

PERCEIVING RISK OF AUTOMOBILE DRIVERS ON MOBILE PHONE USAGE WHILE DRIVING IN IBADAN METROPOLIS, NIGERIA

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Abstract

The cross sectional study of perceived risk of automobile drivers using mobile phone while driving was carried using 250 questionnaires on habits and experience of automobile drivers in Ibadan Metropolis, Nigeria. The questionnaires were served through purposive random sampling technique at mechanic workshops in the metropolis. This was supported with the use of secondary data from FRSC, journals and unpublished thesis. The analysis of the data revealed that, majority of the respondents do not whether partially or totally make or receive calls, send or read text messages, switch off or use cell phones in traffic. A further analysis showed that, a higher percentage of the respondents had not experienced road traffic accidents and run a stop sign, as a result of using mobile phone while driving. But most of the respondents had experienced slower reaction time to traffic signs and objects and lost control from using mobile phone while driving.

Keywords: Mobile phone, Automobile drivers, Habits, Perceived risk, Experience.

1. INTRODUCTION

Driving distraction in vehicle has become more prevalent than before with an increasing amount of technology finding its way into the automobile. Arguably, the most detrimental technological distraction in vehicle is the mobile phone. The usage of mobile phones in vehicles has become an apparent problem in road safety. However, distraction from the use of mobile phone while driving has become a major problem in road safety. Driver distraction has to do with diversion of attention away from activities critical for safe driving towards a competing activity (Lee et al., 2008).

Goodman, et al. (1999) noted a potential causal relation between the increasing number of cell phones and an increasing frequency of cell phone-related car accidents. Supporting this relationship Laberge-Nadeau et al. (2003) found out that, the relative risk of being involved in accidents was 38% higher for cell phone users than for non-users and more than 100% greater for frequent cell phone users. A number of studies have attempted to quantify driver engagement in distracting activities (Strayer & Johnston, 2001; McEvoy et al., 2006). Driver engagement in mobile phone use is common and widespread, particularly among drivers who are young, inexperienced, travel in urban areas and have high annual mileage rates (Sullman & Bass, 2004). In order to develop interventions (e.g. media campaigns, enforcement) targeted at those who use mobile phones most often while driving, information is firstly needed about who these drivers are. Unfortunately, paucity of information exists on the use of mobile phones while driving in Nigeria, even in other countries (Horberry et al., 2001).

Survey, by Arrive Alive Road Safety Initiative (AARSI), 2010 in Nigeria showed that, driver distraction was the singular most important safety issue in the country. According to the survey, driver distraction through the use of mobile phone accounted for 25% of the causes of road crashes. In addition, 43% of Nigerians was reported to use mobile phones (phoning/texting) while driving and 57% of them were young people of between 18 and 30 years. This is potentially a significant safety hazard to Nigerian road users.

Therefore, this paper looks at the perception of automobile drivers on the risk involved in phone usage while driving in Ibadan metropolis, Nigeria. In order to meet the above stated objectives the following specific objectives were set:

1. To ascertain the habits of automobile drivers towards mobile phone usage while driving; and
2. To find out the experience of automobile drivers as a result of the use of mobile phone while driving.

Research questions

1. What are the habits of automobile drivers towards mobile phone usage while driving? and
2. How do automobile drivers perceived the experiences of using mobile phone while driving?

2. LITERATURE REVIEW

The act of driving while conversing using a mobile phone is a classic example of a dual task (Dressel and Atchley, 2008). Automobile drivers do not have the cognitive capacity to attend to both talking and

driving simultaneously, what should be the primary task (driving) suffers as a result of the secondary task (communicating via a telecommunications device). Many studies have documented the effects of talking on a mobile phone while driving, and many countries and individual jurisdictions have outlawed or limited their use, yet the rate of usage still remains high.

In France, Brusque and Alauzet (2008) conducted a study aimed at identifying those who use mobile phones while at the wheel and determine the forms taken by this use. A representative sample of 1973 French people was interviewed by phone on their driving practices and mobile phone use in everyday life and their mobile phone use while driving. The study found that 40.2% of males reported phoning while driving, against 22.7% of females. Male population, between 25-34 years olds reported both driving and mobile phoning six times more often than the oldest group (>59 years old). For females, high mileage traveled (more than 25.000km/year). Car and phone uses in everyday life are factors for the intensive use of mobile at the wheel (Brusque and Alauzet 2008).

Furthermore, Zhou et al. (2009) in a survey investigating young driving learners' intention to use a handheld or hands-free mobile phone when driving. A sample of 164 young driving learners completed a questionnaire based on the theory of planned behavior (TPB), which measured people's intentions to use mobile phone while driving in handheld condition or hands-free condition, along with their attitudes towards the behavior, subjective norms, perceived behavioral control. The results indicated that, more participants would like to use a hands-free mobile phone while driving, since participants perceived more safety if they use hands-free mobile phone in driving context, which was consistent with previous studies (White et al., 2004).

Troglauer et al. (2006) investigated the extent and variations in mobile phone use among drivers of heavy vehicles in Denmark. Despite a prohibition of hand-held mobile phone use while driving 31% of the drivers reported to do so. Analysis of the variations in usage found a positive significant relationship between driving hours and phone use. That is, the longer the hour driven the higher the probability of using a mobile phone. A negative linear effect was found between age and phone use. Similarly, a positive significant association was found between the number of stops and the amount of phone use. 0.5% reported that their use of mobile phones had contributed to an accident, while 6% had experienced their mobile phone use causing a dangerous situation. However, 66% reported experiencing dangerous situations because of others road users' mobile phone use (Troglauer et al., 2006).

3. STUDY AREA

Ibadan city is situated approximately between Longitude 7°2' and 7°40'E and latitude 3°35' and 4°10'N of Greenwich Meridian at an altitude of 237.3 metres above sea level and distance of about 145 km north-east of Lagos and 659 km south-west of Abuja, Ibadan was the capital of the old Western Region of Nigeria between 1950s and 1960s. Ibadan metropolis is made up of five Local Government Areas (LGAs) with landmass of 463.33 km², representing 14.83% of the total land area of Oyo State. Ibadan city is one of the most important cities in Nigeria which used to be a war camp has grown without due consideration for effective planning, resulting in both planned and unplanned areas in the city.

4. METHODOLOGY

This is a cross sectional descriptive study with relevant data collected through the use of the questionnaire to obtain data on the socio-demographic variables of the respondents, factors responsible for phone usage while driving and risk perception of respondents. The sample frame for this research is the average number of registered automobile (private) drivers in Ibadan municipal from January 2008-December 2010 which is 2,660 (FRSC, 2011). The reason for using data from 2008-2010 was to avoid the possibility of double counting; this is because the validity of a license is three years. Using a sample size of 0.1% of the sample frame 2,660 gave 266. In other words a total of 266 questionnaires were administered. However, a total of 250 questionnaires were retrieved for analysis.

Only automobile drivers who have been identified to have mobile phone were served questionnaire at mechanic workshops where they are expected to spend more time waiting through purposive sampling technique. Field observations were also used to ascertain the level of compliance by automobile drivers at strategic places in the study area such as Secondary sources of data for this study were collected from published journals, articles, textbooks, unpublished dissertation and thesis. Other relevant data were collected from Federal Road Safety Corps (FRSC). However, the bulk of the secondary data was retrieved from publications on the internet due to the paucity of data in relation to the subject matter in Nigeria. Data collected from the study was analyzed using descriptive and inferential statistics.

5. RESULTS AND DISCUSSION

5.1 Habits of automobile drivers towards mobile phone usage while on the wheel

Phone use exposure estimates vary across countries, with up to 40% in Canada (Beirness et al., 2002; Laberge-Nadeau et al., 2003) and 30% in Sweden (Thulin and Gustafsson, 2004). In Nigerians 43%

was reported to use mobile phones while driving (AARSI, 2010). Usage rates in countries such as the United States, Spain, New Zealand and Australia are higher, with around 60% of drivers reportedly using a mobile phone (Stutts et al., 2003; McEvoy et al., 2006; Gras et al., 2007).

Young and Lenne's (2010) study shows that 94% (n = 269) of the respondents reported that they own a mobile phone, 59% (n = 158) reportedly use their phone while driving, Over one third (35%; n = 55) of the drivers who use a phone use it in hand-held mode all of the time, while 13% (n = 21) use their phone in both hand-held and hands-free mode. Of the drivers who use a mobile phone while driving, 64.3% (n = 101) read SMS text messages while driving, while 55.4% (n = 87) send SMS messages. Most drivers (84%) believe that their driving is less safe when engaged in distracting tasks and take steps to avoid distraction.

Poysti et al. (2005) carried out a study on the factors influencing the use of mobile phone during driving and the hazards while using it. The result shows that eighty-one percent (81%) of the drivers used their mobile phone in the car at least sometimes, with 9% using it over 15 min a day. Using logistic regression models, the result shows that older age, female gender, smaller mileage of travel, and occupation promoted not using a phone at all while driving.

Frequency of Making Calls while Driving

Table 1 reveals that, 47.2% and 26.0% of the total respondents totally and partially disagreed respectively that, they dial numbers frequently while driving. While 15.6% and 10.4% of them partially and totally agreed respectively that they dial number frequently while driving. It implies that a higher proportion of the total respondents do not dial number frequently while driving.

Frequency of Receiving Calls while Driving

An analysis of the total respondent that answer calls frequently while driving in the study area according to Table 1 reveals that 55.6% of the respondents disagreed that they answer calls frequently while driving while 43.6% of them agreed that they answer call frequently while driving.

Refusal Incoming Calls while Driving

Results from table 1 indicate that 62.8% of the total respondents in the study area disagreed that they refuse incoming calls while driving. However, 36.0% of them agreed that they refuse incoming calls while driving.

Answering of only important calls while driving

Table 1 reveals that 12.8% of the respondents in the three residential zones totally disagreed that they answer only important calls while driving, in the same vein 29.6% of them partially disagreed that they answer only important call while driving. On the other hand, 22.0% and 34.4% partially and totally agreed respectively that they answer only when the call is important while driving.

Never used cell phone while driving

Majority (73.6%) of the of respondents in the study area disagreed that, they have never use a cell phone while driving on the other hand 25.2% of the respondents agreed that they have never use a cell phone while driving (see Table 1).

Read only Important SMS while Driving

Table 1 reveals that, 70% of the total respondents in the three residential zones disagreed that they read only important SMS while driving, while 28% of them agreed that they read important SMS while driving. The high percentage of respondents that do not read SMS while driving could be as a result of the level of distraction it will cause while driving (E.g. visual distraction).

Send important SMS while driving

According to Table 1 shows that, 57.2% of the total respondents strongly disagreed that they send important SMS while driving while 22.0% of them partially disagreed. On the other hand, 10.8% and 9.2% of the respondents partially and strongly agreed respectively that they send only important SMS while driving.

Read whenever I received an SMS while driving

The overall percentage of respondents in the study area according to Table 1 reveals that 38.0% and 33.6% of them totally and partially disagreed respectively that they read whenever they receive an SMS while driving, on the other hand 16.8% and 10.0% of the respondents partially and totally agreed respectively that they read whenever they receive an SMS while driving.

Switch off mobile phone when driving

40.4% and 47.6% of the total respondents in the study areas totally and partially disagreed respectively that, they switch off their cell phone always while driving. The implication of this is that a higher proportion of the respondent does not switch off their cell phone while driving so that whenever they received an important call or SMS they can attend to it immediately or when they have reached their destination or better still park and attend (see Table 1)

Switch Off Cell Phone Occasionally while Driving

27.6% and 36.0% of the total respondents in the study areas totally and partially disagreed respectively that they switch off their cell phone occasionally while driving. However, 22.4% and 11.3% of the respondents partially and totally agreed respectively that they switch off their cell phone occasionally while driving (see Table 1).

Use Mobile Phone Only when on Traffic

A total of 53.2% of the respondents in the study areas disagreed that they use mobile phone only when they are on traffic while 41.6% of the respondents agreed that they use mobile phone only when they are on traffic. However, the remaining 5.2% of the respondents do not respond to the question (see Table 1).

TABLE 1: HABITS OF AUTOMOBILE DRIVERS ON THE USE OF MOBILE PHONE WHILE DRIVING

Attributes	Likert scale (F %)				
	SD	D	A	SA	NR
Frequency of making calls while driving	118 (47.2%)	65 (26%)	39 (15.6%)	26 (10.4%)	2 (.8%)
Frequency of Receiving Calls while Driving	48 (19.2%)	91 (36.4%)	80 (32.0%)	29 (11.6%)	2 (.8%)
Refusal of incoming calls while driving	42 (16.8%)	115 (46%)	77 (30.8%)	13 (5.2%)	3 (1.2%)
Answering only important calls while driving	32 (12.8%)	74 (29.6%)	55 (22%)	86 (34.4%)	3 (1.2%)
Never Used Cell Phone while Driving	96 (38.4%)	88 (35.2%)	55 (22%)	8 (3.2%)	3 (1.2%)
Read only Important SMS while Driving	108 (43.2%)	67 (26.8%)	49 (19.6%)	21 (8.4%)	5 (2%)
Send Important SMS while Driving	143 (57.2%)	55 (22%)	27 (10.8%)	23 (9.2%)	2 (.8%)
Read Whenever I Received an SMS while Driving	95 (38%)	84 (33.6%)	42 (16.8%)	25 (10%)	4 (1.6%)
Switch off cell phone always when driving	101 (40.4%)	119 (47.6%)	18 (7.6%)	7 (2.8%)	4 (1.6%)
Switch off cell phone occasionally when driving	69 (27.6%)	90 (36%)	56 (22.4%)	28 (11.2%)	7 (2.8%)
Use Mobile Phone Only when on Traffic	52 (20.8%)	81 (32.4%)	57 (22.8%)	47 (18.8%)	13 (5.2%)

Source: Fieldwork, 2011.

Note: SD=strongly disagree, D=Disagree, A=Agree, SA=Strongly agree, NR=No response

5.2 Experience of automobile drivers as a result of the use of mobile phone while driving

Use of Mobile Phone and Road Traffic Accident (RTA)

A higher percentage (84.4%) of the total respondent disagreed that, they have experience RTA as a result of using mobile phone while driving. However, a significant small proportion (14.0%) of the same

respondents agreed that they have been involved in RTA as a result of using mobile phone while driving (see Table 2).

Run a Stop Sign or Red Light while Using Mobile Phone on the Wheel

As revealed in Table 2, majority of the respondents 40% and 33.2% respectively strongly disagreed and disagreed to running a stop sign while using mobile phone on the wheel. However, the rest either agreed or strongly agreed.

Slower Reaction Time (SRT) to Traffic Signs/Objects while Using Mobile Phone on the wheel

Table 2 reveals that, 47.2% of the total respondents disagreed that they have experience SRT as a result of engaging in mobile phone conversation on the wheel while 50.4% agreed that they have experience SRT to traffic signs and objects as a result of using mobile phone while driving.

Loss Control of Vehicle (e.g. lane variation) while Using Mobile Phone on the Wheel

A higher percentage (52.4%) of the total respondents in the study disagreed that they have experience loss of control of their vehicle as a result of engaging in mobile phone conversation while driving; However, 45.6% of the respondents agreed they have experience loss of control of their vehicle as a result of using mobile phone on the wheel (see Table 2).

TABLE 2: EXPERIENCE OF AUTOMOBILE DRIVERS AS A RESULT OF THE USE OF MOBILE PHONE WHILE DRIVING

Attributes	Likert scale (F %)				
	SD	D	A	SA	NR
Road Traffic Accident (RTA) While Using Mobile Phone on the Wheel	153 (61.2%)	58 (23.2%)	20 (8%)	15 (6%)	4 (1.6%)
Run a Stop Sign or Red Light while Using Mobile Phone on the Wheel	100 (40%)	83 (33.2%)	38 (15.2%)	20 (8%)	9 (3.6%)
Slower Reaction Time (SRT) to Traffic Signs/Objects while Using Mobile Phone on the Wheel	62 (24.8%)	56 (22.4%)	85 (34%)	41 (16.4%)	6 (2.4%)
Loss Control of Vehicle (e.g. lane variation) while Using Mobile Phone on the Wheel	71 (28.4%)	60 (24%)	72 (28.8%)	42 (16.8%)	5 (2%)

Source: Fieldwork, 2011.

Note: SD=strongly disagree, D=Disagree, A=Agree, SA=Strongly agree, NR=No response

Haigney et al. (2000) examined the effects of phone type (Hand-held and Hands-free) manipulated within-subject during different periods in relation to a 150 second phone call (pre-call, during call, and post-call) on driving performance. Thirty participants drove a simulated road four times, populated with vehicles on either side of the highway. Each simulated driving episode included three phone calls, each lasting 150 seconds. During a call, participants verbally responded to a reasoning test. Number of

collisions, number of off-road, and vehicle speed were measured. The number of collisions and off-road did not differ as a function of the period of a call. However, vehicle speed was slower during the call period than during the other periods. These patterns suggest a process of risk compensation when talking on a phone (i.e., slowing down to avoid a collision or go off-road). While the number of collisions and speed did not differ as a function of the phone type, there were significantly more off-road with a Hand-held phone than with a Hands-free phone.

Other findings that lend further empirical support of the dangers of drivers being distracted by cell phone conversations was conducted by Beede and kass (2006) in Florida, United State of America. The study examined the effect of cognitively distracting tasks (cell phone) on various measures of driving performance. Thirty-six college students with a median of six years of driving experience who completed a driving history questionnaire and four simulated driving scenarios were used for this study. The distraction tasks consisted of responding to a signal detection task and engaging in a simulated cell phone conversation. Driving performance was measured in terms of four categories of behaviour: traffic violations (speeding, running stop signs), driving maintenance (standard deviation of lane position), and attention lapses (stops at green lights, failure to visually scan for intersection traffic), and response time (time to step on brake in response to a pop-up event). The result reviews that performance was significantly impacted in all four categories when drivers were concurrently talking on a hands-free phone. Performance on the signal detection task was poor and not significantly impacted by the phone task, suggesting that considerably less attention was paid to detecting these peripheral signals. However, the signal detection task did interact with the phone task on measures of average speed, speed variability, attention lapses, and reaction time.

Statistically results from the study indicated that more than half of the participants (58%) indicated that they have dialed a cell phone while driving in a typical week (4.4 times on average). Nearly 80% reported that they engaged in at least one hand-held cell phone conversation while driving in a typical week with the average number of hand-held cell phone conversation being 8.4 at an average of 7 min per day. Furthermore, the results from the study regarding lane maintenance behaviour are consistent with Seppelt and Wickens (2003) findings.

A similar study by Just et al. (2008) also reviews that language comprehension performed concurrently with driving draws mental resources away from the driving and produce deterioration in driving performance, even when it does not require holding or dialing a phone. The dual-task condition produced a significant deterioration in driving accuracy caused by processing of the auditory sentences.

Akande and Ajao (2006) carried out a study in Ilorin, Nigeria, using a descriptive survey method. It was conducted to determine the use of mobile phone by non-commercial drivers and their awareness and attitude to the related risks. Two-hundred and sixty-seven (267) non-commercial drivers were randomly selected and interviewed using structured questionnaires. Results from the study shows that most of the respondents 240(90.6%) are aware that mobile phone usage while driving increases risk of road traffic accident (RTA). Whereas less than a third (27.5%) admits using mobile phone while driving, only 92(37.7%) use hand free cord while driving. More than half of the respondents 152(59.1%) reported to have switch off their phone while driving. Among them only 28(18.5%) always switch off their phone, 23.2% switch off frequently and 43(28.5%) switch off occasionally.

6. CONCLUSION

Data from the field observation in the study area reveals that the level of compliance of mobile phone usage while driving is relatively high. This is because automobile drivers are aware of the danger associated with making and receiving calls, reading and sending messages while driving. Moreover, the envisaged risk cause automobile drivers to switch off phones or not receiving or making phone calls while driving. The use of mobile phones brings divided attention which reduces response rate in times of emergency.

7. RECOMMENDATIONS

In view of the prevailing danger in the use of mobile phone while driving the following recommendation are proffered:

Media Campaign and Education

First of all, more awareness should be created through various media such as dailies, television and most especially radio which serve a wider variety of audience to sensitize people on the dangers involved in the use of mobile phone while driving and the penalty they are liable to face whenever they flout the law by using mobile phone while driving.

Confiscation of Mobile Phones

Tougher measure like taking the phone off the person should be put in place. This is because most people care about losing their phone than losing their license. The appropriate authority should charge offenders N1000 a day for safe keeping their phone whenever they are caught using mobile phone while driving. The government should empower the FRSC to carry out this function effectively.

Pull Over to Take Call

The study further recommends that drivers should pull over in safe place and attend to the phone if they must use mobile phone while driving.

Switch off cell phone

In other not to be distracted the study recommend that phones should be put on silence or switch off while driving.

8. FURTHER RESEARCH

This study has provided the platform on habits and experiences of automobile drivers in Ibadan Metropolis, Nigeria. Researches could be carried out to ascertain the effects of socio-demographic characteristics on habits and experiences of automobile drivers with regards to the use of mobile phone while driving in the study area. More so, Ibadan metropolis is not uniform in terms of residential density, hence a study can be conducted to look at the differences in the volume of traffic and traffic violation with regards to the use of mobile phone while driving.

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