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ARTICLES

Full Length Research Paper

Do marketing margins determine local leafy vegetables marketing in the Tamale Metropolis?

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In Northern Ghana, local leafy vegetables marketing has become an important trade in Ghana due to the increasing application of the health benefits from consuming local leafy vegetable. It was theorized that marketing margins (temporal arbitrage) may not encourage marketing agents to undertake and facilitate trade in the local leafy vegetable marketing chain. This hypothesis is investigated by using data collected from 80 traders randomly sampled from three markets in the Tamale Metropolis. The major marketing channels identified are from farmers to wholesalers through retailers to the final consumers. The sale of leafy vegetables directly from farmers to consumers and food vendors were also recorded. Despite incurring higher marketing cost, wholesalers had higher net returns (GH₵74 per 146 kg and GH₵73 per 10 kg per week in the dry and wet seasons respectively) than retailers (who had GH₵29 per 70 kg and GH₵9 per 55 kg per week respectively in the dry and wet seasons). Though the marketing of local leafy vegetables in the study area was inefficient, the benefit-cost ratio showed that, it is profitable. The authors recommend that, farmers and traders should form co-operatives to enable them bargain for prices, obtain loans and purchase storage facilities as groups. Also, fundamental problems of perishability among traders must be addressed.

Key words: Local leafy vegetables, wet season, dry season, marketing margins, net returns, marketing efficiency and Tamale Metropolis.

INTRODUCTION

The production and consumption of vegetables in Africa is an ancient activity. According to the Plant Resource and Tropical Africa (PROTA), about 397 out of the 6376 useful indigenous African plants that exist are vegetables (PROTA, 2004). Indigenous vegetables refer to plants whose leaves, fruits and/or roots are used as vegetables by rural and urban communities through custom, habit and tradition over a long time (Muhanji et al., 2011). Among these, those whose leaves are consumed as vegetables are called local leafy vegetables. Like other African countries, the production of local leafy vegetables is gradually becoming a common and commercial activity

in Ghana especially in the northern part.

Northern Ghana is endowed with many valuable indigenous vegetables including local leafy vegetables. Common local leafy vegetables cultivated in the Tamale Metropolis are ayoyo (Chochorus or jute mallow), *Corchorus olitorius*; bra (Roselle), *Hibisctus sabbariffa*; suule (beans leaves), *Phaseolus vulgaris*, alefu (amaranth), *Amaranthus cruencus, among others*. These vegetables can be exploited for commercial purposes since they grow on marginal and less fertile lands and are well adapted to the tropical African climate than the exotic ones (Abukutsa-Onyago, 2007). Production of these local leafy vegetables contributes positively to Ghana's economy as a whole and help resolve the problem of poverty, hunger and malnutrition (Mohammed, 2011). According to Ajewole and Folayan (2008), production of local leafy vegetables generates higher profit and employment to farmers and the nation as a whole as compared to the exotic vegetables. The production, marketing and consumption of these vegetables also have potential social, economic and health benefits and as well serve as a source of livelihood and a good source of essential nutrients leading to food security (Irungu et al., 2011).

In the northern part of Ghana, both domestic and wild leafy vegetables are produced and consumed. About 40% of the vegetable farmers in the Tamale Metropolis farm all year round (Zibrilla and Salifu, 2004). Aju and Popoola (2010) mentioned in a survey carried out in Tamale that, there are about 15 local species of such local leafy vegetables. These local leafy vegetables are used in soup, stews, porridges and relish which accompany carbohydrate (Smith and Eyzaguirre, 2007).

Local leafy vegetables mainly contribute to the rural economy of Northern Ghana especially through income generation particularly to women who engage either in the cultivation, collection or sales. These vegetables are sources of essential vitamins such as vitamin A, B, and C and minerals such as iron and calcium, certain essential amino acids such as lysine (Imungi, 2002) as well as supplementary protein and calories which can eliminate deficiencies among children, pregnant women and the poor (Habwe et al., 2009). They are also used in the management of diseases such as human immuno-deficiency virus infection and acquired immune deficiency syndrome (HIV/AIDS), diabetes, high blood pressure and other common ailments (Imungi, 2002).

Despite these importance and availability of local leafy (indigenous) vegetables, most people do not consume them as they should (Muhanji et al., 2011) as they prefer exotic vegetables. The reason may be that some people especially the high income earners consider these vegetables as food for the poor (Asian Vegetable Research and Development Centre, 2006). Also majority of these local vegetables are not consumed mainly by the youth of Africans due to their unfamiliar tastes or ignorance of how to prepare them (Orech et al., 2005;

Okeno et al, 2003; Community Technology Development Trust, 2000).

According to Faber et al. (2010), urbanization and inadequate scientific information on these vegetables have contributed to their low patronage of which knowledge associated with them has been labelled 'backward.' The distribution and marketing of indigenous vegetables especially the leafy ones is problematic due their easy perishability (Smith and Eyzaguirre, 2007). According to Aju et al. (2013), local leafy vegetables, like traditional food, have remained unrecognized and unappreciated and hence undervalued both by government and resource planners and policy makers. Generally, local leafy vegetable sub-sector is highly unorganized. Poor market access has resulted in seasonal glut with some farmers unable to sell their produce, hence leading to low high losses and spoilage of leafy vegetables among marketers. The poor road networks coupled with the scattered and small scale farms has led to increased marketing cost of the produce especially for wholesalers. These challenges affect the profit levels of marketers and make the sector not attractive to new entrants. This study seeks to determine the cost and return of marketing selected local leafy vegetables in the Tamale Metropolis by identifying marketing channels, determining marketing efficiencies and margins and the constraints to marketing local leafy vegetables.

METHODOLOGY

Sampling technique and data collection

The study was carried out in the Tamale Metropolis of Northern Ghana where four markets were purposively selected for the study. They are the Lamashegu market located in the southern part of the Metropolis, Aboabo market located in the western part of the Metropolis, the Central market located at the heart of the Metropolis and the Sakasaka market located along the main Bolgatanga road. All the markets are run on daily basis with a general market day locally referred to as 'Tamale Daah' which falls on every 6 days. These four markets were selected because they are the most popular in the Metropolis and have high proportion of marketers of local leafy vegetables.

Simple random sampling technique was used to select 80 respondents for the study of which 60 were marketers (wholesalers and retailers) and 20 were producers. The marketers were selected from the four markets in Tamale earlier mentioned (15 respondents from each market). Each market has both wholesalers and retailers. Dividing the markets into these categories was based on the marketers' trading characteristics. For instance, retailers sell local leafy vegetables directly to consumers in smaller quantities while suppliers in wholesale markets sell in bulk (wholesale basis) to retailers. Since wholesalers sell the produce to retailers who need more time to re-sell them, they normally come to the market very early in the morning to trade. They also trade within a very short period of time but retailers trade almost the whole day. Five wholesalers and ten retailers were interviewed from each of the four markets since retailers are more in number than wholesalers.

Primary data (made of both quantitative and qualitative data) generated from these respondents were used for the study and this

includes volume of local leafy vegetables marketed by producers, wholesalers and retailers in the wet and dry seasons, prices of vegetable, cost, constraints of marketing, and socio-economic characteristics of marketers in the study area. Qualitative data were obtained through detailed interviews and discussions with respondents while quantitative data were generated through the administration of a comprehensive semi-structured questionnaire to the sampled respondents. The data collection period was from March to April, 2014.

Data analysis

The quantitative and qualitative data obtained from respondents were presented using descriptive statistics such as averages, percentages and frequencies while marketing margin analysis was used to determine the profitability of local leafy vegetable production in the Tamale Metropolis. Marketing margin is the difference in price between the first seller and the final buyer (Adegeye and Dittoh, 1985). The methods used by Isibor and Ugwumba, (2014), Osondu et al., (2014), Bashir and Yakaka (2013), Maimouna and Jing (2013), Adeniji et al. (2012), Kassim (2012), Ojogho et al. (2012), Carambas (2005), Adegeye and Dittoh (1985) and Olukosi and Isitor (1990) in determining marketing margin in their various researches were adopted for this study. To estimate the marketing margins, these authors deducted the purchase prices from the selling prices. As a result, both the selling prices of wholesalers and retailers were crucial in calculating the market margins. Following Osondu et al. (2014), the purchase and selling prices were obtained by finding the average of the prices given by the respondents. The equation for estimating market margins is given as:

$$\text{Marketing margin (Gross)} = \text{Total revenue} - \text{Purchasing price of vegetables} \qquad 1$$

The total revenue was obtained by multiplying selling price by the quantity of vegetables sold. Marketing efficiency is the ratio of net marketing returns to total marketing costs either expressed as a fraction or percentage. Ozougwu (2002) indicated that marketing efficiency ratio ranges from zero to infinity. Marketing efficiency less than one (100%) shows inefficiency in marketing of local leafy vegetables. In this case, cost incurred in marketing is greater than the amount received from the marketing of the produce as returns. On the other hand, a marketing efficiency ratio that is greater than one (100%) indicates a very high efficiency in marketing the produce. With this scenario, net returns obtained from marketing of the produce are greater than the marketing cost incurred. This means that there is excess profit for marketers. In between these two points is a ratio of exactly one (that is, 100%) which demonstrates a break-even point (perfectly efficient market). This is because the marketing cost of marketing the produce is equal to the net returns obtained (Scarborough and Kydd, 1992).The marketing efficiency was computed by following Shepherd Futrel Model given as:

$$\text{Marketing efficiency} = \frac{\text{Net marketing returns}}{\text{Total marketing cost}} \qquad 2$$

Other studies such as Osondu et al. (2014) and Olukosi and Isitor (1990) estimated marketing efficiency by dividing output of marketing by input of marketing and multiplied by 100 where output of marketing was proxied as net returns from marketing and input of marketing was proxied as cost of marketing. Marketing cost comprise of all costs associated with moving a commodity (local leafy vegetable) from the point of purchase to the final consumer such as cost of transportation, storage, labour, among others

(Aidoo et al., 2012). Net returns is given in equation [3].

$$\text{Net returns} = \text{Total revenue} - \text{Total marketing cost} \qquad 3$$

From equation [4], the benefit cost ratio (BCR) is calculated by dividing the total revenue by total marketing cost. A BCR greater than one is an indication that, marketing of local leafy vegetables is profitable in the metropolis while a ratio of less than one indicates that marketing of the commodity is not profitable. Also, a BCR value of exactly one means indicates a break-even.

$$\text{Benefit cost ratio} = \frac{\text{Total revenue}}{\text{Total marketing cost}} \qquad 4$$

RESULTS AND DISCUSSIONS

Socio-demographic characteristics of the producers and marketers

As reported in Table 1, all the 60 marketers interviewed were females, while out of the 20 producers, 75% were males. This is in line with the finding of Mohammed (2011), who asserted that, more women are involved in vegetable marketing, because they perceive marketing as less stressful and easier than arable crop farming. Osondu et al. (2014) also found that the marketing of vegetables is dominated by females while Thompson and Agbugba (2013) found that agricultural marketing in Abia State, Nigeria is dominated by women. Table 1 also reveals that majority of the respondents (38%) fell within the age bracket 31 to 40 years, closely followed by those within 41 to 50 years (30%). About 89% of the respondents fell within the economically active population bracket (20 to 50 years). This result implies that the marketers of local leafy vegetables were young and energetic. As a result, if they are provided with the necessary supports and motivation, they can be more efficient and improve upon the marketing of local leafy vegetables in the study area. Comparably, Kainga, (2013) indicated that more than half (70%) of vegetable marketers were within the age of 21 to 40 years.

In terms of educational status of respondents, it is shown in Table 1 that about 66% of the respondents had no formal education whilst 34% had at least primary education. This indicates that, there is high illiteracy among marketers and producers of local leafy vegetables in the Tamale Metropolis. This has a disadvantage on the production and marketing of the produce in the study area since literacy positively influences the activities and profit level of these actors. According to the FAO (2006), high literacy among marketers is an added advantage which can lead to higher business acumen in terms of profit level. This result is in contrary with Kainga (2013), who found that about 62% of vegetable traders had secondary education.

More than half (73%) of the respondents have married. The respondents had a household size in the ranges of 5

Table 1. Socio-demographic characteristics of the producers and marketers.

Socio demographic characteristics	Frequency	Percentage (%)
Sex of marketers		
Males	0	0
Females	60	100
Sex of producers		
Males	15	75
Females	5	15
Age		
20 – 30	17	21
31 – 40	30	38
41 – 50	24	30
51 – 60	9	11
Educational level		
Educated	27	34
Non educated	53	66
Marital status		
Married	59	73
Single	11	14
Widowed	4	5
Divorced	6	8
Household size		
> 5	23	29
5 – 10	48	60
< 10	9	11
Marketers marketing experience (Years)		
> 5	3	5
5 – 10	13	21
11 – 15	6	10
16 – 20	17	28
< 20	21	35
Producers marketing experience (Years)		
> 5	10	50
5 – 10	5	25
11 – 15	2	10
16 – 20	0	0
< 20	3	15

Source: Field Data: May, 2014.

to 10 people which indicate a fairly large family size (Table 1). Household size plays an important role in family labour supply which is a major characteristic of small scale agriculture in Ghana. The large households could be a source of cheap and affordable labour for vegetable production and marketing.

With respect to experience in the production and marketing of local leafy vegetables, Table 1 indicates that a greater percentage (35%) of the traders have engaged in marketing for over 20 years whilst half (50%) of the
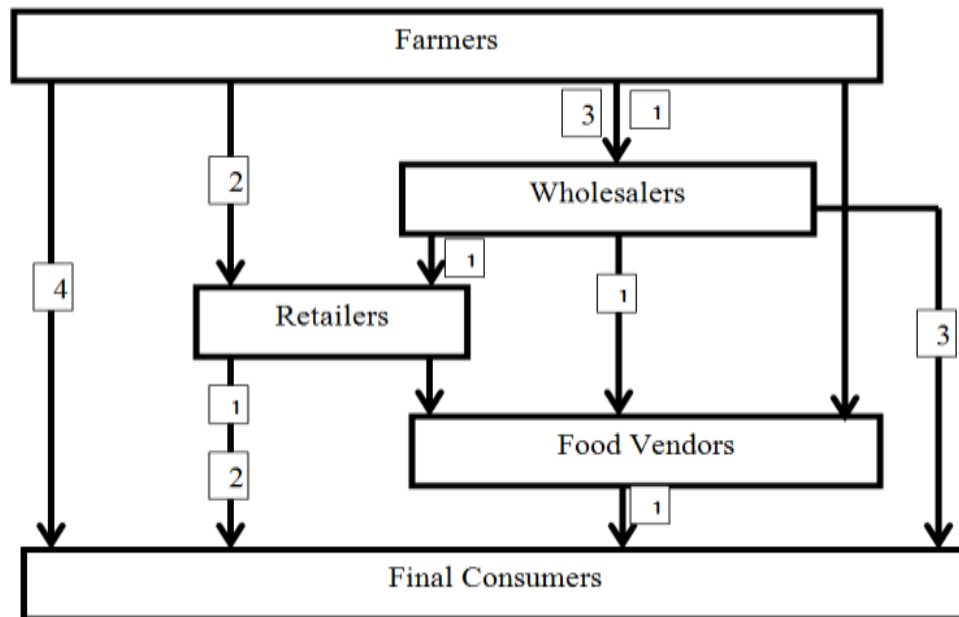
Figure 1. The marketing channel of local leafy vegetables in the study area (Source: Field data: May, 2014).

producers have been producing for less than 5 years. This implies that, majority of the respondents have gained enough experience in the business over the years which will contribute to the success and sustainability of their business. The years of marketing experience in the study area is higher compared to the findings of Onyemauwa (2010). Osondu and Ijioma (2014) pointed out that experience gained over years could increase efficiency and net returns more than level of education.

Economic and marketing characteristics of local leafy vegetable traders

About 98% of the traders had never received any form of training in vegetable handling and marketing. This suggests that, their level of knowledge in the marketing of the produce is limited. Trading of local leafy vegetables in the study area was found to be a major occupation to about 80% of the respondents. This implies that, unlike some traders who sell this produce during the peak of its harvest, these traders sell it both in the lean and major season of its production in the study area. This further indicates that, they trade in local leafy vegetables throughout the year and it serves as their major source of livelihood (income generation).

91% of the traders indicated that, they obtain capital through personal savings while the remaining is through banks and co-operatives. This has led to lower level of finance for the marketing and production of the produce in the study area which consequently affect the level of

production and quantity traders can purchase for sale. About 82% transport their local leafy vegetables to the market through motor vehicles. This is because; this form of transport is relatively cheaper and accessible in the study area. About 82% of the traders sell the produce on the local market by displaying them in baskets, rubber buckets or tying them into bunches while few (11%) sell the produce in households within the metropolis. The remaining 7% of the traders transport them to Southern Ghana for sale. The lower quantities conveyed to the southern part of the country for sale is due to lower demand for the produce in the area, high cost of transportation, poor road network, and high perishability of the produce.

Marketing channels for local leafy vegetables in the Tamale metropolis

Marketing channel for local leafy vegetables refers to the chain of participants involved in the movement of the produce from the producer to the final consumer. Four major marketing channels were identified in the study area for the distribution of the commodity (Figure 1). These channels of distribution entail series of players (individuals or firms) who undertake the activities involved in the flow of local leafy vegetables from the producer to the ultimate consumer or end user. These participants include the services of assemblers, transporters, wholesalers, retailers and others involved in moving the commodity to its final destination. The nature of the

channel (whether simple/short or complex/long) greatly affect the price of the commodity. The length and nature of the marketing channel depends on the type of commodity, traders, level of processing and storage as well as closeness of producers to consumers.

It can be observed from Figure 1 that the major participants in the channel were producers, wholesalers and retailers. In specific terms, the Figure 1 can be broken down into the following 4 marketing channels as indicated with identical numbers on the arrows:

1st channel: This channel has been depicted in the Figure 1 as 1. The farmers sell the local leafy vegetables to wholesalers who aggregate the produce from a scattered geographical area. These wholesalers sell to retailers in bulk who also sell in small quantities to the final consumers directly. The wholesalers also sell to food vendors who prepare food and sell to the final consumers.

2nd channel: It has been illustrated on the figure 1 with 2 and does not involve wholesalers. The farmers sell to retailers directly who then deliver to the final consumers. The retailers who buy vegetables directly from the farmers pay lower prices than those who buy from the wholesalers but may be subjected to high transportation cost since they have to convey the produce from the producing market to the consumer markets.

3rd channel: It has been represented with 3 and does not involve retailers. The wholesalers purchase local leafy vegetables from farmers and directly sell to the final consumers.

4th channel: This is depicted with 4 and involves neither wholesalers nor retailers. It is regarded as the shortest. Occasionally farmers sell the produce directly to the final consumers. Though producers may not prefer this channel since they sell at low prices, consumers may prefer it since they pay lower prices than to buy from wholesalers or retailers. Farmers at times sell to food vendors who prepare food and sell to final consumers.

Reasons cited by vegetable marketing participants for the choice of a channel

1. Almost all the farmers interviewed (about 95%) revealed that, they prefer to sell their produce at the farm gate to reduce the transportation cost.
2. The farmers in the study area also mainly sell to wholesalers since wholesalers purchase the produce in bulk.
3. Majority of the wholesalers interviewed (about 97%) revealed that, they buy from farm gates due to its availability and low prices. However, they incur huge cost in transporting to the market for sale.
4. Wholesalers also revealed that, they sell on the major

markets due to the high demand and high prices.
5. About 98% of the retailers interviewed in the study area also prefer to purchase local leafy vegetables at the market centre from wholesalers in order to reduce cost of transportation.
6. Retailers again prefer to sell at the market place due to ready market and high prices.

Determining marketing efficiencies and margins

The marketing efficiencies and margins have been presented in Tables 2, 3 and 4 which showed that, the marketing of local leafy vegetables in the metropolis is profitable.

Pricing of local leafy vegetables and quantities sold at the various marketing channels

About 90% of the respondents revealed that, farmers set their own prices for the leafy vegetables. The remaining 10% is shared among traders and consumers. However, cost of production, prevailing market price and buyers' ability to negotiate are the main factors farmers consider before arriving at an agreed price. The local leafy vegetables are sold using traditional measuring scales (bowl, basket, rubber buckets, or tied in bunches). The study specifically used rubber bucket as a measuring scale which was converted into kilograms (kg) in order to obtain standard measurement. On the average, one rubber bucket = 10 kg.

As reported in Table 2, on the average, farmers sell 34 kg of leafy vegetable weekly in the dry season and 44 kg in the wet season. Conversely, wholesalers sell 731 kg weekly in the dry season and 509 kg in the wet season while retailers also sell 427 and 328 kg respectively in the dry and wet seasons. This indicates that, farmers produce higher quantities of leafy vegetables in the wet season than in the dry season whereas both wholesalers and retailers rather sell lower quantities in wet season due to the excess supply over demand during the wet season. During the wet season, traders (wholesalers and retailers) are not able to buy and resell all the produce farmers harvest due to the large quantities produced. This glut leads to spoilage of large quantities of leafy vegetables in the wet season since the produce is highly perishable. The lower quantity produced during the dry season is due to the cultivation of the produce under irrigation system during this period of the year which is not available to most of the farmers in the study area. Additionally, the table reveals that, wholesalers sell larger quantities than retailers in either seasons since the former purchase in large quantities from a number of farmers from whom retailers buy.

According to the study, selling price of the produce is higher in the dry season than the wet season for all the

Table 2. Prices for local leafy vegetable at various stages of the value chain.

Narration	Average price in the marketing channel (GH₵)		
	Farm gate price	Wholesale price	Retail price
Dry season			
Average weight/quantity sold per day	3.43 buckets (34kg)	14.62 buckets (146.2 kg)	7.12 buckets (70kg)
Selling price per bucket (10kg)	GH₵5.53	GH₵7.37	GH₵9.04
Number of times per week	1	5 times	6 times
Average weight/quantity sold per week	1 X 3.43 = 3.43 buckets (34kg)	5X14.62=73.1 buckets (731kg)	6X7.12= 42.72 buckets (427.2kg)
Average revenue per week	3.43X5.53=*GH₵19*	7.37X73.1=*GH₵539*	9.04X42.72= *GH₵386*
Wet season			
Average weight/quantity sold per day	4.36 buckets (43.6kg)	10.17 buckets (101.7kg)	5.46 buckets (54.6kg)
Selling price per bucket (10kg)	GH₵4.23	GH₵6.94	GH₵8.74
Number of times per week	1	5 times	6 times
Average weight/quantity sold per week	1X4.36 = 4.36 buckets (43.6kg)	5X10.17=50.85 buckets (508.5kg)	6X5.46=32.76 buckets (327.6kg)
Average revenue per week	4.23X4.36= *GH₵18*	6.94X50.85= *GH₵353*	8.74X32.76 = *GH₵286*

Source: Field Data: May, 2014. Note: At the study US$ 1= ₵2.81.

three actors due to oversupply in the wet season. Also, retailers had the highest selling price followed by wholesalers, while producers had the lowest for both seasons. For example, on the average, farm gate price per 10 kg was GH₵6 and GH₵4 in the dry and wet seasons respectively while wholesale and retail prices were respectively GH₵7 and GH₵9 in both seasons. This is due to the higher marketing cost incurred by wholesalers and retailers as reported in Table 3.

On the average, retailers buy and resell more frequently (6 times) within a week than wholesalers (5 times). Farmers on the other hand, sell the produce once a week since the number of times a farmer can harvest leafy vegetables within a given period of time is limited. This has contributed to the low quantity sold weekly by the producers compared to the traders.

Comparing the prices and quantities sold weekly discussed earlier, it is obvious from Table 2 that, traders had far higher revenues than producers while wholesalers also had higher revenues than retailers in both seasons. Specifically, farmers' weekly revenue from the sale of local leafy vegetables were GH₵19 and GH₵18 respectively for dry and wet seasons, that of wholesalers were GH₵539 and GH₵353 respectively for dry and wet season while retailers had GH₵386 and GH₵286 respectively for wet and dry seasons. Furthermore, revenues were higher in the dry season than the wet season due to the higher selling prices in the dry season as well as the higher quantities sold by wholesalers and retailers in the dry season.

Marketing cost of local leafy vegetables per week

The marketing costs of local leafy vegetables

incurred by farmers, wholesalers and retailers are largely influenced by the quantities they sell per week as depicted in Table 2. From the field survey, the cost components of marketing local leafy vegetables include transportation, storage, tax, and spoilage. Transportation cost basically includes amount of money paid by marketers (wholesalers and retailers) to vehicle owners for conveying the produce from the purchase point to the selling points. Since the commodity is not heavy and is easy to load, transportation cost incorporates loading and offloading cost (money paid to labourers who load the commodity into vehicles and offload them at purchase and selling points respectively). Storage cost is the amount of money spent by the actors in keeping the produce safe and fresh mainly for higher prices. Tax in usually paid by wholesalers and retailers to government officials as they sell the produce on the market. Spoilage cost refers to the estimate

Table 3. Marketing cost of local leafy vegetables per week.

Variable	Average cost in the marketing channel (GH₵) per week		
	Farmers	**Wholesalers**	**Retailers**
Dry season			
Transportation	1.3×1 = 1.3	7.02×5 = 35.1	1.5×6 = 9
Storage	–	1×5 = 5	1×6 = 6
Tax	0.2×1 = 0.2	0.43×5 = 2.15	0.43×6 = 2.58
Spoilage	2.57×1 = 2.57	3.65×5 = 18.25	4.21×6 = 25.26
Total cost	*4.07*	*60.5*	*42.84*
Purchasing price	–	5.53×73.1= 404.24	7.37×42.72 = 314.85
Total marketing cost	4	60.5+404.24 = 465	42.84+314.85 = 358
Wet season			
Transportation	1.73×1 = 1.73	7.50×5 = 37.5	1.73×6 = 10.38
Storage	–	1.03×5 = 5.15	1.60×6 = 9.6
Tax	0.2×1 = 0.2	0.43×5 = 2.15	0.43×6 = 2.58
Spoilage	2.98×1 = 2.98	4.11×5 = 20.55	4.53×6 = 27.18
Total cost	4.91	65.35	49.74
Purchasing price	–	4.23×50.85 = 215.1	6.94×32.76 = 227.35
Total marketing cost	5	65.35+215.1 = 280	49.74+227.35 = 277

Source: Field data: May, 2014. Note: At the study US$ 1= ¢2.81.

cost incurred due to deterioration of the produce during handling. This consists of the quantity of produce that go to waste during loading, transportation, offloading, and low demand.

The field survey showed that, producers' average marketing cost per week were GH₵4 and GH₵5 respectively for dry and wet seasons, those of wholesalers were GH₵465 and GH₵280 for dry and wet seasons respectively while those of retailers were GH₵358 and GH₵277 respectively for dry and wet seasons. This shows that, wholesalers and retailers incurred far higher marketing cost than producers in both seasons. It can be observed from Table 3 that, both wholesalers and retailers incurred higher marketing cost in the dry season than the wet season due to the huge difference in the purchasing price between these two seasons. The difference in wholesale purchasing price between the two seasons is GH₵189 while that of retailers is GH₵88 all in favour of the dry season. The higher marketing cost in the dry season is also due to the larger quantities these traders sell in the dry season. Apart from these, differences in the other cost components between the two seasons were not much for both actors.

Additionally, wholesalers incurred higher marketing cost than retailers in both seasons due to wholesalers' high cost of transportation. Wholesalers aggregate the produce from different farms/farmers before transporting them to the market leading to higher wholesale cost. Retailers buy at this point for resell usually on the same or a nearby market/destination. While transportation forms the greatest proportion of wholesalers marketing cost, that of retailers was spoilage cost for both seasons. Table 3 further reveals that, both transportation and spoilage costs were higher in the wet season than the dry season. Higher transportation cost was as a result of the muddy feeder roads during the wet season leading to extra charges by vehicle owners and the long distance covered by majority of the wholesalers to purchase local leafy vegetables. These account for the high transportation cost incurred by wholesalers in conveying the produce from the production (purchase) point to the retail (selling) point. On the other hand, high spoilage cost was due to excess supply over demand during the wet season which leads to surpluses. This coupled with the poor storage facilities and high perishability of the commodity leads to huge spoilage of the excess produce. Comparably, (Osondu et al., 2014) found that transportation cost formed the highest proportion of marketing cost for both wholesalers and retailers of vegetables.

Both wholesalers and retailers incurred higher storage and spoilage costs in the wet season than the dry season also due to the excess supply over demand in the wet season. Farmers on the other hand, incurred very low transportation and spoilage costs in both seasons while they do not incur any storage cost at all in both seasons. The details of marketing cost have been reported in Table 3.

Marketing margins and returns of local leafy vegetables per week

These were computed from the prices and marketing cost

Table 4. Marketing margins and returns of local leafy vegetables per week (GH₵).

Narration	Wholesalers	Retailers
Dry season		
Gross marketing margin	539-404 = 135	386-315 = 71
Net returns	539-465 = *74*	386-358 = *28*
Marketing efficiency	74 / 465 = 0.16	29 / 358 = 0.08
Benefit Cost Ratio	539 / 465 = 1.16	386 / 358 = 1.08
Wet season		
Gross marketing margin	353-215 = 138	286-227 = 59
Net returns	353-280 = *73*	286-277 = *9*
Marketing efficiency	73 / 280 = 0.26	9 / 277 = 0.03
Benefit Cost Ratio	353 / 280 = 1.26	286 / 277 = 1.03

Source: Field data: May, 2014, Note: At the study US\$ 1= ₵2.81.

obtained in Tables 2 and 3. The gross marketing margin estimations in Table 4 reveal that while wholesalers had lower margins in the dry season (GH₵135) than the wet season (GH₵138), the reverse is true for retailers (who had GH₵71 and GH₵59 respectively in the dry and wet seasons). This may be due to the large difference in wholesale purchasing price between the two seasons (GH₵189) and the lower difference in retailer purchasing price (GH₵8) between the two seasons though they are all in favour of the dry season since estimation of marketing margins is based on purchasing price of the commodity. Also, in both seasons, wholesalers had higher gross marketing margins than retailers due to wholesalers' higher revenue per week. Comparably, Thompson and Agbugba, (2013) also reported that wholesalers of selected vegetables have high marketing margins.

Despite incurring higher marketing cost, wholesalers had higher net returns (GH₵74 and GH₵73 per week in the dry and wet seasons respectively) than retailers (who had GH₵28 and GH₵9 per week in the dry and wet seasons respectively). This is due to the higher quantities sold by wholesalers in both seasons. Also, both wholesalers and retailers had higher net returns in the dry season than the wet season. This is because; the market is always glutted with high quantities of the produce in the wet season leading to lower quantities sold weekly. Besides, prices are lower during the wet season.

From Table 3, wholesalers had marketing efficiency values of 0.16 and 0.26 in the dry and wet seasons respectively whilst retailers had 0.08 and 0.03 in the dry and wet seasons respectively. Since all these efficiency levels are less than 1, it can be deduced that, the marketing of local leafy vegetables in the study area is inefficient for both seasons (for both actors). This could be attributed to the higher marketing cost incurred by both traders relative to the net returns. Additionally, it can be observed from Table 4 that, while wholesalers were

more efficient in the wet season, retailers on the other hand, were more efficient in the dry season. Wholesalers were less efficient in the dry season due to the higher purchasing price that contributes to higher marketing cost (Table 3). Comparing efficiency levels for the two traders, it can be observed that, wholesalers had higher marketing efficiency values in both seasons than retailers. This may be due to the higher quantities of local leafy vegetables sold by wholesalers accounting for higher net returns despite incurring higher marketing cost than retailers. Also, it may be that wholesalers have a better approach for reduction in marketing cost relative to the quantities marketed.

Similarly, the benefit-cost ratio (BCR) computed in Table 4 indicates that, wholesalers had higher BCR in the wet season (1.26) than the dry season (1.16) whilst the reverse is true for retailers (who had 1.08 and 1.03 in the dry and wet seasons respectively). It can thus be deduced that, the marketing of local leafy vegetables in the study area is profitable since the BCRs obtained by both traders in both seasons are greater than 1. Similar to the marketing efficiency, it can be observed from Table 4 that, while wholesalers had higher BCR in the wet season, retailers in contrast, had higher BCR in the dry season. Also, comparing the BCRs for these two traders indicates that, wholesalers had higher ratios than retailers in both seasons. The findings are in agreement with Weinberger and Lumpkin (2007) who pointed out that, vegetable production has the potential to be highly profitable and generate income.

Constraints in marketing local leafy vegetables in the Tamale Metropolis

77% pointed out that, poor storage facilities is a major constraint that militate against the marketing of the produce in the study area (Table 5). Poor storage facilities

Table 5. Constraints in marketing local leafy vegetables.

Marketing constraint	Frequency	Percentage (%)
Poor storage	46	77
Inadequate finance	58	97
High perishability	42	70
Unstable prices	1	2
Low price	11	18
Scarcity during dry season	1	2
Bulky nature	2	3
Low demand	8	13

Source: Field data: May, 2014.

compel most of the traders to buy small quantities that can be sold within a day or few days. Since the produce is highly perishable, this leads to untimely spoiling (wilting) especially at the retailer end. Lack of shade to display the produce on the market for sale makes it wilt easily leading to lower prices and sales. In line with this, Chagomoka et al. (2013) indicated that, high perishability of indigenous vegetables is a principal challenge in the marketing and distribution of the produce.

Almost all the respondents (97%) mentioned inadequate finance as a major constraint to local leafy vegetable marketing. Inadequate finance prevents most of the producers from producing on large scale as well as traders from having enough finance to purchase the produce on large scale for sale. Comparing to the production and marketing cost, some of the respondents asserted that, the produce attract lower price leading to reduced returns. Others pointed out that, the produce has lower level of demand leading to lower sales. The findings agree with those of Lenné and Ward (2010) and Lyatuu et al. (2009) who identified a number of bottlenecks that impede the growth of the traditional vegetable sector in Eastern and Southern Africa. It is also in line with Onyemauwa (2010) who found limited supply, paucity of capital and spoilage as major problems.

CONCLUSION AND RECOMMENDATIONS

From the study findings, it can be concluded that, the major marketing channels identified were from farmers to wholesalers through retailers to the final consumers. The sale of local leafy vegetables directly from farmers to consumers and food vendors were also recorded. Though the marketing of local leafy vegetables in the study area was found to be inefficient, the benefit-cost ratio showed that, it was profitable. Though wholesalers had higher marketing cost, they recorded higher net returns than retailers in both seasons. Both traders had higher net returns in the dry season than the wet season. The major marketing constraints were found to be inadequate finance, poor storage facilities and high

perishability.

The study recommends that, non-governmental organisations (NGOs) and microfinance institutions should provide credit to farmers and traders. They should also be encouraged to form co-operatives to enable them bargain for prices, obtain loans and purchase storage facilities as a group. Putting in place good storage facilities will help maintain the availability of local leafy vegetables and enhance price stability in the study area. Extension officers are also required to educate farmers on improved storage practices to increase shelf life of produce.

RESEARCH LIMITATION

The main research limitation was the difficulty in getting standard units of measurement for the sale of local leafy vegetables since they are usually displayed on tables, kept in baskets for aeration or at times kept in a rubber or pan filled with water to keep them fresh and attractive. The actual quantity tied or loaded in sacks are very different among traders making it difficult to obtain consistent/uniform scale of measurement for the produce.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

Effect of capital size on the profitability of listed insurance firms in Nigeria

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Financial reforms have been an ongoing process, not only in Nigeria but the world over. Prior to the recapitalization of the insurance sector in 2005, the industry was characterized by the inadequate capital base, the dearth of appropriate human capital and weak performance. The objective of this paper is to examine the effect of capital size on the profitability of insurance companies in Nigeria. The researcher used correlational research design to carry out the study. Secondary data was sourced from Nigerian Stock Exchange Fact Book 2012, and we used Panel regression model (random effect) to estimate the impact of capital size on the profitability of insurance companies in Nigeria. The results provided evidence to believe that capital size and gross premium have a positive but insignificant effect on the profitability of insurance businesses in Nigeria. Hence regulators should not put much emphasis on the issue of recapitalization of insurance companies, but on other policies that will increase the market penetration ability of the insurance companies as indicated by the gross premium earned.

Key words: Recapitalization, capital size, and profitability.

INTRODUCTİON

The financial sector is the nucleus of the productive activity of every economy. It consists of a notable network of institutions ranging from banks, insurance companies, specialized banks, capital market, to finance companies. The Nigeria financial sector has been driven by structural and institutional reforms (Ogujiuba and Obiechina, 2011). It has intensified in recent times because of the impact of globalization, which has been spurred by incessant integration of the world economies (Adeeko, 2013). The 2005 reform of the Nigerian insurance sector was carried out to increase shareholder value, ensure greater efficiency and provide the insurance companies with the requisite capacity to underwrite high-risk (Epetimehin, 2013). Some analysts believed that National Insurance Commission (NAICOM) had not been efficient in designing the 2005 reform package. It succeeded in following the banking sector reforms without a clear articulation of the primary objectives insurance business (Ujunwa and Modebe, 2011).

Omanufeme (2014) reported that the Nigerian insurance industry has recently experienced an average growth of 40% from about 3% in the last three years. He affirmed

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that the growth was based on the reforms introduced by the National Insurance Commission (NAICOM). He reported that the industry had the capacity to grow between 200 and 400% if compulsory insurance is strictly complied.

Nigeria with a population of about 170 million has the biggest insurance market in Africa, but industry weaknesses have not allowed the country to reap the tremendous benefits provided by insurance business (African Business, 2007). Insurance companies perform significant economic roles in the development of every nation. The insurance sector stabilizes the economy through efficient diversification of risks (PanAfrican Capital, 2013). The total insurance gross premium for Nigeria amounted to about US1.8 billion as at 2012. Even though this makes Nigeria the third largest insurance market in Africa, the penetration ratio is small given the size of the country's population. The head of the National Insurance Commission lamented that only 2.25 million Nigerians have access to one form of insurance policy or the other (KPMG, 2014). Chukwulozie (2008) indicated that inadequate capital base, dearth of appropriate human capital, poor returns on investment; poor corporate governance structures; and the absence of risk management framework are among the major problems that have prevented the Nigerian insurance sector to impact positively on the economy. Government, therefore, believed that it is imperative to reposition the insurance industry to make it a major player in the world insurance markets. Zurich (2005) reported that the Nigerian insurance industry represents only 0.02% of the worldwide stock markets. The report put Nigeria at 62 position out of the 88 countries in terms of annual premium volumes; 69th on life funds and 86th on insurance density.

Prior to the 2005 reforms, the Nigerian financial sector was weak and fragmented that usually financed short-term projects are rather contributing to the real sector of the economy (Ogujiuba and Obiechina, 2011). To strengthen the financial system, the Central Bank of Nigeria (CBN) increased the capital base of commercial banks from about N2 billion to N25 billion (CBN, 2004). Following the successful recapitalisation of the banking sector, the insurance industry as a component of the financial system also introduced its aspect of reforms. NAICOM proposed recapitalization as an economic strategy that offer numerous benefits relating to higher liquidity, risk minimization and enhanced growth opportunities among others (Brito, 2006). To create a better enabling environment, NAICOM introduced Market Reconstruction and
Development Initiative (MRDI) in 2012. This policy initiative has led to an annual growth of the gross premium income (GPI) by about 25% in the last five years hitting N300 billion in 2012 (Abiodun, 2013). The total premium income was ₦201 Billion Naira in 2010, representing 0.7% of GDP (IMF and World Bank, 2013).

The industry presents a lot of growth opportunities due to the low insurance penetration of 0.37% as at the first quarter of 2013 (CardinalStone, 2014). Some of the insurance companies adopted integration strategies to enable them increase their resource, expand their market share and increase profitability (Adeyele and Maiturare, 2012). The asset of the Nigerian insurance sector is less than 2% of GDP.

Several studies have been conducted in the areas of consolidation, merger and acquisitions within the Nigerian financial industry (Ewedemi and Lee, 2008; Ibiwoye and Adeleke, 2008). While some believed that increasing the firm's capital base may not increase firm's performance (Mohan, 2005). Others believed that increase in the capital base will enhance the performance of a firm (Adegbaju and Olokoyo, 2008). Also, very few studies have empirically examined the effect of capital size on the performance of Nigerian insurance companies (Ibrahim and Abubakar, 2011).

Profitability refers to the state where a firm gains financial profit. As such, profitability in this study refers to profit after tax. It is a performance ratio that is calculated by dividing net income after taxes by net sales. Aransiola (2013) used the same measure to gauge the effect of consolidation on the profitability of banks in Nigeria. Wood and Sangster (2008) affirmed that profitability is affected, by the way, the assets of a business venture are used. The primary objective of this study is to find out the extent to which share capital size affects the profitability of quoted insurance companies in Nigeria? The rest of the paper proceeds as follows. Section 2 reviews previous studies related to the topics. Section 3 explains the methodology. Section 4 discusses the findings while section 5 concludes the paper.

LITERATURE REVIEW

Insurance as any other discipline defies any single or universally accepted definitions. Rejda and McNamara (2014) have explained that American Risk and Insurance Association viewed insurance as the pooling of fortuitous losses by insurers, who agree to indemnify the insured in the event of contingencies. Although this definition may not be acceptable to all insurance scholars, it has captured all the major arrangements of an insurance plan. Mishra and Mishra (2007) noted that there are several kinds of risk which people may wish to insure. However, for that to be possible, certain features must be in place. For instance, before any person can be allowed to take an insurance policy for any property, that person must evidently have an insurable interest in the subject-matter of insurance. Therefore, insurance is a co-operative device that spread the losses of the insured over those that have agreed to protect themselves against that risk (Mishra and Mishra, 2007). Thus, for insurance companies to actively perform their functions,

they require large capital base.

Nnabugwu (2011) reported that the recapitalization of insurance sector is a strong policy drive that will increase not only the profitability level of the industry but also its stability and will improve the capacity of insurers to underwrite "significant risks". The driving factor for this study is based on the idea that reforms are necessary for repositioning financial sector for it to achieve sound economic development.One of the theories advanced to explain financial sector reform is based on the principle of necessity. The advocate of theory believed that financial institutions are the hub of every economy and determine to some extent the prospect of the entire economic system (Bernard and Michael, 2014). As such they argued that it is necessary to regulate the activities of the financial institutions. On the other hand, the advocate invisible hands argued for self-regulation through the forces of demand and supply (Okpara, 2011).

Recapitalization is an important component of the economic policy reform package. It is a process where firms increase their capital stock by issuing shares to existing shareholders or new shareholders or a combination of both. In whatever way one sees it, recapitalization is one of the government's policy reforms that enables organizations to increase its capital stock substantially to sustain adequate economic growth and development. Recapitalization requirements may be accomplished by raising additional funds or through mergers and acquisition (Adegbaju and Olokoyo, 2008). Aransiola (2013) examined the effect of consolidation on the profitability of commercial banks in Nigeria between the year 2000 and 2010. The study used a t-test to find out whether a significant difference exists between the profitability ratios before and after consolidation.

The study revealed that bank consolidation has improved the efficiency of the banks and it showed that bank consolidation program is of great success in the Nigerian context. Though the study reported that banks have recorded significant improvement after the consolidation, the study suffers some methodological deficiencies. The study did not explicitly specify the profitability measures adopted for the study though he mentioned several measures of profitability. As such efficient recapitalization that is cost-effective could be of beneficial to the shareholder (Philippon and Schnabl, 2013). Also, Adegbaju and Olokoyo (2008) investigated the impact of the recapitalization on the performance of Nigerian banks using secondary data obtained from NDIC annual reports. The study found significant increase on the mean values of the three performance indicators after the recapitalization.

On the other hand, Mohan (2005) asserted that it would be difficult to argue that greater size has any serious effect on bank performances in India. At the very least, such argument needs to be backed by rigorous research so as to explain what constitute the optimal size of assets in the Indian context. In the same trend, Ibrahim et al.

(2012) in their study reported an insignificant decrease in return on assets of banks after recapitalization, hence concluded that recapitaliza-tion would subject banks (especially the small banks) in Nigeria into severe liquidity crisis. Recapitalization should be undertaken with dexterity because the major obstacle facing Nigerian banks is not peculiar with a shortage of capital alone. Similarly, Ibrahim and Abubakar (2011) have assessed the pre and post effect of the recapitalization on the profitability of quoted insurance companies in Nigeria. The study though descriptive in nature revealed that recapitalization has not impacted significantly on the profitability of quoted insurance businesses in Nigeria. It is obvious that the methodology adopted for the study is not robust hence there is a need to adopt a more robust analytical technique to gauge the effect of this significant policy reform package. Also, Nicolo et al. reported in their study that consolidation may not necessarily lead to a resilient banking industry. As there are several other factors that improve bank performances.

METHODOLOGY

The study adopted a correlational research design to examine the effect of share capital size on the performance of insurance companies in Nigeria. Secondary data was sourced from the Nigerian Stock Exchange Fact Book, 2012 for the period 2006-2012. A proportional sample size formula developed by Ralph et al. (2002) was used to drive the sample size. The sample of the study was drawn using Ralph et al. (2002)'s sample size formula:

$$n = \frac{\log \beta}{\log p}$$

n = sample size
β = Level of precision (0.01)
p = Proportion of existing insurance companies to the number of insurance prior to recapitalization.

To achieve the highest level of possible precision a 99% confidence level is chosen, which gives a precision level of 0.01 (i.e. β = 0.01). Data from the Nigerian Stock Exchange Fact Book, 2006 indicated that 71 listed insurance firms were in existence prior to the recapitalization exercise of 2005. The number of listed insurance companies operating after the recapitalization exercise stood at 36 as at December, 2012. To compute the proportion, the population of the study was dichotomized into two. Firstly, we use the number of listed firms (71 firms) in existence prior to the introduction of recapitalization policy. The second class comprised the number of insurance companies (36) in existence after the introduction of the recapitalisation exercise as at 31st December 2012. The proportion of existing insurance companies relative to the number of insurance firms that were in existence before 2005 recapitalization exercise was computed using the formula below:

$P = \frac{36}{71}$
$P = 0.5070$

$n = \frac{Log\ 0.01}{Log\ 0.5070}$

$n = \frac{-2}{-0.2949} = 6.78$

Table 1. Descriptive Statistics.

Variables	Mean N000million	Median N000million	Maximum N000million	Minimum N000million	Skewness	Kurtosis	Jarque Bera	Probability
PAT	351057	273979	1343879	-438492	0.7267	2.9715	4.3140	0.1157
CAPSZE	545500	5234268	14024734	354827	0.4856	2.6819	2.1321	0.3444
GPE	345580	2252740	14952247	244808	1.6295	5.1871	4.314	0.1157

Table 2. Regression results.

Variables	Coefficients and t-values
Intercept	26663.06
Capital size	0.0274* (1.5309)
Gross Premium Earned	0.0718*** (3.9205)
Standard error	249183
R2	48.28%
Adj. R2	46.03%
F-Stat	21.4796***
Durbin-Watson	1.5235

Source: Eviews 8.0 Regression Results.-statistics are reported in parentheses and the symbols *** indicate statistical significance at the 1% level while * indicates statistical significance at 10%.

$n \approx 7$

The regression model

A panel Random Effect Regression Model was used to estimate the variables as shown below:

$$\text{PAT}_{it} = \beta_1\text{CAPSZE}_{it} + \beta_2\text{GPE} + (\alpha_i + \mu_{it})$$
$$\text{......................}\qquad (Eqn.1)$$

Where:
PAT = Profit after tax
CAPSZE = Capital Size
GP = Gross Premium Earned (Control variable)
β = beta coefficient
α_i = intercept
μ_{it} = Statistical error term

Hausman test

To determine the best model that fit the data, a Hausman test was used. Below is the Hausman hypothesis:

H_O: Random Effects Model Appropriate
H_1 : Fixed Effects Model is Appropriate

The decision criteria are that if the p-value < 0.05, we reject the H_O, otherwise we accept the H_1.
   From the Hausman Test output, the probability value for the cross section random effects model is 53% that is greater than

0.05%. As such we accept the H_0 (null) that random effect model is appropriate. Hence we estimated a random effect model.

RESULTS AND DISCUSSION

From Table 1, the average values of the profit- after- tax (PAT) and that of the capital size are 351057 and 5455003 respectively. Also, the variables in the table exhibit some level of variability as the mean are larger than the median. The minimum value of a profit-after-tax is -438492 within the period while that of capital size is 354827. In contrast, the maximum value for PAT within the period under investigation is 1343879 while the share capital is 14024734. This small profitability figure may be attributed to inability of the industry to market innovative products that will be appealing to low-income owners who constitute the majority of the population. The annual growth of premium revenue for the entire industry was about N300 billion for the last five years. More so, the above profit figure is only for the seven listed firms that made up the study sample (Table 2).

The equation shows that the independent variables have a positive but insignificant effect on the profitability of insurance companies in Nigeria. A one unit increase in capital size and gross premium earned increases the firm profit by 2.7 and 7.1% respectively. The Durbin-Watson statistic shows no serial correlation as the value is within the range of 1.5 to 2.5. The results provide evidence to believe that capital size and the gross premium earned positive but insignificant effect on the profitability of insurance companies in Nigeria. This result is consistent with Aransiola (2013); Adegbaju and Olokoyo (2008) who affirmed that recapitalization or greater capital size have a significant effect on the performance of the recapitalized institutions. Also, the results indicated that gross premium income has a significant impact on the profitability of insurance companies. The Gross Premium Income (GPI) has grown at an annual average of 25% in the last five years (2008 – 2012), hitting N300 billion in 2012 (Abiodun, 2013). The full results are shown in Appendix I. In terms of the fitness of the model, the regression equation indicates an adjusted coefficient of determination of 46.03%. The result shows that 46% of the variations of *PAT* (profit after tax) are explained by the combined influence of the two explanatory variables used in the model. Another factor in favour of the fitness of the model is the F-Statistics value of 21.47595 shown

by the model is found to be significant at 1%.

CONCLUSION AND RECOMMENDATION

An insurance company is a financial institution whose primary function is to provide compensation for different kinds of risks affecting both the public and private sector of the economy. It plays a vital role in the financial markets as well as for the economic development of a nation by providing cover and assistance to a variety of firms and government agencies. The insurance industry is still developing in Nigeria. It is, therefore, apparent that this important area, if adequately monitored and the current effort sustained, can turn around the Nigerian economy. The study, therefore, conclude that capital base alone may not create a sound insurance industry, the insurance sector can deepen the market and increase gross premium earned which in turn will lead to higher profitability. Therefore, the regulators should not put much emphasis on the capital base of insurance companies as it may not have the capacity to increase the profitability of insurance firms in Nigeria. However, emphasis should be placed on other performance indicators. The government should continue to encourage insurance companies to ensure efficiency in underwriting to deepen market penetration. The quoted insurance companies should adopt strategies that will enhance insurance patronage, hence high profitability.

Conflict of Interests

The author has not declared any conflict of interests.

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