Original Research Article

ANALYSIS OF FOREST BASED MORTAR AND PESTLE MARKETING IN OYO STATE, NIGERIA

Abstract

The emerging high level technology is a threat to small scale retail livelihood business in Nigeria. Wood carving business particularly mortar and pestle production and marketing is an important component of local household economy and culture of many tribes especially in southwest Nigeria. This study analyzed marketing of mortar and pestle in Oyo state, Nigeria. Primary data were collected through administration of questionnaire using snowballing techniques to select 37 traders who involved in marketing of mortar and pestle in five major markets in Ibadan metropolis. Data were analysed using descriptive statistics to describe socio-demographic characteristic of the respondents. Marketing margin analysis was used to determine the profitability in mortar and pestle among the traders. The results revealed that majority of the respondents in mortar and pestle marketing were male (90.3) with more than three-quarter having primary education. The respondents are in their active and middle age with average age of 38 years. The estimated monthly return on the marketing of mortar and pestle was ₦19,000. that *Vitellaria paradoxa* was ranked first among the tree species used in mortar production while While *Irvingia gabonensis* is was ranked last. The average price of *Vitellaria paradoxa* was the while highest while *Pterocarpus soyauxii* was the cheapest for all the types of mortar and pestle in terms of size. Majority (90.32%) of the respondents prefer to consider the species during marketing of mortar and pestle. The study therefore recommends effort should be made towards the establishment of tree plantation and sustainable forest management to ensure continuous availability of wood species for mortar and pestle business enterprise

Keywords: Motar, Pestle, Marketing, Snowballing

INTRODUCTION

Forest products are important for socio economic development of any nation and serve as a major source of income in many developing countries. These are materials derived from forestry for direct consumption or commercial use, such as lumber, paper, or forage for livestock. Wood by far is the dominant product of forests which is used for many purposes, such as wood fuel (e.g. in form of firewood or charcoal) or the finished structural materials used for the construction of buildings, or as a raw material in the form of wood pulp that is used in the production of paper (Belcher, 2005; Fuwape, 2000). Based on usage, forest products can be divided into several categories: Timber, Non timber and minor minerals (Oriabure *et al*., 2017). Many household implements including furniture, tools, cooking equipment and utensils are produced from forest materials. Mortar and pestle is one of such products.

Mortar is a cylindrical bowl shaped wood with a hollowed-outer interior, cut out of the stem used for pounding and grinding of food substances such as yam, cocoyam, cassava, fresh herbs, dried herbs, spices, etc. while a pestle is a club–shaped 2–3 m long tree stem with 3–6 cms diameter used together with a mortar to crush, mash or grind materials.(Njoh *et al*, 2014). Mortar and pestle are made from tree stumps and logging waste after harvesting of timber from natural forests, farms and the surrounding villages(Larinde and Aiyeloja 2015). They are made in different shapes and sizes. Mortar and pestle making are part of wood carving that serve as an important economic activity, that provides full and part time employment for both local and urban dwellers in Nigeria (Aiyeloja, 2007; Kozak, 2007). And also, it helps in locking-up of carbon thereby mitigating climate change. Some of the variety of tree species use for making wooden mortar and pestle are *Nauclea diderrichii, Melicia excelsa, Terminalia ivorensis*

Vitellaria paradoxa, Afzelia Africana, Pterocarpus soyauxii and *Irvingia spp*(Ndah 2013). In most African countries mortar and pestle have been considered as a major wooden cookware both in rural and urban communities; for instance in Cameroon, it is used in the pounding of millets and maize, dried cassava to cassava flour, *Gnetum africanum*, *Colocosia sp* "Achu" and pounding cassava "water fufu" (Njoh *et al*, 2014), in Ghana carbohydrate-rich foods such as maize, cassava, yams, cocoyam and plantains are processed for considerable duration via repeated kneading and/or pounding with Mortar and Pestle (Mensah et al, 2012) while in Nigeria it is used to prepare rich cultural food such as pounded yam. Despite the invention of modern machine meant to replace mortar and pestle a traditional kitchen utensil, most consumers of pounded yam still prefer the one made from wooden mortar and pestle. This shows that wood carving is a potential business to local artisans in Nigeria. Thus, efforts must be made to keep these people in business for their socio economic sustenance and stability. This study therefore evaluates marketing of mortar and pestle in the study area. Specifically, it described the socio demographic of mortar and pestle marketers, identify the wood species used in mortar and pestle production, estimate the cost and return in mortar and pestle marketing and determine the marketers preference for mortar and pestle in terms of species, size and price.

METHODOLOGY

Study Area-. The study was conducted in selected markets in Ibadan, Oyo State, Nigeria. It is located in southwestern Nigeria and lies on longitude 7.3775° N and latitude 3.9470° E. There are eleven local governments in Ibadan metropolitan area consisting of five urban local governments in the city and six semi urban local governments in the less city. The urban local government comprises of Ibadan North, Ibadan North East, Ibadan North West, Ibadan South

West, Ibadan South East. The Ibadan semi urban comprises of Akinyele, Egbeda, Ido , Lagelu , Ona Ara, and Oluyole. The city's total area is 1,190 sq mi (3,080 km^2).

DATA COLLECTION

Sampling and Data Collection Procedure-. Data used for this study were mainly primary and were obtained from mortar and pestle marketers in the study area. Purposive sampling technique was used to select the respondents from Five Local Government Areas (LGAs) in Ibadan metropolis based on the presence of mortar and pestle marketers. Snow balling technique was used to select a total of thirty-one (31) marketers across five major markets in the study area. These are Bodija, Shasha, Oja-Oba, Oje and Orita-Merin markets

DATA ANALYSIS

Analytical Techniques-. The following analytical methods were used

a. Descriptive statistics such as frequency count and percentages
b. Marketing margin analysis: This involves the calculation of costs and returns to determine the profitability of mortar and pestle marketing. The formula is specified as follows.

GI= TR-TVC

Where: GI = Gross income; TR = Total Revenue; and TVC = Total Variable Cost

RESULTS AND DISCUSSIONS

Socioeconomic and Demographic Characteristics of the Respondents- The results in Table 1 showed the demographic characteristics of the respondents. It was revealed that most of the respondents 90.3% were male while 9.7% were female. This shows that males are more involved in the business, this may be due to the fact that it is energy-demanding task requiring physical strength. This support the assertion that wood carving and its sale requires much energy and it is associated with physical stress which most women cannot cope with (Adedokun, 2018). The age of the respondents showed that 64.5% were between the ages of 31-40 years while 3.2% were 50 years and above this implies that most of the respondents were in their active age. It is a good

indication for entrepreneurship development in wood carving and marketing as majority of the people involved are youths. It was further noted that majority of the respondents 87% were married. The implication of marital status in small scale business is associated with availability of family labor. Larinde and Aiyeloja (2015) in their study on contribution of mortar and pestle production to rural livelihood reported that mortar and pestle production and marketing provides livelihood benefits that can secure a living for households. Majority of the respondents were literate as only 3.2% had no formal education. Educational level is very important as small scale livelihood business because literates will be willing to diversify the income sources to cope with socioeconomic need of household members.

TABLE 1 Socio Demographic Characteristics of the Respondents

Variables	Frequency	Percentage
Gender		
Male	28	90.3
Female	3	9.7
Age		
21-30	2	6.5
31-40	20	64.5
41-50	8	25.8
>50	1	3.2
Marital status		
Single	2	6.5
Married	27	87.0
Divorced	2	6.5
Educational level		
No formal education	1	3.2
Primary education	27	87.1
Secondary education	3	9.7
Mode of business operations		
Mortar and pestle selling only	28	90.3
Mortar/pestle selling and farming	2	6.5
Mortal/pestle production and selling	1	3.2
Total	**37**	**100**

Species used in Production of Mortar and Pestle in the study area

The results listed in Table 2 show that the tree species used in the production of mortar and pestle in the study area. It was revealed that *Vitellaria paradoxa* was ranked first among the tree species used in mortar production. This was followed by *Milicia excelsa* which *was* ranked second. While *Terminalia ivorensis* and *Daniella ollivera* was ranked third and fourth among the species used in mortar production. While *Irvingia gabonensis* is less important among the tree species used in mortar production as it was ranked last. The use of shea tree is because it is a utility timber that is hard, strong heavy, durable and resilient. It is also termite resistance. (Orwa et al. 2009). The Wood used in the production of mortar are usually hard wood species that requires extremely hard and durable capability of absorbing the applied force without developing cracks due to the force of impact of the pestle. (Mensah et al. 2012). It also must have low sensitivity to moisture be fungi and insect resistant. The value chains of mortar and pestle are characterized by a limited number of stages between production, trade, and end use. (Larinde and Aiyeloja, 2015).

Table 2 Tree Species used in Production of Mortar and Pestle in the study area

S/N	Species	Family	Trade name	Frequency	Percentage	Rank
1	*Vitellaria paradoxa*	Sapotaceae	Shea butter	31	100.00	1
2	*Milicia excelsa*	Moraceae	Iroko	25	80.65	2
3	*Irvingia gabonensis*	Irvingiaceae	Bush mango	7	22.58	6
4	*Pterocarpus soyauxii*	Fabaceae	Camwood	10	32.26	5
5	*Terminalia ivorensis*	Combretaceae	Afara	21	67.74	3
6	*Daniella ollivera*	Caepinaceae	Iya	11	35.48	4

Cost and returns in mortar and pestle marketing-. The average gross income as shown in Table 3 revealed that monthly income from the sales of mortar and pestle is ₦19000 showing

that that the business is profitable. The estimated profit obtained in this study is above the current minimum wage. Essentially, it is important to develop this local enterprise to enhance household economy. The implication of this also means that wood curving business is of one the potential livelihood option. (Babalola, 2009). The income from the marketing is of great importance and support for those engaged in the business. Many forest based businesses provide substantial employment opportunity and supplementary income. (FAO, 2009).

TABLE 3 Costs and returns in mortar and pestle marketing

Items	**Value (₦)**
Gross Revenue	105,000
Average Variable Cost	86,000
Gross Income	19,000

Prices of mortar and pestle by the species and sizes-.

Table 4 shows that average prices of Mortar and Pestle produced form *Vitellaria paradoxa* were ₦5000-₦6500, ₦2500-4500 and 1500-2500 for big, medium and small sizes respectively. The price obtained for *Milicia excels* were ₦4000-5500, ₦2000-4000, ₦1500-2500 for big, medium and small sizes respectively. The price of big, medium and small of the mortar and pestle produced from *Pterocarpus soyauxii* 3100-4500, 2200-3000, and 1500-2000 respectively. This result implied that mortar and pestle made from *Vitellaria paradoxa* is the most expensive which could be due to durability, numerous socio economic and ecological values. (Ismaïla and Abibou, 2002). The mortar and pestle made from *Pterocarpus soyauxii* was the cheapest as stated by the traders.

TABLE 4 Prices of Mortar and pestle based on species and sizes

Species	Sizes	Prices(₦)
Vitellaria paradoxa	Big (>25cm)	5000- 6500
	Medium (18-25cm)	2500-4500
	Small (<18cm)	1500-2500
Milicia excels	Big	4000-5500
	Medium	2000-4000
	Small	1500-2500
Irvingia gabonensis	Big	3500-4000
	Medium	2100-3500
	Small	1200-2000
Pterocarpus soyauxii	Big	3000-3500
	Medium	2000-3000
	Small	1200-1800
Terminalia ivorensis	Big	4500-6000
	Medium	2500-4000
	Small	1800-2500
Daniella oliveri	Big	3100-4500
	Medium	2200-3000
	Small	1500-2000

Note: Big (>25cm); Medium (18-25cm); Small (<18cm)

Respondents' preference for mortar and pestle in terms of species size and price-. The results listed in Table 5 showed that the species of mortar and species is the major factor determining their preference as majority (90.32) stated that the first thing they consider is the species. About half (48.39) of the respondents consider size of the mortar. Those that prefer the species and size constitute 33.61% while those that prefer mortar and pestle based on species and price constitute 17.72%. The results implied that species is the major factor that determine the demand for mortar and pestle among the traders. Suppliers', manufacturers' and retailers' preferences for specific wood species for most wooden cookware differed from that of consumers (end-users) (Mensah *et al*., 2012).

TABLE 5 Distribution of Respondents preference for mortar and pestle

Variable	Frequency	Percentage
Species	28	90.32
Size	15	48.39
Price	12	33.61
Species and size	17	17.72
Species and price	12	33.61
Size and price	15	48.39

CONCLUSIONS AND RECOMMENDATIONS

This study reveals that men are actively involved in the selling and that the marketing of mortar and pestle is a profitable business that provides livelihood benefits that secure living. It was also revealed that the wood species used in the making of mortar and pestle are of great value even though they can be made from tree stumps and logging waste after harvesting of timber from natural forests, farms and the surrounding. Hence it is important not to underestimate the role that they play in easing poverty. It is therefore recommended that establishment of tree plantation and sustainable forest management should be encouraged to ensure continuous availability of wood species for mortar and pestle business enterprise.

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