

An Empirical Investigation into Urban Informal Tire Repair Service in Ilorin, Nigeria

EMQUETE EMPIRIQUE SUR L'URBAINISME DU SERVICE DE REPARATION DES PNEUS INFORMEL DANS ILORIN, NIGERIA

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Abstract

The employment generation capacity of the formal sector comprising the public and organized private sectors in Nigeria is shrinking. The informal sector therefore offers a ray of hope for employment and earnings for urban unskilled and semi skilled labour. The promotion of informal sector activities by the government requires an insight into their mode of operation for better policy targeting. This paper therefore examines the operational characteristics, financing, training, employment and earnings, and challenges of tire repair business in Ilorin, Nigeria. The data were collected through a structured questionnaire and analyzed using descriptive statistics and phi coefficient.

The study finds that tire repair provides employment and income for low skilled labour, most of whom are underemployed, earning about US\$7.36 per day. The study finds that age, apprentice access and tire repair service index have significant association with earnings. About 92% of the operators sourced their financing for start-up capital from the informal financial sector. The informal training required is through the apprenticeship scheme, which is largely deficient in safety issues relating to tire rating, maximum load, expiry date, resistance, etc. The safety gap in the apprenticeship training scheme

should be bridged through training and seminar. The informal sector support agencies should be overhauled to provide financing, technical and extension services to the informal sector operators.

JEL Classification: G29; O17; R41

Key words: Informal sector; Tire repair; Operation; Employment; Road safety

Résumé

La capacité de génération d'emplois du secteur formel comprenant les secteurs public et privé organisé au Nigeria est en diminution. Le secteur informel offre donc une lueur d'espoir pour l'emploi et des revenus en milieu urbain non qualifiés et semi-d'œuvre qualifiée. La promotion des activités du secteur informel par le gouvernement exige un aperçu de leur mode de fonctionnement pour une meilleure politique de ciblage. Ce document examine donc les caractéristiques opérationnelles, financement, formation, emploi et revenus, et les défis de l'entreprise de réparation de pneus à Ilorin, Nigeria. Les données ont été recueillies par le biais d'un questionnaire structuré et analysées en utilisant des statistiques descriptives et le coefficient phi.

L'étude constate que la réparation de pneus fournit de l'emploi et de revenus pour le travail peu qualifié, dont la plupart sont sous-employés, gagne environ \$ 7,36 américains par jour. L'étude constate que l'âge, l'apprenti et l'indice d'accès de service réparation de pneus ont une association significative avec les gains. Environ 92% des opérateurs provenant de leur financement pour les start-up capital du secteur financier informel. La formation informelle est requise par le régime d'apprentissage, qui est largement déficiente dans les questions de sécurité relatives à la notation des pneus, la charge maximale, la date d'expiration, résistance, etc

L'écart de sécurité dans le schéma de formation des apprentis doit être comblé par la formation et de

séminaire. Les agences d'appui au secteur informel devrait être remanié pour offrir des services de financement, techniques et de vulgarisation pour les opérateurs du secteur informel.

Classification JEL: G29; O17; R41

Mots clés: Secteur informel; Réparation de pneus; Fonctionnement; Emploi, Sécurité routière

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INTRODUCTION

The economic crisis of the 1980s in Nigeria led to the introduction of Structural Adjustment Programme (SAP). The programme has policies aimed at reducing the size of government, which was considered over bloated resulting in high fiscal burden. The down sizing or right sizing of government agencies led to job cut while the inadequacy of foreign exchange to import raw materials for industries led to closures and low capacity utilization in the industrial sector. The effects of these are increased unemployment, poverty and social insecurity, etc.

Most of the retrenched workers flooded the informal sector, which is a core employer of labour particularly in the urban centers. The informal sector of Nigeria has made enormous contribution to national development through employment and income generation as well as linkage with the formal sector, etc (Abumere, Arimah and Jerome, 1988; Arimah, 2001; Adewuyi, 2002; Nwaka, 2005; Obadina, 2007).

The informal economy of Nigeria is the third largest in Africa, put at 57.9 per cent of the GDP (Schneider, 2002, p.5). The import of this size is that the informal sector is crucial to Nigeria's economic development; therefore it should be promoted through policy and enabling environment. However, a good policy must be anchored on an insight into the operations of the informal sector enterprises. The activities under the informal sector are many; therefore specific policies must be based on specific insight into an informal sector activity, which is without prejudice to general informal sector studies.

The bulk of activities in the Nigerian road transport system, apart from infrastructure provision, are informal in nature. These activities range from bus and taxi service provision, commercial motorcycle operation, truck and haulage business, to support services such as car-wash, tire repair, auto and mechanical repairs, etc. The operations of these informal transport or support services have serious impact on employment and income;

backward and forward integration and; safety on Nigerian roads. One of these urban informal transport-support activities is the tire repair service. Vehicles run on tires. The road safety records of Nigeria are not good. Road crashes are a major public health concern in Nigeria; and one of the contributory factors to road crashes in Nigeria is defective tires (FRN, 2008, p.35,40).

The automobile functions with the interplay of various components, which are unique in their own right yet work together as a system. One of such components is the tire. A tire is a roughly toroidal shaped piece of synthetic rubber which covers the circumference of a wheel. The main purpose of tire in vehicles are to dampen the oscillations caused by irregularities in road surface; protect the wheel from deterioration and; serve as high-friction bond between the automobile and the road to improve acceleration and handling (Wikipedia, 2006). There are various types of automobile tires. These include performance tires; winter tires; all-season tires; run-flat tires; all-terrain tires; mud tires etc. The tires used in the automobile industry are mainly pneumatic tire that is air-filled tires. An air-filled tire could either have inner tube or be tubeless tire. Like any other component of the vehicle, tires are also subject to wear and tear, as well as outright damage. Notable among these are bald tire, flat tire, blowout, etc.

The management of tire is therefore crucial in road safety. Various studies have been conducted in Nigeria on the informal road transport sector but there seems to be none that has specifically examined the nature of operations of the tire repair industry. In view of the increasing rate of road crashes occasioned by defective tires, there is the need to study the operations of those responsible for its fixing and repairs with a view to using them as an agent of change in the awareness and enlightenment campaigns of the Federal Road Safety Commission (FRSC) against the use of unsafe tires on Nigerian roads.

This study therefore provides an insight into the operational features of the tire repair industry with a view to providing measures that can improve its service delivery. Specifically, the study examines the operational characteristics of the tire repair business, sources of fund, training and skill acquisition, employment and earnings capacity as well as constraints of the industry.

1. INFORMAL SECTOR AND ECONOMIC DEVELOPMENT

The concept of the informal sector was introduced by the International Labour Organization (ILO) in 1972 in its Kenya mission report in which informality was defined as a way of doing things characterized by; ease of entry; reliance on indigenous resources; family ownership; small scale operations; labour intensive and adaptive

technology; skill acquired outside of the formal sector; unregulated and competitive markets (World Bank, 2007a). The informal sector consists of small scale, self employed activities (with or without hired workers), typically at a low level of organization and technology, with the primary objective of generating employment and incomes. The activities are usually conducted without proper recognition from the authorities, and escape the activities of the machinery of government responsible for enforcement of law and regulations (ILO, 2007a). The informal sector is heterogeneous, encompassing production units of different features, economic activities and people. This heterogeneity of the sector and its complex dimension made conceptualization and measurement of the sector not to be a clear cut one (ILO, 2007b). Studies have used various terms, definitions and categorizations. Some of the diverse terms used to describe this form of economy include shadow, unofficial, third, underground, gray, hidden, counter and parallel (Thomas, 1992). Various conceptualizations have been given to the informal sector based on functionality, behavior (legality), technology, etc (see Portes, et al. 1989; Feige, 1990; Cole and Fayissa, 1991; Thomas, 1992; Loayza, 1997; Saavedra and Chong, 1999; Farrel, et al. 2000).

Enterprises in the informal sector usually employ fewer than ten workers, mostly immediate family members. It is heterogeneous cutting across activities such as retail trade, transport, repair and maintenance, construction, personal and domestic services, and manufacturing. Entry and exit are easier than in the formal sector. Capital investment is generally low or minimal. Work is mostly labour intensive, requiring low-level skills. Workers learn skills on the job. The employer-employee relationship is often unwritten and informal, with little or no appreciation of industrial relations and workers' right, among others (ILO, 2007a).

The informal sector plays vital roles in most economies. It provides jobs and reduces unemployment and underemployment and consequently poverty. However, in most cases the jobs are low-paid and the job security is poor. Informal sector employment is usually the last resort or survival option in most countries without social safety nets such as unemployment benefits, poor modern wage sector, etc. Informal sector enterprises bolster entrepreneurial activity, despite the fact that it is at the detriment of state regulations compliance, particularly with regards to tax and labour regulations.

Various empirical studies have been conducted across the globe over time on the nature, operation, employment, earnings, challenges, etc. of informal sector enterprises. They include but not limited to Uganda (Aliber, 2002); Mongolia (Bikales, et al 2000); Fiji (Mahendra, et al 2003); India (Aliber, 2002); Ghana (Aryeetey, 1993); South Africa (Chandra, et al. 2002) and Jamaica (Miller-Stennett, 2002).

In Nigeria, informal sector studies abound. These

studies include: Abumere, Arimah and Jerome, 1988; Arimah, 2001; Adewuyi, 2002; Nwaka, 2005; Obadina, 2007; etc. The review in this paper is limited to activities in the road transport sub-sector which include urban transport services and road transport-support services.

Ogunsanya and Galtima (1993) evaluated informal motorcycle operators in Yola, Nigeria and found that it was a male-dominated activity with most operators (88.3 percent) between the age brackets of 18 and 30 years. The study revealed that 47.11 percent had no formal education while those with formal education but to a maximum of secondary education accounted for 50.6 percent. The operators work for 10 hours a day on the average. About 69 per cent of the operators are owner-drivers while 31% use hired motorcycle on a N30 rent per day. The average earning was estimated at N50 per day.

Ojekunle (1998) studied users' and operational characteristics of motorcycle transport called Okada in Agege Local Government Area of Lagos State, Nigeria. The study showed that both single and married people are involved in the operation with about 90% falling between the age bracket 21 -40 years. The study showed OND graduate (14 years of schooling) participation in the business at 5% while 88% of the motorcycle operators have either primary (6 years of schooling) education (29%) or secondary (12 years of schooling) education (59%). The study further showed that 64% of the operators do the job on full time basis while 20% do it on part-time basis. At the ownership level only 22% are owner-drivers while the rest rent motorcycle for daily operation. For the owner-drivers, the study did not examine the source of funding for acquisition of these motorcycles. Ojekunle (1998) showed that about 77% of the operators earn above N20, 000 annually. It however did not examine whether there are correlations between the earning of these operators and the identified characteristics.

Adesanya (1998) examined the users' and operators' characteristics of motorcycle as public transport in Ibadan, Nigeria. About 91.9 percent of the operators fell between 21 and 40 years. The operators who had not more than secondary education were about 59 per cent. About 84% of the operators had a previous job, most of whom were retrenched workers and artisans. Also 53.3 percent work on full time basis. The hours of operation are between 9 and 14 hours a day, with about 63.9% operators working six days a week. It further shows that 77 percent of the operators are owner-drivers while 23 percent of them were hired drivers. About 92 percent of the motorcycles were purchased through full payment while about 6 percent used hire-purchase. There is no indication of the source of the fund for the purchase.

Adesanya (1998) also showed that 20.5 percent of the operators earn less than N200 a day; 13.1% earn between N201 and N300 per day; 23.8 percent earn between N301 and N400 a day; 30.3 percent earn between N401 and N500 per day; and 12.3% earn above N501 per day. There

is no evidence of the determinants and correlation of earnings with some of the characteristics of the operators.

Arosanyin, et al. (2000) examined 382 informal enterprises in Ilorin where 59.9 percent of the sampled informal enterprises were involved in the provision of services and 40.1 percent were involved in production of tangible goods. The study observed that 86 percent of these informal enterprises are sole proprietorship form of business. About 83 percent of the operators had up to secondary education, while graduate involvement accounted for 17 percent. The study found that only 7.9 percent of the enterprises obtained their start-up capital from formal sources (Banks, 7.1% and government, 0.8%), while 92.1 percent obtained their start-up financing from informal sources (personal saving, 58.8%; loans from Cooperative/Rotating Savings and Credit Associations (ROSCA)/ friends/relations, 30.9%; other, 2.4%) (Arosanyin, et al. 2000: 18). The study further showed that 93.7% of the enterprises never got financial assistance from the government; 88.7% and 80.6% never got extension support services and training/seminar from the government respectively. The major reasons identified for the 'amoebic nature' of the enterprises in order of importance are low patronage, high production cost, inadequate capital, etc. The study also revealed that 17 and 13 percent of the enterprises used apprentices and family labour in production or service delivery respectively.

Arosanyin and Ipingbemi (2007) examined the operational characteristics of 176 car wash service operators in Ilorin, Nigeria. The mean age of operators was estimated at 29 years, with 68.7 percent between the age bracket of 18 and 30 years. The car wash business or enterprise was found to be a male-dominated enterprise with sole proprietorship as the main structure of ownership. In terms of education, 91.4 percent had up to secondary education while those with post secondary education accounted for 8.6%. The study estimated the mean-operation year at 3 ½ years.

The bulk of the start-up capital was sourced from the informal sector constituting 95%, while only 5 % of the operators obtained funding from formal sources. The study recorded that 51.2 percent of the operators went through the apprenticeship programme of a mean month of six. There are evidences of the use of family labour in the business as 28.1% of married operators use their sons as 'assistants'; and 67% of the operators work on full time basis, while only 33% work on part time basis. The mean gross earnings per day stood at N2, 611. The core determinants of earnings using the Mincerian equation were found to be the patronage index, experience and apprentice access.

2. ANALYTICAL TOOL, DATA AND DATA MEASUREMENT

2.1 Analytical Tool

In examining the determinants of earnings from this

informal sector activity, the Mincerian earnings function, which is based on the human capital theory, would have been appropriate, but the estimates arrived at only confirms the patronage index as the only significant variable. This therefore necessitated the recoding of the data to categorical data to allow for the use of categorical analysis, which can bring out the correlates of earnings with selected variables (see Liebetrau 1983; Agresti 1996). The main analytical tool adopted due to the categorical nature of the data is therefore the Phi coefficient.

The phi coefficient is a measure of the degree of association between two categorical variables, especially when the two variables are binary. Therefore, phi statistic is a measure of association between two variables measured at nominal level. It is mainly applicable to 2-by-2 contingency table and is similar to the Pearson Product Moment Correlation coefficient in its interpretation as it lies between ± 1 . Phi coefficient varies from 0 to 1. If chi-square is significant, then the phi is also significant. However in larger tables, phi may be greater than 1.0 in which case there will be no simple intuitive interpretation, which is a reason why phi is often used only for 2-by-2 tables. It may still be used for larger tables provided the value lies within the range of ± 1 . Two categorical variables are considered positively associated if most of the data falls along the diagonal cells and in contrast, two variables are considered negatively associated if most of the data falls off diagonal (Rosenberg, 1968; Goodman and Kruskal, 1972; Liebetrau, 1983; Agresti, 1996). Earning is the dependent variable. The independent variables are age, marital status, education, years in business, apprentice access, family labour and tire repair index.

The results were evaluated at 1 and 5 percent levels of significance.

2.2 Scope and Data

The survey area of this study is Ilorin in North Central Nigeria. As at September 2005, the total vehicle stock of Kwara State stood at 117,495 representing 1.75 percent of the total vehicle stock of Nigeria. The above vehicles, which run on tires (tube or tubeless), provide the ready market or customer base for the tire repair service in the state.

The tire repair in this study includes bald tire, blow out, flat tires, etc. Flat tire repair is the most common. A flat tire occurs when a pneumatic tire gets a hole or a leak through which the air inside escapes. A leak may be caused by sharp objects such as screws, broken bottles, nails, etc. puncturing the rubber tire wall (Wikipedia, 2006). The repairs of flat tires often take the form of patches, replacement of valve stem or outright replacement. In most cases the tire is taken off the rim, repaired and replaced. There are special instruments for repairing tires which are contained in the tire repair kit. The artisans in Nigeria involved in the repair of tires are

called in local parlance ‘vulcanizers’. They constitute a vital segment of road transport supportive services which is seldom studied. They are visible along the roads, often occupying unsheltered spaces, usually designated for either vehicle parking or pedestrian use in urban areas. The sign post which advertises their presence is usually the spoilt tires hung on the road sides. They are not registered as individual business entities, but have very strong unions.

A total of 228 tire repair enterprises were surveyed based on the information supplied by their union. The enterprises were selected using the simple random sampling technique of even-odd number style along routes in their major operational zones in Ilorin. The main instrument for data collection was a structured questionnaire. Focus group discussions (FGDs) and observations were also used to complement the information gathered through the questionnaire method in order to achieve a higher benefit of triangulation in the research.

2.3 Data Measurement

The categories are earnings (1 if earnings < N1, 100; 2 if earnings ≥ N1, 100; N 1,100 is industry daily average). Age (1 if age < 34 years; 2 if age ≥ 34 years); Marital Status (1 if single; 2 if married). Education (1= No schooling; 2= Koranic; 3 =primary; 4= junior secondary; 5= senior secondary; 6= post secondary): apprentice access (1= No apprentice; 2= has apprentice): family labour (1= No assistant; 2= has assistant); years in business (1 if years in business < 5 years; 2 if years in business ≥ 5 years), and tire repair service index (TRS) (1 if TRS < 30; 2 if TRS ≥ 30). The exchange rate used in this paper is N150=US\$1. Nigeria operates a flexible market determined rate which may account for variation in exchange rate between the time of survey, data analysis and report writing.

3. FINDINGS OF THE STUDY

3.1 Operators’ Characteristics

The survey shows that the operators are all male with an average age of 34 years. The operators who are married constitute 70 percent while the unmarried accounted for 27 percent. The mean number of children per married family was computed at four. In terms of highest educational attainment, the bulk falls within primary school (6 years of schooling) and junior secondary education (9 years of schooling). These combined categories accounted for 81 percent. It implies that 81 per cent of the operators had not more than 9 years of formal schooling, regardless of quality. This is an indication that high skill through education is not required to operate in this segment of the informal sector.

The dominance of operators with a maximum of Junior Secondary education (9 years of schooling) further confirms the earlier works of Ogunsanya and Galtima,

1993; Ojekunle 1998, Adesanya, 1998; Arosanyin 2000; Arosanyin and Ipingbemi 2007, that informal operators are not highly educated. The operators in the tire repair industry are mostly school drop-outs. The rest details of the background of operators are shown in Table 1.

Table 1
Background of the Operators

Variable	Statistics
Age (years)	Mean =34 St. Dev.=6.4 Min.=24 Max.=59
Marital status	Single=27.1% Married=70.2% Divorced=2.7%
No. of wives	1=69.7% 2=24.2% >2=5.9%
No. of children	Mean=4 Min.=1 Max.=8
Highest educational attainment	No schooling at all=0.4% Quranic=5.7% Primary Education=44.3% Junior Sec. Edu.=36.8% Senior Sec. Edu.=11.8% Post Sec. Edu.=0.9%

Source: Field survey

3.2 Start-Up Financing

Investment, small, medium or large scale, is often financed from initial capital raised through owners’ contribution or loans or both. In the case of the informal sector under study, the mean amount required to commence operation was computed at N31, 584 (US\$210.56). The mode of starting capital was estimated at N35, 000, which accounted for 26.14 percent of the starting capital of operators. The above shows that the required start-up capital is small. Analysis of the sources of finance shows that the combination of personal savings, and loans from friends and relations accounted for 42 percent while personal savings only accounted for 40 per cent. These are shown in Table 2. In spite of the low capital requirement of the tire repair business, the bulk of the operators could not raise the fund from a single source. Those who combined two sources of funding accounted for 50.3 percent. In terms of formality of sources, 92 percent of the operators sourced their funds from the informal financial market. Those who sourced fund from the formal financial market such as banks were just 8 percent. The low access to formal financial market was attributed to lack of collateral security, cumbersome nature of bank loan processes, high interest rate, lack of awareness of credit facilities, etc. More worrisome is the fact that the schemes

created by the government to address the bottlenecks associated with bank loans did not serve the segment of the informal sector they were designed for. The focus group discussion held with the operators revealed accusations of government agencies, which prefer to give the loans and grants to loyalists and thugs of politicians and not the real informal sector operators.

A comparative analysis of the findings of this study on sources of finance for start-up capital with other studies shows that the informal financial market is the core source of funding for the informal sector. These are evident in the works of Arosanyin, et al. (2000) where 92 percent of the 382 informal sector activities surveyed sourced their initial capital from the informal financial market and Arosanyin and Ipingbemi (2007), where 95% of the sampled 176 car wash service providers got their start-up financing from the informal financial market.

Table 2
Start-Up Capital (Requirement and Sources)*

Variables	Statistics
1) Start-up capital requirement	Mean=N 31,584 (US\$210.56) St. Dev.=N3,651.67K Mode= N 35,000 (US\$ 233.33)(26.4%) Min.=N 25,000; Max.= N38,000
2) Sources of finance for start-up capital**	PS=39.6 %;LFR=4.4%; LICS=3.1;LFS=1.3%; LGG=1.3%; PSLFR=41.8%; PSLICS=2.7%; PSLFS=5.3%; PSLGG=0.4%
3) Usage of sources (number)	Single source =49.7%; Combined (two) sources=50.3%
4) Usage of sources (formality)	Informal financial sector=91.6%; Formal financial sector=8.3%***

Notes:*The effect of rounding is acknowledged in some of the estimates. ** PS: Personal Savings; LFR –loans from friends and relations; LICS-loans from the informal credit sector (*ajoo*, co-operative societies etc); LFS-loans from the formal financial sector (banks); LGG-loans and grants from the government(NDE,NAPEP, etc.); PSLFR-personal savings and loans from friends and relations; PSLICS-personal savings and loans from the informal credit sector; PSLFS-personal savings and loans /grant from the formal sector; PSLGG- personal saving sand loans/grants from the government.*** Those who added personal savings to fund from the formal sector were added to this group.

Source: Field survey

3.3 Training, Apprenticeship and Family Labour

The informal sector has served as an avenue for skill acquisition over the years. The tire repair industry is not different. The study shows that 98 percent of the operators had informal training through the apprenticeship system before commencing their business. The mean year of apprenticeship was estimated at 2.67 years as shown in Table 3. The survey also reveals that 59 percent of the operators have apprentices under them learning tire repair informally. The numbers of apprentice range from 1-3 with those with one accounting for 34.1 percent. Those

with two apprentices constitute 58 percent while only 8 percent of the operators have three apprentices under training. The cumulative number of people trained under this scheme was computed at 275. The distribution is shown in Table 3. A striking feature of the apprenticeship training system is the absence of training on vital issues regarding tire safety beyond how to repair and apply air pressure. Even training in correct tire pressure is poor. The vital issues which the apprenticeship system failed to address include expiry date on tires; fake and substandard tires, maximum inflation pressure, maximum load and speed ratings, tire resistance, etc. The above short comings in the apprenticeship system are not unconnected to the low educational level of the operators. There were evidences of the use of family labour (29.4%) while the use of journey men was low (6.6%).

Table 3
Skill Acquisition and Family Labour

Variable	Statistics
Apprentice(informal) training before commencement of business	Apprentice training=98.2% No apprentice training=1.8%
Years of apprentice training	Mean=2.67 years 2years=33.6% 3years=66.4%
Apprentice access	Has apprentice=40.9% Do not have apprentice=59.1%
Training in any aspects of tire safety knowledge	No single evidence was found among those who had apprenticeship training.
Number of apprentice currently in training	1=34.1% 2=58% 3=8%
Cumulative No of people trained under the apprenticeship model=275	Distribution 1=37.7%; 2=23.7%; 3= 19.3%; 4=8.8%; 5=4.4%; 6=4.4%; 7= 0.9%; 10= 0.9%
Use of family labor (sons)* (no payment)	Usage=29.4%; Non usage = 70.6%
Use of Journeymen (payment is based on commission i.e. agreed % of daily net earning)	Usage=6.6%; Non usage=93.4%

Note: * Family labour is used after school hours and during holidays.

Source: Field survey

The above shows the potential of the informal sector to absorb the large urban labour force if properly encouraged. Most of the pupils who dropped out of primary or secondary school ultimately find themselves in the informal sector learning one vocation or the other. This sector provides a safe haven for school dropouts, judging from the educational status of the respondents in Table 1.

3.4 Operational Issues

The mean year of operation for the operators was computed at 5.2 years with a range between 2 and 16 years. The study reveals that 85 per cent of the operators work for six days a week while 15 per cent work throughout the week. It shows that most of the operators work for more than five days a week. The main services rendered are gauging and pumping of tube and repair of tire of bicycles, motor cycles, and vehicles. Charges are usually fixed by the union as shown in Table 4. The major tools used in the tire repair business are the air compressor and the tire repair kits including tire remover. No evidence of hiring of air compressor was recorded as commonly found in motorcycle passenger transport where motorcycles are hired for a fee; and car wash business where water pits are rented (Adesanya, 1998; Ojekunle, 1998; Arosanyin & Ipingbemi, 2007).

Table 4
Operational Issues

Variables	Statistics
Years in business	Mean= 5.2years; St. dev.=2.41; Min.=2; Max.= 16. Range (years): 2-6=80.4%; 7-11=16.7%; 12-16=2.8%.
Working days(per week)	6days=85%;7days=15%
Services rendered	Gauging and pumping of tubes; repair of tires; selling of tire and tube accessories
Service targets	Tires of bicycles, motorcycles, cars/buses, truck and school children football
Charges	Determined/fixed by the Union. Haggling is allowed. Gauge and pumping: bicycle-N10; motorcycle-N30; car/bus=N40; truck-N200. Repair (1 patch): bicycle-N20; motorcycle-N70; car/bus-N 100; Truck- N500.
Main instrument	Air compressor and tire repair toolkit.
Source of energy for the air compressor	Petrol (premium motor spirit)
Ownership of air compressor	Owner-user. No evidence of rentage

Source: Field survey

3.5 Employment and Income

The economic downturn of the 1980s and early 1990s in Nigeria resulted in most Nigerians not being able to afford new tires due to high cost. This gave rise to the

use of fairly-used imported tires called *tokunbo*, which are generally unsafe. It created a boom for the tire repair industry as the tires are prone to higher frequency of damages, requiring more repairs or patching than new ones. The tire repair industry provides employment to operators both on full time and part time basis. Table 5 shows that 42 percent were found to be on full time self-employment while 58 percent do the job on part-time basis. The fact that majority of the operators still have other jobs to supplement their earnings from tire repair is an indication of underemployment in the industry. The other jobs engaged in to supplement income from tire repair include commercial motorcycle operation (30.5%), Taxi/commercial bus driving (28.8%), trading (15.3%), farming (10.2%), etc.

Table 5
Employment and Earnings

Variables	Percentages
Employment status	Part time= 57.7%; full time= 42.3%
Other works done to supplement earning form tire repair	Okada riding=30.5%; Taxi/bus driving=28.8%; farming=10.2%; bricklaying=4.2%; trading=15.3%; GSM operation (call service)=2.5%; Government worker=2.5%; security guards at night=3.4%; others(shoe making, painting, cloth weaving etc.)=2.6%
Earnings per day (gross)	Mean=N 1,104.83k (US\$7.36) St. dev.=188.39 Min.=N600 (US\$4) Max.=N2000 (US\$13.33) Mode=N1000 (US\$6.67) (30.1%)

Source: Field survey

The average gross earning per day was computed at N1, 104 (US\$7.36). The mode earning was found at N1, 000 (US\$6.67) (30.1% of operators).

In order to test if there is any significant relationship between earnings and selected determinants, the Pearson Chi-Square test of independence shows that only three variables were related to earnings in the tire repair industry. These variables are age (Phi = 0.174; p-value of Phi = 0.008); apprentice access (Phi = 0.167; p-value of Phi = 0.014); and tire repair service index (TRS) (Phi = 0.315; p-value of Phi = 0.000). Variables such as education, marital status and family labour were found to be independent of earnings. The details of the result are shown in Table 6.

Table 6
Relationships Between Earnings and Selected Variables⁶

Variable	Chi-Square	df	Phi	p-value of Phi
Age	6.926	1	0.174	0.008**
Marital status	0.020	1	-0.009	0.889
Years in business	2.023	1	0.094	0.155
Educational level	3.365	5	0.121	0.644
Apprentice access	6.003	1	0.167	0.014*
Family labour	2.610	1	0.111	0.106
Tire repair service index	22.661	1	0.315	0.000**

*significant at p-value < 0.05

**significant at p-value < 0.01

The results show that the daily earning of tire repair operators is positively related to total repair jobs done (TRS index), age of the operator, which may indicate maturity, and apprentice access. The results show that the level of education is not a significant factor in determining how much can be earned in the tire repair business. This is not surprising because about 81 per cent of the operators had not more than nine years of schooling.

3.6 Challenges of Urban Informal Tire Repair Sub Sector

The major challenges inhibiting the growth and efficiency of the tire repair business, using weighted factor rank of 5x 3 dimensions, were found to be spare parts problem (34.11%); financial constraints (33.43%); lack of training and seminars (16.92%); incidence of multiple taxes (11.14%) and ; patch rubber scarcity (4.40%). These factors limit the ability of the sector to serve as a core employer of labour, improve its earnings capacity and service delivery.

4. IMPLICATIONS FOR POLICY

One of the implications of the above findings is that the apprenticeship programme of the tire repair business, which is the informal training required, has no component of road safety training on tires. It excludes the knowledge of tires in terms of tire ratings and load, expiry date, tire resistance, etc. The knowledge of the above is crucial for road safety, given that tire defect is one of the causes of road crashes in Nigeria. The Federal Road Safety Commission (FRSC) should partner with the Association of Tire Repairers or *vulcanizers* on these issues, and train them. Once they are trained, they will serve as tire safety advisors to motorists, whenever they are repairing their tires or replacing them. Secondly, they will also pass the knowledge to their apprentice, since there is no formal education required for the job. The lack of training and seminars was identified as one of the constraints inhibiting

the efficiency of the business. The FRSC should provide the training to cover the gap in the informal training system.

The lack of access to formal financial market by the operators especially funds from programmes specifically created for the informal sector such as National Directorate of Employment (NDE) and National Poverty Eradication Programme (NAPEP) calls for the overhauling of the activities of these agencies as 92% of the operators sourced their start-up capital from the informal financial market. The scope, funding, training and extension services of both NDE and NAPEP should be overhauled to serve the interest of genuine informal sector operators. This is important because of the employment and earnings potentials of the urban informal tire repair business.

The tire repair industry is characterized by under-employment going by the percentage of operators that are involved on part time basis (58%). Under employment is one of the features of the road transport and transport-supportive services in Nigeria. The operators must supplement income from the tire repair job with other jobs to survive. It shows that the industry is saturated, which can hamper vertical growth. The replication of repairers after 'informal graduation' leads to more tire repair spots rather than an increase in vertical growth. This splitting off to start a new outfit, competing for almost constant customers, explains the *amoebic* growth in the informal sector. The National Directorate of Employment (NDE) should promote the formation of partnerships among the operators to enhance access to formal credit facilities and government funded assistance, which will aid their modernization process and hence patronage.

The challenge of multiple taxes as identified by the operators must be addressed by the government. Multiple taxes have been known to cripple business, not only in the formal sector, but also on the informal sector. It is even worse for informal sector operators where the earning is low. There is the need to abolish multiple taxes to enhance the earning capacity of the operators. This is necessary to keep them on the job and not turn into social miscreants as the economy is already faced with high rate of unemployment and under-employment.

CONCLUSION

The informal sector is crucial in the drive to reduce unemployment in Nigeria. The continued reduction in the size of government and its effect in terms of employment contraction means that most Nigerians will join the informal sector. The government must therefore provide the necessary assistance and policy atmosphere

⁶The uncategorized earnings data were used to estimate the determinants of earnings using the Mincerian equation, but only TRS was found to be significant. This was therefore not reported.

for the self employed service providers to survive. It is important to reiterate that all the agencies set up by the government to offer both financial and technical support to the informal sector should be overhauled. The Federal Road Safety Commission (FRSC) should, as a matter of urgency, beam its awareness campaigns on tires and on the tire repair unions or associations by providing training on the various aspects of tire codes and ratings, necessary to ensure safety on Nigerian roads. This knowledge gap is grossly lacking in the apprenticeship training scheme.

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