 2009 and 2013. The increased number of accidents serves as a wake-up call to the company to come up with a behavioural-based safety system for commuting accident. The objective of this paper is to look into the effectiveness of behavioural-based system in a company. A total of one hundred and thirty (130) respondents participated in the data-collection session for this study. From this data-collection, along with accident data from the company, a number of criteria that contributes to commuting accidents in the company is obtained. At the end of this study, the behavioural-based safety system is applied, thus showing how its implementation assists in curbing the issue of commuting accidents in the company.*

**Keywords** - *Accident Data, Behavioural-Based Safety System, Commuting Accident, Motorcycle Accident, Number of Motorcycle*

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## 1.0 INTRODUCTION

Syarikat Bekalan Air Selangor Sdn. Bhd. (SYABAS) was established on 8<sup>th</sup> July 1996 under the Malaysian Companies Act, 1965 to undertake the privatization of water in the state service supply Selangor and Wilayah Persekutuan Kuala Lumpur and Putrajaya. The company was granted for a period of thirty (30) years from the date of January 1, 2005 to take over the duties and functions of Selangor Water Governance Corporation Berhad (PUAS) in the field of water supply and distribution of water to consumers in the State of Selangor and the federal territories of Kuala Lumpur and Putrajaya involving more than 7.3 million residents and industrial and commercial users through 1.52 million accounts.

In SYABAS, the company's main revenue derives from the utilisation of water by consumers in the state of Selangor and Federal Territories. A large number of meter readers are employed to read water consumption meters at the customers' premises and produce water bill to the consumers. These meter readers use motorcycles to execute their daily works.

Although there are many other workers in SYABAS who utilise the motorcycle in their daily work, the meter readers have contributed a substantial increase of commuting accidents in SYABAS. During the first year, more than one hundred (100) motorcycles accidents have been recorded. Subsequently, an average of 20 cases are registered throughout SYABAS either at the district or head offices levels every year. This has caused a lot of problem to the management since it involves a number of subsequent activities such as requirements to carry out investigation, preparation of claims to SOCSO, Construction Industry Development Board Malaysia (CIDB) or the insurance company, and even the need to attend court hearing should the accident escalates to a court case.

In 2011, thirty-nine (39) accident cases involving motorcycle and six (6) cases involving other vehicles were recorded among SYABAS staff. Preventive measures have been taken by the management; however, the number of accident recorded is consistently increasing with a few records every year. In 2013, a percentage of 22.3%, 16.9%, and 10% accident cases are recorded for Hulu Langat, Klang and Kuala Lumpur. There is no consistent decrease in the number of commuting accidents recorded although the management of SYABAS with the cooperation from PERKESO and Malaysia Society

Occupational Safety Health (MSOSH) has conducted the defensive riding program commencing 2011 to 2012 which involves all staff who uses motorcycle in their daily work, and this includes those who are previously involved in motorcycle accidents.

Through this study, the behaviour aspects that may affect safety towards commuting accident rate is identified, the relationship between behaviour aspect identified and the number of motorcycle accident is investigated, and the behavioural-based safety system for improvement to the current safety systems as suitable countermeasures to reduce the commuting accidents among SYABAS staffs is recommended.

**2.0 METHOD**

This study begins by distributing questionnaires to a random one hundred (100) staff within the company’s ten (10) districts in Selangor area with the intention of gaining information and data collection. These staff are those who frequently use motorcycles as primary transportation in daily work operations. Next, the processing and extraction of these data will be analysed according to the collection and recording of the evidence in the questionnaires through the Statistical Package for Social Sciences (SPSS) Version 17.0 software which includes Cronbach’s Alpha Analysis, Mean and Pearson Correlation. Finally would be the publication of the result obtained and recommendation that can be given to improve the situation.

Quantitative data in the form of survey questionnaires is used in this research. Choices of three (3) answers are given to be selected in the form, as well as the Likert Scale is used. Apart from these questionnaires, data from organization sources are obtained. They are the Accident Statistics Report (2009 – 2013) and the Incident and Accident Investigation Report (2009 – 2013). Other outsourced data obtained are from Polis Di Raja Malaysia (PDRM), Malaysian Institute of Road Safety (MIROS) and Social Security Organization (SOCSO).

Table 1 shows the number of respondents who attended the data collection at their respective territories.

**Table 1: Total Number of Respondents**

No.	Location	Total Respondents
1	Gombak District	10
2	Kuala Langat District	10
3	Hulu Langat District	10
4	Klang District	10
5	Hulu Selangor District	10
6	Kuala Lumpur District	10
7	Kuala Selangor District	10
8	Petaling District	10
9	Sabak Bernam District	10
10	Sepang District	10

**3.0 RESULTS**

From the aspect of sociodemographic data, one hundred (100) random respondents throughout SYABAS who commute on the motorcycle on a daily basis who are involved in this study, fifty-one percent (51%) are meter readers. Seventy-one (71) of them are married and Malay respondents are the most since the company employs more Malays than the other races. In addition to that, fifty-four (54) respondents are SPM holders with forty (40) of them have served the company for more than six (6) years. Surprisingly, the employees who own a valid license for more than eight (8) years contribute to the largest number involved in commuting accident with sixty-five (65) cases. The accidents in SYABAS mostly happen in the evening when returning home from work, with sixty (60) cases. Nevertheless, lunch time can also be said as a critical time since there is also a number of staff who is still at work at this hour, especially those working on site.

From the socio-demographic data collected also, motorcycle type Yamaha LC has the highest numr for the type of motorcycle most involved in accidents in SYABAS with thirty-five (35) cases, more than other types of motorcycle. In second place is Honda EX5 with twenty-two (22) cases. Without realizing, the ability and strength of a motorcycle plays a

vital role in influencing the mind or way of thinking, emotion and attitude of the staff. These two motorcycles are the most used by SYABAS staffs in their daily activities.

Finally, a total of sixty-one percent (61%) of the respondents are involved in an accident for at least one time, compared to those who were involved in an accident twice with thirty-two percent (32%), the thrice with three percent (3%). This shows staffs who use the motorcycle as their main transportation in their daily work are prone to be involved in an accident for the first time, as depicted in the percentage above.

From another part of the questionnaire, which is from the effectiveness of the attitude aspect towards motorcycle-riding responsibly by respondents, the record options average between 3 to 5 with the highest mean at 4.48 under the category of Scenery shows that the scenery plays an important role in affecting a rider's concentration. Besides that, under the respondent's assessment of skills theory, the data shows a highest mean of 4.49 for drugs and illegal driver which means that most respondents agree that drugs and riders who do not possess a valid driver license contribute to dangerous behaviour on the road. Apart from that, under the respondent's evaluation in terms of application of personal protective equipment (PPE), the data shows a highest mean of 4.44 for SIRIM, which means that they have the perception that a SIRIM approved helmet is important in ensuring the safety of a rider. Next, under the respondent's evaluation on motorcycle maintenance, the highest mean is 4.13 under condition which means that the respondents agree that the condition of the motorcycle is crucial to ensure safeness on the road. Finally, under the comparison between mean score and behavioural aspects, the answers given by the respondents from the evaluation are between the values of 3 to 5 which the majority of answers agree that behavioural aspects as a role an important part to reduce the motorcycle accident happen. It also shows that the behavioural aspects from the practical skills are the most strongly agree from the respondents through the highest score by the mean value of 4.37.

Table 2 below shows that the OSH Management System available is effective as a measure to reduce accidents. This is further reinforced by the results obtained through the questionnaire respondents showed absolutely agree that this system is effective in reducing accidents but there are problem lack of commuting safety management and element of road safety in OSH management system.

**Table 2: Total Number of Motorcycle Accidents (By Year)**

No.	Type of Years	Year	Number of case recorded
1	Year before OSH system	2009	37
2		2010	41
3		2011	45
4	Year after OSH system	2012	16
5		2013	14
Total			153

## 4.0 DISCUSSION

### 4.1 The Behavioural-Based Safety System

From the data analysis and result obtained, several ways are identified to decrease the rising number of commuting accidents in SYABAS. They are to apply the Behaviour-Based Safety System through the seven key principles, to implement the HSE policy, to prepare a Critical Behaviour Checklist (CBC), to arrange consultant and communication, as well as to have safety intervention and intensive programs.

In the Behaviour-Based Safety System through the seven key principles, the following elements are emphasized. They are: 1. Focus intervention on observable behaviour 2. Look for external factors to understand and improve behaviour 3. Direct with activators and motivate with consequences 4. Focus on positive consequences to motivate behaviour 5. Apply the scientific method to improve intervention 6. Use theory to integrate information, not to limit possibilities 7. Design interventions with consideration of internal feelings and attitudes.

### 4.2 HSE Policy

It is the policy of SYABAS to conduct its business at the highest international standards, providing a healthy, safe and environmental friendly workplace for all employees, consumers, contractors, visitors and others, and promoting a positive health, safety and environment culture with proactive involvement by the management, employees and contractors. In order to achieve the above, SYABAS endeavours to: 1. Recognize health, safety and environment objectives as an integral part of

its business performance 2. Implement a continually improved Health, Safety and Environment Management System 3. Periodically establish and review the health, safety and environmental objectives and targets 4. Comply with all applicable health, safety and environment legal and other requirements to which SYABAS subscribes 5. Provide sufficient information, instruction, training and supervision to enhance employee's health, safety and environment consciousness in ensuring works is performed safely 6. Minimize waste and continually prevent pollution in all activities 7. Continuously prevent injury and ill health at workplace 8. Investigate any incidents where the findings will be used to develop and continually improve the health, safety and environment conditions and performance.

The policy HSE will be reviewed yearly through the management review meeting which involves safety and health committee members from all levels including employer representative and employee representative to evaluate and discuss on continuous improvement. SYABAS is committed to periodically review this policy to ensure it is understood by all employees and is made available to all interested parties.

#### 4.3 A Critical Behaviour Checklist (CBC)

A BBS checklist can be specific to a particular task, such as a critical behaviour checklist for motorcycle-riding to train the employees to develop safe riding habits, or at least to demonstrate to other employees the right way and how to ride safely. It is also to enhance the participation of employees to use the checklist as a guidance to encourage safe riding. In a water distribution organization like SYABAS, this type of behavioural checklist could be applied among staffs who commute on the motorcycle regularly as part of their daily work.

The BBS checklist for safe riding is a tool to facilitate employees towards the target behaviour through the action taken. There are two (2) observers for each activity of work which are through safe observation and risk observation. The use of the basic elements of riding can be vary such as behaviour identified, road direction if turn signal, intersection, speed limits, passing and two second rule.

#### 4.4 Consultation and Communication

The responsibility and commitment of employees in health and safety issues and safety risks is communicated to and from employees as well as other interested parties.

The Head of Section shall communicate effectively to employees on matters related to the significant environmental impacts and safety risks, at least through departmental meetings, briefing or memos. Employees who receive information, feedback or complaint from any external interested parties shall forward the information to the Head of Section or the Head of Department directly. Interested parties can communicate through the website maintained by SYABAS and also through the hotline maintained by PUSPEL. PUSPEL will then channel the communication to the relevant department within SYABAS which will then decide on the actions to be taken.

The Head of Department will then, in consultation with the Safety and Health Committee decides on the actions to be taken and the reply to the interested parties. This information, feedback or complaint together with the decision and a copy of the reply would be maintained by the respective department/district. A Safety and Health Committee (SHC) has been established with members from the shop floor employees. Employees can channel their views through the SHC members for consideration by the management. All policies with regards to safety & health and environment are reviewed by the SHC before being approved. The SHC meets at least once in two months and the Secretary of the committee maintains minute of this meeting.

#### 4.5 Safety Intervention

The Head of Department (HQ) / Head of Section (District) shall carry out the hazard and risks identification using the Hazard Identification, Risk Assessment and Determining Control Form (HRAR-HSE-01/01) and the aspect/impact identification using the Identification of Environmental Aspect and Impacts Form (HRAR-HSE-01/02) for all processes under their jurisdiction. If necessary, assistance from other relevant department/section, suppliers or consultant may be requested to complete the identification process.

The process of safety and health hazards/environmental aspects identification shall be conducted by taking into consideration of the following conditions: 1. Normal Condition - All process carried out under this condition are without any problems and are under control during normal operating hours. This does not include non-routine activities like maintenance 2. Abnormal Condition - This applies to process when the processes are functionally upset or functioning with abnormalities. E.g.: Machine functioning with abnormal sound or spillages of hazardous chemical on floor 3. Emergency Condition - This

applies to processes where the processes cause a disaster unexpectedly. E.g.: Machine catch fire or large amounts of emissions to the atmosphere. It shall also include the non-routine activities like maintenance, repair and others.

#### 4.6 Intensive Program

The success of the behavioural based safety system depends on how the process of managing and maintaining continuously improve from time to time and covers the entire area on OSH management system. Other than consultation and communication area, the employee needs to adopt the safety culture in workplaces or any changes and instruction of company about HSE as stated in section 24 (ii) which is the responsibility of employee according to Occupational Safety and Health Act 1994. To enhance the ways of working safely, programs such as motivational talks, social relationship programs and spiritual enhancement programs.

Social relationship programs are one of the BBS strategies to enhance the behaviour of employee in the workplace, construct and maintain relationships, communication networks and process, problem solving and communication skills. While the spiritual enhancement programs are important to employee to strengthened connection between the physical, emotional and spiritual for relaxing body pains and internal body parts or organs through natural way.

“It is the responsibility of the master (employer), to provide work for the employee, what made it easy. They should not be given a job that causes health is jeopardized.” Hadith Riwayat Muslim Ibnu Majah.

"There can be a danger to yourself, and not be a danger to others." Riwayat Muslim.

## 5.0 CONCLUSION

This study shows that there are indeed significant relationships between the behaviour aspects and the number of accidents. It is proposed to improve the existing system with commuting safety management and road safety element in the OSH management system at workplace. Apart from SYABAS, the proposed improvements in OSH management system can be carried out by other organisations, particularly organisations involved with the use of motorcycles in daily operations. The studies previously cited the lack of provision of training leading to an increase in cases of accidents have always been a subject of dispute among each other.

Besides implementing the behavioural-based safety system, the result of the research also needs to be looked into. Demographic factors such as the group of staff, total years of service and level of education need to be taken into consideration before placing a staff in a job that requires the daily usage of motorcycle.

Furthermore, SYABAS needs to work together with the official authorities such as PDRM, JKR, MIROS and NIOSH in order to enforce strict ruling to ensure staffs comply with the road-safety requirements. The authorities need to oversee the matter and the condition of the roads under their coverage and responsibility.

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