

Examination officer



Bearing in mind that accidents are inevitable, automobile manufacturers have fixed several safety devices to curtail the rate of accidents. Safety was not taken seriously during the early days of vehicle manufacturing it was until the first known fatal car accident of the last 1800s did safety becomes a design concern. The aim of this paper is therefore, to educate motorists and professionals on the importance of safety concept in automobile so as to save lives in the course of accident. Causes of accidents on the roads were itemizes and analyzed as well as recent and modern development of safety devices in automobile was researched upon.

Accident avoidance on the auto safety and human factors as an integral part of the vehicle design process was also addressed. CHAPTER ONE BACKGROUND OF STUDY INTRODUCTION The issue of safety concept in Automobile cannot be overemphasized. The resultant effect of lack of safety is accident which, happens when least expected is nobody's wish. Several authors have defined safety in many ways their definition tends towards preventing fatal accident to the barest minimum . Peden M. Mc Gee K, Sharma G. (2002) said safety measures is necessary in order to reduce the rate of accident from occurring.

According to Conford (2005), whenever accident occurs, it is an indication that somebody somewhere has failed to do what should have been done. This could be due to negligence, ignorance or lack of knowledge. Automobile safety is the study and practice of design, construction, equipment and regulation to minimize the occurrence and consequences of automobile accidents. Safety turns out to be one of the key issues of future development. New functionality not only in the area of driver assistance but

also of crashworthiness as well as vehicle dynamic control in active and passive safety system.

With the trend of increasingly complexity of software content and mechatronic implementation there are increasing challenges from systematic fault detection, soft and hard ware of the system. Standard has been set to give guidance to automotive industries to maintain high safety level. This standard covers the complete life cycle of a vehicle. Safety in Automobile cannot be achieved without maintenance culture. In Nigeria what we engage in is usually corrective maintenance. In this system, the engine or equipment is operated until it begins to malfunction.

The faulty part or component is identified and then repaired or replaced. If not corrected, eventually the equipment breaks down at the worse possible occasion. For instance, a vehicle breaking down in the middle of a bush the owner runs helter-skelter to look for the maintenance staff in order to bring the broke down vehicle back into operation. STATEMENT OF PROBLEM The occurrence rate of accident cases on Nigeria road is increasing yearly. the drain on the economy is enormous given that in most cases the casualties were the future of the nation that would contribute to the growth and development of Nigeria.

Bearing in mind that accident are inevitable automobile manufacturers have fixed several safety devices to curtail the rate of accident. This paper would improve the current driver education so as to raise their level of awareness as well as for tomorrow's drivers so as to reduce the rate of accident to the barest minimum (Smith, 1981) . It is in the light of this that the study of development of safety concept in Automobile was carried out. CHAPTER TWO

The following headings were discussed: Lack of maintenance culture
Negligence on the part of the driver Reckless driving Stationary Vehicle
Braking at high speed Overtaking on the hill

POSSIBLE CAUSES OF ACCIDENT ON THE ROAD Lack of maintenance culture:
maintenance culture is an attitude which is sadly lacking in Nigeria whether
in the school, office or the factory. This paper has a role to play inculcating
maintenance culture. Just as we wage war against illiteracy and war against
corruption. We have to engage in a relentless battle against lack of
maintenance culture. Indeed absence of maintenance culture is a
manifestation of ignorance and indiscipline which breeds corruption and
exhibits economic development. (Olaitan, 2000) . There is a need to
examine the role of maintenance culture in Automobile industry in Nigeria.

In doing so we then highlight its concepts. The concept of maintenance simply
means taking appropriate steps and precautions to ensure that a given piece
of capital assets, equipment or infrastructure attains its maximum possible
life span. Three important and related concepts readily associated with
maintenance includes: a. Preventive maintenance b. Predictive maintenance
c. Corrective maintenance Preventive maintenance: This describes the
maintenance undertaken by operational staff for the purpose of preventing
a breakdown of an equipment or asset. This may involve inspection,
cleaning, testing, lubrication, and routine check.

Predictive maintenance: Takes place when there is a warning signal, a
symptom of a danger or something bad, in the operation of the engine. Thus
as soon as the warning signal is received, or the symptom is perceived, the
operational staff will intervene to arrest the dangerous situation. The speed

and accuracy with which the maintenance intervention is applied determines the extent to which a break down is forestalled. Corrective maintenance: in this type of maintenance, the effort is to rectify damage or worn out equipment to a serviceable condition through minor or major repairs.

This includes replacing damage or deteriorating assemblies or components by serviceable ones or making repairable components serve longer by the use of correct tools or materials. Negligence on the part of the driver
Negligence on the part of the driver to follow simple daily checkups and care necessary on vehicles to avoid accidents on the roads which includes: a. Check Engine Oil: this is done with the help of dip stick, calibrated Low and Full, that runs right into the sump of the engine. b. Check Level of Water: this is done by uncorking the radiator cover and refilling with water.

For sealed radiators the water bottle is Calibrated Low and Full (normal). c. Check Brake Fluid though being overlook in most cases, is also very important in case of broken or slacked brake pipe as well as brake master cylinder leakage or worn out wheel cylinder rubbers. The plastic bottle is also calibrated Low and Full (normal) d. Check battery electrolyte: this is done by uncorking the different covers for each battery cell. For some battery the calibration of Low and Full is right on the battery wall while for others it is attached to the inner top surface of the battery. e.

Washing the Car: Done on daily basis to keep the car neat and maintains the paint color. A dirty car is an eye-sore and indication of lack of maintenance culture. f. Check Tyre Pressure: the driver of a vehicle should know the pressures of the front and rear wheels and gauge them accordingly. g. Care of Self: the driver must always appear smart and clean. A shabbily dressed

driver is an indication of lack of maintenance culture. h. Dive with Care and obey Road Signs: bearing in mind that the life of the passengers and other road users are in your hands treat your vehicle with care as your life is on its wheels.

Other causes of accident are: Reckless driving most of the time drivers over speed as well as overtaking wrongly which results in fatal accidents. A driver is not suppose to over take while climbing a hill so as to avoid head to head collision. Stationary vehicle: there is a need to observe safe parking habits. So as to avert accident. Impatient and Fatigue: impatient leads to beating the traffic lights, failure to wait at major road junctions or unnecessary over takings while fatigue leads to sleeping or loss of concentration.

Driver who sleeps on the wheel may never wake up to tell their story The Federal Road Safety Commission (FRSC) recently released frightening statistics on road accidents in the country. According to the Corps Marshal and Chief Executive of the FRSC, Mr Osita Chidoka, in the four months (December 2009 – March 2010), 7, 737 road accidents we recorded in the country. This resulted in the death of about 1, 056 persons. These figures are alarming, considering the fact that the actual figure may be higher than what has been given by the FRSC.

They show that the death toll on our roads is not reducing in spite of all the efforts by the Road Safety Commission. The grim statistics mirror the global death toll on roads, which is currently put at 1. 2 million annually. According to the Corps Marshal, who revealed these figures at a recent National Stakeholders' Forum on Road Safety, the causes include bad roads, drink-driving and non-adherence to road safety rules and regulations. He said

within the past four months, 2, 252 vehicles were involved in road accidents, with over 5000 persons reportedly injured.

Other figures show that Nigeria recorded the highest number of road accidents in the 1980's, which was a period of oil boom. The implication is that if this kind of casualty figure continues, Nigeria risks losing over 26 per cent of its Gross Domestic Product (GDP) by the year 2013. This will translate to a hefty \$6 billion loss. We see this as a major challenge, which the government and the leadership of FRSC should tackle head-on. We urge the FRSC in particular to double its efforts through public enlightenment of all motorists and other road users. These campaigns should focus primarily on the causes of such crashes and how they can be minimized. So far, the FRSC has done well, but it must not rest on its oars. It should seek for more partners in areas that will enhance road safety awareness.

MOST ACCIDENT PRONE AREA KUGBO ROAD (CLOSE TO NASARAWA) WHICH LEADS TO ABUJA

The akwanga - LAFIA highway - dotted by intersections, twisty lanes and sharp curves, Abuja- Lokoja-Okene road, Jos - Bauchi- Gombe road, Katsina-Kano axis, Kabba-Omuo Ekiti, Oye-Ifaki-Ekiti road, Shagamu- Ore- Benin highway, Owerri-Aba-Porthacourt road, Onitsha - Enugu stretch, other

STATISTICS	JAN TO JUNE 2011	JAN TO JUNE 2010
DEATHS	2, 218	1, 822
INJURY	8, 487	8, 720
TRAFFIC OFFENCES	268, 576	320, 015
ROAD TRAFFIC CRASHES	2, 234	2, 673

NIGERIAN ROAD TRAFFIC STATISTICS JAN - JUNE 2011 CHAPTER THREE

The discussion is based on the two categories of safety:: I. Active safety II. Passive safety

Active safety" refers to technology assisting in the prevention of a crash and Passive safety" refers to components of the vehicle (primarily airbags, seatbelts and

the physical structure of the vehicle) that help to protect occupants during a crash. Advantages of safety precaution It safe guard human lives. Ensure equipment reliability in terms of performance

Consequences on Non- Observance of safety precaution Economic hardship Fatal accident may occur Reduce Equipment durability and reliability Crash avoidance Crash avoidance systems and devices help the driver and the vehicle itself — to avoid a collision. This category includes: * The vehicle's headlamps, reflectors, and other lights and signals * The vehicle's mirrors * The vehicle's brakes, steering, and suspension systems Driver assistance Driver assistance in other word is A subset of crash avoidance is driver assistance systems, which help the driver to detect obstacles and to control the vehicle.

Driver assistance systems include: * Automatic Braking systems (ABS) to prevent or reduce the severity of collision. * Infrared night vision systems(INV) to increase seeing distance beyond headlamp range * Adaptive headlamps control the direction and range of the headlight beams to light the driver's way through curves and maximize seeing distance without glaring other drivers * Reverse backup sensors, which alert drivers to difficult-to-see objects in their path when reversing * Backup camera * Adaptive cruise control which maintains a safe distance from the vehicle in front Crashworthiness

Crashworthy is defined as a systems and devices which prevent or reduce the severity of injuries when a crash is imminent or actually happening. There are so many but for the benefit of this seminar the presenters tend to restrict themselves to the following: 1. Seatbelts 2. Airbags * Seatbelts: limit

the forward motion of an occupant, stretch to absorb energy, to lengthen the time of the occupant's deceleration in a crash, reducing the loading on the occupants body. They prevent occupants being ejected from the vehicle and ensure that they are in the correct position for the operation of the airbags. *

Airbags: inflate to cushion the impact of a vehicle occupant with various parts of the vehicle's interior. The most important being the prevention of direct impact of the driver's head with the steering wheel and door pillar. *

Post-crash survivability Post-crash survivability is the chance that drivers and passengers survive a crash after it occurs. Technology such as Advanced Automatic Collision Notification can automatically place calls to emergency services and send information about a vehicle collision.

Automotive lighting I. Lights and II. reflector Vehicles are equipped with a variety of lights and reflectors to mark their presence, position, width, length, and direction of travel as well as to convey the driver's intent and actions to other drivers. These include the vehicle's headlamps, front and rear position lamps, side marker lights and reflectors, turn signals, stop (brake) lamps, and reversing Vehicle color A Swedish study found that pink cars are involved in the fewest and black cars are involved in the most crashes (Land transport NZ 2005).

In Auckland New Zealand, a study found that there was a significantly lower rate of serious injury in silver cars; with higher rates in, brown, black, and green cars. The Vehicle Color Study, conducted by Monash University Accident Research Centre (MUARC) and published in 2007, analyzed 855, 258 accidents occurring between 1987 and 2004 in the Australian states of

Victoria and Western Australia that resulted in injury or in a vehicle being towed away. The study analyzed risk by light condition.

It found that in daylight black cars were 12% more likely than white to be involved in an accident, followed by grey cars at 11%, silver cars at 10%, and red and blue cars at 7%, with no other colors found to be significantly more or less risky than white. At dawn or dusk the risk ratio for black cars jumped to 47% more likely than white, and that for silver cars to 15%. In the hours of darkness only red and silver cars were found to be significantly more risky than white, by 10% and 8% respectively. However, no study on the relation between car color and safety is scientifically conclusive.

CHAPTER FIVE FINDINGS

Based on the finding of the study it was found out that there is need to imbibe on the maintenance culture so as to safeguard our life and the economy of the country. A lot of problems that caused accident have been identified and adequate measures were proposed in order to reduce the accident rates in the country.

RECOMMENDATION The following recommendations were made based on the findings of the study.

- * There should be effective enlightenment by the federal road safety commission at the Federal, State and LG's level to create awareness in terms of workshops, seminar, etc. on the importance of maintenance culture. Government should subsidize the supply of mechatronic instrument and train manpower to help inculcate the practice of the new innovation of maintenance to the mechanics.
- * Government should repair Federal State and Local government roads.
- * Government should as a matter of urgency ban the importation and sale of substandard Automobile parts.

CONCLUSION: There are Unused

Safety Features about auto safety which have been issued but never put on a production car yet. Such items include: the driver seat in the middle (to give the person a better view), rear facing seats (except for infant car seats), and control stick steering.

The current collaboration with the United Nations (UN), the World Bank, the Central Bank of Nigeria (CBN) and other multilateral agencies should lead to fresh strategies to combat road accidents. Government at all levels should be concerned about the present state of our roads. A case where a good percentage of a nation's human capital becomes victims of road mishap does not bode well for the well-being of the citizens and the economy, which is in dire need of human and material energy to reinvigorate it.

The Federal Government should immediately roll out a new blueprint to enhance the safety of road users across Nigeria. New measures have become necessary due to the persistent scourge of road accidents. Altogether, motorists and other road users should see the need to comply with safety rules and regulations. It is in their best interest. It's the hope of the presenters that readers will acquaint themselves with the ideas of safety in every sphere of life.

Safety precaution is not limited to automobile alone, in our various homes recreation centre's, there are rules for safety and they must be observed.

REFERENCES Gladwell, M. (2004). Big and Bad : How the S. U. V ran over automotive safety (PDF). The New Yorker. Retrieved. 2012-11-09 Smith B. (1981). Chrysler Motors Co. Journal. The Automobile for Tomorrow vol. 3, p. 15-16 Olaitan S. O (2000). Provision and Maintenance of Engineering

Infrastructure for Technology Development in Nigeria John S. D (1980)

General Motors Co. Symposium on motor vehicle injuries.