



Assessment of Truck Drivers' Literacy and Performance Evaluation in Haulage Operations in Nigeria

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Authors' contributions

This work was carried out in collaborations among all authors. Author ADV wrote the introduction and part of the literature. Author OSA reviewed the draft of the manuscript, wrote the abstract and made the final corrections. Author OAO carried out the analysis and designed the conceptual framework diagram. All authors read and approved the final manuscript

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ABSTRACT

This research work examined the literacy of Nigerian truck drivers being used in haulage operations with a view to assess whether driver's literacy enhances haulage operational performance. The problem of haulage operations in Nigeria can be attributed to inadequacy of well trained and educated drivers who can carry out deliveries with little or no supervision. For truck drivers; the need to understand road signs, traffic signals, documentation procedures, negotiations and readings of certain descriptions on equipment like fire-extinguisher cannot be carried out properly without certain level of education. Data collected at randomly selected Trailer Parks in Nigeria were analysed using Chi-Square and Pearson Product Moment Correlation (PPMC) analytical techniques. Results revealed that, calculated value of 10.7643 is less than tabulated value 15.507; therefore, null hypothesis was accepted. i.e (Most Truck drivers are not educated). Also, drivers with higher academic qualification has higher correlation value of $r = 0.555$ at $p < 0.05$

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level of significance which indicated higher level of performance. Similarly, lower academic qualification has a positive correlation with performance with $r=0.331$ at $p<0.05$. In other words, drivers with higher academic qualification has $R^2=0.308$ which is about 31% in relation to their driving performance. Lower academic qualified drivers accounted for approximately 11% of drivers' performance. The paper suggested establishment of truck driving school, creation of drivers' database and safety issue should also be given paramount importance in Nigeria.

Keywords: Challenges; literacy; truck drivers; performance, haulage operations.

1. INTRODUCTION

The mode of transport that is more flexible and provides door to door services is road transport. Roads by far handle the largest freight transport share in Nigeria. The highways in the country generally account for about 70% of the movement of goods and persons in the country [1]. Transporting goods from one place to another to ensure there is a balance from surplus to deficit areas is the bedrock of any sustainable economy. Reviewed differently, [2] opined that the freight system is comprised of a set of interacting, interrelated economic agents, facilities and infrastructure that form a complex system that is in charge of producing, processing, transporting, distributing the supplies needed for manufacturing, human consumption, and trade. However, drivers are major agents that will ensure these deliveries. From the research carried out by [3], about 80% of freight movements in Nigeria are done on the road with about 2,500 trailers in dry cargoes plying Nigerian roads daily. The ineffectiveness of services provided by rail transport has magnified the usage of road and mostly freight transport in Nigeria. The Nigerian haulage and logistics industry is seriously embattled with challenges relating to high level of uneducated truck and trailer drivers, lack of proper maintenance, inefficiency in costing and accounting procedures and fleet management operational procedures. Tanker and trailer drivers faced challenges of unwarranted tax demands at local and state government levels at different places throughout the country.

Loeb and Clarke [4] commenting on accidents of truck drivers acknowledged that; indeed, the miles driven on roadways, alcohol consumption by truck drivers, and age of truck drivers have been shown to be positively linked to accidents. From their own point of view, [5,6,1] suggested that poor roads, narrow bridges, menace of armed robbery on highways, harassment by security officials, touting, delays occasioned by traffic congestion, outright non-delivery of

consignments consequent upon accidents, shortage or scarcity of fuel, incessant vehicle breakdown and traffic hold-up in the city centers are some of the operational difficulties confronting goods haulage in the country. However, experiences of drivers differ from one another depending on the policy of the company or organization they work with. The main freight-related issues affecting Nigeria in the various freight reports are a shortage of drivers, rising wage, fuel and insurance costs, and environmental restrictions and regulations which increase the financial burdens on freight companies. The two ways described to improve fuel efficiency is through drivers' performance and vehicle maintenance. Other than the type of vehicle used, the driver is the single biggest factor affecting fuel costs and emissions. Speeding, harsh acceleration, harsh braking and idling are all drivers' behaviours that increase fuel consumption and can have an impact on NOx emissions. Each of these behaviours is also likely to increase the risk of accidents and vehicle wear and tear, including increased tyre and brake wear. Anything that modifies poor driver behaviour is likely to reap significant benefits in terms of reduced fuel costs, accidents and insurance premiums, and reduced vehicle wear and tear.

The major concern of most truck drivers in Nigeria is remuneration and they tend to move quickly from one company to another most especially if the wages or salary is higher. Regrettably however, no matter how they are well paid, some of them have certain attitudes that cannot make them stay long in a particular company. Drivers sell goods on the road, they lie about the condition of the vehicles and make unscrupulous arrangements with road side mechanics when vehicle develops fault. On the part of companies, drivers are seen as worthless being and most paid stipend.

Copsey [7] expressed the challenges of divers from another perspective; drivers' activities include irregular working hours and may include

considerable night shift work. Fatigue and sleepiness are common among professional drivers, and falling asleep while driving accounts for a significant proportion of their work-related vehicle accidents. In addition to driving, working in a haulage company involves many loading and unloading activities, which may be ergonomically challenging. Parking is another area of challenge for truck drivers in Nigeria. Most truck drivers park along the major highways and constitute problem to other vehicles and in most cases their dangerous post results in avoidable accidents. To this end, this paper was set out to address the issue of truck driver's literacy and observe the performance of drivers through their academic qualifications.

2. LITERATURE REVIEW

According to [8], road haulage drivers are regularly exposed not only to the dangers of the road, but also to the risks associated with activities such as loading and unloading. These activities may involve manual handling or working with mechanized lifting equipment, working at heights and exposure to dangerous substances. It is also often necessary for drivers to work at customers' premises and in unfamiliar environments, which may have hidden hazards.

Rainer [9] observed that heavy goods vehicle and bus drivers are often on the road for long periods of time and they rarely consult a doctor during their journeys because it would put their schedules into disarray. Drivers are often obliged to carry on even with headaches or other health problems, and sometimes they take medicines that are not specially prescribed for them. This situation poses a risk to the drivers and to other road users. Hence, [10] stated that musculoskeletal risks are not just related to actual driving. There is also a risk of musculoskeletal damage to the neck, due on the one hand to torsion movements made by the driver when passengers get off the bus and, on the other hand, to extension movements made when looking at the central rear-view mirror during the opening and closing of the doors. They however suggested periods of breaks in drivers schedule by various organizations. Statistics gathered by the HSE and local authorities in the UK over a five-year period show that nearly 60 employees were killed and 5,000 seriously injured in haulage and distribution

industries [11]. [12] stated that before delivery/pick-up, the following information should be considered: the restrictions on the types of vehicles that can be accepted, delivery times, site information, including loading/unloading area, parking facilities, reception, rest rooms and the reporting procedures on arrival and departure safety procedures on site, such as wearing high-visibility clothing, using mobile phones and the availability and use of equipment person in charge of loading/unloading emergency contact details.

USAID [13] report opined that, good drivers should be able to anticipate the actions of other road users and pedestrians, and change speed accordingly. They should also anticipate hazards, such as corners, bridges, drain covers and potholes. In the case of a breakdown, drivers should place the vehicle in the safest position possible. They should use visible hazard warnings or a person (who is positioned to be visible to oncoming drivers, but who is not at personal risk) to warn other road users of the danger ahead. Warning signs should be removed as soon as they are no longer needed. When working on a vehicle, drivers should make sure they are clearly visible to and out of the path of moving traffic. If possible, it is best not to leave a vehicle unattended. It opined that, employees can gain the requisite knowledge through delegation, work group, job rotation and special assignment. These can enhance drivers' performance in the areas of increasing job awareness (i.e., of technical, operational, legal or financial aspects), acquiring or developing skills and increasing self-knowledge (e.g., career assessment).

2.1 Conceptual Framework of Drivers' Recruitment and Management

The selection of driver is very important to haulage operations. A wrongly selected or recruited driver can cause damage that can ruin the entire organization. In fact, if there is no proper framework for recruiting drivers it can lead to the closure of the organizations that seek to employ them. In most cases, the goods carried by trucks are by far costlier than the cost of the trucks. Therefore, a policy framework and recruitment strategies are crucial to survival of haulage operations. The figure below (Fig 2.1) presented a flow chart for recruiting and managing drivers in haulage operations.

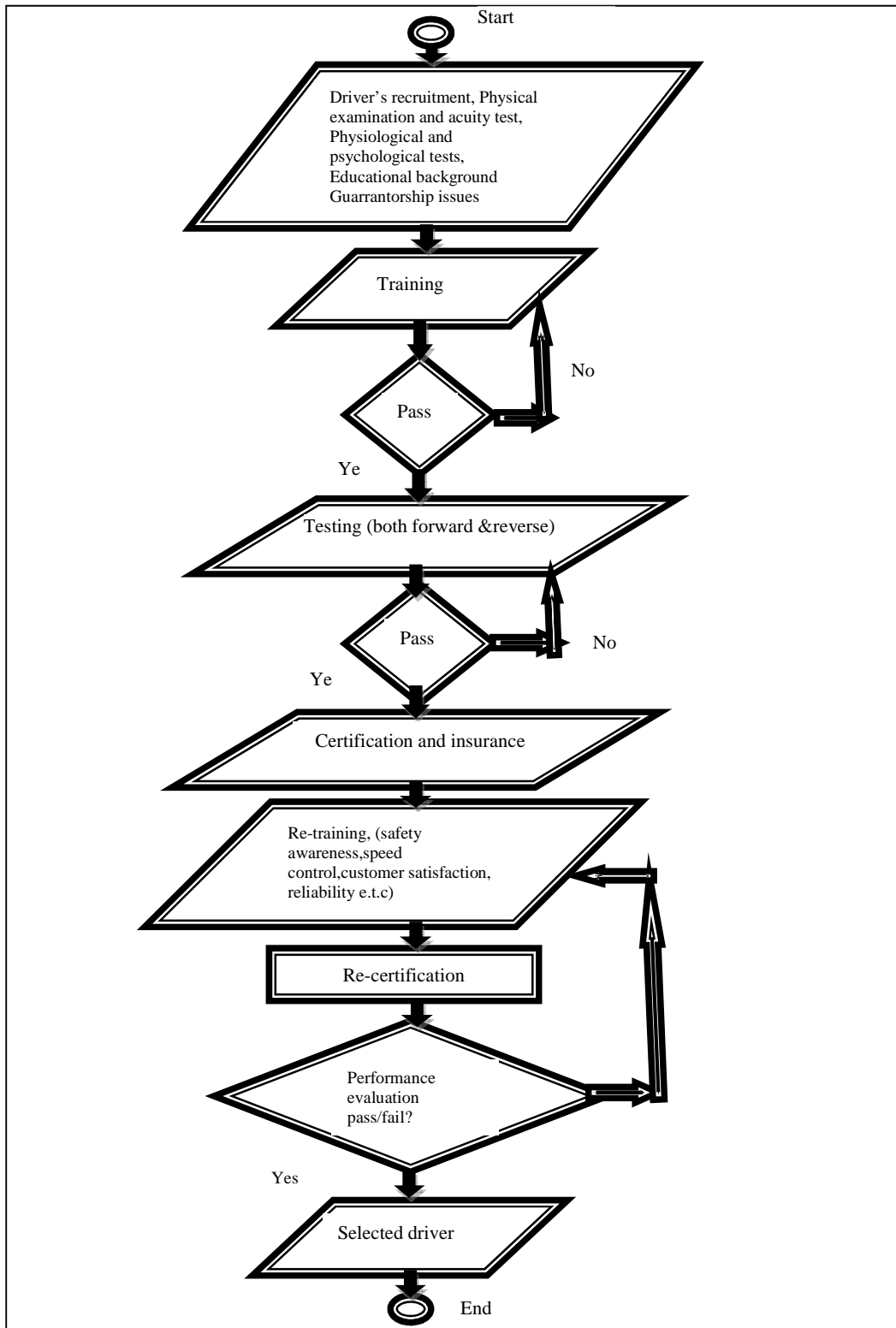


Fig. 2.1. Flow chart for driver's recruitment and performance evaluation
Source: Authors' Concept (2016)

The Fig. 2.1 above provided a flow chart for recruiting and evaluating driver's performance in haulage operations. It explained that physical examination of drivers is very important with certain conditions (Physical examination-acuity test, Physiological and psychological tests, Educational background, Garrantorship issues) must be assessed. Further processes involves, training inform of lectures and practical followed by testing, certification, recertification and performance evaluation. At each stage of training, if the intending does pass the stage process he/she goes back to the previous stage.

[14] described the importance of drivers in relation to enhancing business performance. In recruiting a new driver; the report suggested that you employers pay attention to their driving style, their mental approach and their accident history. The test should include the pre-trip inspection of the vehicle and should assess skills in relation to vehicle maneuvering, steering, stopping and reversing. Courtesy to other road users should also be observed.

In the road transport sector, as with any other, it is important to pay attention to working conditions in order to ensure a skilled and motivated workforce. Certain characteristics of the sector make it more difficult to practice risk management than in other sectors. But by taking account of how the sector operates in practice, and the characteristics of drivers themselves and the way they work, risks can be successfully managed. Drivers work independently and away from a fixed base. They may be self-employed and often have long experience as drivers. This means that it is not always easy to communicate with them and consult and involve them, and they are not always open to change. Employers of drivers can find it difficult to ensure the safety of their employees whilst they are working at customer premises.

In the work of Logistics Team of The Finnish Institute of Occupational Health, Turku provided by [7], the project was to promote truck drivers' health and wellbeing by minimizing their risk of fatigue and sleepiness and by improving their workplace ergonomics with the assistance of the employer's long-term occupational health service provider. Firstly, the company doctor carries out physical examinations of all the drivers to detect sleep apnoea. Many Finnish professional drivers are known to be obese, which is commonly associated with sleep apnoea. Since sleep

apnoea is a medical condition that can be managed with an appropriate treatment, one aim of the examination is to identify the drivers who potentially have sleep apnoea and refer them to a specialist for further diagnostic testing and treatment. Secondly, to help ensure the drivers eat a healthy lunch, the company provides a lunch box to each driver as well as recommendations for healthy lunch box contents. To determine these recommended lunch box contents, a nutritionist is consulted. The aim of this measure is to help drivers reach and maintain optimal body weight, which is challenging for individuals who work irregular hours and night shifts.

Thirdly, an occupational psychologist provides support to the personnel management department, with the aim of improving the company's logistics strategies so that drivers' work schedules give them sufficient time to rest. In order to improve drivers' workplace ergonomics, an occupational physiotherapist visits the drivers' workplaces and discusses ergonomic issues with them while they are working. Both the representatives and drivers of the company have been satisfied with the services of the occupational health service provider. Additionally, it has been noted that the company's positive attitude towards drivers' health and wellbeing has promoted a good working and safety culture among the drivers.

The introduction of online management system is paramount to managing truck drivers effectively with the use of Global Positioning Systems and other latest information technology devices. [15] when explaining how information system has changed the traditional ways of transacting business stated that; with new mobile smartphones, high-speed wireless Wi-Fi networks, and wireless tablet computers, remote salespeople on the road are only seconds away from their managers' questions and oversight. Managers on the move are in direct, continuous contact with their employees and customers. In other words, drivers communicate, snap pictures of incidents and only a second away from manager most especially in modern day driving where drivers are provided with mobile phones to enable them communicate with their managers. Problem arise, when driver however does not know what to do or how to operate the tools given as a result of low level of education. Conversely, there has been a great deal of interest in the use of Global Positioning Systems (GPS) for freight demand modeling. Among other

benefits, these data are: very accurate, increasingly common as the number of companies using GPS devices is increasing, and free as they are the byproduct of vehicle tracking and navigation systems. Meanwhile, a fundamental limitation that has not been overcome is that GPS cannot collect key data that traditional surveys provide (e.g., commodity type, shipment size, trip purpose). As a result, the maximum utility of GPS is realized when it is combined with other data collection methods. For example, origin, destination and routing information received from GPS receivers can be used to validate and improve the information provided by truck drivers in manually completed travel diaries. Also, combining GPS truck trip information with Geographic Information System land use data can yield useful information on truck activity characteristics at trip ends [16].

2.2 Drivers' Performance Evaluation

Adelayo [17] noted that; logistics performance evaluation can be examined based on timeliness of operation, Quality of service evaluation, comparison and statistical analysis/optimization methods. Timely operation is based on projected schedule and operational targets are to correspond with the timing. Secondly, quality of service may be in form of no account of cargo damage during discharging and loading; it is an ability of all resources available to effect promptly and maximally the set operational target, human resources, machinery and all other attributes.

According to [18]; logistics performance can be monitored by using standard costs, budgets, productivity standards, statistical process control, and activity-based management. Control costs through predetermined standards and flexible budgets are the most comprehensive type of control system available. A standard costs can be defined as a benchmark or norm for measuring performance. Standard costs are what the costs should be if the firm is operating as planned. Most organizations boost driver's moral by introducing competition in terms of best driver of the year or given prizes to the drivers with mostly neat vehicle and/or safe delivery per annum with little or no cost of repairs. These measures no doubt forced drivers to guide their behavior on the road. Conversely, [19] indicated

the policy against loss of performance indicators for drivers as road vehicle accidents, lost time injuries, personal injuries, spills, crossovers/contamination which of course will make organization not to be productive.

3. MATERIALS AND METHODS

There are over 160 transport and haulage companies in Nigeria [20]. This study was conducted with a structured questionnaires with the understanding to simplify the languages to enable all respondents participate in the research. Therefore, the questionnaires were structured to elicit the questions in the three major languages in Nigeria. The researchers selected Trailer Parks along OPIC-Ogere Remo, Ogun State; Trailer Park at Akinyele Local Government, Ibadan along the Northern part of Nigeria and Trailer Park (Oboloafo, Night Mile corner) along the Eastern part of the country. Primarily the questionnaire was formed to extract information about the academic qualifications of the drivers and designed another questionnaire for the sampled drivers' managers in order to determine their performances. Some managers were able to trace the records of the drivers and from there filled the questionnaire.

Hence, the following questions were asked:

What are the academic qualifications of Nigerian truck drivers?

Does higher academic qualification of a truck driver enhances haulage operations' performance?

Sequel to the above, the following hypothesis were postulated in null form only:

H0₁: Most Nigerian truck drivers are not educated

H0₂: Academic qualification does not enhance the performance of truck drivers in haulage operations

Demographic characteristics of the respondents All respondent drivers are male. Their age bracket is between 23-51 years old

The populations of the drivers based on the selected parks across the country were presented in Table 3.1 below:

Table 3.1. Population of drivers among selected haulage companies

Companies	Area	Population
Trailer park (OPIC-Ogere)	Ogun	Drivers 93
Trailer park (Akinyele,LG)	Ibadan	Drivers 88
Trailer Park (Easter part)	Along Benin Highway	Drivers213

Source: Field survey (2015)

3.1 Sampling Method and Sampling Size

Sample size = 152

The sample size for the study was determined by the [21] and [22]

$$n = \frac{P(1-P)N^3}{(E/1.96)^2 (N-1) + P(1-P)N^2}$$

Where,

- n = Sample size;
- N = Population size;
- P= the proportion of households with the attributes of interest.
- and E = Level of Significance (at 5%).

$$44+8+1+41+10+2+51+17+4+20 =198$$

The total number of estimated three logistics and haulage companies =198

Therefore for the population of 160 logistics companies it can be estimated to be $198 \times 160/3=10560$

- N=10560
- P=198
- E=0.05

$$\text{Therefore } n = 198 (1-198) 10560^3 / (0.05/1.96)^2 (10560-1) + 198(1-198)10560^2$$

4. RESULTS AND DISCUSSION

The assessment of the first objective is to determine the academic qualifications possessed by Nigerian truck drivers. Therefore, data collected from sampled population were analysed with the Chi-square analytical technique. Table 4.1 presented the sampled drivers across the selected locations from the population.

Table 4.1. Drivers sampled

Companies	Area	Population
Trailer park (OPIC-Ogere)	Ogun	Drivers 44
Trailer park (Akinyele,LG)	Ibadan	Drivers 41
Trailer Park (Easter part)	Benin	Drivers 51

Source: Output result based on field survey (2015)

The average number of driver expected = $38+2+29+4+1+44+6+1 =125/5=25$

Using Chi-Square;

$$X^2 = \sum (O - e)^2 / e$$

- Where X²= Chi-Square
- O= Observed frequency
- e =expected frequency

Table 4.2. Qualification of drivers of the selected companies

	SSCE	OND	NCE	HND	Bsc	Total
Trailer park (OPIC-Ogere)	38	2	0	0	0	40
Trailer park (Akinyele,LG)	29	4	1	0	0	34
Trailer Park (Easter part)	44	6	1	0	0	51
Total	111	12	2	0	0	125

Source: Result output based on field survey (2015)

To determine the expected frequencies for each company (park) using Chi-Square

$$\text{Expected} = \text{Row Total} \times \text{Column Total} / \text{Grand Total}$$

Table 4.3. Chi-square analysis

	Below SSCE &SSCE holders	OND	NCE	HND	Bsc
Trailer park (OPIC-Ogere)	(40x111)/125 35.52	(40x12)/125 3.84	(40x2)/125 0.64	(40x0)/125 0	(40x0)/125 0
Trailer park (Akinyele, LG)	(34x111)/125 30.192	(34x12)/125 3.264	(34x2)/125 0.544	(34x0)/125 0	(34x0)/125 0
Trailer Park (Easter part)	(51x111)/125 45.288	(51x12)/125 4.896	(51x2)/125 0.816	(51x0)/125 0	(51x0)/125 0

Source: Result output based on field survey (2015)

$$X^2 = \sum \sum (O - e)^2 / e$$

$$(38-35.52)^2 + (2-3.84)^2 + (0-0.64)^2 + (29-30.192)^2 + (4-3.264)^2 + (1-0.544)^2 + (44-45.288)^2 + (6-4.896)^2 + (1-0.816)^2$$

$$(2.48)^2 + (-1.84)^2 + (-0.64)^2 + (0.736)^2 + (0.736)^2 + (0.456)^2 + (-1.288)^2 + (1.104)^2 + (0.184)^2$$

$$6.15 + 0.41 + 0.542 + 0.542 + 0.208 + 1.659 + 1.219 + 0.0339 = 10.7643$$

The degree of freedom = (3-1) (5-1) = 2x4=8

Table 4.2-4.3 indicated the academic qualifications of the observed drivers with Chi-square calculations. The tabulated value is 15.507 at p<0.05. Since the tabulated value is lower than the calculated value, then we accept the null hypothesis. It therefore means that, majority of Nigerian truck and trailer drivers are illiterate or semi-literate. Somuyiwa [23] opined that; when a set of people in society are well

informed about safety rules and regulations; and others know little or nothing about safety rules, the resultant effects will still be un-safer roads. Unfortunately, many drivers on our roads cannot decipher road markings, road signs and signals not to talk of reading Highway codes, traffic acts and traffic regulations. Perhaps this can be attributed to level of illiteracy especially among Nigerian commercial drivers.

In order to assess the performance of the truck drivers based on their academic qualification, PPMC analytical technique was used. Higher academic qualification starts from drivers with more than Secondary school certificate holders (Ordinary National Diploma OND, National Certificate of Education NCE, Higher National Diploma HND, First Degree Bsc and above) while Lower academic qualification is between Primary school leaving certificate holders and Senior Secondary School Certificate holders (SSCE). The result from the analysis is as shown in Table 4.4.

Table 4.4. Correlation analysis

		Drivers	Drivers with higher qualification	Drivers with lower qualification
Driver's performance	Pearson correlation	1	.555*	*.331
	Sig (1-tailed)		.000	.048
	N	152	152	152
Drivers with higher qualification	Pearson correlation	.555*	1	.107
	Sig (1-tailed)	.000		.040
	N	152	152	152
Drivers with lower qualification	Pearson correlation	.331	.107	1
	Sig (1-tailed)	.048	.040	
	N	152	152	152

Source: Output results based on field survey (2015)

Table 4.4 provides a matrix of the correlation coefficients for drivers' performance, drivers' experience and drivers' training. Underneath each correlation coefficient both the significance value of the correlation and the sample size (N) were stated. Each variable is perfectly correlated with itself and so $r=1$ along diagonal table. Driver's performance is positively correlated with driver's higher academic qualification with Pearson correlation coefficient of $r=0.555$ at significant value $p<0.05$. The result also indicated that, driver's performance is positively related with driver's lower academic qualification with coefficient value $r=0.331$ at $p<0.05$. Finally, drivers with higher academic qualification are correlated with drivers with lower academic qualification with correlation value of 0.107. In other words, drivers with higher qualification has $R^2=0.308$ which is about 31% in relation to truck drivers' performance. Lower qualification accounted for approximately 11% of drivers' performance. However, it must be pointed out that, training breeds experience, and experience lead to better performance. Most importantly, the better performance may not only be attributed to educational qualification of the driver but in negotiation, writing and communication that may be demanded and require driver's level of education while on a trip which perhaps may be difficult if level of education is otherwise. Again, ability to read instructions, road signs and signals, traffic rules and regulations are the areas where education seems to enhance the operational capabilities of truck drivers.

5. CONCLUSION AND RECOMMENDATIONS

Most companies of course employ drivers with experience, but unfortunately these drivers do not stay long when they get better offer. Most truck drivers learn driving as a motor boy following their boss on routes before they become truck drivers which is good. Unfortunately because of how society and educated employers perceive the job, no literate person will want to work as a truck driver. Because of this, drivers need to be intimately involved in solutions – solutions need to be developed by drivers for drivers using participatory methods, in order to use their experience and gain their acceptance. It is also crucial to allow sufficient time to discuss, plan and introduce changes. The experience of drivers can also be harnessed by using them as advocates, trainers and mentors. The usual practice of recruitment is that a motor-boy will

eventually graduate to becoming a truck driver. As good as this process is, the processes involved and the procedure lacks proper educational requirements and fundamental academic prerequisites.

This research concluded that; the haulage system in Nigeria lacks adequate competent drivers and driving is seen as a job to be done by school "drop outs". The incentives and remunerations of drivers despite the challenges they are facing like securing the vehicles even when the environment is not conducive, protecting the goods and their own life, the inability to see their family, and the compensation for all these sacrifices are meager salaries. This perhaps does not encourage the elite to take appointments in this direction.

The researchers recommend that, there should be a truck and trailer driving school and the policies that will enhance safety at work. Similarly, the wages or salary of drivers should be reviewed and possibly the government should introduce policies for the employers of labour by initiating a concepts that will favor both the practitioners and their drivers. Due to the number of illiterate drivers on our roads, traffic laws manuals should be printed in all languages we have in Nigeria. Although, safety clubs have been established in Nigerian schools, there is need to incorporate safety education into the curriculum just like other subjects like Mathematics and English Language [23]. There is also need for database or an account that will showcase the historical records of all truck drivers where employers can identify who they wish to employ.

Road Safety Authority [14] provided the benefits derived from using well trained and educated drivers as follows: Drive more safely than a driver who has not received proper training; work more efficiently than a driver who has not received proper training, contribute to your overall profitability, make risk assessments and understand risk management, provide good customer service; and contribute to the positive image of your transport business.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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