Exploring safety culture and speeding among truck drivers: A study in Johor

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Abstract: The phenomenon of speeding among truck drivers are prevalent in most places and contributed to high number of road accidents. Most of heavy vehicle drivers are subjected to multiples traffic laws including their employers for monitoring safety performance while discharging duties. However, heavy vehicle drivers or truck drivers are in full control of their behaviour and as such reckless driving or speeding are all due to their attitudes, which resulted to such behavioural actions. The current study is looking at redefining safety culture in exploring the behaviours of speeding among heavy vehicle drivers. Multiple series of case studies, comprising interviews as well as observations were conducted at three road transport operators to explore the effect of safety culture in these organisations. The findings for the inappropriate speed are documented and discussed. It was discovered that transport organisations which implemented the driver' performance monitoring on over speeding either through internal initiative or authorities enforcement could all reduce the likelihood of over speeding among truck drivers. Nonetheless, due to flaws in the ability to monitor appropriate speed, this conduct was primarily influenced by attitudes, values and cultural beliefs. Truck drivers are generally have the tendency to regard speed as relatively safe and as such , had the determination to speed to cut down time and increase delivey trips, and therefore often attempted to speed without detection.Generally drivers perceived speeding as risk, however they were prefer to drive safely. Consequences for intervention are discussed.

Keywords – safety culture, safe driving , heavy vehicle ,truck drivers.

Introduction

Speeding is among the highest causes of road accident in the heavy vehicle industry. Driving above the permitted speed limit is a well known risk factor for traffic accidents. Driscoll (2013) reported on 461 major heavy vehicle accidents in 2015, stating that inappropriate speed was responsible for 25.4% of these crashes. Brodie,Lyndal and Elias (2015) analysed coroners' reports, finding that excessive speed was involved in 43.1% of fatalities in which speed was documented. A number of researchers have indicated that safety culture could provide a useful avenue for improving safety in the heavy vehicle industry (Gander et al.,2011; McCorry& Murray,2013;Short,Boyle,Shackelford,Inderbitzen,& Bergoffen,2007). With more trained drivers, the accident rate is expected to drop and importantly the severity of accidents is expected to decline as well (Snyder, B. H. (2012). It has been acknowledged that road users' behaviour contributes significantly to road accidents and that the road accident rate increases with speeding (Chen, F., & Chen, S. (2011). Sully, M. (2015) found that excessive speeding (40 km/h more than the posted speed limit) is a better predictor of serious injury and fatal crash.

Safety culture has seen significant attention within the literature in recent years, and there is a significant debate about the nature of safety culture and how it can be defined (see reviews by Choudhry,Fang,& Mohamed,2007;Edwards,Davey,& Amstrong,2013; Guldenmund,2016). There are two major approaches to safety culture primarily in terms of organisational structures and systems, and has been called a normative or functionalist approach (Edwards et al.,2013 : Naevestad, 2016). The other views safety culture primarily in terms of sahred beliefs, attitudes and values, and is referred to as

an anthropological or interpretive approach (Edwards et al., 2013: Naevestad,2016). The term safety culture is a concept that describes the shared corporate values within an organisation that influences the attitudes and behaviours of its members. Safety culture is a part of the overall culture of the organization and is seen as affecting the attitudes and beliefs of members in terms of health and safety performance (Edwards et al, 2013). It describes the shared perceptions and attitudes related to the importance of safety (Davey and Amstrong, 2013; Naevestad, 2016). Culture was also described by Guldenmund (2016) to have depth, at the surface are the visible manifestations (eg., statements, meetings, personal protective equipments use), a middle layer includes the espoused values and deeper layer of the basic assumptions regarding the nature and reality of truth, time, space, human nature, activity and relationship.

Safety compliance is considered the core or required safety activities that must be accomplished to maintain system safety while safety outcome is measuring the organisational success in preventing road crashes. A positive safety culture is "characterised by communication founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measures" (Gadd and Collins, 2002). Four factors in a strong safety culture (a) senior management commitment to safety; (b) realistic and flexible customs and practices for handling both well-defined and ill-defined hazards; (c) continuous organizational learning through practices such as feedback systems, monitoring and analysing; and (d) a shared care and concern for hazards across the workforce (Gadd and Collin, 2002).

In previously published review, the authors examined journal articles about heavy vehicle driver health and safety identifying a brand range of influences on health and safety in heavy vehicle industries (Edwards,Davey, & Amstrong,2014). These included government regulations and enforcement, organisational factors, customer pressures and requirements and road /environmental factors. In addition to these external factors, it should be noted that heavy vehicle drivers have a high level of autonomy over their own behaviour (Arboleda, Morrow,Crum & Shelley Li, 2013). Further, Sully (2015) suggested that due to the amount of time heavy vehicle drivers spend away from their depot means that they are more likely to associate themselves with an industry wide road culture than to a specific transport company.

As such, to comprehend speeding in trucking industry, it needs to explore both internal and external factors on speeding and think beyond the typical traditional outlook of an organisation. This shows a challenge to the application of two typical approaches to safety culture, which basically focus on one of these aspects in isolation and within the context of an organisation. The authors previously presented an alternative approach to safety culture in which safety culture is viewed in terms of the combined impact of both external contextual elements and shared beliefs attitudes and values (Edwards et al., 2013). More importantly, this framework held that safety related behaviours were influenced by interactions between culture and contextual factors. To date, there is no strong evidence to suggest that culture can be deliberately changed (Edwards et al., 2013 ; Naevestad, 2016), however , by understanding the existing culture and how it interacts with contextual factors , it may be possible to change these contextual factors to work with the culture of a workforce to improve safety (Edwards et al., 2013,2015). The present study uses this framework of safety culture to explore the effect of culture on speeding in the heavy vehicle industry in Johor, Malaysia.

Method

A series of three qualitative case studies with transport organisations were conducted to investigate safety culture among the selected heavy vehicle operators in Johor, Malaysia. These case studies formed a collective case study (Stake,2005), which the three organisations chosen for the research were selected to provide insight into the broader industry. The case studies were conducted using a combination of ethnographic methods (interviews and participant observations) and grounded theory analysis techniques (specifically those of Corbin & Strauss,2005). This study operated under several assumptions. The first assumption was that all participants responded honestly. This assumption was based on the premise that responses will not be subject to a bias which results in the participant answering the questions in a manner that is vindictive or self-serving. A further participant assumption was the participants had the capacity to understand both the research instrument and the concepts. This assumption was based on the assertion that participants were familiar and capable of understanding the

industry specific language used within the questionnaire. In addition, some of the respondents were the established operators in the industry with all the necessary work practices had been in place for years and as such they should have responded objectively with the survey instrument during the data collection exercise. With the many operators with fewer establishments in their safety operational set up, their response in the survey should have reflected the actual practices in their daily operations and the management approach in dealing with drivers' safety.

Participating Organisations

The three participating organisations (identified here as Company A,B & C), were selected on the basis of knowledge from a series of preliminary interviews. These interviews indicated that both safety and the culture in the industry differed depending on the location, types of vehicles used and goods transported, distance of the haul and the size of the company. The three transport companies in Johor, Malaysia were selected to sample this diversity to enable similarities and differences to emerge.These differentiating characteristics for each company can be seen in table 1.

Table 1 . Case study organisation characteristics

	Company A	**Company B**	**Company C**
Company Size	Medium	Medium	Medium
Location	Pasir Gudang	Tampoi	Skudai
Types of freight	Chemical	Container	Earth and sand
Typical Distance Carried	Long haul	Medium and long haul	Short haul
Main truck types	Road Tanker	Container Haulier	Rigid truck

Company A is a medium size family owned and operated a chemical road tanker in Pasir Gudang, Johor. The organisation employs about 100 staff and owns over 50 trucks. Semi-structured interviews and observations were conducted with 10 staff members. Four managerial , administrative and operational staff (two managers, one helath and safety officer and one operations manager) , along with six truck drives, took part in interviews. Six observations were also conducted with heavy vehicle drivers.

Company B is located in Tampoi, Johor Bahru, operating a medium size container haulage , employing 88 staff with over 65 trucks. Due to the diversity within Company B, the organisation has a number of managers overseeing branches within the company. Ten interviews were conducted within Company B. Participants consisted of the compliance officer, and part owner of the company, two regional managers who each oversee about half of the fleet, five branch or depot managers. Two driver trainers and an operational maanger. Eight observations were conducted , typically covering a driver's shift.

Company C is a small sized company transporting earth and sand which is based in Skudai Johor. Family owned and operated, the organisation consists of six trucks and various trailers , and employs between six and 10 people at any point in time. Five interviews were conducted with the owner /manager, compliance officer, two drivers, and the owner/driver/head mechanic. Three observations were conducted.

Method

The interviews lasted between 30 minutes and two hours and covered a variety of topics. The first questions were typically aimed at getting information regarding the history of the individual and identifying major safety concerns in their work role. Later questions sought to identify contextual , cultural and behavioural factors which influence this safety concerns. Participants were asked about specific behaviours and outcome which were not spontaneously discussed. Prompts were seldom required as participants appeared eager to share their perspectives on safety.

Typically conducted after the interviews, observations of drivers occurred during drivers' usual shift. Most observations lasted the duration of the shift, although some lasted for a portion of the shift. During observations the researcher conducted informal interviews similar in nature to the staff member interviews. Additionally, questions were asked which specifically related to tasks witnessed.

Results and Discussion

Throughout the case studies, a significant degree of congruence was found across members of the three companies. As the case study companies were selected to provide a broad overview of perception within the industry from differing subsections, this congruence allowed the case studies to be interpreted collectively as originally intended. This gives support to the notion of an industry wide culture , and for the purpose of this paper, differences between companies will be noted where relevant however, the majority of discussion will incorporate responses from members of each company to shift focus away from specific companies and toward a broader industry focus.

It should be noted that during observations and interviews with drivers , only hand written were taken, reducing the possible length of quotes. Conversely, during interview that occurred with staff members , audio recordings were made. As such, the majority of large quotes are from managers. Nonetheless, the quality of hand written notes permitted analysis to be conducted both on verbatim quotes from audio recordings and the detailed written notes. As such, while the majority of reported quotes are from managers, the analysis allowed equal voice to drivers and staff members.

Participants generally acknowledged speeding to encompass both driving at unsafe speed for the conditions and exceeding the permitted speed limit. Heavy vehicles are legally required to be speed limited to prevent speeds exceeding 80km/h or greater. As such this limiting technology only reduces speeding on highways with a permitted speed limit of 80km/h for heavy vehicles. When asked about speeding one Company B driver stated, due to speed limiter. " I cannot speed". Similarly, the driver/manager of Company C (both is the manager and drives a truck) said that their drivers "can't speed because they are limited". Given that heavy vehicles can easily exceed lower posted speed limits , this perception is clearly flawed, but highlights that some participants though speeding was not a possibility.

There were a broad range of factors suggested by participants to be associated with speeding behaviour and the likelihood of outcomes. These included both contextual and cultural factors. For the purpose of present discussion, contextual factors will be discussed in brief to leave room for greater discussion of cultural beliefs, attitudes and values.

3.1 Contextual factors influencing speeding

Many of the contextual factors identified by participants as being related to speeding and speed related road accidents were obvious or commonly known as risk factors. These included factors such as inclement weather reducing the safe speed of travel, other vehicles and road works causing delays which lead to increased work pressures. Of particular importance however were the roles of law enforcement, organisations and customers.

3.2 Law enforcement and speeding

Traffic law enforcement is a pillar to road safety strategies globally. With regard to heavy vehicles and speeding there were three main methods of monitoring and enforcement in Malaysia. These were (1) sped limiters, (2) automated enforcement system (AES), and (3) mobile enforcement. While each of these has some merit, there weakness identified by participants which reduce their deterrent effect.

Speed limiters were seen as easy to tamper with those who wish to do so. More importantly , however, in addition to the fact that speed limiters only set a maximum speed, which does not adapt to varying speed zones , it was noted that the mechanism by which speed limiters operate does not prevent speeding downhills.

> *The road is fixed at 80km/h. They will go faster than that off a hill because they are not gear bound at 80km/h but I think they will top out at just over 85 km/h (Company A Manager One)*

Standard speed cameras were generally seen as ineffective as truck drivers become familiar with the roads they travel and know exactly the locations of each AES camera the will pass. Thus, they only need to watch their speed in these places. Firther, AES speed trap cameras were seen as easy to overcome , as every truck driver is aware of the legal times and many will time their trip and wait before passing the next AES camera.

> *Speed trap camera (AES) don't stop you from speeding as drivers are familiar with these places with AES cameras and they will abide with the permitted speed before speeding again after passing these areas. The same situation for other road users especially cars (Company A Driver Six)*

Finally, while mobile enforcement by traffic police has benefits, the use of UHF radios allows truck drivers to be aware of police locations at all times on the road, thanks to WAZE apps. Overall, these issues mean that there is an absence of certainty of punishment for speeding , and thus a very limited level of deterrence. Thus, it is seen as unlucky to be caught speeding by the authority.

> *I have had two traffic summons for speeding issued by traffic police via their speed trap cameras in the past six months… just my bad luck that when I did not turned WAZE apps while driving, so I did not get the reminder on the police speed traps camera from the apps. (Company A Driver Six)*

3.3 Transport companies and speeding

Most of heavy vehicle drivers stated the reason for speeding is due incentive payment scheme where the reward system is based on the number of trips done per day. Starting with the payment of drivers ,hourly rates were associated with safer behaviour as driving slower results in greater income. Conversely, as stated by one Company B driver, payment by the kilometre or load is a 'good incentive to drive fast' , as travelling the same distance in less time is a more efficient way to earn money. Of the three participating companies, Company A paid a km rate for all long distance drivers, but an hourly rate for local drivers,Company B paid all their drivers an hourly rate, finally Company C drivers are paid a salary (which was comparable to a load rate due to the inability to earn overtime if the load takes too long.

> *Basically the drivers over at (previous employer location), they are getting paid on trip rate. So it is their own interest to drive faster to get more trips…Over here they get paid on an hourly rate so they are not actually achieving anything by speeding and obviously our trucks are regulated to down to 75km and theirs are still 80km or 85 km per hour.. (Company B Branch Manager Two)*

Each company relied on two primary means to monitor speed compliance – satellite tracking and speeding infringement notices from government departments. The satellite tracking methods of each company were capable of reporting current speeds and sending alerts to managers when vehicle exceed a chosen speed limit. Though they can be used to alert managers to different speeds in different locations, thus monitoring all speeding above the posted speed limit, they were typically only used to detect speeds in excess of the speed limiter. Company C manager did indicate that they will on occasions actively watch the tracking monitor and determine whether the vehicle was speeding on a given road, however, this only occurred occasionally. Company B did implement specific speed zones in two locations, one of which was near a depot and the other was on a specific road within town areas. These locations were monitored due to either past speeding fines or complaints by local residents regarding their trucks. As such, while there are cases of satellite being used more thoroughly , satellite tracking

was predominately only used to detect speeding down hills, or speed limiters that have subjected to tampering.

> *Tampering with speed limiters is easy technically but drivers can't do it without being caught. Satellite tracking via GPS shows vehicle over limited speed for an extended period of time and you know they have tampered. Despite being sacked, such cases are quite repetitive. (Company A Driver three).*

Enforcement of speeding in each company was largely through non-conformance notices. For first offences and minor breaches, non conformance notices were typically used to inform the driver that they were detected and to remind them to comply with the upper speed limit. Within Company A, one driver suggested that individual offences go unpunished, and that drivers will be reminded to slow down, yet that repeated offences are followed by non conformance notifications, and/or one week without work and payment. However, one Company A driver stated that he "had his truck up to 100km/h downhill but it was never followed up".

3.4 Customers and speeding

Whilst customer pressures may encourage speeding , it was generally stated that customers seek to ensure driver speed compliance due to their chain of responsibility requirements. This primarily occurred through auditing company records of traffic infringements and satellite tracking , and how the company manages these. However, it should be again stated that there were weakness in these methods of detecting speeding.

> *We were closely monitored…there is a lot of trucks here that are painted (colour with customer name) on the side. We do a lot of work for them. We were very closely monitored and essentially they even do their own audit on us every six to 12 months to make sure we are not breaking the law. (Company A Manager One).*

Contextual factors : Summary

From the above contextual factors it can be seen that there is a relative lack of successful monitoring and enforcement of speeding in heavy vehicle industry. Police enforcement was only seen as effective in the immediate presence of fixed camera or mobile enforcement (as drivers know their location), and had limited lasting influence on behaviour. Similarly, the three organisations only successfully monitor tampering with speed limiters. Finally, while customers may require evidence of the management of speed, due to limitation in organisational monitoring , this is not sufficiently beneficial. On the other hand , payment methods used by the company can provide incentive to either speed or derive slower. Overall this means there is an absence of sufficient external motivation to adhere to speed limits, and in some cases there is incentive to speed.

4.1 The influence of culture on speeding

A number of common beliefs, attitudes or values were identified throughout the case studies as having relevance to speeding. These broadly included seeing speeding as unintentional , viewing speed limiters as unfair, the value places on time, and a collection of traits related to learning styles and the results these have on behaviour.

4.2 Speeding as unintentional

Generally speaking there was a tendency to excuse speeding behaviour as merely unintentional. As stated by one manager from Company A, " everyone does it, it's not purposeful thing". One health and safety officer , who previously worked in road design, even indicated that truck drivers may miss the posted speed limit and drive at the speed that 'feel' right for the road. This unintentional speeding was linked to the need for drivers to measure travel time between point to point cameras (AES), even though this was also linked with deliberate punishment – avoidance strategies. Though it is clear that such behaviour can occur unintentionally, it is concerning that one of the major task risk factors for road accidents could be simply dismissed as unintended, and there is a need to address the issue. To prevent

unintentional speeding, the use of GPS systems which inform drivers when they exceed the speed limit could beneficial for the industry.

4.3 Speed limiting as unfair

Throughout the case studies, it was evident that drivers also placed a high value of fairness, thus disliking rules or regulations that they thought were not fairly implemented. The requirement of trucks to be speed limited was often deemed unfair. While it was not suggested that cars be speed limited to the same speeds as trucks , it was argued that cars should not de designed to travel as fast as current designs permit.

For this reason one Company B manager stated that truck drivers felt that they were being unevenly regulated when compared to other vehicle drivers. This perception of unfair treatment has the potential to develop an 'us and them' mentality leading to feelings of hostility and resistance to regulations. Importantly, it should be noted that this feeling that the regulations are unfair does not mean that they disagree with the regulation, only its unfair application. For instance , Road Transport Department (RTD) and Traffic Policemen are regularly set speed trap operations for commercial vehicles at certain routes especially at old truck roads with the permissible speed limit at 40 km/h which seemed unfair to these drivers.

4.4 Value placed on time

Commonly truck drivers placed great consideration on the value on timely delivery. This had resulted the implications for driving faster to reduce travel time. Certain employers set the payment methods based on trip incentives and this had encouraged drivers resort to speeding for earning more income. Such system was seen to have a great influence on drivers' perceptions on the importance of timely delivery. Based on the interview, drivers from company A (drivers are paid on hourly rate) typically indicated that " it does not affect us because we are paid on hourly basis". However non financial motivations for saving time also had an influence on speeding. For example, one Company A drivers stated that it is beneficial to reach a destination sooner in order to sleep before the sun rises. Speed trap cameras by policemen have short intervals (e.g. 30 minutes maximum between cameras, can reduce this effect, as speeding would result in regular stopping. Nonetheless, as drivers experience delays between many cameras, it was indicated that they speed to catch up on lost time. Further, it was highlighted that in order to make up for delays and save time, truck drivers may speed through lower speed limit areas.

4.5 Is speeding safe or dangerous?

It was evident that every truck driver who participated in the study placed a very high priority on safety. That is to say, when drivers felt that a particular course of action could lead to a crash or injuries to themselves or others, they would avoid the act. Conversely they would always seek to conduct a behaviour they felt would improve safety. A large number of participants indicated that they perceived speeding to a hazardous behaviour. As stated by the driver/manager of Company C "it's dangerous to speed, of course". Similarly one Company C driver stated that another driver involved in a road accident "was lucky he wasn't going faster". More generally, one Company A driver said " these things(trucks) are too dangerous (to speed) as far as I'm concerned". Conversely, a number of drivers did not hold these same views. For example, one Company A driver disregarded the effects of speed by suggesting that speed was irrelevant if someone cuts in front of you. As this driver believed that most incidents were caused by other vehicles, speeding was not considered dangerous, as the principle cause was not speeding, but behaviours of others.

The primary mechanism through which truck drivers determined what was safe and dangerous was their own experience and stories of other drivers. It was common throughout the observations for drivers to explain why they believed a specific action either increased or decreased safety from their own experiences as well as stories of other drivers. This may have a long historical basis in the industry as, in past years , truck drivers were often left with the sole responsibility of safety , while managers and organisations gave little priority to safety. While this has shifted, there is still a reliance on personal experience and being told stories by other drivers.

It would not even be the last 20 years where there has been a big focus on safety and I am not saying it is wrong, I totally agree with it. But before that, there were less or no real focus by the authority and among the other stakeholders in the heavy vehicle industry. (Company B Regional Manager Two)

A lot of the highway is 80km/h but through towns and that it is somewhat of an issue because drivers like to make up time so of course they speed through towns. We have very few speed related road accident cases. They are normally due to road condition –related or fatigue related (Company A Manager One)

The same manager indicated that one driver from the company had previously spun a truck on a highway at high speed in the wet, yet attributed this not to speed but to the stupidity of the driver. This view was mirrored in the perspectives given by many drivers regarding speed, and highlights how false causal attributions can shape beliefs regarding the dangers associated with speeding. It should be noted however, that due to the reliance on stories and personal experience, the use of stories also presents an avenue for effective training. Incident reports were used by Company B in their training for a variety of safety behaviours (no specific examples of speeding were discussed by participants), and with these behaviours, there was seen to be a high level of compliance due to belief that these behaviours were important to safety.

4.6 The results of seeing speeding as safe

Regarding government legislation and rules, a number of Company B drivers suggested that speed limit compliance held significant safety benefits. One driver in particular stated that " you do speed limits for reason, the signs are on the road for a reason, they are there for safety". This belief that the rules exist for safety extended to many drivers with a belief that speeding was dangerous. Unfortunately , however many drivers did not hold positive views towards speeding regulations due to a belief that speeding is relatively safe. For these drivers they would speed, if they could do do so without being detected. That is ,when a driver views speeding as relatively safe , either through avoiding detection, or where not possible, temporary compliance. Given the findings with relation to monitoring and enforcement, it can be expected that this means that these drivers have the ability to regularly speed in areas with a posted speed limit lower than the speed limiter installed in the vehicle , or when going down hills. This again highlights the need for drivers to believe that speeding is relevant to safety.

Conclusions

All the case studies in this research were conducted from three different truck service operators in Johor. The relatively high level of congruence between these companies had given support to Sully's (2015) assertion that there might be identical approach on the safety culture regardless the size of organisation. However, it should be noted that without further research verifying these findings apply more widely over industry, the findings of this paper should be defined with caution and not perceived throughout the overall industry.

There are many contributing factors comprising a broad range of culture which lead to speeding. Consistent with past research, there were influences from government departments, organisations and customers which had the ability to influence aspects of speeding (Edwards et al., 2014). Additionally there were a number of cultural belief, attitudes and values which were identified in the responses of participants. Whilst these included specific attitudes towards speed limiters and a view that speed was at times unintentional, they also included the value placed on time and a series of beliefs and attitudes related to the value drivers place on safety and the tendency to learn primarily through experience and stories. In both of these later cases, it was evident that there were interactions between cultural and contextual factors, which led to specific behavioural patterns, supporting the use of current framework (Edwards et al., 2013).

It was evident that drivers placed a high value on time, and that this could lead to choosing to sped to save time ,or make up for delays. Some of the reasons highlighted for this by participants could be seen a common for many drivers , such as the desire to get home quickly and take home rest. That unsafe behaviour can be associated with an attempt to make up lost time is not new, and was also notably demonstrated by Snyder (2012) in an ethnographic study of a driver driving through fatigue in

order to make up for loading delays. Importantly, the current study demonstrated the relationship between payment models and speeding to make up time. Participants clearly stated that payment by the km or load is an incentive to speed in order to make the same amount of money in less time. Conversely payment by hour was seen to reduce the value placed on time , as delays and slower travel times actually increase the driver's income for the same load. The relationship between payment and safety is also not new as such. The Malaysian Transport Workers' Union (TWU) has long lobbied for 'safe rates'. Of particular note, the TWU placed a submission to the Malaysian Trade Union Congress (MTUC) arguing that drivers are often not paid for waiting time, and feel pressured to speed. Past research has also supported the link between payment and safety.

Belzer, Rodriguez and Sedo (2012) found that within the USA heavy vehicle industry higher level of payment were associated with lower road accident rates. Further, Williamson (2017) found that heavy vehicle drivers were more likely to use illegal stimulants if they were paid a distance rate, or were paid below the standard rate.The current findings support the need for pay which does not provide an incentive to speed. The findings from this study add to the arguments that the TWU have offered , and show similar trends which indicating that regardless of the amount of pay received , payment per km will always give incentive to travel faster and avoid delays. Thus the limit the incentive to speed, it is recommended that distance and load based payment be eliminated in favour of an hourly payment.

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