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# LASU JOURNAL OF TRANSPORT

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## Transportation and Vehicular Maintenance Regulation in Nigeria: The Way Forward

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### ABSTRACT

Mandatory periodic vehicular inspection and maintenance regulations is a law established in all countries of the world which enables saving of energy in the use of parts and /or the vehicle itself when it moves thereby providing efficient transportation of goods and services. This same concept saves the environment from excessive emission of carbon monoxide and other harmful gases. All aforementioned collectively aid the safety of lives and properties of the citizens of a country as they move from one destination to the other. The situation in Nigeria is experienced by poor vehicle maintenance regulations and absence of vehicle emission standards, and this has been pathetic with continued loss of lives without any meaningful strategy being put in place by the government to curb the menace. This paper looked at the concept of vehicle maintenance regulations and its ineffectiveness in Nigeria, and then suggests ways to combat the peril situation.

Keywords: transportation, vehicles and maintenance.

### INTRODUCTION

**N**avigant Research (Navigant Consulting Inc., 2015) estimates in a new forecast show that light-duty vehicles make up 95 percent of the total world population of vehicles and that the vehicles we drive every day will shortly cross 1.2 billion. Total new-vehicle sales were 84 million in 2015, but the Navigant suggests that annual sales could soar to 127 million by 2035-bringing the global vehicle total to 2 billion or more. The number of motor vehicles used in Japan is about 75.8 million at the beginning of 2001 (Minato and Hirato, 2002). The Federal Road Safety Commission disclosed that Nigeria currently has no less than 7,000,000 registered vehicles operating on its roads as at 2010. In 2007, per capita, vehicle registration of Nigeria stands at 31 (Map of vehicles per capita, 2011). This implies a yearly increase of 25% vehicle registration in Nigeria. Automobile contributes to air pollution and recently, diesel vehicle in freight transport is increasing. This increase offset the progress of air quality improvement and the poor state of vehicle maintenance had also caused many accidents in Nigeria. Today, developing countries account for 80% of the 1.2 million fatalities from road accidents globally even though account for only 20% of the global vehicle population (WHO, 2004).



## STATEMENT OF THE PROBLEM:

Most states in Nigeria today have grown from small settlements to metropolis accommodating not fewer than 4 million people, for example, 68% estimated growth in 1991 population census of Niger State stands at 4.0 Million in 2011 (National Population Commission, 1991): This huge population in Nigeria uses mobility particularly road for its transportation means. Meanwhile, in Nigeria, the various institutions planning and managing the vehicle maintenance enforcement and its documentation do not have a well-coordinated technological structure. The condition of air pollution caused by  $\text{NO}_2$  and photochemical oxidants is serious especially in large cities without clear emission standards in the country. On the other hand, the rates of accidents have continued to increase yearly without a meaningful strategy to curb the menace thereby causing incessant loss of lives and properties in the country. For example, in the year 2015, Niger State had recorded the below statistics which reveals an alarming rate of accidents that had consumed 234 lives with 658 injuries in 1057 accident.

Table 1: Niger State annual revenue and accident report, 2015

	Station	Revenue	No. of vehicles involved	No. of persons	No. Injured	No. of deaths
1	Kontagora	825,250.00	27	88	67	21
2	Bida	1,251,450.00	31	88	60	28
3	Mokwa	801,250.00	10	50	30	20
4	Agale	420,000.00	14	27	19	8
5	Malikunkale	575,500.00	17	15	6	9
6	Kuta	694,500.00	29	48	42	6
7	Bangi	550,400.00	20	35	15	6
8	Lapai	700,500.00	15	75	58	17
9	Suleja	2,772,500.00	14	106	21	9
10	Minna	6,169,200.00	20	31	8	9
11	Paiko	721,000.00	26	51	42	9
12	Kutigi	558,500.00	19	25	10	5
13	Nasko	516,760.00	8	21	11	1
14	Rijau	366,500.00	30	45	15	7
15	Mashegu	479,300.00	33	164	122	42
16	New Bussa	589,800.00	9	16	11	5
17	New Wuse	650,000.00	44	90	60	30
18	Wushishi	415,900.00	31	39	39	0
19	Kagara	415,500.00	7	8	7	1
20	Gawu Babangida	677,750.00	6	35	15	1
	Total	20,151,560.00	410	1057	658	234

Source: Niger State Annual revenue and accident report, 2015

Table 1 and Figs. 1, 2 3 and 4 indicate a high level of accident, persons, injuries and death concerning 20 towns/stations in Niger State for the year under review. Then, of what significance is the vehicle regulation and maintenance enforcement in curbing the above-overviewed trend about Nigerian road transport system?



## THE CONCEPT OF VEHICULAR INSPECTION AND MAINTENANCE REGULATIONS

Vehicle inspection is a procedure mandated by the government in all countries, in which a vehicle is inspected to ensure that it conforms to regulations governing its registration, safety, emission or all of above to saved energy in its use thereby saving lives and properties. Thus, the motor vehicle inspection unit is charged with the responsibility of ensuring compliance by enforcing the Traffic Act relating to Motor Vehicle examination and ensuring compliance by all vehicle owners to curb excessive smoke emission and road accidents (Niger State Road Traffic Law Cap 118, Revised 1989). This includes:

- Checking the vehicle is roadworthy before driving
- Ensuring that any equipment, fittings and fixtures required are present and serviceable
- Not driving the vehicle if faults are present or developed
- Ensuring all actions taken when driving the vehicle are legal
- Ensuring that motor vehicle and spare parts dealers have strictly adhered to standard (Niger State Road Traffic Regulations, 2012).

### Registration of motor vehicles

A motor vehicle that is subject to registration based on the Road Vehicle Act, must be registered and have a license and plate number attached before they can be driven on public roads. Vehicle registration serves two objectives. One is the "official endorsement of ownership" (legal registration). Legal registration ensures stable and smooth distribution of motor vehicles. Legal registration also leads to mortgages while minimizing the risk of thefts. The other object is the "clarification of motor vehicle usage" (administrative registration). Administration registration updates statistics about vehicles, ensure smoother recall of operations, trace crimes involving vehicles, and other purposes (Mandates of Motor Vehicle Administration Department, 1999).

### Inspection of motor vehicles

Vehicle inspection implies undergoing inspection conducted by the Ministry of Works and Transport (motor Vehicle Inspection organization authorized by the Ministry) and is provided with a motor vehicle inspection certificate. Three-wheeled/four-wheeled mini-sized motor vehicles and small-motor cycle are also obligated to undergo inspection. The Road Vehicles Act requires that a motor vehicle not fit for use unless it meets the technical standards for safety as well as for pollution prevention. Mo-

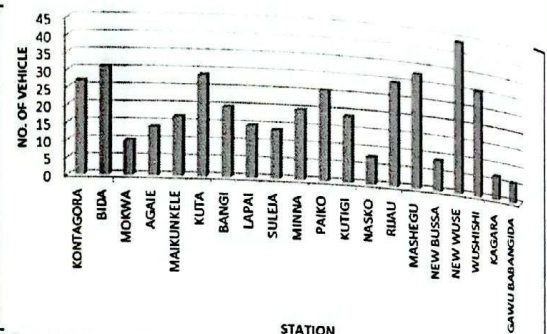


Fig. 1: No. of vehicles in accidents in 2015.

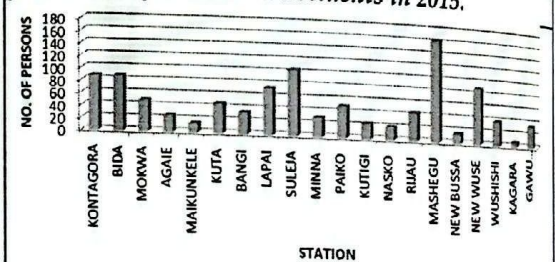


Fig. 2: No. of vehicles in accident, 2015

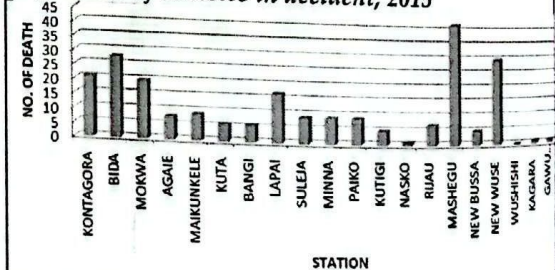


Fig. 3: No. of death persons from accident in 2015

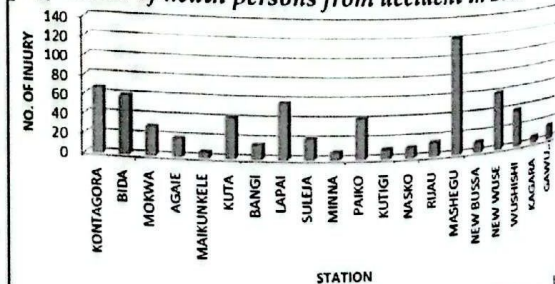


Fig. 4: No. of injured persons in accidents in 2015.  
Source: Vehicle Inspection Office, Niger State



tor vehicles are inspected regularly to confirm their structure and equipment with safety regulations. This increases vehicles safety and prevents pollutions while enabling smoother road traffics and saving more energy (Ditomasso, 2008). The Road Vehicles Act defines "Safety Regulations for Road Vehicles". The motor vehicle inspection is conducted to determine the conformity of motor vehicles about the Safety Regulations for Road Vehicles. No motor vehicle is allowed to be operated on the road unless it has passed the motor vehicle inspection and it has obtained a valid motor vehicle inspection certificate. When motor vehicles fail to pass inspection, or when used-motor vehicles fail to pass the initial inspection or preliminary inspection, a failed motor vehicle inspection certificate is issued. When the failed points, which are written in the certificate, are serviced by maintenance and repair shops, representation of the motor vehicle is corrected after re-inspection.

### **Check and Maintenance system**

The users of motor vehicles carry the periodical check and maintenance once a year in the case of passenger motor vehicles for private purpose. Trucks can be checked every six months. The checkpoints cover the entire construction and devices of a motor vehicle such as the running system, suspension system, power train system, electric system, engine, the steering system and brake system. When vehicles have special construction and devices or their operating system is unique, the necessary checks and services are carried out (Keiko H. and Kiyoyuki M., 2001).

## **QUALIFICATION OF REPAIR PERSONNEL AND WORKSHOPS:**

### **License and training course:**

The motor vehicle mechanics' skill certificate system was established to improve motor vehicles service techniques. The certification system was based on the Road Vehicles Act. Those who wish to be a mechanics must take a written test and practical test for qualification. There are four types of qualifications: first grade, second grade and third-grade mechanics (Vermont, 2013). The qualification is per the year of practical experience of motor vehicle maintenance services. Ministry of Works and Transport designate the training course. Type of qualification for motor vehicle mechanics and practical experience requirements are:

- First grade after 3 years of the qualification of the second grade
- Second grade after 3 years of the qualification of the third grade
- Third grade 1 year

### **Certification of service shop:**

A certified service shop must have an indoor workplace, parts service workplace with the required dimensions, motor vehicle pool and equipment for check and maintenance work (Vermont, 2013). And there should be two or more employees including a supervisor. One quarter or more than one-quarter of the total employees must qualify in motor vehicle mechanics. A certified designated shop also should possess the following criteria:

- i. Possession of Inspection facilities at a certain level
- ii. Owned or appointed workshop head
- iii. Adequate motor vehicle inspection machines and equipment at least 8 item
- iv. At least 5 working staff



## THE QUALIFICATION OF INSPECTORS AND WORKSHOPS

### Test examination's certificate and training course:

The motor vehicle test examiner's certificate and training program are designed for the improvement of vehicles inspection and testing techniques. The certification system is based on the Road Vehicles Act. Those who will be inspectors or test officers must be trained and will be made to take both written and practical test for qualification. They must also be qualified drivers of group E license minimum. The training skill acquired must be well knowledge about methods of inspection and testing and must also possess minimum qualifications and pre-requisite enforcement training (Keiko & Kiyoyuki, 2001).

### ACCREDITATION OF INSPECTION WORKSHOPS:

The criteria for certified inspection workshop possess similar inspection requirement criteria that are similar to that of that mechanics service and repair shop (Commonwealth of Pennsylvania, 2014):

- i. Possession of Inspection facilities at standard level
- ii. Appointed manager and appointed chief engineer
- iii. Adequate motor vehicle inspection machines and equipment for all necessary test requirements
- iv. Not less than 5 working staff including the Chief Engineer

### PROVISION OF REGULATIONS AND ENFORCEMENT:

Appropriate Regulations and enforcement are some of the essential elements of well-balanced transport policy. From this point of view, the Department of Motor Vehicle Administration has a great responsibility to ensure prompt guidelines and apprehension of bad road users to avert the consistent road carnages experienced across the State. As earlier discussed, Nigeria has recorded unfavourable casualty rate from road traffic accidents which have serious consequences to smooth mobility and economic growth. Thus, prompt traffic enforcement has become imperative and should be designed to also educate road users to curb unlawful and unsafe driving habits will not be repeated. One of the most essential tools for combating this menace is to ensure competent and knowledgeable officers, who can educate where necessary, provide campaign awareness and above all are acquainted with the right apprehension techniques for contravening offenders. The greatest challenge, however, has been the institutional conflicts between enforcement agencies resulting from overlapping of statutory laws (Oni, 2004).

## VEHICULAR MAINTENANCE REGULATIONS AND ENFORCEMENT IN NIGERIA:

The challenges of the mandates of Motor Vehicle Inspection unit range from the absence of harmonized Vehicular Administration in all the State, inadequate staff strength, operational equipment and facilities, and inadequate office accommodation to mention but few. This section strives to explain the extent of the aforementioned challenges.

### Poor policy on vehicular administration

Transportation is complex and demands organization, control, enforcement, management and guidelines to avoid conflicts or complexities (Transport Policy, 2010). Therefore, the Policy on vehicular administration must create an enabling environment for transportation to be safe



and economically viable. Road Traffic regulations should be provided to serve as the statutory instruments of operation for vehicular administration. This document of principles and guidelines will cover areas relating to vehicle registration, licensing, inspection, road traffic control, management, enforcement and control of all revenue to be accrued from all. Generally, it shall also be a guide for the motorist or road users, the government and the responsibility of vehicular administration to enhance effective vehicle maintenance and safety.

### **Poor funding and facilitation**

Enhancement of traffic laws is critical to bringing down the rate of road carnages and is faced with many challenges in our dear states. The challenges include lack of adequate personnel, need for the capacity building of the existing personnel, lack of operational vehicles and equipment, lack of ICT facilities for combating challenges of recent times, among others (Abdulka-reem, 2006). More so, poor road condition, the road furniture and aesthetics and aesthetics that guides the drivers' decision and safety are missing or in bad shape on our roads.

## **THE CHALLENGE OF TRIPARTITE SYSTEM OF VEHICULAR ADMINISTRATION**

In Nigeria, various institutions are planning and carrying out the duties of vehicular administration. As such, there is no well-coordinated and integrated arrangement. Many observed shortcomings of vehicular administration in Nigeria are the absence of adopted policy and strategic framework, fragmentation of institutional responsibilities between various agencies and/or parastatals, absence of standard procedures for the technical and economic evaluation of programs resulting in poor management and vehicular maintenance culture enforcement. For example, The Federal Road Safety Commission (FRSC) has gained entry into certain functions of the States through the numerous amendments of the FRSC Decrees (now Acts), which are very much inconsistent with the provisions of the Constitution of the Federal Republic of Nigeria 1999, and the extant Traffic laws or Act.

### **The bad attitude of enforcement officials, unionism and misguided youth**

Several uniformed personnel set up various checkpoints and distract drivers, probably due to the absence of superior monitoring procedure officers. The Nigeria Union of Road Transport Workers also mounts several points along the highways demanding dues from commercial vehicles. Dues should be paid but the methods by which they are collected (while vehicles are in transit) constitute a menace to drivers. Social Miscreants (popularly called Area boys) are a real challenge to drivers in the country. Although it originated in Lagos, it is now spreading to several cities such as Ibadan and Onitsha. These boys usually under the influence of hard drugs usually experience slower reaction time, poor control and thinking, and it increased risk (Olokesusi, 2011).

### **Poor statistical records and non-utilization of modern technology for documentation**

According to Olokesusi (2011), road crashes are under-reported. The under-reported includes:

- i. Road-user error
- ii. Vehicle defects
- iii. Adverse road conditions/environment

Road-user error especially subsumes a lot of driver/vehicle distraction factors but is often not



explicit. It may also be difficult to glean from statistics given in reports. How much of vehicle defects and adverse road condition impacted on driver attention. In developing countries like Nigeria, published road traffic accident statistics do not contain the details mentioned above, but only give some accidents (in fatal, serious or minor categories) and causalities (number killed and injured).

## EFFECTS OF THE POOR STATE

### Increased rates of accident

The incidence of fatal road accidents in Nigeria is phenomenal. Trend analysis of fatal road accidents between June 2006 and May 2014 using Nigeria Watch database shows that 15,090 lives were lost to fatal road accidents in 3,075 events. The highest fatality occurred in 2013 (2,061 deaths), a 2.8% increase from the 2012 record of 1,652 deaths. However, the probability of a high fatality record in 2014 remains high considering the 964 deaths already recorded between January and May 2014. On the national scene, Lagos recorded the highest number of fatalities (1,579 deaths from 620 events), while Federal Capital Territory (FCT) Abuja has the highest relative number of deaths (0.6 deaths per 100,000 population). These findings are explained by the large population and continuous urbanization of Lagos and by the number of registered vehicles in the FCT, Abuja. On the regional level, trend analysis shows that more people died in fatal road accidents in the South (8,288 people: 55%) than in the North (6,792 people: 45%). Among other factors, the volume of oil distribution and the occurrence of highway criminal activities explain why there are more fatal road accidents in the South than in the North (Nkoji, 2014).

### The effect on economic growth

Among the various means of transportation, the road transport system has been greatly dominated. Due to increased economic activities in Nigeria, it is believed numbers of vehicles are increasing geometrically rather than arithmetically and if properly managed should be a huge sum of income for the government to cater for health care, education and infrastructure. An estimated statistical analysis revealed an awesome record of over 75 thousand vehicles and 40 thousand drivers in Niger State as of 2012. The outcome of data gathering exercise is looking good for an over N2 billion annual revenue potentials rather than current N200 Million per annual (Niger State Ministry of Transport (MOT, 2011).

## CONCLUSIONS

It is obvious that poor vehicular maintenance regulations exist in Nigeria and therefore becomes imperative to improve vehicular administration to save energy and lives through the following suggestions:

1. Introduction of new technology in the areas of vehicle inspection and record taking.
2. Use private sector partnership to explore key areas of Vehicular Administration.
3. Involvement of programming software for data generation and statistical analysis to obtain precise estimates and projections.
4. Constant research and development in other to explore other areas of vehicular activities and strategizing towards achieving them.
5. Effective gas emission standards should be incorporated into the vehicle inspection system.



6. Training and retraining of enforcement officials.
7. Provision of adequate patrol vehicles, equipment and facilities.
8. Effective road traffic management system.

## REFERENCES

- Abdulkareem, S. W. (2012). *Essentials of Road Safety and Accident Prevention*. Published in 2006 and Reirsed in 2012 by Universal Resources Management Associates Suite 107, Garachi Plaza Wuse Zone 3 Abuja.
- Commonwealth of Pennsylvania (2014); *Vehicle Equipment and Inspection Regulations*. Department of Transportation, Pennsylvania. [www.dmv.state.pa.us](http://www.dmv.state.pa.us) PUB 45 (2-14).
- Ditomasso J. (2008). *Official Manual for Vehicle Inspection*, Division of Motor vehicles, Department of Revenue Division, Vehicle Safety and Emission Control, Rhode Island.
- Federal Government of Nigeria Draft National Transport Policy (2010). Federal Ministry of Transport Abuja
- Federal Road Safety Commission Statistics (2010). *On Registered Vehicles in Nigeria*. FRSC, Abuja.
- Hirota K. & Minato K. (2000) *Inspection and Maintenance system in Japan, JARI I/M system in Japan* Researcher of Japan Automobile Research Institute, 2530 Karima Tsukuba Ibaraki 305-0822
- Keiko H. and Kiyoyuki M. (2001). *Inspection and Maintenance System in Japan: Researcher of Japan Automobile Research Institute* 2530
- Karima Tsukuba Ibaraki 305-0822 Japan [kminato@jari.or.jp](mailto:kminato@jari.or.jp) [khirota@jari.or.jp](mailto:khirota@jari.or.jp) tel:+81-298-56-0767 fax:+81-298-56-1124 JAMA.
- Map of Vehicles Per Capita, (2011). *List of countries by vehicles per capita*, Retrieved from <http://driversteady.com/cars-per-capita>
- Navigant Consulting incorporation (2015), *Transportation Global Forecasts of Medium and Heavy-Duty Vehicles: 2016-2035*. Cleantech
- Market Intelligence Copyright © 2016
- National Population Commission (1991 & 2003). *Census figures*, NPC Abuja.
- Niger State Annual Revenue and Accident Report, 2015 (Niger State Vehicle Inspection Office), Nigeria.
- Niger State Ministry of Transport (2011). *An estimated statistical analysis of vehicles and drivers and the obtainable potentials of its economic benefit*.
- Niger State Road Traffic law Cap 118 Revised 1989 and Niger state Road Transport/Traffic regulations (2012): *Mandates of Motor Vehicle Administration in Niger State*.
- Nkoji, V. N. (2014), *Trends and patterns of fatal road accidents in Nigeria from 2006-2014, IFRA-Nigeria working papers series, No35*.
- Olokusesi F. (2005): *The vulnerability situation and emergency management in Nigeria in Bola Ayeni and Olusegun E. Ojo (eds), Proceedings of National Conference of Directors and Heads of Disaster Management Organization in Nigeria, National Emergency Management Agency PP. 94-107*.
- Oni, S.I. (2004): *Urbanization and Transportation Development in Metropolitan Lagos in Industrialization, Urbanization and Development in Nigeria 1950 – 1999*, Concept Publications Limited, Lagos.
- Vermont Agency of Transportation (2018): *Periodic Inspection Manual*, State Department of Motor Vehicles, Montpelier, VT 0563-0001, [dmv.vermont.gov](http://dmv.vermont.gov).
- World Health Organization in Geneva (2004). *World report on road traffic injury prevention: Summarizing study on the increasing incidence of carnages as road safety issues in developing countries* WHO Library Cataloguing-in-Publication Data ISBN 92 4 159131 5 (NLM classification:) WA275.