

Ban on Commercial Motorcycle Operations in Benin City, Nigeria: An Appraisal of the Benefits and Business Opportunities

Femi F. Asekhame¹ Michael D. Oisamoje, PhD^{2*}

1. Department of Mechanical Engineering, Igbinedion University, Okada, Edo State, Nigeria.
2. Department of Business Administration, Benson Idahosa University, Benin City, Edo State, Nigeria.

* E-mail of Corresponding author: mikeoisamoje@yahoo.com

Abstract

This paper appraises the socio-economic implications of the ban on commercial motorcycle operations (CMOs) in Benin City, Nigeria. Deriving from the literature review, the paper posits that although CMOs offered a number of benefits to the users, but that they also had negative effects which include the increase in criminal activities such as armed robbery and kidnapping, and phenomenal rise in the number of motor traffic accidents, many of them fatal. Besides, there were strong indications that insurgents were planning to breach the security of the State by leveraging on the activities of CMOs. Therefore to checkmate the security threat and guarantee the safety and security of the populace, the state government banned CMOs in Benin City. The ban subjected many commuters to immense hardship but it has some benefits and it also created potential business opportunities which the paper identifies.

Keywords: Ban, Benefits, Business opportunities, Commercial motorcycles, Insurgents, Operations, Security threat.

1. Introduction

Important modes of land transportation include railways, motor vehicles (cars, lorries, buses), as well as motorcycles, tricycles and bicycles. Others include the use of animals (camels, donkeys and horses), and animal drawn carts. The prevailing mode of transportation in a particular territory, locality or country is an indication of the level of the socio-economic development of that territory or locality. Indeed, it has been argued that “transportation is regarded as an index of economic, social and commercial progress of a country, (and that) the whole structure of a nation’s industry and commerce rests on the well laid foundation of transport” (Saxena and Arora, 2010, p.1.1; Okola, 2013). Since railway systems are cost-intensive ventures, many nations, including those in sub-Saharan Africa are yet to construct and operate functional and viable railway systems that cover a good proportion of their geographical territories and that are adequate to serve the transportation needs of the populace. Again, the use of animals (camels, donkeys and horses) as modes of transport appears to be limited to the northern and relatively arid zones of the country. By implication therefore, animal-drawn carts are rare features in the southern parts of the country. Thus, in the absence of railways and the use of animals and animal-drawn carts, the available options of land transportation are cars, buses and trucks, as well as tricycles, motorcycles and bicycles. Of these options, use of motorcycles for commercial land transportation has gained ascendancy for several reasons which this paper would identify.

2. History of Motorcycle Operation in Nigeria

Prior to 1980, motorcycles or motorbikes were primarily used for private purposes such as for individual mobility and for domestic errands like fetching water and firewood, as well as for conveying farm produce from the farm or to the market (Ajay, 2011; Nwaorgu, 2013; Ikot, Akpan, Benson, and Etim (2011). They also served as status symbols for the low income earners who could afford them (Christopher, Usman and Eke, 2013). However, the use of motorcycles for transportation, and especially for commercial purposes, began about the mid-eighties as a result of the inadequacy in the scope, coverage and services rendered by the public transport system. Besides, the increase in population and the hardship occasioned by the Structural Adjustment Program (SAP) also encouraged the use of motorcycles for transportation, and especially for commercial purposes. Then, it became much more difficult for the average Nigerian employee, private or public, to access even the basic necessities of life (food, water, shelter) let alone save enough money to buy a brand new car or replace an old one. This scenario encouraged the quest for second-hand cars popularly called ‘tokunbos’ in Nigeria. Many Nigerians who wanted even the second-hand cars could not afford them because of the extent of the erosion of the average individual purchasing power. Thus, the use of motorcycles came as a saving grace. With the increasing incidents of unemployment among the youths, the use of motorcycles for commercial purposes

became an attraction. The commercialisation of motorcycle operation was further reinforced by the increasing hike in prices of even the second-hand vehicles, the deplorable and worsening conditions of Nigerian roads and other incidental challenges like traffic jams and ‘go-slows’ on our highways. CMOs therefore came in to fill the service gap created by the unavailability or inadequacy of cars and other modes of mobility on land. In recognising the importance of CMOs to socio-economic activities, some of the advantages identified in their use include easy manoeuvrability, their ability to travel on bad roads, and also their demand responsiveness (Okola, 2013). It is instructive to note that the use of CMs is a common feature in many less developed countries, including (Togo, Benin, Burkina Faso, Liberia and Sierra Leone) in the Economic Community of West African States (ECOWAS).

Commercial Motorcycle Operation (CMOs) gained popularity and Nigerians seemed to have generally accepted this mode of land transportation. This assertion is reflected in the fact that CMO is widespread and found in virtually all Nigerian cities, urban or rural. It is therefore not surprising that, depending on the locality, CMOs have become known by such other names as ‘okada’, ‘achaba’, ‘going’, and ‘inaga’. The alternative name Okada however appears to be the more widely accepted. This name derives from the now defunct local Nigerian airline, Okada Air, which, though not necessarily comfortable, but seemingly operated with such dexterity, doggedness and reliability that it was believed to be operationally dependable and able to safely convey passengers to their destinations even in adverse weather conditions.

3. Functional Characteristics of Commercial Motorcycles

Appearing in the Nigerian scene in the late 1980s as a viable means of commercial transportation for passengers, okadas could maneuver through heavy traffic, often navigating through narrow and poorly maintained roads to convey passengers to distant and even remote destinations and frequently passing through unmotorable terrains. These qualities endeared okadas to commuters such that this mode of transportation became one of the primary modes of movements in Nigeria. This situation was enhanced by the inadequacy of the services rendered by taxicabs and bus services, as well as the recurrent road congestions and poorly maintained road infrastructures.

The services rendered by CMs are not necessarily cheaper than those of taxicabs and buses per unit of distance covered. However, CMs are affordable, relatively more accessible and certainly more adaptable transportation system. This mode of transportation therefore appeals to the young, the elderly, to both males and females, as well as to businessmen, public servants, students, and all a sundry. Notwithstanding these seemingly positive contributions of CMOs to socio-economic activities, their operations and operators were becoming increasingly enmeshed in unacceptable practices and activities that were inimical to safety and security. Hence, not only have CMOs been heavily criticised, in some States, legislations came into effect to severely restrict or even completely prohibit their activities. The ban on motorcycle operation in Benin City, Edo State is therefore examined in this context.

4. Demerits and Merits of Commercial Motorcycle Operation

Adekunbi (2013) notes that since June 2013, when the ban on the use of motor-bikes in Benin City by the State Government was pronounced, residents of Benin and other stakeholders have been counting their losses and groaning under the excruciating backlash of the policy. Unarguably, Commercial Motorcycle Operation (CMO) has its merits and demerits. It may be pointed out that while in the less developed world MO is undertaken primarily as a commercial venture and as a survival strategy to hedge against unemployment and thus provide a means of livelihood, in the more advanced economies, MO is carried out mainly as an individual matter and often for purposes of pleasure. This fact notwithstanding, there are some common behaviour traits and operational challenges that are common to motorcycle riders generally, whether in the developed or in the less developed world. These concerns include matters relating to road traffic accidents, and issues that bother on general safety and security. It is in view of these facts that it is important to look at the advantages and disadvantages of CMOs.

4.1 Demerits of Commercial Motorcycle Operation

CM operators were becoming increasingly implicated in officially reported cases of criminality like armed robbery, kidnapping as well as gang-beating. These vices which remarkably marred the image of the operators are major contributions to the reasons for their ban in some of the cities in Nigeria. Other negative effects of commercial motorcycle operations include high accident rates, the security threat that they pose, the generally low level of safety consciousness exhibited by the operators and problems related to environmental pollution. These factors are now examined.

4.1.1 CMOs and Criminality

A very serious area of concern for all has been the apparent nexus between the operation of CMOs and the rise in criminality of various forms. Motorcycle riders have been implicated in several reported cases of armed robbery as well as kidnapping. Motorcycle operators also became a law unto themselves. They have often been found to be involved in gang-beating car drivers who are involved in traffic accidents with commercial motorcyclists. This happens even when the motorcycle rider is clearly at fault. The association of CMOs with criminality is perhaps the major reason why they have been banned in many Nigerian cities, including Benin City.

4.1.2 CMOs and Armed Robbery

Reporting on the arrest of a five-man gang of armed robbers, Ola (2012), revealed that, one of the armed robbers confessed to the police on how they had been using motorcycles to rob in the city of Ibadan. He added, that another set of armed robbers were caught while using a motorcycle to rob a Lebanese in Ibadan. Also, three policemen were killed in Lagos by armed robbers who were operating on motorcycles (News up-date, 2013). Yusuf (2013), also reported a case of a 3-man robbery gang who operating on a motorcycle shot dead a 42-year old mother of five in Lagos.

4.1.3 CMOs and Kidnapping

One of the criminal activities being perpetuated by motorcycle riders is kidnapping. A recent case was the kidnapping of the wife of the Deputy Leader of Ebonyi State House of Assembly (Peter, 2013). NAN (2013), reported another incident of the kidnapping of Gombe State lawmaker with a motorcycle. It would appear that some of the features that have enabled CMOs to be useful for transportation are the same features that have enabled them to be used for vices such as armed robbery, kidnapping, stealing, and others.

4.1.4 CMOs and Gang Beating

One ugly feature of the CMO is the negative group behaviour called gang beating. These operators of CMOs now believe that they are above the law. For instance, many times when there is an accident that involves a motorcycle and a vehicle, whether the motorcycle riders are at fault or not, they simply gang up to beat up the vehicle driver. Unfortunately, this unacceptable group behaviour is not limited to Nigeria. Honan (2013), reported a case in New York, where an SUV driver who ran over a motorcycle was attacked by a gang of motorcycle riders.

4.1.5 CMOs and Road Traffic Accidents

Road traffic accidents constitute an important worry for authorities whenever there is substantial operation of motorcycles- whether for private or commercial reasons. Motorcycle accidents have increased significantly, year by year throughout the world (Nowy, Meng-Han, and Ray-I, 2012). It is reported that most of these accidents are a result of the risky behaviour of the riders, chaotic traffic and road design faults (Oluwadiya, Oginni, and Olasinde, 2004). An important study (The Hurt Report) conducted in the USA identified the causes of motorcycle accidents to include the widespread violation of the motorcyclist's right-of-way by car drivers who fail to see an approaching motorcycle and thus precipitating a crash. The study also noted that the use of helmets significantly reduced deaths and brain injuries (Hurt, Ouellet, and Thom, 1981). However, in Nigeria, the reverse may in fact be true as the vast majority of okada drivers are not only reckless but disregard and disrespect with impunity road signs and other motorists. Many of them are under-aged, unlicensed and untrained. Several of them drive under the influence of drugs and alcohol. It is also not uncommon to find shared riders involving two or more passengers (Ofonime, 2012). The problem of corruption among road traffic enforcement agents who are easily induced into ignoring traffic misdemeanours when given bribes remains a major impediment to curtailing the excesses of these riders. The deplorable state of Nigerian roads remains a major cause of road accidents in Nigeria (Oluwadiya, Kolawole, Adegbehingbe, Olasinde, Agodirin and Uwaezuoke 2009).

4.1.6 CMOs and Safety and Security

As has been earlier stated, safety and security issues are major concerns for stakeholders in the transport business. Indeed, the ban on CMOs in several Nigerian cities has been due more to the need to tackle security and safety issues. Many of the CM riders are simply reckless on the roads. They generally have very low regards for traffic rules and regulations, a factor that is perhaps not unconnected with their generally low level of education on the average. As a result of the low educational level, many of them are unable to read road signs let alone obey them. In spite of frequent involvement of motorcycles in fatal accidents, that most of the CM operators do not bother having motorcycle insurance covers only goes to confirm their apathy for issues relating to their own safety, the safety of their passengers and those of other road users. Hence it has been recommended

that the law enforcement agencies, especially the police, should ensure that riders put on crash helmets, carry valid licenses and have valid insurance covers for themselves and their passengers (Kudebong, Wurapa and Aikins, 2011).

Lack of safety consciousness is a key reason motorcycle riders are frequently involved in road accidents. This is perhaps a global phenomenon as revealed by the study undertaken by the United States National Highway Traffic Safety Administration (NHTSA). The study showed that 13.10 cars out of 100,000 ended up in fatal crashes, while the rate for motorcycles was 72.34 per 100,000. The report also added that motorcycles have a higher fatality rate per unit of distance travelled when compared with automobiles. (NHTSA, 2008).

Motorcycle accidents result in thousands of injuries and death each year. Even the most experienced and careful rider is at the mercy of other motorists. Motorcycle accident victims often experience the most severe types of injuries compared to other motor vehicle accidents. Statistics have shown that a motorcyclist is 16 times more likely to be killed in an accident than an occupant of an automobile (NAN, 2013a; Youth for Road Safety, 2013). A study showed that the recklessness of motorcyclist, alcohol and intoxication from drugs account for 78%, 66% and 46%, respectively of okada accidents (Etukumana, Onumbu, John and Valenti, 2010). These actions endanger the lives of innocent passengers. It has also been reported that several people have lost their lives, limbs, arms or become maimed for life through the reckless activities of the commercial motorcycle operators (Akinremi, 2012).

4.1.7 CMOs and Education

As earlier noted, the frequent involvement of motorcycle riders in road traffic accidents in Nigeria may not be unconnected with their generally low level of education on the average. In an increasingly hostile environment characterized by aggressive and distracted drivers, motorcyclists have been charged to be wiser, more skilled and more educated in order to enhance their survival in cases of traffic accidents. Hence, in the USA, the Motorcycle Safety Foundation is involved in developing educational and training programmes for motorcyclists who take their safety seriously (Buche, 2010).

4.1.8 CMOs and Traffic Congestion

The rapid increase of motorcycle ownership associated with inadequate public transport has largely contributed to increased traffic congestion (Minh, Sano and Moto, 2005). It is further confirmed that several cities in developing countries have been suffering from very serious congestion problems which are mostly caused by two-wheel vehicles (Tuan and Shimizu, 2005). Due to their general disregard of routine traffic rules and regulations, and their lack of respect for other road users, CM operators have often been responsible for avoidable congestions on our roads (Sugiyanto, Malkhamah, Munawar, and Sutomo, 2011). It would be interesting to quantify the socio-economic implications of this behavior

4.1.9 CMOs and Environmental Pollution

Many of the CMs are very poorly maintained or serviced. The result is that a good proportion of these machines exude very thick and offensive fumes from their exhausts into the air thus further worsening the pollution of the atmosphere and increasing the hazards in the environment. It is estimated that on the average, motorcycles emit 1.5 and 5 times more carbon monoxide and hydrocarbon gases, respectively per kilometer driven than motor vehicles (Shing, Muttamara and Preecha, 2001). This situation poses serious health hazard in the environment. It has further been established that the increase in the number of motorcycles has led to an increase in local air pollution and green house gas emissions (Ajay, 2011). Moreover, because bike riders often add engine oil to their fuels in order to help lubricate the engines of these motorbikes. This action not only makes the fuels denser and makes them burn rather slowly, but also increases the amount of environmental pollution, and creates such health hazards as eye infections and skin cancer (IRIN, 2008).

4.2 Merits of Commercial Motorcycle Operation

Some of the advantages inherent in CMOs include the fact that they could maneuver through heavy traffic and bad and narrow roads and take passengers to their destinations in a timely manner. Other advantages are the jobs they create; their accessibility and availability as a mode of transport; their relatively low start-up costs; their relatively low operating and maintenance costs; as well as their relatively low repair costs. These variables and other merits in their operations are hereby highlighted.

4.2.1 Socio-economic Factors

It would appear that socio-economic considerations form the major driving force for CMOs in Nigeria. These factors include the low initial purchase cost, low operating cost which is generally related to the superior fuel economy or efficiency of motorbikes in relation to cars, their relatively low maintenance cost and perhaps the most important in Nigeria's context, is the employment opportunities it offers to our teeming army of unemployed youths.

In Nigeria, one of the reasons that sustains the increasing use of commercial motorcycles is the initial cost of purchasing a brand new one (Solagberu, Ofoegbu and Abdur-Rahman, 2006). The initial cost may not exceed about one hundred thousand naira (N100,000.00), which is the equivalent of about six hundred US dollars (\$600 USD) at the current exchange rate. This amount appears relatively affordable when compared to the cost of purchasing a second hand car which goes for as much as N480,000.00 (or some \$2880 USD).

4.2.2 Operational Factors

It is instructive to observe that similar factors influence the decision to use motorcycles for commercial purposes both in Nigeria and even in countries like Brazil (Ganne, 2010). The operational factors in focus are the easy manoeuvrability of CMs, their ability to travel on poor roads, and the ease with which they can reach distant and remote places. Some commuters consider these factors as prime motivators in their decision to use CMs. In Nigeria, motorcycles are often the only means of transportation available and useful for navigating poor road networks or traffic hold-ups (Ajay, 2011; Solagberu et al, 2006). They are also capable of circumventing road traffic hold – ups, and navigating remote and unmotorable areas of most villages and cities (Ajay, 2011; Nwadiaro, 2011). They also have the advantage of taking passengers to their doorsteps at a competitive cost, unlike the commercial buses that only take passengers to bus stops. One advantage associated with the use of the motorcycle is the fact that it is relatively cheaper to maintain a motorcycle compared to taxi cabs or buses. Low maintenance cost is also another factor that determines the choice to use motorcycle in Brazil (Ganne, 2010). Compared to motor vehicles, it costs much less to operate a motorcycle. This is because motorcycles use less gas than the motor vehicles, the spare parts are cheaper and the other running costs are also much lower. This is an additional factor that has made commercial motorcycles quite attractive to young people (Abiodun, 2013).

4.2.3 Employment Opportunities

Perhaps by far the most important consideration for people, especially the youths, to get involved in CMO is the employment opportunities it provides. It has been argued that the recent upsurge in the unemployment rate among youths coupled with the poor economic situation in Nigeria has greatly influenced the rise in the use of motorcycles as means of commercial transportation (Abiodun, 2013). Christopher (2013) also notes that CMO has created business opportunities for millions of Nigerians, especially the youths, the retired and the retrenched persons, as well as the educated and even the uneducated in the society.

The jobs created by the CMOs initially got a good proportion of the youths quite busy and thus removed their minds from vices that are generally associated with their age brackets. That the same tool of employment (MO) was being increasingly diverted for criminal tendencies became a serious puzzle. Unfortunately, the activities of the few who had taken to these vices became weighty enough to mar the positive contributions of the generality of the CM operators.

4.2.4 Demand Responsiveness

Demand responsiveness is another transport advantage offered by commercial motorcycle (Ajay, 2011). CMOs may be considered as products; intangible products that are also subject to the economic factors of demand and supply. What appears obvious so far is that wherever CMs operate in the country, the demand for their services have exceeded the supply. The CMOs however seem to respond much more effectively and more efficiently than the other modes of land transportation.

5.0 *Benefits and Business Opportunities*

The benefits inherent in the use of commercial motorbikes are numerous. The following are some of them:

1. It is pleasurable to ride on motorbike as the experience is similar to riding on a horse for pleasure (Ikot, Akpan, Benson and Etim, 2011);

2. It serves as a means of employment creation for the skilled as well as the unskilled (Adekunle, Abiodun and Sholeye, 2013)
3. It enables the circumvention of road traffic hold-ups and the navigation of remote and unmotorable areas of most villages and cities (Nwadiaro, 2011)
4. It contributes to poverty reduction, as it serves as a source of income to many people.
5. It has been able to complement the services of commercial buses and cabs in taking passengers to their destinations (Olawole, Ajala, and Aloba, 2010).
6. It is faster in service delivery within the city when compared to cabs and buses.
7. In terms of demand responsiveness, motorbikes have the advantage of responding to passengers demand more promptly than cars and buses would do.

From the foregoing, while the State government had good reasons to ban CMO in Benin City metropolis in particular, these commercial operators of motorcycles must find viable alternative uses for their assets- the motorcycles. This is because in the absence of alternative jobs, some of them may be driven into vices that they never planned to be engaged in. The need to ensure that they remain gainfully employed can therefore not be over-emphasised.

A number of business opportunities are still open to owners of motorbikes even if they have to operate in less urban environments than Benin City. For instance, with little creativity or innovativeness, CMOs can find alternative uses for their motor cycles by converting these mechanical devices (machines) to other uses such as small power generators, grinding machines, power saws or chain saws to enable them get involved in lumber business, some form of tools for reducing labour in some business areas like farming, and others. Indeed, some of these machines can be converted and used for bush clearing, for ridging and planting purposes. They could check if these machines could be converted for use in the production of cement or mud blocks or bricks. They could even be used for low-scale hand-held haulage businesses. The choice remains that of the commercial motorcycle owner and his unique circumstance.

6.0 Conclusion

While acknowledging the fact that commercial motorbikes have offered a lot of transport advantages in the form of easy maneuverability in traffic, ability to travel on bad roads, high demand responsiveness, and good speed of service, it is also true that they have led to phenomenal increase in road accidents resulting in serious injuries or deaths. In addition, the operation of commercial motorbikes has increased traffic management problems, worsened crimes, increased noise, and amplified local air pollution and green gas emissions. With respect to job creation however, a lot of people will suffer from joblessness which may give room for all kinds of vices ultimately manifesting in threats to security and safety. These threats notwithstanding, the ban has simultaneously opened up some other business opportunities that business-minded people (including former bike riders) can take advantage of. Finally, to minimise or completely avert some of the possible threats to safety and security that the ban on CMO may likely create, the government should organise a stakeholders meeting to discuss ways of handling the possible negative effects of the policy. This is also to mitigate complications that may arise from the introduction of the policy in the first place.

References

- Abiodun O. A (2013). HIV/AIDS related sexual behaviour among commercial motorcyclist in Shagamu – South-West, Nigeria. *International Journal of Medicine and Biomedical Research*, 2(1), January-April, 2013. Retrieved from www.cjmbr.com
- Adekunbi Ero (2013). Counting the Cost of Okada Ban. *Tell Magazine*, Thursday 4, July, 2013. Tell Communication Limited. Retrieved from <http://www.tellng.com/business/counting-cost-okada-ban>
- Adekunle Salako, Olumide Abiodun and Oluwafolahan Sholeye (2013). Risk behaviour for road traffic accidents and severe crash injuries among motorcyclists in Sagamu, the South-West Nigeria. *Online Journal of Medicine and Medical Science Research*, 2(2), 19-23 February, 2013.
- Ajay Kumar (2011). Understanding the emerging role of motor-cycles in African cities: Sub-saharan Africa Transmit Policy Program (SSATP). *Discussion Paper No. 13, Urban Transport Service*. A political economy perspective, Retrieved from www.worldbank.org/cifr/ssatp
- Akinremi, Adeola (2012): Lagos: 619 killed, Injured in Accidents Caused by Commercial Motorcyclist: *This Day Live*. 26 October, 2012.
- Buche, T., Williams, S. and Ochs, R. (2010). Giving motorcyclists the best in training:

- Designing principle-based, safety-oriented education and training programs. Presented to the 2010 Conference, held in Essen, Germany October 2010. Motorcycle Safety Foundation (MSF), USA. Retrieved from http://online2.msf-usa.org/msf/pdfs/ifz_msf_giving_motorcyclists_the_best.pdf
- Christopher E.M Usman A.O. and Eke C.C. (2013). Abolition of Commercial Motor-bikes and Implications on Transportation and Criminality in Calabar Metropolis. *International Journal of Social Sciences Studies*. 1(1).
- Etukumana I.A, Onumbu L.C John I and Valenti M. (2010): Possible Causes of Motorcycle (Okada) accidents in Karu, Nigeria 6(1). IP safety 2010 abstract. *International Peer-review Journal for Health Professional and Others in Injury Prevention* 2010: doi 10.1136/is.2010.029215.319.
- Ganne Newton (2010): Study on traffic accident involving motorcycles in the city of Corumb and surrounding region, Mato Grosso do Sul state; Brazil, in 2007: *Rev. Pan-Amaz Saude*, Sept. 2010. 1(3), 19-24..
- Honan, Edith (2013): Undercover Officer arrested in probe of New York Motorcycle Gang beating. *Reuter*. Wednesday 9 October, 2013. Retrieved from <http://www.reuters.com/article/2013/10/09/us-usa-newyork-motorcycle-idUSBRE99800G20131009>
- Hurt, H. H., Ouellet, J. V. and Thom, D. R. (January 1981). "The Hurt Report". *Technical Report, Volume 1, Traffic Safety Centre, University of Southern California*. Retrieved from <http://en.wikipedia.org/wiki/Motorcycle>.
- Ikot A.S, Akpan U.U, Benson P.J and Etim O.P (2011): Motorcycle Ban and Its Economic Implication on Uyo Metropolis of Akwa-Ibom State, Nigeria. *International Journal of Economic Development Research and Investment* 2(3), Dec. 2011.
- IRIN (2008): Nigeria: Motorcycle pollution causing health risk in Kano City. Retrieved from <http://www.irinnews.org/report/76693/nigeria-motorcycle-pollution-causing-health-risks-in-kano-city>
- Kudebong M, Wurapa. F and Aikins. M. (2011): Economic burden of motorcycle accidents in northern Ghana. *Ghana Medical Journal*, 45(4), 135-142 December 2011. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3283097/>
- Mohammed, Yusuf (2013). Okada robbers kill mother of 5. *PM News*. February 22, 2013. Retrieved from <http://pmnewsnigeria.com/2013/02/22/okada-robbers-kill-mother-of-5/>
- Minh, C. C., Sano, K. and Moto, S. M. (2005). The speed flow and head way analysis of motorcycle traffic. *Journal of the Eastern Asia Society for Transportation Studies*, 6, 1496 – 1508.
- NAN (2013): Gombe Lawmaker Kidnapped: *African Spotlight*. Retrieved from www.africanspotlight.com
- NAN (2013a). Robbers kill three Policemen in Lagos. *Vanguard*. October 8, 2013. Retrieved from <http://www.vanguardngr.com/2013/10/gunmen-kill-3-policemen-lagos/>
- National Highway Traffic Safety Administration [NHTSA] (2008). *Traffic Safety Facts 2008 Data- Motorcycles*. Retrieved from <http://www-nrd.nhtsa.dot.gov/pubs/811159.pdf>
- Nowy Condor, Meng-Han Li, and Ray- I chang (2012): Moto safe: Active safety system for Digital forensics of motorcycle Rider with Android. *International Journal of Information and Electronics Engineering* 2(4), July 2012.
- Nwadiaro H.C., Ekwe, K. K., Akpayak, I. C., and Shitta, H. (2011): Motorcycle, injuries in North-Central Nigeria. *Nigerian Journal of Critical Practice*, 14(2), 186-189. Retrieved from doi: 10.4103/1119-3077.84013.
- Nwaorgu, Faustinus (2013). Nigeria: The ban on commercial motorcyclist. *On Line Nigeria*. Retrieved from <http://www.onlinenigeria.com/articles/ad.asp?blurb=856>
- Ofonime, Effiong Johnson (2012). Prevalence and pattern of road traffic accidents among commercial motorcyclists in a City in Southern Nigeria. *Educational Research*, 3(6), 537-542, June, 2012. Retrieved from http://www.researchgate.net/publication/236131660_Prevalence_and_Pattern_of_Road_Traffic_Accidents_among_Commercial_Motorcyclists_in_a_City_in_Southern_Nigeria
- Okola, A. (2013). Targeting motorcycle users to improve traffic safety in Latin America. *World Bank*. Retrieved from <http://blogs.worldbank.org/latinamerica/targeting-motorcycle-users-improve-traffic-safety-latin-america>
- Ola Ajayi (2012). Police on Oyo State round up ex-convicts that formed notorious robbery gang, *Vanguard News Paper*, Friday, August 21, 2012. Retrieved from www.vanguardngr.com
- Olawole, M.O., Ajala, O. A., and Aloba, O. (2010). Risk perception among users of commercial motorcycles in cities of South-Western Nigeria. *East African Journal of Public Health*, 18(2). Retrieved from <http://www.ajol.info/index.php/ifep/article/view/56764>
- Oluwadiya K.S., Kolawole I. K., Adegbehingbe, O. O., Olasinde, A. A., Agodirin, O. and Uwaezuoke, S. C. (2009). Motorcycle crash characteristics in Nigeria: Implications for Control *Accid Anal Prev*. Mar. 2009, 41(2), 294-298. Retrieved from doi 10.1016/j.aap.2008 pubmed-indexed for MEDLINE.

- Oluwadiya, K.S., Oginni, L.M., and Olasinde, A.A (2004): Motorcycle limb injuries in a developing country. *West African Journal of Medicine*. 2004, Jan-Mar; 23(1), 42-47.
- Peter, O. (2013): Kidnap of lawmakers wife: How suspects abode was invaded and demolished, *Vanguard*, July 19, 2013.
- Saxena, S. C. and Arora, S. P. (2010). *A text book of railway engineering*. New Delhi: Dhanpat Rai Publications (P) Ltd.
- Shing Tetteong, Muttamara .S. and Preecha Laortanakul (2001): Evaluation of Air Pollution Burden from contribution of motorcycle Emission in Bangkok: *Journal of Water, Air and Soil Pollution*. 131(1-4), 41-60.
- Solagberu, B.A, Ofoegbu CKP and Abdur – Rahman L.O (2006): Motorcycle Injuries in a developing country and vulnerability of riders, passengers and pedestrians: *Journal of Injury Prevention*, August; 12(4), 266-268.
- Sugiyanto, G., Malkhamah, S., Munawar, A., and Sutomo, H. (2011). Estimation of congestion cost of motorcycle users in Malioboro, Yogyakarta, Indonesia *International Journal of Civil and Environmental Engineering* 11(1).
- Sugiyanto, G., Malkhamah, S., Munawar, A., and Sutomo, H. (2011). Estimation of congestion cost of motorcycle users in Malioboro, Yogyakarta, Indonesia *International Journal of Civil and Environmental Engineering* 11(1), 34-41. Retrieved from <http://www.ijens.org/vol%2011%20i%2001/114401-5858%20jcee-ijens.pdf>
- Tuan, Vu Anh and Shimizu, Tetsuo (2005): Modeling of household motorcycle ownership behaviour in Hanoi City: *Journal of the Eastern Asia Society for Transportation Studies*, 6, 1751-1765. Retrieved from http://www.easts.info/on-line/journal_06/1751.pdf
- Youth for Road Safety (2013). Training of Commercial Motorcycle Riders in Nigeria. www.youthforroadsafety.org .

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage:

<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> The IISTE editorial team promises to review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Recent conferences: <http://www.iiste.org/conference/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

