

Safe commuting factors from existing guidelines in Malaysia: a review for the construction sector

E S A Sukor¹, A Suratkon², H Mohammad³ and S K Yaman⁴

^{1,2,4} Faculty of Civil and Environmental Engineering, Universiti Tun Hussein Onn Malaysia, Johor, Malaysia

³ Faculty of Architecture, Planning and Survey, University of MARA Technology, Shah Alam, Malaysia

E-mail: zasuliana1166@gmail.com

Abstract. The construction industry is a very active and dynamic industry, which proceeding as one of the significant industry that contributing to the country's economy. Unfortunately, the construction industry has also earned the reputation of being the riskiest industry because of the higher rates of accidents and fatalities. Nevertheless, overwhelming focus by many on the accident in the workplace has shaded the alarming issue of the construction-related commuting accident. As reported by the Malaysia's Social Security Organisation (SOC SO) in 2016, the number of commuting accidents and the compensations paid is increasing each year, and it is including the construction sector. Aware of the importance of safe commuting, several Malaysian agencies have developed their guidelines specifically for the improvement of such issue. Regrettably, the number of guidelines published does not exemplify the improvement of such issue when the number of commuting accidents is on the rise, especially for the construction sector. Therefore, this preliminary research was conducted to identify the safe commuting factors from the existing guidelines through manual document analysis. The finding shows that there are four (4) major categories namely; (1) driver/human factor, (2) vehicle factor, (3) environment factor, and (4) others. Hence, the research posits for subsequent exploration to ensure strategic implementation of those factors that will benefit the Malaysia's construction sector.

1. Introduction

The construction industry plays an important role and able to boost the growth of Malaysia's economy by providing facilities and infrastructure for the country. The Tenth Malaysia Plan (10MP), from 2011 to 2015 showed that the positive impact on innovation and productivity was mainly from the construction sector [1]. However, those achievements have also contributed much towards the safety issue where the statistics have proved that the construction industry was a highly hazardous industry due to its fatality rates [2]. This circumstance depicts that the construction industry is indeed needed a huge and fast overhaul of the current safety practices which capable to improve the overall construction industry's image [1]. Traditional construction objectives of on-time completion, within cost and quality, is becoming obsolete, and the inclusion of safety conducts seen as equally paramount. Unfortunately, in reality, safety matter is always being considered as secondary and many construction employers have not established any comprehensive accident and prevention policies, but instead concentrated on maximising profit [3]. Rationally, providing a safe and healthy work environment is one of the most effective strategies for holding down the cost of doing construction business. Furthermore, accident frequencies and property losses will create a great impact on the construction company. Not only they



do cause delays in operation but also, directly and indirectly, incur additional cost [4]. Therefore, through the national agenda of the CITP, among its mission is to alleviate the safety standard and conduct within the industry. Instrumental to the agenda, the CITP has put forward measures to raise safety levels in the industry [5].

Thus, it is undeniable that safety in the construction workplace appears highly concerning, however, the safety during commuting to the workplace was also seen perturbed, and it is less emphasised. Overwhelm focus by many on the accident in the workplace has shaded the alarming issue of construction-related commuting accident. As reported by Malaysia's Social Security Organisation (SOCISO) in 2016, the number of commuting accidents and the compensations paid is increasing each year (this including the construction sector). Due to the issue addressed, several Malaysian agencies such as the Ministry of Health (MOH), the Department of Occupational Safety and Health (DOSH), the Scientific and Industrial Research Institute of Malaysia (SIRIM), and the Malaysian Institute of Road Safety Research (MIROS) has developed their own guidelines specifically for the improvement of such issue. Unfortunately, given the number of guidelines available which generally sectorial-focused, the argument on their implementation-wise towards the construction sector has emerged. This is exemplified by the lack of current safety practice on safe commuting by the construction practitioners in Malaysia. Therefore, by seeing the above conundrum, a preliminary research undertaking was established to identify the common ground of safe commuting factors. The research is limited by the review of several pertinent keywords and the existing indigenous guidelines which eventually became the primary concerned of this inaugural paper.

2. Commuting accidents

According to James in 1983, the term "commuting" refers to the journey from home to the workplace or from the workplace back to home whereas an "accident" refers to the unplanned event, which could result in injury to persons, or damage to plant and equipment, or both [2]. Similarly from Kirch in 2008, where the regular journey from and to workers' eating places and other work-related places are taken into account [2]. Additionally, by referring to the Malaysian law, the definition of commuting accident can be found in Section 24 of the Employees' Social Security Act 1969 which states that "*commuting accidents are accidents arising out of and in the course of employment occurred while the employee is travelling on the direct way between the place of work and: (a) the worker's place of residence or stay; (b) the place where for any reason which is directly connected to his employment; or (c) the place where the worker usually takes his or her meals during any authorised recess*" [23]. Not far apart, the International Labour Organisation (ILO) defines the accidents occurred during commuting as "*an accident occurring on the habitual route, in either direction, between the place of work or work-related training and: (1) the worker's principal or secondary residence; (2) the place where the worker usually takes his or her meals; or (3) the place where he or she usually receives his or her remuneration; which results in death or personal injury*" [3]. Therefore, from the previous definitions given by several sources, demarcation of "normal accident" and "commuting accident" is very much observed. In a nutshell, commuting accident covers the accidents occurring on legitimate routes taken by the employees on the daily or purposeful basis. It is one of the concerned by most employers, and it happened to be regulated by the government (e.g. Malaysia's government) due to its impacts.

2.1. Commuting accidents in Malaysia

In Malaysia, SOCISO was established as a government department to enforce the Employees' Social Security Act 1969. SOCISO administers the Employment Injury Insurance Scheme which is protection for employees against industrial accidents including occupational diseases and accidents while commuting for work related purpose [4]. According to SOCISO, the number of commuting accidents in Malaysia is seen as alarming and the trend for commuting accidents perceived to be constantly increased from time to time [7]. There are 62,863 workplace accidents in 2015, where 34,272 of the cases were classified as industrial accidents, and the other 28,591 cases were coming from commuting accidents [5]. This is an increase of two percent compared in 2014 with only 27,342 cases. Every day, three people

die in road accidents in this country, and two out of those three cases would involve people travelling to or from work [5]. The Deputy of Human Resource Minister, Datuk Seri Ismail Abdul Mutalib said that the increase in these accidents was a cause for concern as the incidents mostly occurred within just five kilometres from their workplace [6]. On the other hand, the chairman of National Institute of Occupational Safety and Health (NIOSH), Tan Sri Lee Lam Thye also claimed that “*the commuting accidents are also very alarming when it increased 65.3 percent in 2015 compared to 2005*” [5]. The previous statements strongly support the predicament, and this issue needs to be taken seriously and should be prevented from continuously rampant.

By referring to figure 1, it shows the number of accidents and the number of commuting accidents reported from 2006 to 2014 [7-12]. The trend of accidents reported was slightly decreased from 58,321 cases in 2006 to 54,133 cases in 2008. However, a gradual increment to 63,557 cases in 2013 before a marginal decreased to 63,331 cases in 2014 is observed. In contrast, the trend for commuting accidents increased each year, which is 17,704 cases in 2006 to 28,037 cases in 2014. This situation shows that the commuting accidents are regarded as serious and might further continue to rise if left unchecked. As a consequence, the SOCSO need to compensate a lot of money, and the amount is increasing each year. The annual amount has increased from RM 2 billion in 2012 to RM 2.6 billion in 2015, with a third was for commuting accidents [13].

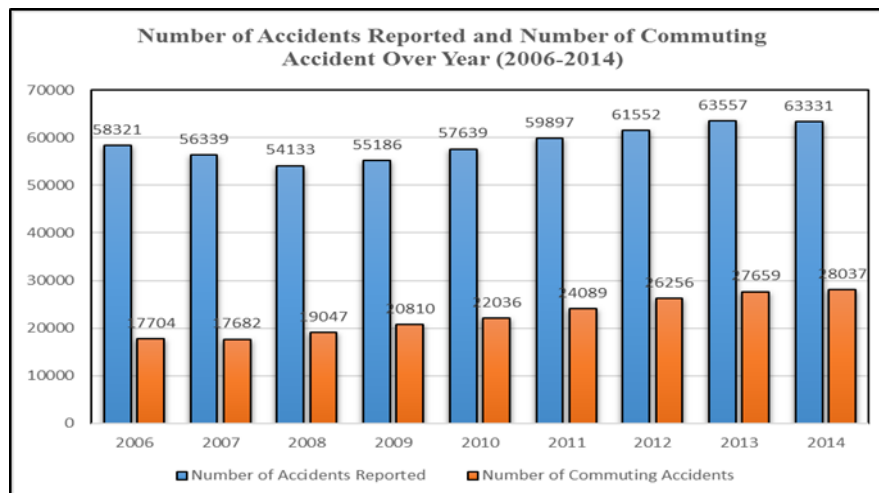


Figure 1. The number of accidents and commuting accident reported by SOCSO from 2012 to 2015. Source: Social Security Organisation (SOCSO) [7-12].

According to Aziz [2], the law does not only dealt with workplace accidents or injuries but also including commuting accidents as well [2]. Commuting accident is not new to occupational safety and health yet it is not as popular and given very much concentration as industrial accidents. Nevertheless, in recent years, the commuting accidents has become a serious issue at national and international levels and has caused concern to the developing countries, and it is including Malaysia [2]. The International Labour Organization (ILO) stated that 22 million work-related deaths occurred every year, in which 350,000 death were from accidents at work, 1.7 million due to occupational disease, and 158,000 due to commuting accidents [3]. The previous studies by the Social Security Organization (SOCSO) in collaboration with local universities showed that 88% of accidents occurred while commuting to and from work [19]. This situation seems worrying since the accidents have not only can cause direct losses (e.g. lives and properties) but also indirect losses (e.g. social and economy) to the employee, organisation, and the country as a whole. Furthermore, the issue related to commuting accidents cannot be considered trivial as the implications of this issue are indeed substantial.

Additionally, Rahim et al. (2008) stressed that the safety aspect is often considered unimportant, and many employers have not established any comprehensive accident and prevention policies, and only

focusing on maximising profit [14]. This is more prevalent in the construction sector. On the contrary, by providing a safe and healthy workplace environment, the cost of doing construction business can be minimised. This is especially true when property losses and accident frequencies will cause delays in operation which directly led to an increase in cost [15]. Therefore, through the national agenda of the Construction Industry Transformation Programme (CITP) by the Construction Industry Development Berhad (CIDB), among its mission is to alleviate the safety standard and conduct within the industry. As one of the main thrust, the CITP has puts several forward initiatives to improve the safety levels in the construction industry [16].

2.2. Commuting accidents within construction sector

SOCSSO as the main government agency that provides protection for employees against industrial accidents has accumulated a large database pertaining to employees' accident record. According to an unpublished statistic regarding sectorial commuting accidents (see figure 2), the construction sector is listed in the top four sectors which contributed to the consecutive increase in the number of commuting accidents and this phenomenon is considered to be alarming. In a greater detail (see table 1), the number of commuting accidents occurred in the construction sector in 2012 was 1,913 cases, and this number is gradually increased to 2,724 cases in 2015 [17]. This statistic encapsulated various types of vehicles commonly used in the construction sector and spans for the entire hierarchy of worker/personnel positions. Currently being labelled as one of a highly hazardous industry due to its fatality rates [18], the reputation of the construction sector will continue to deteriorate. Therefore, immediate countermeasures are indeed needed to overcome this problem from getting worse and at the same time improvement of its image can be made.

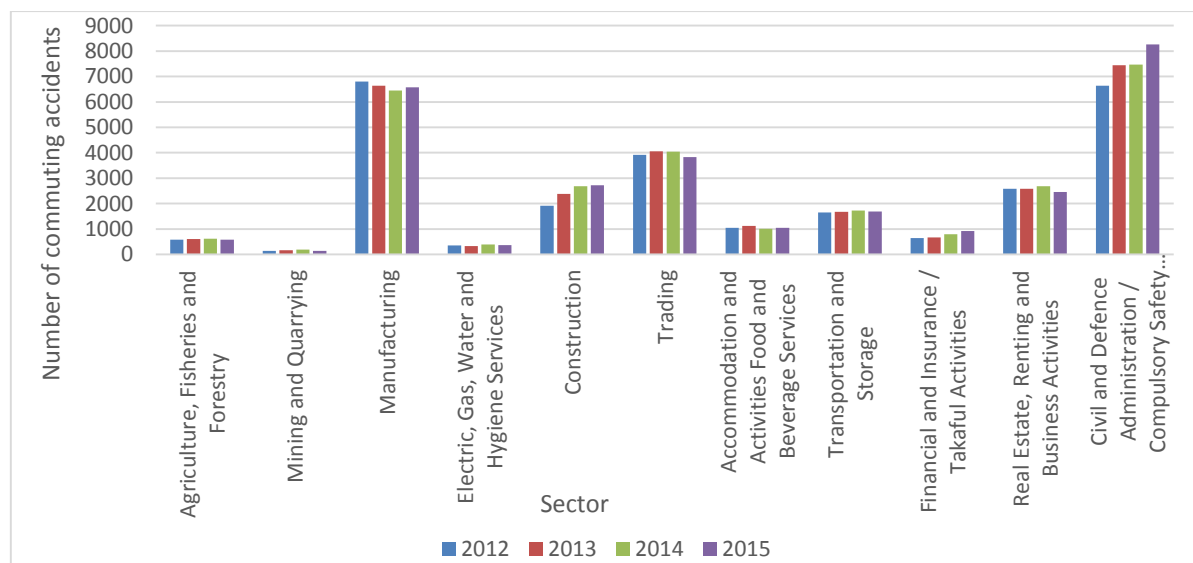


Figure 2. Trends of commuting accidents by sector from 2012 to 2015 [17].

3. Safe commuting guidelines in Malaysia

The issue related to commuting accidents is not new, and several organisations have taken their initiatives due to the importance of general safe commuting. Agencies such as the MOH [19], DOSH [20], SIRIM [21], MIROS [22] has developed their guidelines specifically for the improvement of such issue. As for the MOH, a document named “Guidelines for the Prevention of Accidents at the Workplace” was introduced in 2008. Since the MOH’s jurisdiction is covering the prevention of accidents at the workplace, this guideline is seen as broad in nature. Only a sub-section of guidance for safe commuting is observed within the document. On the other hand, as a department under the Ministry of Human Resources (MOHR), DOSH is responsible for ensuring the safety, health, and welfare of people at the workplace. As an initiative to curb commuting accident, DOSH has published a guideline

named “Occupational Safety and Health Industry Code of Practise for Road Transport Activities” in 2010. The guideline is generally formulated to provide information and practical guidance for employers in fulfilling their general responsibility to ensure their workers’ safety and health. As for the SIRIM, a guideline named “SIRIM Standard (SIRIM 4 : 2014): Good Practices in Implementing Commuting Safety Management” was introduced in 2014. Finally, a guideline named “Code of Practice for Safety, Health and Environment” was introduced in 2017 by the MIROS. Regrettably, the number of guidelines published does not exemplify the improvement of such issue when the number of commuting accidents is on the rise, especially for the construction sector. Therefore, several questions emerged regarding their awareness level, implementation and enforcement, etc.

Table 1. Number of commuting accidents by sector from 2012 to 2015 [17].

| Sector | 2012 | 2013 | 2014 | 2015 |
|---|--------|--------|--------|--------|
| Agriculture, Fisheries and Forestry | 585 | 610 | 614 | 578 |
| Mining and Quarrying | 135 | 168 | 192 | 141 |
| Manufacturing | 6805 | 6,636 | 6,443 | 6,569 |
| Electric, Gas, Water and Hygiene Services | 349 | 324 | 386 | 364 |
| Construction | 1,913 | 2,378 | 2,685 | 2,724 |
| Trading | 3,923 | 4,053 | 4,047 | 3,829 |
| Accommodation and Activities Food and Beverage Services | 1,044 | 1,120 | 1,007 | 1,051 |
| Transportation and Storage | 1,652 | 1,673 | 1,727 | 1,686 |
| Financial and Insurance / Takaful Activities | 640 | 675 | 791 | 918 |
| Real Estate, Renting and Business Activities | 2,578 | 2,580 | 2,680 | 2,454 |
| Civil and Defence Administration / Compulsory Safety Activities | 6,632 | 7,442 | 7,465 | 8,265 |
| Total | 26,256 | 27,659 | 28,037 | 28,579 |

4. Safe commuting factors

The key factors for safe commuting are observed to be well documented by several indigenous guidelines. As shown in table 2, there are 44 factors found from all relevant guidelines gathered in Malaysia. As for SIRIM, there are ten factors listed which are competency; health and fitness; behaviour; safety features and device; suitability of vehicle; vehicle pre-check inspection; road condition; road furniture along the route; road environment; and traffic volume. Meanwhile, there are 12 factors listed from the MOH which are competency; health and fitness; behaviour; safety features and device; pre-check inspection; road condition; emergency response; trip monitoring; driving hours and working hours; maintenance and restoration of vehicles; training; and safe vehicle. Apart, from MIROS, there are 25 factors altogether. The factors listed are emergency response; driving hours and working hours; maintenance and restoration of vehicles; recruitment of driver procedure; driver categorisation; training and change way of thinking; driving procedure; driver rotation; awards and punishment; procurement of vehicles; vehicle license; use of vehicles; designated driver for certain vehicles; replacement and disposal of vehicles; passenger and cargo management; identifying hazard and risk on routes; rest and recreation area; insurance coverage; personal accident coverage; incident or accident reporting system; complaint management; safety, health, and environment (SHE) training and competence; contractor management; monitoring system; and self-assessment. Finally, the DOSH has 19 factors namely, health and fitness; pre-check inspection; emergency response; trip monitoring; driving hours and working hours; training; maintenance and restoration of vehicles; driver categorisation; driver rotation; vehicle license; passenger and cargo management; rest and recreation area; complaint management; driver intake procedure; trip schedule; reports and accidents investigation; vehicle fault recording and reporting; vehicle cleanliness; and driving practices and hazard. According to table 2, a guideline from MIROS recorded the highest frequency of safe commuting factors, while the least is from SIRIM.

Table 2. The safe commuting factors according to guidelines in Malaysia

| Safe Commuting Factors | Guidelines (from) | | | |
|---|-------------------|-----|-------|------|
| | SIRIM | MOH | MIROS | DOSH |
| 1) Competency | ✓ | ✓ | | |
| 2) Health and Fitness | ✓ | ✓ | | ✓ |
| 3) Behaviour | ✓ | ✓ | | |
| 4) Safety features and device | ✓ | ✓ | | |
| 5) Suitability of vehicle | ✓ | | | |
| 6) Vehicle pre-check inspection | ✓ | ✓ | | ✓ |
| 7) Road condition | ✓ | ✓ | | |
| 8) Road furniture along the route | ✓ | | | |
| 9) Road environment | ✓ | | | |
| 10) Traffic volume | ✓ | | | |
| 11) Emergency response | | ✓ | ✓ | ✓ |
| 12) Trip monitoring | | ✓ | | ✓ |
| 13) Driving hours and working hours | | ✓ | ✓ | ✓ |
| 14) Driver training | | ✓ | | ✓ |
| 15) Safe vehicles | | ✓ | | |
| 16) Maintenance and restoration of vehicles | | ✓ | ✓ | ✓ |
| 17) Recruitment of driver procedures | | | ✓ | |
| 18) Driver categorization | | | ✓ | ✓ |
| 19) Training and Change Way of Thinking | | | ✓ | |
| 20) Driving procedure | | | ✓ | |
| 21) Driver rotation | | | ✓ | ✓ |
| 22) Awards and Punishment | | | ✓ | |
| 23) Procurement of vehicles | | | ✓ | |
| 24) Vehicle License | | | ✓ | ✓ |
| 25) Use of Vehicles | | | ✓ | |
| 26) Designated Driver for Certain Vehicles | | | ✓ | |
| 27) Replacement and disposal of vehicles | | | ✓ | |
| 28) Passenger and Cargo Management | | | ✓ | ✓ |
| 29) Identifying Hazards and Risks on Routes | | | ✓ | |
| 30) Rest and Recreation area | | | ✓ | ✓ |
| 31) Insurance coverage | | | ✓ | |
| 32) Personal Accident Coverage | | | ✓ | |
| 33) Incident / Accident Reporting System | | | ✓ | |
| 34) Complaint Management | | | ✓ | ✓ |
| 35) SHE Training and Competence | | | ✓ | |
| 36) Contractor Management | | | ✓ | |
| 37) Monitoring System | | | ✓ | |
| 38) Self-Assessment | | | ✓ | |
| 39) Driver intake procedure | | | | ✓ |
| 40) Trip schedule | | | | ✓ |
| 41) Reports and accident investigation | | | | ✓ |
| 42) Vehicle fault recording and reporting | | | | ✓ |
| 43) Vehicle cleanliness | | | | ✓ |
| 44) Driving practices and hazard | | | | ✓ |
| Total | 10 | 12 | 25 | 19 |

In order to preliminarily categorise the factors based on its inherent meaning, reviews from the guidelines itself and other reference were conducted. According to the Royal Malaysian Police (RMP) in 2004, the main factors contributing to road accidents were divided into three categories, namely; human factors, vehicle factors, and environmental factors [19]. Inline, SIRIM also divided the factors into three categories which are the road users, the vehicle, and the road and environment factors [21]. Meanwhile, the DOSH divided the factors into three categories which are the driver's management,

vehicle's management, and journey and risk management [20]. In contrast with the MIROS, the factors were divided into four categories, namely driver's management, vehicle's management, journey and risk management, and document management system. However, a single general classification is observed from the MOH's guideline [19]. Table 3 present the summary of categorisations according to the previous discussion. It can be seen that the majority of them opted for three main categories. Nevertheless, to maintain the reproduction of factors without jeopardising their current inherent meaning, the authors have selected four main categories as according to the MIROS.

Table 3. Categorisation of safe commuting factors based on references.

| Reference | Road Users/Driver/Driver Management | Vehicle/Vehicle Management | Road and Environment /Journey and Risk Management | Document Management System |
|-----------|-------------------------------------|----------------------------|---|----------------------------|
| SIRIM | ✓ | ✓ | ✓ | x |
| MOH | x | x | x | x |
| DOSH | ✓ | ✓ | ✓ | x |
| MIROS | ✓ | ✓ | ✓ | ✓ |
| RMP | ✓ | ✓ | ✓ | x |
| Total | 4 | 4 | 4 | 1 |

Therefore, guided by table 3, the authors have divided the safe commuting factors into four (4) essential categories, namely; (1) driver/human, (2) vehicle, (3) environment, and (4) other factors. Driver's factors generally cover all road users including their management aspects. Apart, vehicle and vehicle management were classified as vehicle factors. Separately, for road, environment, journey and risk, it was being categorised as environment factors since their external nature apart from the driver and vehicle. Finally, other factors which do not inherently belongs to the previous classifications are grouped into one, this was including document and system management. Finally, conceptualisation of safe commuting factors (see Table 2) according to four essential categories were made as in figure 3. Here, demarcation of safe commuting factors according to its categories was visualised clearly. There are 16 factors under driver's category, 11 factors within each vehicle's and environment categories, and six factors belongs to others.

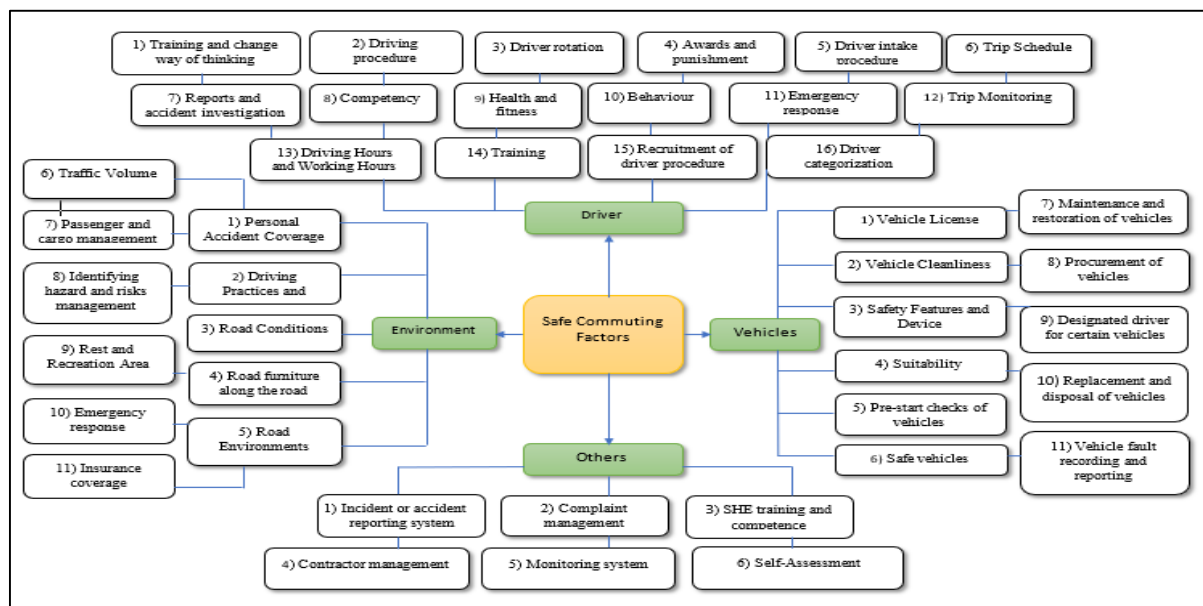


Figure 3. Safe commuting factors according to its categories

5. Conclusions

In recent years, the commuting accidents have become a serious issue at national and international levels. This issue has caused concern to the developing countries including Malaysia. In a micro perspective, this situation is considered alarming to the construction sector since the construction sector is one of the highest contributors to the increment of commuting accidents in Malaysia. Consequently, this research was initiated as a preventative measure to address this problem from becoming to more severe. In this inaugural paper, given the existing nature of safe commuting guidelines offered by several public organisations, the authors gathered all factors which are relevant to maintain safe commuting based on the guidelines. Then it was clustered as according to their inherent meaning for the conceptualisation of holistic understanding regarding the phenomenon. Four clusters were identified, namely; (1) driver, (2) vehicle, (3) environment, and (4) others. The authors posit for necessary subsequent research undertakings through qualitative and quantitative approaches in order to materialise the strategic implementation of safe commuting conducts among construction practitioners.

6. References

- [1] Keng T C and Razak N A 2014 Case studies on the safety management at construction site *J. Sustain. Sci. Manag.* **9** 90
- [2] Aziz N H A and Yusof A A 2015 The employer's duties and liabilities in commuting accidents in Malaysia: law and management *Procedia - Soc. Behav. Sci.* **211** 796
- [3] The International Labour Organization 2011 *World Social Security Report 2010/11: Providing coverage in times of crisis and beyond* (Geneva: International Labour Organization) p 65
- [4] Jamaluddin N, Sim H J, Shabadin A, Johari N M and Batcha W A 2015 Exposure work commuting: case study among commuting accidents in Klang Valley, Malaysia *J. Civ. Eng. Archit.* **9** 51
- [5] Hamudin N 2016 *NIOSH names three industries responsible for highest cases of workplace accidents* News Strait Times (online), 1 September 2016
- [6] Ismail L 2016 *Accidents on the rise as people hurry to clock-in during morning rush hour* News Strait Times (online), 12 April 2016
- [7] Pertubuhan Keselamatan Sosial 2009 *Annual Report 2009* (Kuala Lumpur: PERKESO)
- [8] Pertubuhan Keselamatan Sosial 2010 *Annual Report 2010* (Kuala Lumpur: PERKESO)
- [9] Pertubuhan Keselamatan Sosial 2011 *Annual Report 2011* (Kuala Lumpur: PERKESO)
- [10] Pertubuhan Keselamatan Sosial 2012 *Annual Report 2012* (Kuala Lumpur: PERKESO)
- [11] Pertubuhan Keselamatan Sosial 2013 *Annual Report 2013* (Kuala Lumpur: PERKESO)
- [12] Pertubuhan Keselamatan Sosial 2014 *Annual Report 2014* (Kuala Lumpur: PERKESO)
- [13] Miwil O 2016 *Less workplace accidents, but commuting accidents up in Sabah* News Strait Times (online), 12 May 2016
- [14] Hamid A R A, Majid M Z A and Singh B 2008 Causes of accidents at construction sites. *Malaysian J. of Civil Engineering* **20**(2) 242
- [15] Bakri A H, Zin A, Misnan R M and Mohammed M S 2006 Occupational safety and health (OSH) management systems: towards development of safety and health culture *Proc. of the 6th Asia-Pacific Structural Engineering and Construction Conference (ASPEC 2006)* (Kuala Lumpur) (Skudai: Universiti Teknologi Malaysia) pp 5-6
- [16] CIDB 2015 *Construction Industry Transformation Programme (CITP) 2016-2020* (Kuala Lumpur: CIDB)
- [17] SOCSO 2017 *Number of Commuting Accidents Reported to SOCSO* (Kuala Lumpur: PERKESO) "Unpublished"
- [18] Abdullah D N M A and Wern G C M 2010 An analysis of accidents statistics in Malaysian construction sector *Int. Conf. E-business, Manag. Econ.* **3** 1
- [19] Unit Kesihatan Pekerjaan 2008 *Garis Panduan Pencegahan Kemalangan di Tempat Kerja* (Putrajaya: Unit Kesihatan Pekerjaan)

- [20] DOSH 2010 *Occupational Safety and Health Industry - Code of Practise for Road Transport Activities 2010 JKKP DP(S) 127/379/3-5* (Kuala Lumpur: DOSH) pp 24-37
- [21] SIRIM Berhad 2014 *Good Practices in Implementing Commuting Safety Management (SIRIM 4:2014)* (Selangor: SIRIM) pp 5-37
- [22] MIROS 2008 *Kod Amalan Keselamatan, Kesihatan dan Persekitaran* (Kajang, Selangor: Institut Penyelidikan Keselamatan Jalan Raya Malaysia (MIROS)) pp 19-55
- [23] Malaysia 1969 The Commissioner of Law Revision, Malaysia (2006): *Laws of Malaysia, Act 4: Employees' Social Security Act 1969* pp 34

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