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Texting and Making Calls Whilst Driving: Can Hand-Free Car Kits and Smartphones Speaker Tones Come to the Rescue of Ghanaian Drivers?

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Abstract. The safety of road users is paramount to every nation. As such, stringent measures are put in place to protect them. Such measures are multi-faceted which include legislation, policing, and technology. In spite of these, accidents still occur and are rampant on most developing economies' roads, including Ghana. The purpose of this paper is to explore why Ghanaian drivers, despite the Road Traffic Regulations, 2012 L.I. 2180 Act continue to drive whilst holding their phones and texting/making/receiving calls. The study will also find out why such drivers are not using the Hands-Free Car Kit/Speaker Tones features in their phones that can let them make/receive calls without holding their phones. Again, the study investigated drivers' attitude towards making/receiving calls and texting/reading text messages whilst driving through the lens of the theory of planned behaviour. With a survey data of 284 drivers from Accra, Ghana, and analyzed through partial least squares structural equation modeling (PLS-SEM), the results indicate that subjective norm and perceived behavioral control influence the actual behavioral intention towards texting and making phone calls whilst driving. Also, actual behavioral intention and perceived behavioral control influence behavior towards driving whilst texting and making calls. However, attitude towards behavior does not influence actual behavioral intention. The findings have provided insights into this phenomenon through scientific analysis which is

lacking in the literature especially from a developing economy context. Other implications are also discussed.

Keywords. Texting and Making Calls, Driving, Hands-free Car Kits, Smartphones Speaker Tones, Theory of Planned Behaviour (TPB), Ghana

1. Introduction

There are several means of transport in the world in recent times. These include road transport, air, rivers and seas, and rail among others. In most developing countries, including Ghana, road transport is predominant in the inner and intra cities because of its affordability, as compared to air which is quite expensive and also not in every part of the nation as well as the railway sector which has also not seen much development. Cycling and motorbikes for example, as a means of road transport, has become the mode of urban transport (Sietchiping et al., 2012), enabling commuters to cover longer distances at a much higher travel speed and time as compared to foot commuting (Rwebangira, 2001).

The attainment of lower-middle-income status by Ghana has made cars generally affordable in recent times than before, hence, there are many cars plying the country's road. However, this comes with its own menace, with many accidents being reported daily. The National Road Safety Commission of Ghana (NRSC, 2018), for example, avers that about 2095 road crashes were recorded in January and February alone which resulted in 336 people losing their lives and several others injured with loss of properties running into several millions of Ghana Cedis (<https://citinewsroom.com/2018/07/a-region-records-1204-accidents-in-6-months-207-deaths/>). Through road accidents, Ghanaians are losing human capital which includes politicians, musicians, doctors/nurses among others. Some of these human capitals are difficult to replace and even if replaceable, it cost a lot of money to train such human capital.

The causes of the accidents have been attributed to many factors which are multi-faceted and categorized as mechanical, behavioral, and infrastructural. The mechanical factors include improper maintenance of vehicles; behavioral is very common and includes over speeding, drunk driving, driving whilst texting/making/receiving calls, disobeying traffic rules among others; the infrastructural factors include bad roads with a lot of potholes, no/broken traffic lights, no streetlights, insufficient road signs, insufficient road markings among others. One of such causes of accidents is making/receiving calls or texting/reading text messages whilst driving.

According to Oviedo-Trespalacios et al. (2016), the use of mobile phones while driving is one of the major contributors to driver distractions and has a focus for research in recent times. The distractions include texting whiles driving which causes them to remove their attention on the steering to the keypad of their mobile phone keypad and to remove their hands from the steering wheel to write or read a message (Hosking et al., 2006).

In several countries, just like Ghana, laws have been made to curtail drivers from using their phones whiles driving as a result of the distractions it brings to them thereby jeopardizing their safety (Zhou et al., 2012). However, in the view of Nelson et al. (2009), the laws and subsequent actions taken by law enforcement agencies have impacted little on the behaviors of drivers in refraining them from using phones whiles driving. In Ghana, for example, the Road Traffic Regulations, 2012 (L. I. 2180) prohibit drivers' "use of hand-held communication devices such as mobile phones to make or receive calls, send, or receive messages or access the internet" whiles driving. However, with almost every Ghanaian driver owning mobile phones, the tendency for them to make calls or text whilst driving is inevitable. It is as a result of this

that hands-free car kit are available to drivers so that they can make and receive calls whilst driving without holding their mobile phones. Also, “research investigating the psychosocial influences on drivers’ intentions to use hand-held mobile phones is limited” (Waddell & Wiener, 2014). Thus, there is the need to explore further this phenomenon which is limited in the literature especially in developing countries’ contexts. This calls for further exploration to unearth why drivers in spite of the handsfree kits and also speaker tones of modern smartphones, still use their phones by answering calls, texting, etc. whilst driving.

The purpose of this study is in three-folds:

1. To explore drivers continued reasons for flouting the Road Traffic Regulations, 2012 (L.I 2180) by holding their phones and making calls whilst driving.
2. To explore whether drivers are aware of hands-free kits and smartphones speaker tones and why they are not using them whilst driving and making/receiving calls.
3. To investigate drivers’ attitude towards making/receiving calls and texting/reading text messages whilst driving.

This study was motivated by the researchers’ observations whilst driving on Ghanaian roads especially in Accra. Although the statistics available do not specify which factors account for more road accidents in Ghana, yet, with the upsurge of road accidents on Ghanaian roads, every effort should be made to reduce this canker. Therefore, once hands-free car kit/smartphones speaker tone has been identified to be able to curtail the menace in one way or the other, exploring its use scientifically through a study like this will go a long way to help Ghanaian road users. Government, policymakers, and regulators can use the findings to create awareness among drivers on the safest way of using their phones whilst still driving.

The rest of the paper is organized as follows: literature review follows which introduces readers to the Road Traffic Regulations, 2012 L.I. 2180 Act, and discussion of the concepts of Hands-free kits and smartphones speaker tones. This is followed by the underpinning theory and hypothesis development. The methodology section follows and then data analysis cum discussion of findings. The study concludes with implications for research, policy, and practice as well as suggestions for future studies.

2. Literature Review

Before describing the theoretical lens and research methods employed in this study, we will present in this section a broader view of the **Road Traffic Act - 2004 (Act 683)**, the hands-free, and speaker tone sets.

2.1 Road Traffic Regulations, 2012 L.I. 2180

The new Road Traffic Regulations 2012, LI 2180 was enacted by Parliament and became effective on July 5, 2012. This Act was passed to help address all recent issues regarding the safety use of Ghanaian roads concerning vehicles and other road users (humans, animals, among others). The Act has different sections but one that is of most interest as far as this study is concerned is “Prohibition on use of communication device while driving” (Section 7). Portions of this section state that “*a person shall not drive a motor vehicle on a road or in a public place while holding, using, or operating a cellular or mobile telephone or any other communication device in one or both hands*”. Other details of the Act include: “(5) For the purposes of this regulation, (a) a mobile telephone or other communication device is hand-held, if it is or has to be held at some point during the course of making or receiving a call or performing any other interactive communication function; (b) interactive communication function includes: (i)

sending or receiving oral or written messages; (ii) sending or receiving facsimile documents; (iii) sending or receiving still or moving images; and (iv) providing access to the internet; and (c) two-way radio means a wireless telegraphy apparatus which is designed or adapted for the purpose of transmitting and receiving spoken messages. (6) Subregulation (1) does not apply to the following persons while those persons are driving in execution of their duties and the use of the mobile phone or other communication device is required in the execution of the duty: (a) a person driving a fire-fighting vehicle; (b) a person driving a rescue vehicle or an ambulance; (c) a traffic officer; (d) a police officer; (e) an officer of the Armed Forces; or (f) an officer of any other recognized Government Security Agency or an emergency service provider. (7) A person who contravenes this regulation commits an offence and is liable on summary conviction to a fine of not more than fifty penalty units or to a term of imprisonment of not more than three months or to both” (<https://www.ashigbey.com/2014/12/16/road-traffic-regulations-2012-l-i-2180-beware-of-it-safe-lives-including-yours-save-cash/>).

Interestingly, despite the Act being clear on the punitive measures against the phenomenon of texting and making/receiving calls whilst driving, some drivers still flout this law with impunity. This thus calls for investigations into why some Ghanaian drivers disregard this law whilst they can fall on technologies such as the Hands-free kit and the **Smartphones** Speaker tones features of their phones especially when it comes to making/receiving calls when driving.

2.2 Hands-free Kit

Mobile digital devices come in a range of forms, features, and functions, not to mention from different suppliers and network competencies. Hands-free devices are gadgets that are able to connect to cell phones and allow the user to operate the phone (make calls, read texts, navigate routes with little or no physical manipulation) (Nunes & Recarte, 2002). Examples of devices with hands-free connectivity include tablets and smartphones, as well as e-reader devices, such as Amazon’s Kindle.

While “public adoption of these devices has generally been rapid in the U.S. and much of the world since the early 2000s, the fastest growth in use since 2011 has been among the young, especially” millennials (Wagner, 2013). A “study released in late 2013 shows that over the previous two years, the use of mobile and digital devices among younger folks has tripled, from 12 percent to 38 percent, in the U.S.” (Wagner, 2013). By age 8, 72 percent of children in the U.S. have access to a smartphone or tablet. According to Fitch et al. (2013), there are two types of hands-free devices. These include, (1) Portable Hands-Free (PHF); which refers to devices such as wireless headsets or headsets connected to the phone via Bluetooth, and (2) Integrated Hands-free (IHF); which are equipment(microphones and speakers) that have been installed into vehicles by the manufacturers and are able to seamlessly interact with the user’s phone without any direct manipulation.

2.3 Smartphones Speaker Tone

Modern smartphones are fitted with speakers which provide sounds such as those coming from phone calls, audios, videos, among others. One interesting feature about this facility is its ability to put it in loudspeaker mode which enables the user to use it without necessarily holding the phone. This feature can be highly beneficial in instances when one must pick a call but yet cannot hold the phone.

Thus, this feature comes in handy especially in instances when driving and one must pick an important call or respond to an important message.

2.4 Applications of Hands-free Kit and Smartphones Speaker Tones

For the effective and efficient application of hands-free kit and speaker tones, devices such as Magnetic Phone Mount, Sun Visor Bluetooth Clip, Steering Wheel Bluetooth Car Kit, Cup Holder Cell Phone Car Mount and Bluetooth Headset are usually mounted.

- Magnetic Phone Mount – This device is placed on the dashboard. It enables drivers to keep their phones out of their hands and laps; glance if needed, while still keeping their eyes on the road (Harris, 2019).
- Sun Visor Bluetooth Clip – This small speaker located on the right to the sun visor allows drivers to focus on the road but still take calls (Harris, 2019).
- Steering Wheel Bluetooth Car Kit – This is hooked to the right on the steering wheel for convenient access to answer and end calls with one-touch (Harris, 2019).
- Cup Holder Cell Phone Car Mount - It has an adjustable gooseneck that can be swiveled up to 360 degrees for the best viewing. The product has rubber grips to securely hold the phone in place (Harris, 2019).
- Bluetooth Headset – This is a more personal way to drive safely. Instead of the speaker, put the earpiece on and talk away (Harris, 2019).

2.5 Benefits of Hands-free Kit and Mobile phones Speaker Tone

BESTEK (2017) highlights some benefits that can be derived from using Hands-free Kit and Speaker tones. They include multipurpose; improved safety; healthier and ease of use.

- In terms of multipurpose benefits BESTEK (2017) says that with Hands-free Kit, drivers can make a phone call by just pressing a button on the car kit without removing the two hands from the steering. Also, some Bluetooth car kits can allow drivers to connect with two cell phones at the same time, one phone for business, and one for music.
- A Hands-free Kit improves safety because it enables drivers to concentrate while driving with the two hands-free on the steering wheel and receive or make a phone call if needed.
- The hands-free Kit promotes drivers' health as it ensures the protection of their ears and ensuring a healthy body.
- Ease of use is another benefit of the hands-free Kit. The Bluetooth hands-free car kit for instance is wireless and easy to connect with a phone.

2.6 Underpinning Theory - Theory of Planned Behavior (TPB)

One cannot find an Information System (IS) effective unless it is put to use. However, "people sometimes do not use systems that could potentially increase their performance" (Mathieson, 1991). Further in the view of Mathieson (1991), for many individuals, using a system is important to them, as they find it less convenient due to limited time and their perceived difficulty in accessing such systems. The Theory of Planned Behavior (TPB) is one theory that has been widely used to measure users' behaviors towards the use of an IS system (Wu & Chen, 2005), hence its adoption for this study.

The TPB was an extension of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) to cater for the lapses in it regarding its deficiency in dealing with peoples' behaviors of incomplete will power (Ajzen, 1991). In addressing this deficiency, the construct of perceived control over the behavior was added, considering that an individual may not have complete willpower over a behavior (Montano & Kasprzyk, 2015). This stance was earlier indicated by Mathieson (1991) that the "behavior is determined by intention (I) to perform the behavior, Intention is predicted by three factors: attitude toward the behavior (A), subjective norms (SN), and perceived behavioral control (PBC)" (p.175). Further, the theory primarily

serves as a predictor of intentions (Ajzen, 2002), “which are, in turn, influenced by attitudes towards the behavior”, subjective norms concerning the behavior, and perceived behavioral influence over the behavior (Waddell & Wiener, 2014).

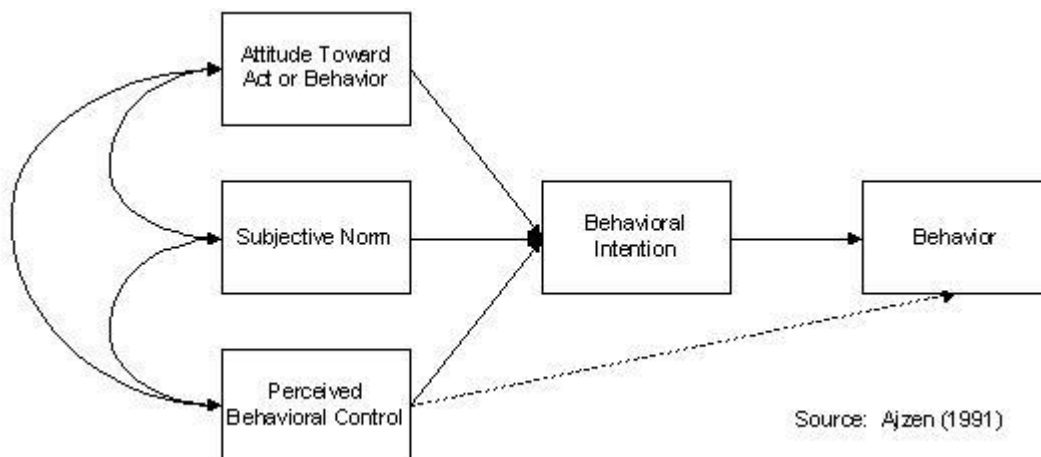
- a. **Attitudes** are “the overall positive or negative evaluation of a particular behavior” (White et al., 2010).
- b. **Subjective norm** “refers to the perceived social pressure from significant others to behave in a particular way” (Elliott et al., 2003).
- c. **Perceived behavioral control** is “the perception of the ease or difficulty of performing a particular” behavior (Ajzen, 1991) “that not only influences intention, but also exerts a direct influence on behavior” (Churchill et al., 2008).

In the context of road safety, the theory has been used to predict many roads safety occurrences (e.g. Chan et al., 2010; Moan & Rise, 2011). Particularly, with regards to drivers, the theory has been used to explore drivers’ psychosocial intentions and behavior concerning mobile phone use (e.g. Nemme & White, 2010; Zhou et al., 2009). Figure 1 shows Ajzen (1991)’s model of the TPB.

The TPB (Ajzen, 1991) “has demonstrated efficacy in predicting intention and behavior in many road safety contexts, including speeding” (Conner et al., 2003), “driving violations” (Forward, 2009), drunk driving (Chan et al., 2010; Moan & Rise, 2011) “and road crossing in risky situations” (Evans & Norman, 2003). The TPB “has also been used to investigate the psychosocial influences on drivers’ intentions and behavior relating to mobile phone use” (Nemme & White, 2010; Walsh et al., 2008; Zhou et al., 2009).

According to the TPB, “behavior is primarily predicted by intentions” (Ajzen, 2002), which “are, in turn, influenced by attitudes towards the behavior, subjective norms regarding the behavior, and perceived behavioral control over the behavior”. Attitudes are “the overall positive or negative evaluation of a particular behavior” (White et al., 2010). Subjective norm “refers to the perceived social pressure from significant others to behave in a particular way” (Elliott et al., 2003). Perceived behavioral control “is the perception of the ease or difficulty of performing a particular behavior” (Ajzen, 1991) “that not only influences intention, but also exerts a direct influence on behavior” (Churchill et al., 2008).

Previous research “using the TPB model has reported that the TPB predictor variables have accounted for 11–48% of the variance in drivers’ intentions to use mobile phones” (Nemme & White, 2010; Walsh et al., 2008; Zhou et al., 2009). The “influence of each of the TPB variables on intention has been inconsistent. Attitudes, subjective norm, and perceived behavioral control were all significant predictors of Chinese learner drivers’ intentions to use a hand-held mobile phone” (Zhou et al., 2009), and “university students’ intentions to send text messages” (Nemme & White, 2010). In “contrast, the only attitude significantly predicted students’ intentions to read text messages” (Nemme & White, 2010) and “intentions to text in general, while attitude and subjective norm both significantly predicted drivers’ intentions to engage in general mobile phone use and calling behavior” (Walsh et al., 2008).



Source: Ajzen (1991)

Figure 1: Theory of Planned Behavior

2.7 Conceptual and Hypotheses Development

Development of the relationships found in the TPB as it relates to texting and making calls whilst driving among the Ghanaian drivers is carried out here. Therefore, we provide the definitions of the constructs contained in the study in Table 1 as well as show the correlation between the constructs in Figure 2, the conceptual framework.

Table 1: Conceptual framework constructs and their definitions

Constructs (in this study)	TPB Model Variable	Definition	Supporting Literature
Attitude toward the behavior	Attitude toward the behavior	It is “the overall positive or negative evaluation of a particular behavior”.	White et al. (2010)
Subjective Norm	Subjective Norm	An “individual's own perception of a particular behavior and the strength of motivation to comply, or to conform, with relevant others' beliefs”.	Ajzen (2011)
Perceived Behavioral Control	Perceived Behavioral Control	An “individual's evaluation of her or his ability to engage in the intended behavior is based on her or his perceived power, or perceived difficulty or ease, of performing the behavior”.	Ajzen (2011)
Actual Behavioral Intention	Actual Behavioral Intention	Behavioral intention “reflects the motivation to perform the behavior and the likelihood with which	Ajzen (1991)

		respondents will perform it in the future”	
Behavior	Behavior	An “individual's observable response in a given situation with respect to a given target”.	Ajzen (1991)

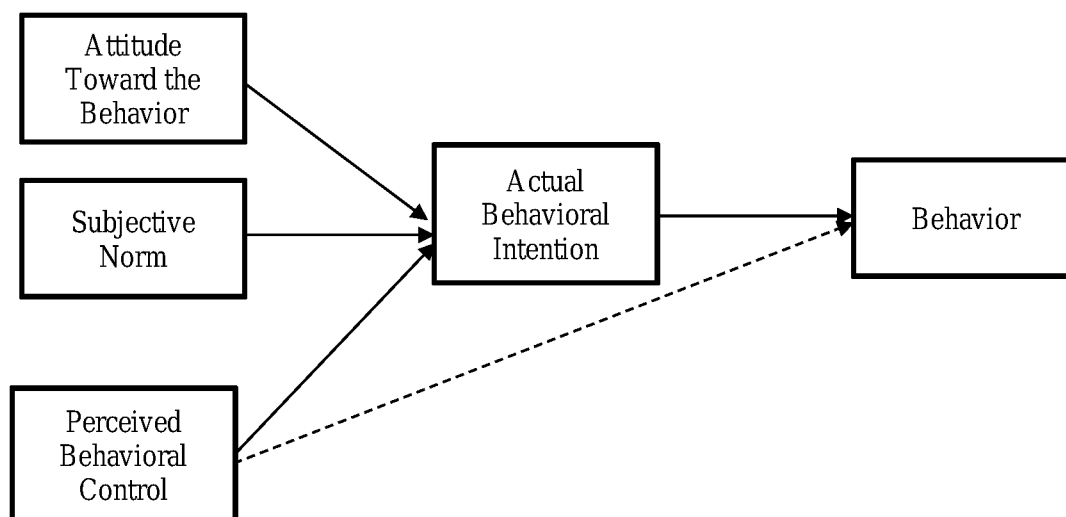


Figure 2: Conceptual Framework

2.7.1 Attitude toward the behavior (AttTowBeh)

As one of the important determinants of behavioral intention, attitude is defined by Mariotti and Glackin (2014) as a way of acting, thinking, or feeling that expresses one's opinion. In a similar vein, Petty and Cacciopo (1981) defined “attitude as a general and enduring positive or negative feeling about some person, object, or issue”. In specific terms, an individual's beliefs regarding the pros and cons of performing the behavior (behavioral beliefs) are what informed attitude (Ajzen, 1991). Attitude toward using hands-free kit whilst driving has been studied in order to establish its correlation with the behavioral intention to adopt using the kit.

In a field research, Consiglio et al. (2003) found that the respondents sampled believed that using of “mobile phones with ‘hands-free’ device does not offer any advantage in relation to the use of mobile phones without ‘hands-free’ functionality”. Isa et al. (2012) in their study reported that 68.6% of the 188 drivers sampled in Indonesia submitted that they do not use “hands-free” device while driving. In Törnros and Bolling (2005) study done in Sweden, respondents agree that either they use or do not use a hands-free device while driving their diving performance is reduced when making a phone call and conversing. Similarly, Mathew et al. (2003) found that there is no difference “in terms of oral comprehension between mobile phone use while driving without a hands-free device and personal mobile phone with a hands-free device”. This negative disposition toward using the hand-free kit device to make phone calls while driving, Pennay (2006) in a study done in Australia confirmed this negative disposition toward using the hand-free kit as it was “found that only 29% of drivers surveyed reported using a hands-free kit indicating that a large amount of mobile phone use while driving is conducted on hand-held mobiles”.

However, studies established that there are drivers who have positive dispositions toward using hands-free device while driving. For instance, White et al. (2010) in a study

conducted in Australia “found that frequent users reported more advantages of, more approval from others for, and fewer barriers that would prevent them from, using either a hands-free or a hand-held mobile phone while driving than infrequent users”. Equally, findings from Ronggang et al. (2009) research carried out in China showed that young drivers see the use of hands-free device to make and receive calls while driving is safer than not using it.

From the above, it is hereby hypothesized that:

H1: The Attitude of Ghanaian drivers will positively influence their Actual Behavioral Intention toward using a hands-free device while driving.

2.7.2 Subjective Norm (SubNorm)

The expectations of specific individuals and groups (normative beliefs) are the determinants of the subjective norm (Ajzen, 1991).

Armitage and Conner (2001) have established through their study that Subjective Norm alongside Attitude and Perceived Behavioral Control accounted for 39% of the variance in Intention. Likewise, Zhou et al. (2012) found that “Attitudes, Subjective Norms, Perceived Behavioral Risk and Control (PBRC), and prior answering behavior emerged as common predictors” of Intention to use hands-free kit while driving. The predictive models explained 37% of the variance for perceived limits of a conversation length in hands-free scenarios. Findings from White et al. (2010) study indicate that social approval influences recurrence of utilizing a hands-free mobile phone while driving; there is a significant difference between regular and irregular users of hands-free kit “on half of the listed normative beliefs and normative beliefs, as a set, increased the probability of frequently using a hands-free mobile phone while driving”. Overall, White et al. (2010) found normative beliefs to be the only belief factor among the various belief sets tested to be the one that exerts the most influence on the behavioral intention to use hands-free mobile phones while driving. This indicates that drivers’ decisions to use a hands-free phone while driving is dependent on the influence of their close associates such as family, friends, and colleagues. Going by this finding, White et al. (2010) suggested that themes of social influence processes should be incorporated as an effective method of minimizing hands-free mobile phone use while driving.

Therefore, it can be hypothesized that:

H2: Subjective Norm will positively influence the Actual Behavioral Intention of Ghanaian drivers to use a hands-free device while driving.

2.7.3 Perceived Behavioral Control (PerBehCon)

Ajzen (1991) submitted that the beliefs a person has regarding the possibility of certain factors that may hinder (i.e., barriers) or aid (i.e., motivators) them toward engaging in a behavior is what informed Perceived Behavioral Control (PBC). In other words, Ajzen (2011) opined that Perceived Behavioral Control has to do with people evaluating “their ability to engage in the intended behavior” vis-a-vis their “perceived power, or perceived difficulty or ease, of performing the behavior”. Accurate prediction of “perceived behavioral control and intentions to carry out a behavior” is dependent on conditions such as: the compatibility of measures of intentions and perceived behavioral control with the intended behavior; the steadiness of “intentions and perceived behavioral control between the time of assessment and observation of the behavior”; a realistic reflection of actual control by the perception of behavioral control (Ajzen, 1991).

Studies such as Matthews et al. (2003); Tornros and Bolling (2006) have found that people see the use of both hand-held and hands-free device as a major distraction that is not safe while driving. Hence, this will serve as a behavioral control for them not to use it. Similar to that, finding from White et al.,’s (2010) study revealed that drivers’ likelihood of using hands-free mobile phone while driving is reduced by perceived barriers (control beliefs). Findings from White et al. (2004) revealed that using hands-free phone is safer than using a hand-held one while driving. Correspondingly, Zhou et al. (2009) found Perceived Behavioral Control (PBC) to be the most important variance in behavioral intention than age, gender, or the other TPB variables of subjective norm or attitudes. Equally, Waddell and Wiener (2014) found PBC among the TPB variables to be the “strongest predictor of intention for initiating and responding behavior”.

Support for the efficacy of the TPB regarding predicting intention and behavior across a variety of contexts was confirmed via a study done by Armitage and Conner (2001). The TPB likewise says that the PBC is a gauge of the abilities required for communicating the behavior and the likelihood to overcome barriers. In this manner, it can be assumed that PBC has a direct impact on behavior.

Given the above analysis, it is hereby hypothesized as follows:

H3: Perceived Behavioral Control will positively influence the Actual Behavioral Intention of Ghanaian drivers to use hands-free device while driving.

H4: Perceived Behavioral Control will positively influence the Behavior of Ghanaian drivers to use hands-free device while driving.

2.7.4 Actual Behavioral Intention (ActBehInt)

It has been established through the TPB by Ajzen (1991) “that intentions (i.e., readiness to act) are the most immediate determinant of behavior”. Ajzen (1991) declared that given the fact that the intention of an individual connotes how hard he/she is glad to work and how much effort he/she will apply in order to act out a behavior, subsequently, it is normal that intentions will get persuasive elements that sway behavior. A spin-off of that, Ajzen (1991) in this way recommended that it is the quality of an individual's aim to participate in a behavior that decides the probability of the individual to act out the behavior. Nonetheless, Ajzen (1991) included that such conduct “must be under a person's volitional control, or will, to choose whether to perform the behavior”.

Armitage and Conner (2001) found “Intentions to be a strong predictor of subsequent behavior explaining, on average, 27% of the variance in behavior with a further 2% of variance attributable” to Perceived Behavioral Control.

Findings from studies such as White et al. (2004) and Zhou et al. (2009) regarding driver’s risk perception showed that individuals saw the behavior of using mobile phone whilst driving to be more secured and revealed that the drivers’ intentions to use hands-free device while driving is stronger than using the handheld.

Owing to the above, it can be hypothesized that:

H5: The Actual Behavioral Intention will positively influence the Behavior of Ghanaian drivers to use hands-free device while driving.

2.7.5 Behavior

The manner in which an individual act or conducts themselves is behavior. Ajzen (1991) in his Theory of Planned Behavior submits that the immediate predictors of behavior are behavioral

intentions which also get “influenced by attitudes towards the behavior, subjective norms, and perceived behavioral control”.

The findings from Walsh et al. (2008) and Zhou et al. (2009) uphold the legitimacy of the TPB and demonstrate that notwithstanding the standard TPB variables (attitude, subjective norm, and PBC); expanded factors, for example, individual factors (e.g., sex and age), driving reason, crash hazard, and hazard misgiving are likewise potential indicators of intentions to utilize a cell phone when driving.

Ghanaian drivers “already have attitudes and beliefs that shape their values and decisions” to adopt the use of hands-free device whilst driving, the “TPB can be used to study this deliberate and planned behavior with the potential to change or alter that behavior, based on covariate predictors, for a more desirable outcome, i.e., increase” in the number of the drivers that use hands-free device while driving to promote safety on the road.

3. Methodology

This study is cross-sectional. This method has repeatedly been utilized in social sciences research for instance (Abdurrahman et al., 2018; Abdurrahman et al., 2021; Bakare et al., 2017; Owusu et al., 2017; Owusu, 2019; Owusu et al., 2021). The nature of the study is quantitative, and it’s aimed at measuring Ghanaian drivers making/receiving phones calls and texting habits while driving.

3.1 Sampling and Data collection

The study population is all drivers driving on Ghanaian roads. Since getting the required actual numbers of Ghanaian drivers was difficult, the researchers relied on convenience sampling by sending the online questionnaire links to drivers on different platforms (drivers unions, lecturers, students, churches, colleagues etc.). Based on this, 284 valid responses were received which was used for the analysis.

The instrument used for the data collection was a structured questionnaire. The introduction page contained important instructions for the respondents and the assurance of confidentiality of the data provided. The questionnaire comprises two sections. Firstly, the respondents were asked about their demography (Age, Gender, Education, Awareness of the Road Traffic Regulations, 2012 L.I. 2180 Act, and Frequency of Texting/calling while driving, etc.) while the second part deals with the relationships of the constructs based on the conceptual framework.

3.2 Operationalization of the Constructs

Unless otherwise stated, items were scored on a seven-point Likert scale of (1) strongly disagree, to (7) strongly agree and some items used a semantical differential scale. The Attitude construct was measured using a seven-point semantic-differential scale (Ajzen, 1991; Gauld et al., 2014; Nemme & White, 2010; Walsh et al., 2008). On the other hand, the subjective norm construct was measured by three items (Nemme & White, 2010; Waddell & Wiener, 2014). Likewise, the Actual Behavioral Intention was measured by three items (Nemme & White, 2010). Similarly, four items measure Perceived Behavioral Control (Nemme & White, 2010; Walsh et al., 2008). Furthermore, six items were used to measure the Behavior construct (Bakare et al., 2017; Nemme & White, 2010; Walsh et al., 2008).

3.3 Content Validity and Pilot

Two academic experts assisted with the Content validity of the survey instrument. Their recommendations led to the exclusion of questions that were considered vague. Thirty (30)

samples were used for a pilot study to test the reliability and validity of the items. All the emergent Cronbach Alphas and Composite Reliabilities were above the thresholds of 0.7 signifying the items weighing the constructs were reliable. The Average Variance Extracted (AVE) values were also above 0.5 signifying convergent validity was achieved (Hair et al., 2017). Discriminant validity through HTMT was also established as all the values were below 0.9 (Hair et al., 2017).

4. Data Analysis and Findings

Two different statistical tools were used for the data analysis. SPSS 22 was used for the Descriptives whilst PLS-SEM through Smart PLS 3 was used for the inferential statistics. PLS-SEM was chosen due to its novelty lately in social sciences literature and many studies (Abdurrahman et al., 2020; Owusu et al., 2017; Owusu, 2020; Owusu et al., 2020) using it.

4.1 Descriptive Analysis

Table 2 shows the Descriptive statistics for Gender, Age, Educational Level, Car Ownership, Driver Type, Awareness of the Road Traffic Regulations, 2012 L.I. 2180 Act, Awareness of Hands-free Kits, and Smartphones Speaker Tone.

Table 2: Descriptive statistics of respondents' demographics

Variable	Item	Frequency	Percentage
Gender	Male	155	54.6%
	Female	129	45.4%
Age	Below 20	5	1.8%
	21-30	144	50.7%
	31-40	107	37.7%
	41-50	25	8.8%
	51-60	2	.7%
	Above 60	1	.4%
Educational Level	Diploma	9	3.2%
	Undergraduate	170	59.9%
	Masters (MPhil/MSc/MBA/MPA)	104	36.6%
	PhD	1	.4%
Car Ownership	Self	152	53.5%
	Family	102	35.9%
	Company	12	4.2%
	Rented	18	6.3%
Driver Type	Private	251	88.4%
	Commercial	33	11.6%
Aware of the Road Traffic Regulations, 2012 L.I. 2180 Act?	Yes	284	100%
	No	0	0%
Aware of Hands-free Kits?	Yes	75	26.4%
	No	209	73.6%
Aware of Smartphones Speaker Tone?	Yes	284	100%
	No	0	0%

Regarding the Gender of the respondents, 155 (54.6%) were males whilst 129 (45.4%) were females. In terms of the Age distribution, the majority of the respondents were between

21-30 and 31-40 with 144 (50.7%) and 107 (37.7%) respectively. With Educational Level, majority of the respondents were undergraduate followed by Masters holders with 170 (59.9%) and 104 (36.6%) respectively. Most of the respondents have cars, followed by those owned by families with 152 (53.3%) and 102 (35.9%) respectively. With the type of driver, majority of the respondents were private drivers with 251 (88.4%) and the rest 33 (11.6%) being commercial drivers. Regarding the respondent's awareness of the Road Traffic Regulations, 2012 L.I. 2180 Act, all of them responded 'Yes' with a 100%. Concerning their awareness level of the "Hands-free kits", 75 (26.4%) responded 'Yes' with the majority 209 (73.6%) responding 'No'. In terms of their "awareness of the Smartphones Speaker tone", all of them responded 'Yes' with 100%.

One other interesting descriptive statistic that this study sought to show is a "Concealed manner" when it comes to driving. Thus, this question was posed, "How often do you do the following in a Concealed manner while driving?". Below are the results from the respondents.

4.1.1 With the question, "Use a mobile phone for any purpose?"

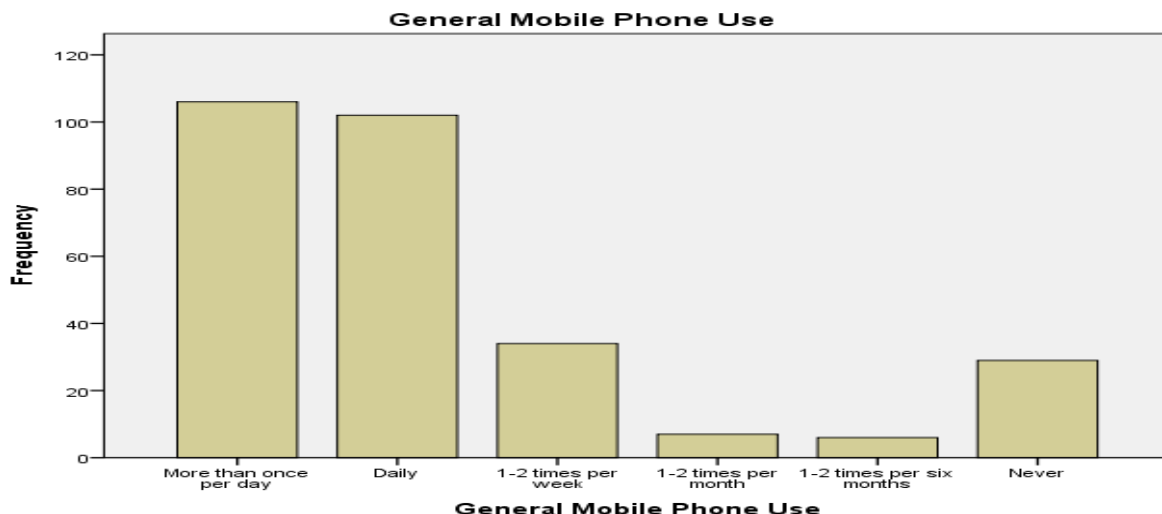


Figure 3: General Mobile Phone Use

From Figure 3, the majority of the respondents indicate that they use mobile phones more than once a day followed by those who said daily with 106 (37.3%) and 102 (35.9%) respectively. Thus, most of the respondents are heavy users of mobile phones for different purposes.

4.1.2 With the question, "Sending a text message?"

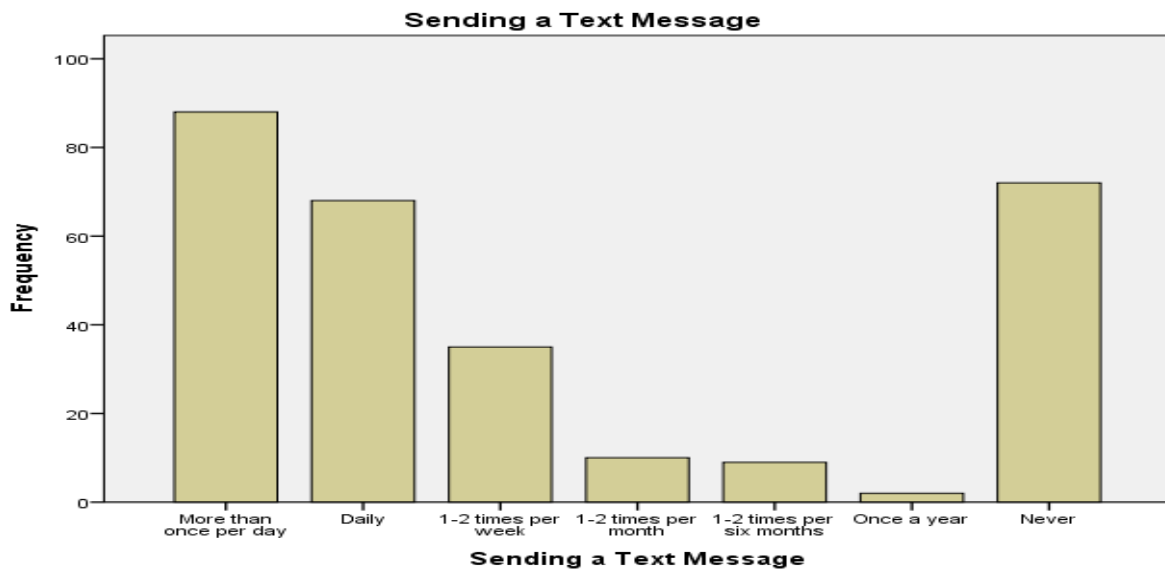


Figure 4: Sending a Text Message

From Figure 4, the majority of the respondents indicate that they send text messages more than once a day with 88 (31.0%). This is followed by surprisingly, 72 (25.4%) respondents indicating they have never sent a text message before. Others also indicate that they sent text messages daily and 1-2 times per week with 68 (23.9%) and 35 (12.3%) respectively. Thus, despite some indicating they have not sent text messages before, yet most of the respondents are still using their mobile phones to send text messages.

4.1.3 With the question, "Reading a text message?"

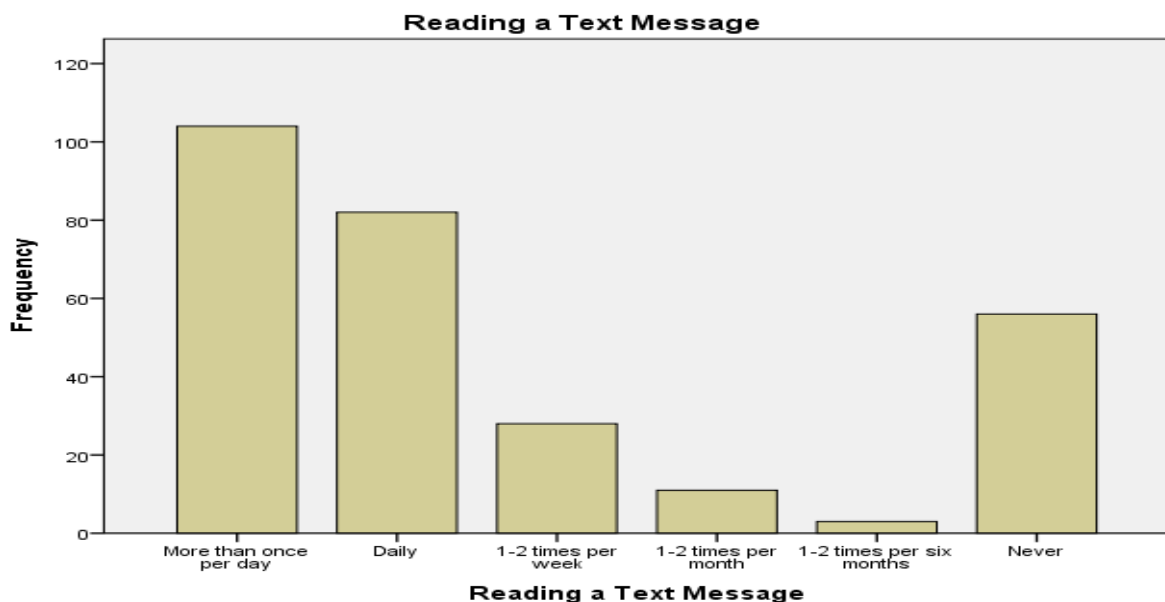


Figure 5: Reading a Text Message

From Figure 5, majority of the respondents indicate that they read text messages more than once a day followed by those who said daily with 104 (36.6%) and 82 (28.9%) respectively. Others also indicate they read text messages 1-2 times per week and 1-2 times per month with

28 (9.9%) and 11(3.9%) respectively. Nevertheless, 56 (19.7%) indicate they have never read a text message before. Thus, despite some indicating they have not read text messages before, yet most of the respondents are still using their mobile phones to read text messages.

4.1.4 With the question, “Making a phone call?”

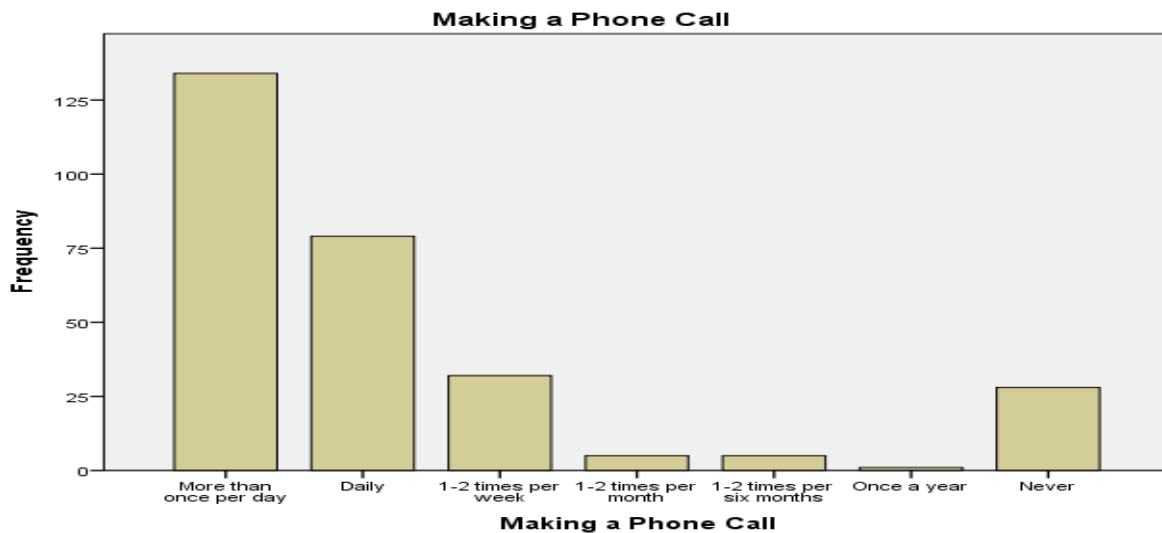


Figure 6: Making a Phone Call

From Figure 6, majority of the respondents indicate that they make phone calls more than once a day followed by those who said daily, and 1-2 times per week with 134 (47.2%), 79 (27.8%), and 32 (11.3%) respectively. Surprisingly, 28 (9.9%) indicate they have not used their phones to make calls before. Thus, despite some indicating they have not made calls before, yet most of the respondents are still using their mobile phones to make phone calls.

4.1.5 With the question, “Answering a phone call?”

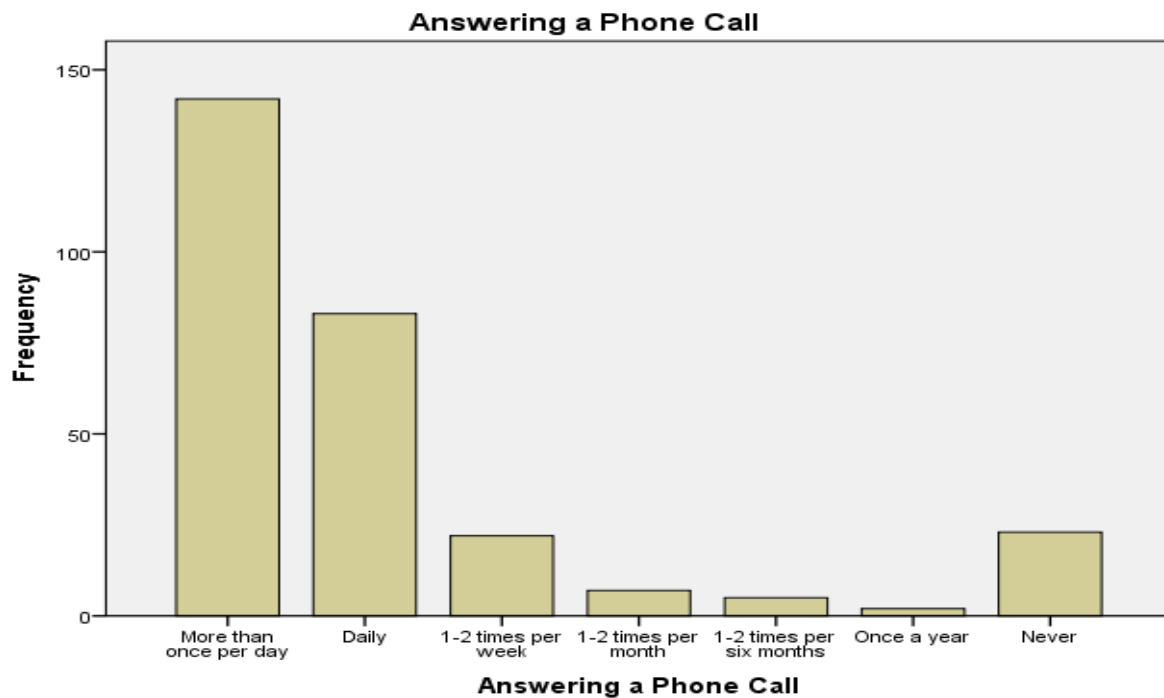


Figure 7: Answering a Phone Call

From Figure 7, majority of the respondents indicate that they answer phone calls more than once a day followed by those who said daily, and 1-2 times per week with 142 (50.0%), 83 (29.2%), and 22 (7.7%) respectively. Surprisingly, 23 (8.1%) indicate they have not used their phones to answer calls before. Thus, despite some indicating they have not answered calls before, yet most of the respondents are still using their mobile phones to receive phone calls.

Another interesting descriptive analysis that the study sought was about the "*Attitude Toward the Behavior*". Interesting questions with different scenarios were asked here. Below are the different scenarios and the responses received.

As shown in figure 8, scenario 1 seeks to know the perceptions of respondents regarding driving at 100 km/h and running late. Will they send/read SMS messages whilst driving under this condition? The majority of the respondents indicate it is extremely unwise (73.2%) followed by 13% who said is it is unwise. This indicates that most of the respondents will never drive whilst texting/reading SMS in such conditions. This is a good finding in terms of reducing drivers' distractions whilst driving.

1. Scenario 1: You are driving at 100 km/h and running late. Sending [reading] SMS Messages while driving in this condition would be
284 responses

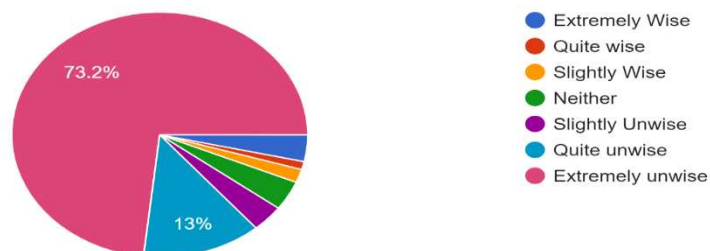


Figure 8: Scenario 1

As shown in figure 9, scenario 2 seeks to know the perceptions of respondents regarding driving at 100 km/h and are not in a hurry. Will they send/read SMS messages whilst driving under this condition? The majority of the respondents indicate it is extremely unwise (56.3%) followed by 18.7% who said it is quite unwise and 9.2% saying it is slightly unwise. This indicates that most of the respondents will never drive whilst texting/reading SMS in such conditions. This is a good finding in terms of reducing drivers' distractions whilst driving.

2. Scenario 2: You are driving at 100 km/h and are not in a hurry. Sending [reading] SMS Messages while driving in this condition would be
284 responses

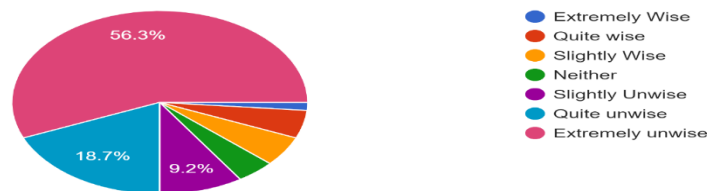


Figure 9: Scenario 2

As shown in figure 10, scenario 3 seeks to know the perceptions of respondents regarding waiting at traffic lights and running late. Will they send/read SMS messages whilst driving under this condition? Here, the findings were mixed with just 20.4% indicating it is extremely unwise. 18.7% slightly unwise and 17.6% indicating quite unwise. Others 18% and 14.1% indicate slightly wise and quite wise respectively. Thus, although a little majority still sees it as not wise, yet others also see it as wise. This is not surprising considering the boredom some drivers have to endure in traffic.

3. Scenario 3: You are waiting at traffic lights and are running late. Sending [reading] SMS Messages while driving in this condition would be
284 responses

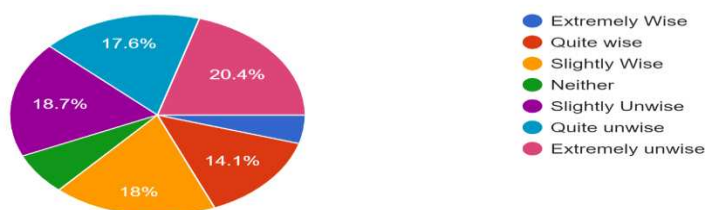


Figure 10: Scenario 3

As shown in figure 11, scenario 4 seeks to know the perceptions of respondents regarding waiting at traffic lights and are not in a hurry. Will they send/read SMS messages whilst driving under this condition? Here, the findings were mixed as well with 14.4% indicating it is extremely unwise, 20.1% slightly unwise and 21.1% indicating quite unwise. Others 14.8% and 17.3% indicate slightly wise and quite wise respectively. Thus, although a little majority still sees it as not wise, yet others also see it as wise. This is not surprising considering the boredom some drivers have to endure in traffic.

4. Scenario 4: You are waiting at traffic lights and are not in a hurry. Sending [reading] SMS Messages while driving in this condition would be
 284 responses

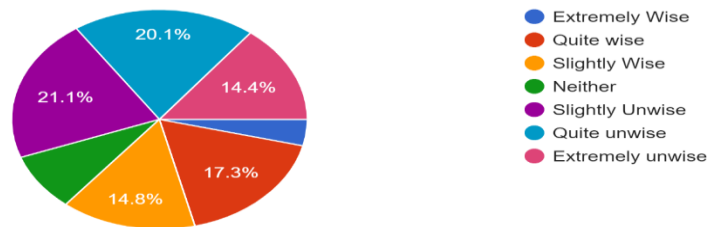


Figure 11: Scenario 4

4.2 Inferential Statistics

The inferential statistic for this study was done through the Partial Least Squares Structural Equation Modelling (PLS-SEM) with Smart PLS Version 3.3.3. The 2-step approach for SEM analysis was used (Hair et al., 2017, p. 131). This involves first assessing the measurement model to establish the reliability and validity of the constructs' measures and then the structural model assessment for establishing the hypothesized relationships between the constructs.

4.2.1 Measurement Model

The measurement model assessment was done through the evaluation of the reliability and validity of the constructs. The measures used are Cronbach Alpha and Composite Reliability for assessing the reliability of the constructs. Average Variance Extracted (AVE) was used to assess the convergent validity of the constructs.

Table 3: Construct reliability and validity

Construct	Indicators	Outer loadings	Cronbach's alpha	Composite reliability	Average Variance Extracted (AVE)
ActBehCon	ActBehInt1	0.865	0.786	0.875	0.701
	ActBehInt2	0.881			
	ActBehInt3	0.761			
AttTowBeh	AttTowBeh3	0.959	0.866	0.936	0.879
	AttTowBeh4	0.916			
Behavior	Behaviour1	0.709	0.833	0.882	0.599
	Behaviour2	0.803			
	Behaviour3	0.762			
	Behaviour4	0.836			
	Behaviour5	0.754			
PerBehCon	PerBehCo1	0.909	0.701	0.868	0.767
	PerBehCo2	0.842			
SubNorm	SubNorm1	0.936	0.949	0.967	0.907
	SubNorm2	0.964			
	SubNorm3	0.958			

For a construct to be reliable, all its indicator loadings should be above 0.7 (Hair et al., 2017, p. 136). In the first analysis of the PLS Algorithm, some of the indicators did not meet the minimum threshold of 0.7 and above. As such, such indicators were deleted. These include AttTowBeh1 and AttTowBeh2 with loadings 0.574 and 0.660 respectively for the AttTowBeh construct. Also, PerBehCo3 and PerBehCo4 with loadings 0.656 and 0.581 respectively for the PerBehCon construct as well as Behaviour6 with loading 0.428 for the Behaviour construct were all deleted. Thus, from Table 3, all the constructs' outer loadings meet the minimum threshold of above 0.7. Also, both the Cronbach alphas and Composite reliability's values were all above the 0.7 thresholds, thus signifying reliability has been achieved. For convergent validity, all the AVE values of the constructs should be above 0.5 (Hair et al., 2017, p. 138). Thus, from Table 3, all the AVE values for all the constructs were above 0.5. This indicates that convergent validity has been established.

Table 4: Discriminant validity – Fornell-Larcker Criterion

Constructs	ActBehInt	AttTowBeh	Behaviour	PerBehCon	SubNorm
ActBehInt	0.838				
AttTowBeh	-0.196	0.937			
Behaviour	0.530	-0.269	0.774		
PerBehCon	0.601	-0.245	0.413	0.876	
SubNorm	0.512	-0.064	0.249	0.494	0.953

An additional criterion for establishing validity is through discriminant validity. Discriminant validity for this study was assessed through the Fornell-Larcker criterion (Hair et al., 2017, p. 139). With the Fornell-Larcker criterion, "the square root of each construct's AVE should be greater than its highest correlation with any other construct (Hair et al., 2017, p. 139; Fornell & Larcker, 1981). Thus, from Table 4, discriminant validity is established as the square root of each construct's AVE is greater than its highest correlation with other constructs.

4.2.2 Assessment of the Structural Model

After establishing the reliability and validity of the constructs, the next stage was to assess the structural model. The bootstrapping method in Smart PLS 3 was used to assess the structural model.

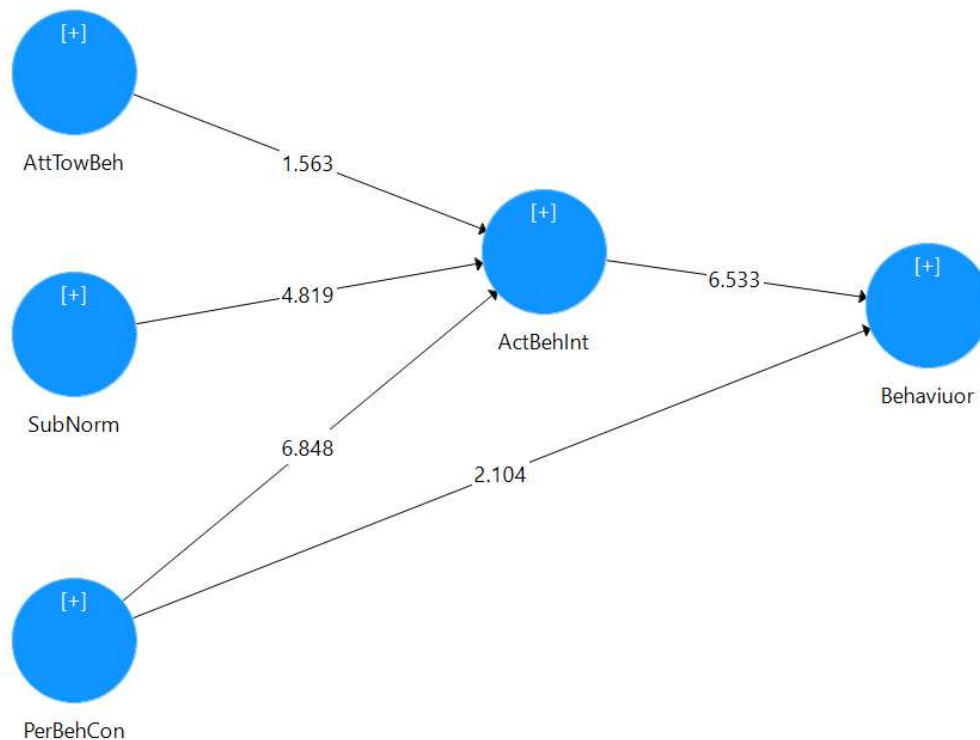


Figure 11: Structural model (Bootstrapping results)

Table 5: Path Coefficients (Bootstrapping results - direct effects)

Relationships	Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
ActBehInt → Behaviour	H5	0.441	0.446	0.068	6.533	0.000
AttTowBeh → ActBehInt	H1	-0.069	-0.075	0.045	1.563	0.122
PerBehCon → ActBehInt	H3	0.442	0.444	0.065	6.848	0.000
PerBehCon → Behaviour	H4	0.147	0.147	0.069	2.104	0.032
SubNorm → ActBehInt	H2	0.289	0.288	0.060	4.819	0.000

Figure 11 and Table 5 show the results of the structural model. The hypothesised relationships values are shown in Table 5 with the standard deviation, T statistics and the P values. According to Hair et al. (2017, p. 216), the “popular critical t values for a two-tailed test are 1.65 ($\alpha = 0.10$), 1.96 ($\alpha = 0.05$), or 2.57 ($\alpha = 0.01$)”. At 5% significance interval ($t\text{-value} \geq 1.96$), ActBehInt → Behaviour ($t = 6.530$, $p = 0.000$); PerBehCon → ActBehInt ($t = 6.825$, $p = 0.000$); PerBehCon → Behaviour ($t = 2.142$, $p = 0.032$); SubNorm → ActBehInt ($t = 4.784$, $p = 0.000$) emerged significant. However, AttTowBeh → ActBehInt ($t = 1.547$, $p = 0.122$) emerged insignificant.

Thus, the hypothesized relationship between perceived behavioral control and actual behavior intention (H3), subjective norm and actual behavioral intention (H2), perceived behavioral control and behavior (H4), and actual behavioral intention and behavior (H5) were all supported. However, attitude towards behavior and actual behavioral intention (H1) was not supported.

Table 6: Path coefficients (Bootstrapping results – indirect effects/Mediation)

Constructs	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
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AttTowBeh -> ActBehInt -> Behaviour	-0.009	-0.008	0.045	0.209	0.835
PerBehCon -> ActBehInt -> Behaviour	0.393	0.429	0.233	1.689	0.091
SubNorm -> ActBehInt -> Behaviour	0.121	0.115	0.068	1.765	0.078

The indirect effects (Mediation analysis) were done through the consistent PLS bootstrapping algorithm. From Table 6, at 5% significance interval ($t\text{-value} \geq 1.96$), all the three paths AttTowBeh -> ActBehInt -> Behaviour ($t = 0.209$, $p = 0.835$), PerBehCon -> ActBehInt -> Behaviour ($t = 1.689$, $p = 0.091$), and SubNorm -> ActBehInt -> Behaviour ($t = 1.765$, $p = 0.078$) emerged insignificant. Thus, actual behavioral intention does not mediate the relationships between attitude toward behavior and behavior, perceived behavioral control and behavior, as well as subjective norm and behaviors.

Table 7: R^2 , R^2 Adjusted, f^2 , and Q^2 values

Constructs	R^2	R^2 adjusted	f^2	Q^2
ActBehInt	0.427	0.421	0.176	0.288
AttTowBeh			0.008	
Behaviour	0.294	0.289		0.169
PerBehCon			0.242	
SubNorm			0.110	

In terms of the effects of the exogenous (independent) constructs on the endogenous (dependent) constructs, the R^2 , f^2 values were observed.

Constructs Attitude towards Behavior, Perceived Behavior Control, and Subjective Norm have a combined effect of 0.427 on Actual Behavioral Intention with an adjusted R^2 value of 0.421. Thus, these three constructs explained 42.1% of the variance of the Actual Behavioral Intention. Thus, there is a moderate effect (Hair et al., 2017, p. 209). Also, Actual Behavioral Intention has a total effect of 0.294 on Behaviour with an adjusted R^2 value of 0.289. Thus, this explains 28.9% of the variance of the Behaviour. Thus, there is a weak effect (Hair et al., 2017, p. 209).

Regarding the effects sizes, Hair et al. (2017, p. 211) asserted that f^2 values of “0.02, 0.15, and 0.35 are interpreted as a small, medium, and large effect sizes”, respectively. Thus, from Table 7, ActBehInt (0.176), PerBehCon (0.242), and SubNorm (0.110) all have medium effect size. Thus, Perceived Behavioral Control has the highest effect size, followed by Actual Behavioral Intention, and then Subjective Norm. However, AttTowBeh (0.008) has no effect size.

For a model to have a predictive relevance, the Q^2 value should be greater than zero (Hair et al., 2017, p. 212; Geisser, 1974; Stone, 1974). The blindfolding method, through the Cross Validated Redundancy, was used to calculate the predictive reliance value (Hair et al., 2017, p. 212). From Table 7, Q^2 values of ActBehInt (0.288) and Behaviour (0.169) were greater than zero. This signifies that the structural model paths have predictive relevance.

5. Discussions

To understand the attitude and behavior of Ghanaian drivers towards texting and calling whilst driving, this study explored whether Ghanaian drivers are aware of the Road Traffic Regulations, 2012 (L.I 2180) Act (**objective 1**) in the first instance. Through descriptive analysis, all the respondents indicate they are aware of the Act, yet they still flout it. This is quite surprising and one of the reasons is that the Ghana Police Motor Traffic & Transport Department (MTTD) staff cannot be everywhere. So, drivers are able to do this without being arrested and prosecuted.

The study also explored if Ghanaian drivers are aware of the hands-free kits and smartphones speaker tones and why they are not using them whilst driving and making/receiving calls (**objective 2**). The descriptive analysis indicates all the drivers are aware of the smartphone's speaker tones of their phones, yet the majority of them are not using them. This may be due to the privacy of the communication between two parties who do not want others to hear what is being discussed especially in commercial vehicles. In terms of the hands-free kits, the majority of the drivers are not aware. So, this is something that stakeholders should strive to create awareness about its adoption and usage.

Regarding investigating drivers' attitude towards making/receiving calls and texting/reading text messages whilst driving (**objective 3**), this study developed a conceptual model derived from the TPB as the theoretical lens. The findings indicate that except for attitude towards behavior and actual behavioral intention which emerged insignificant, all the other hypothesized relationships were supported.

As hypothesized, Subjective Norm has a significant relationship with the Actual Behavioural Intention of Ghanaian drivers to text/make calls whilst driving. Prior studies (Armitage & Conner, 2001; Zhou et al., 2012; White et al., 2010) have all indicated Subjective Norm as a predictor to Actual Behavioral Intention to use hands-free kit while driving. White et al. (2010) find that drivers' decisions to use a hands-free phone while driving is dependent on the influence of their close associates such as family, friends, and colleagues. Thus, with the Road Traffic Regulations, 2012 L.I. 2180 in force, some Ghanaian drivers are forced to adhere to it by using technology that aids them to make/receive calls and also text/read text SMS whilst driving. Thus, the finding in this study concurs with the findings of Armitage & Conner, (2001); Zhou et al., (2012); White et al., (2010).

As hypothesized, Perceived Behavioural Control has a significant relationship with Actual Behavioural Intention and Behaviour of Ghanaian drivers to text/make calls whilst driving. Findings about Perceived Behavioural Control towards the use of hand-held and hands-free device use during driving is mixed. Whilst (Matthews et al., 2003; Tornros & Bolling, 2006) found that people see the use of both hand-held and hands-free device as a major distraction that is not safe while driving, thus serving as a behavioral control for them not to use it, others (White et al., 2004; Zhou et al., 2009) found it to be the most important variance in behavioral intention than age, gender, or the other TPB variables of subjective norm or attitudes. Waddell and Wiener (2014) found PBC among the TPB variables to be the strongest predictor of intention for initiating and responding behavior. Thus, the findings in this study corroborate that of (White et al., 2004; Zhou et al., 2009; Waddell & Wiener, 2014) signifying Ghanaian drivers see the hands-free device as safe and can reduce distraction during driving.

As hypothesized, Actual Behavioural Intention has a significant relationship with the Behaviour of Ghanaian drivers to text/make calls whilst driving. Studies such as (White et al., 2004; Zhou et al., 2009) regarding driver's risk perception showed that individuals saw the behavior of using mobile phones whilst driving to be more secure and revealed that the drivers' intentions to use hands-free device while driving is stronger than using the handheld. Thus, it is not surprising that Actual Behavioral Intention has a significant relation with Behavior in this study. Ghanaian drivers see the use of hands-free kit as reducing drivers' risk of using mobile phones whilst driving. Thus, the finding agrees with (White et al., 2004; Zhou et al., 2009; Armitage & Conner, 2001).

However, the hypothesized relationship between Attitude Towards Behaviour and Actual Behavioural Intention has no significant relationship with Ghanaian drivers texting/making calls whilst driving. Prior research (Pennay, 2006) has established a negative disposition towards using hand-free kit whilst driving as some drivers believe that it does not

offer any advantage concerning the use of mobile phones (Consiglio et al., 2003; Törnros & Bolling, 2005; Mathew et al., 2003). Contrarily, other studies (White et al., 2010; Ronggang et al., 2009) provided positive disposition towards hands-free device while driving with drivers indicating the use of hands-free device to make and receive calls while driving is safer than not using it. The finding in this study agrees with (Consiglio et al., 2003; Törnros & Bolling, 2005; Mathew et al., 2003) who see the hand-free kit as not offering any advantage when it comes to driving and making phone calls.

6. Conclusion and Recommendations

This study investigated Ghanaian drivers' attitude towards making/receiving calls and texting/reading text messages whilst driving. Through the lens of TPB theory and a PLS-SEM analysis, the findings have indicated that Subjective Norm and Perceived Behavioral Control have a significant influence on Ghanaian drivers' Actual Behavioral Intention towards driving whilst texting/making/receiving calls. Also, Perceived Behavioral Control and Actual Behavioral Intention have a significant influence on Ghanaian drivers' behavior towards driving whilst texting/making/receiving calls. However, Attitude Towards Behaviour has no significant relationship with the Actual Behavioural Intention of drivers to drive and make/receive calls. These findings have given a lot of insights towards this behavior which is now a huge menace on Ghanaian roads. The implications are discussed below.

6.1 Implications, Limitations, and Suggestions for further studies

This study has contributed to the IS literature in terms of the phenomenon of driving whilst texting/making calls and the use of hands-free kit to the rescue of drivers by using a theory supported by a novel statistical analysis (SEM) to explain this phenomenon from a developing country context.

Findings from this study, have indicated that the phenomenon of texting/making calls whilst driving will not cease once there is a proliferation of mobile phones and drivers are bound to be in traffic from time to time and sometimes are bound to make/receive urgent calls and also respond to some urgent text messages. Thus, as shown in the literature that hands-free kits and smartphones speaker tones are being encouraged to be used in other jurisdictions, same should be encouraged in Ghana to reduce the incidence of distractions resulting from this phenomenon of driving whilst texting/making phone calls. Thus, the National Road Safety Authority (NRSA), the MTTD of the Ghana Police Service, the Driver and Vehicle Licensing Authority (DVLA), among others should encourage Ghanaian drivers to adopt and use these technologies that can reduce the incidence of distractions which can lead to accidents. Also, the Road Traffic Regulations, 2012 L.I. 2180 Act should be updated to include the implementation of these technologies by drivers which will help its adoption and use among Ghanaian drivers. In terms of drivers flouting the Road Traffic Regulations, 2012 L.I. 2180 Act, although a majority of them are aware, yet they flout the law with impunity due to lack of police officers being everyone. Thus, Ghana Government must implement Close Circuit Televisions (CCTV) Cameras on all our major roads especially on the major traffic intersection in the cities. This is a project that Ghana Government has recently embarked upon. Its completion will go a long way in reducing this behavior of drivers texting/making phone calls whilst driving. Although, the law is very clear against this phenomenon, but because sometimes it is difficult for the MTTD to get evidence against drivers, they find it difficult to prosecute offenders.

This study like many others has some limitations. One major limitation is that the data collection was done in only one city (Accra), thus, its generalization for the entire country cannot be substantiated. Future studies can do a national survey about this phenomenon. Also,

a future study can use the results of this study as a basis to do a qualitative study to unearth the actual reasons behind drivers' behavior for flouting the Road Traffic Regulations, 2012 L.I. 2180 Act.

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