Economic Efficiency of Forest-based Small-Scale Herbal Soap Enterprise Utilizing Agricultural-Wastes in Southwest Nigeria

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Abstract

This study investigated the economic efficiency and socio-economic status of entrepreneurs involved in the utilization of agricultural waste and forest products in Forest-based Small Scale Herbal Soap Processing and marketing Enterprises. Multistage sampling technique was adopted to purposively select 502 processing and marketing entrepreneurs from the six States of Southwest Nigeria. A pre-tested and open-ended questionnaire was administered for the collection of data from the respondents. The results revealed three enterprise combinations: herbal soap processing and marketing; ashes burning and marketing, and herbal soap marketing. Agricultural wastes (cocoa pod husks and cassava peels) were processed as ashes for lye production and herbal soap making. Forest products used included natural honey, Sheabutter, coconut-oil and Camwood (osun). Majority (51.80%) of respondents were in the productive age group (31-50 years), 87.60% were females, and 84.00% of respondents had no formal education. All respondents sourced credit from informal sector. No access to formal source of credit assistance. Problem of non-availability of modern equipment was high (95.00%). The economic efficiency maximum value was 0.99, minimum value was 0.47 and mean economic value was 0.7014. The fact that the technical efficiencies of all the sampled herbal soap enterprises are less than one implies that no farm reached the frontier of production. This means that the herbal soap enterprises have the potentials to increase efficiency. It is recommended that access to formal credit and education should be encouraged through cooperative formation, the provision of formal education to enhance livelihood status, promote production and marketing of herbal soap to alleviate poverty in Southwest Nigeria.

Keywords: *Economic efficiency, Agricultural-wastes, Forest products, Herbal soap, Enterprise.*

Introduction

Forests are the world's predominant vegetation and play an important role in rural poverty alleviation, health enhancement, personal hygiene management and environmental sustainability (Fisseha, 1987; FAO, 1997; Agbeja, 2004; Adekunle, 2005; Oluwalana *et.al*, 2007; Oluwalana, 2010; Soaga *et al.*, 2010). In addition, Forest-based Small-scale Enterprises (FB-SSEs) are traditional forest enterprises that depend largely on timber, non-timber, and sometimes wastes generated from agricultural commercial activities as their raw materials. FAO, (1997) stated that FB-SSEs are a major source of livelihood especially in rural communities of developing countries and are often next only to agriculture as primary occupation in terms of rural employment.

There are many agricultural-wastes and forest products being utilised in forest-based herbal soap processing in Southwest Nigeria. Some of the agricultural wastes are cocoa pod husks, palm kernel bunches, plantain peels and cassava peels. The forest products which are used to add value to herbal soap are natural honey, Sheabutter, coconut-oil and Camwood *(osun)*. Hence, the focus of this study is to evaluate the economic efficiency of the entrepreneurs involved in the utilisation of agricultural wastes to produce herbal soap in Southwest, Nigeria

MATERIAL AND METHODS

Multi-stage sampling technique was used in selecting the 502 entrepreneurs that participated in the cross-sectional survey for the study. The first stage-involved stratification of Southwest Nigeria into six States based on political divisions- Ogun, Oyo, Osun, Ondo, Ekiti and Lagos. Each State denotes a stratum. Enumerators were obtained from each of the State's Agricultural Development Agencies (ADPs). The enumerators understood the various languages and location of the herbal soap processors and marketers in the study area. The second stage involved purposive sampling of sixteen (16) LGAs based on pre-test survey information. In the third stage, systematic random sampling procedure was employed to select

entrepreneurs/respondents from the sampled LGAs. This was determined with Probability Proportionate to Size (PPS) based on the population distribution in the strata. A purposive selection of entrepreneurs was done at this stage because some entrepreneurs selected by the systematic sampling were non-herbal soap entrepreneurs. These were deliberately replaced with the herbal soap entrepreneurs.

RESULTS AND DISCUSSION

Socio-Economic and Demographic Characteristics of Respondents

The socio-economic and demographic characteristic variables of the respondents considered were gender, age, marital status, household size, level of education, type of occupation, forest products and agricultural-wastes being utilised.

Distribution of the Respondents by Gender per State in the Study Area

Majority of respondents in the study area are females. Of the 502 respondents, 490 were females, representing 87.65%, while a few men (62) in Ekiti and Ondo States were involved in ash-burning and marketing enterprise. Table 1 shows the gender profile of the soap-makers.

Distribution of the Respondents by Age per State in the Study Area

Two hundred and forty two (48.2 per cent) of the 502 respondents in the six States studied were in the 51- 60 years age group, 37.1 per cent in the 31-40 years group, and 14.7% in the 41-50 years group. The average age was found to be 53.7year. The 41-50 years age group represents a gap between 31-40 and 51-60 years age groups. The 31-40 year age group is recruitment to the herbal soap industry. This means that the entrepreneurs in their productive age have the required physical strength for herbal soap production and marketing. Therefore, given adequate level of processing and marketing resources, the entrepreneurs are capable of achieving high level of herbal soap output (Yusuf and Okoruwa, 1995; Oluyole and Adeogun; 2005). In all the States, with the exception of Lagos, respondents were more in the 31-40 and 51-60 years age groups than in the 41-50 years age group. This shows recruitment into the herbal soap enterprise as shown in Table 2. This should be interesting to policy makers as the herbal soap industry seems to attract younger people and that the cultures of herbal soap production will go a long way into the decades ahead to create employment for the youth in rural areas.

Marital Status of the respondents

The study revealed that, 338 respondents of the 502 respondents, that is, 67.3% were married. About 32.7% of the respondents were widows but had families to cater for and therefore herbal soap production is important to the likelihood of the respondents and their families. (Table 3).

Educational attainment of respondents

The respondents' educational status shows that 84% had no formal education. Fifty four respondents that is, 10.8% had incomplete primary school education (Figure 1). This indicates that the industry is run by knowledge transfer through field experience (Indigenous knowledge). The low literacy level clearly shows the poor human capital development of the herbal soap entrepreneurs and this could negatively affect the profitability level of the enterprise.

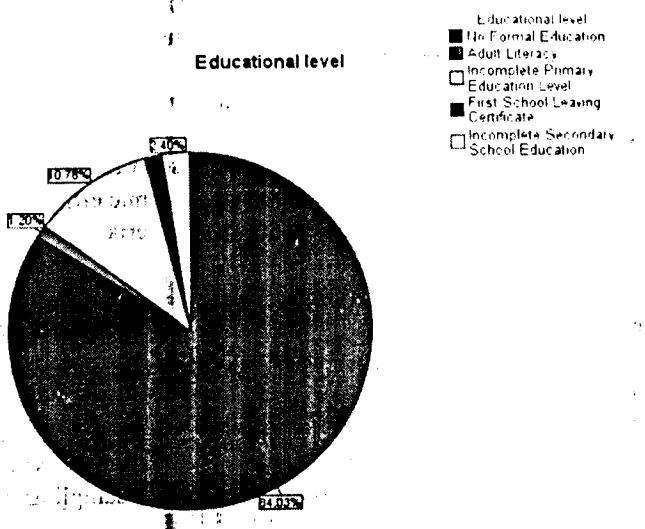

Figure 1: Distribution of Respondents by Educational level per State in the Study Area

Distribution of Respondents by Years of Experience

Continuous practice of an enterprise for a long period presumably makes a person more experienced and more productive in the venture. Years of experience varied considerably among the respondents in different states in the study area. From Table 4 the years of experience ranged from 10-20, 21-30, 31-40, and 41-50 and above 50years. The average number of herbal soap years of experience is 22 years, meaning that the entrepreneurs are well experienced in the herbal soap production which could reflect in the profitability level of the enterprise. Only about 20.1 percent of the entrepreneurs had ten years or less of experience. On the other hand, entrepreneurs between 41 and 60 years of herbal soap production experience constituted 44.60 percent of entrepreneurs in the sample (Table 4). Herbal soap enterprise experience as a factor is supposed to have a positive relationship with the productivity of the entrepreneurs. However, those with many years of experience in herbal soap enterprise may also tend to be the aged; therefore, productivity may decrease with herbal soap enterprise experience after some years.

Distribution of Respondents by Household Size

This is an important variable, especially in situations where family labour becomes the main source of labour for carrying out herbal soap enterprise activities. The larger the household size, the more labour the household can provide and the less the expenditure on hired labour, provided the members of the household are interested in herbal soap enterprise. Table 5 revealed that the minimum size of household in the sampled entrepreneurs was one person while the maximum was 9 people, giving an average household size of seven persons and the modal size group is 7 – 9. Furthermore, the household size ranged between 1-9, also, 1 - 3 household size representing 1.4% of the total. Household sizes of 4 - 6 and 7 - 9 persons represented 48.8% and 49.8% respectively. Ogun State has the highest frequency (58.9%) for household size of 7-9, followed by Oyo and Lagos States with 55.5% and 48.5% respectively. Ekiti State recorded the highest (100%) for household size of 4-6 followed by Ondo and Osun States with 75% and 56.2% respectively. This agrees with observations under marital status that herbal soap production is important to the livelihood of the respondents and their families.

Resource Use Efficiency Distribution

A very important characteristic of the stochastic production frontier is its ability to estimate individual, farm specific technical, allocative and economic efficiencies. Table 6 shows farm specific resource use efficiency indices. It also shows considerable variation of efficiency index across the herbal soap enterprises. The fact that the technical efficiencies of all the sampled herbal soap enterprises are less than one implies that no farm reached the frontier of production. This means that the herbal soap enterprises have the potentials to increase efficiency. With a mean technical efficiency index of 0.7014, there is still scope for increasing firm output.

The parameters of the ML estimates and inefficiency determinants were asymptotically efficient, unbiased and consistent and were obtained using Cobb-Douglas production function estimated by maximum likelihood estimation technique. Maximum value was 0.99, minimum value was 0.47and mean economic value was 0.7014.

CONCLUSION AND RECOMMENDATION

In conclusion, there are many outstanding policy findings from the study on Forest-based Small-scale Enterprises (FB-SSEs) processing herbal soap which can guide all stakeholders in policy making for SMEs in Southwest Nigeria, Nigeria and the world at large. The attribute of a dynamic country is its strong enterprise- based activities because enterprise generates income and propels employment for the people. Various researches has contributed that in other to achieve sustainable development there is the need to stimulate and facilitate the development of Small and Medium Scale Enterprises (SMEs). They are acknowledged globally as the engine of growth of most economies in the developed and developing world (Oyeyinka *et. al, 2007*). Forest-based Small Scale Enterprise (FB – SSE) which is the focus of this study is one of the SMEs in Nigeria. There are opportunities to utilize NTFPs and agricultural-wastes identified in this study to generate wealth. The wealth so generated from wastes can lead to reduction of poverty among the rural entrepreneur generally especially the women processing the herbal soap in particular. This concept is classified as *"waste-to-wealth"* initiative to improve the economic and health status of the beneficiaries. Furthermore, the emerging business opportunity in ash burning in Ondo and Ekiti States will provide subsidiary occupation for cocoa farmers who usually dispose the cocoa pod husks as "wastes" on the farm. There is the need for Ondo and Ekiti States Government to utilize the comparative advantage of the abundance of cocoa in these states.

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Table 1: Distribution of the Respondents by Gender per State in the Study Area

Characteristics	Respondents in Six States in Southwest, Nigeria															
Gender	Ekiti n=30		Lagos n=33		Ogun n=56		Ondo n=32		Osun n=16		Oyo n=335		Total N=502		Mode	Mean
	freq	%	freq	%	freq	%	freq	%	freq	%	freq	%	freq	%		
Male	30	100.0	0	0.0	0	0.0	32	100	0	0.0	0	0.0	62	12.4		
Female	0	0.0	33	100.0	56	100.0	0	0.0	16	100.0	335	100.0	440	87.6	Female	-
Total	30	100.0	33	100.0	56	100.0	32	100.0	16	100.0	335	100.0	502	100.0		

Source: Field Survey, 2009

Table 2: Distribution of the Respondents by Age per State in the Study Area

Characteristics	Respondents in Six States in Southwest, Nigeria															
	Ekiti n=30		Lagos n=33		Ogun n=56		Ondo n=32		Osun n=16		Oyo n=335		Total N=502		Mode	Mean
Age	freq	%	freq	%	freq	%	freq	%	freq	%	freq	%	freq	%		
31 - 40	13	43.3	17	51.5	14	25.0	11	34.4	6	37.5	125	37.3	186	37.1		
41 - 50	2	6.7	12	36.4	10	17.9	2	6.2	2	12.5	46	13.7	74	14.7	51-60	53.7
51 - 60	15	50.0	4	12.1	32	57.1	19	59.4	8	50.0	164	49.0	242	48.2		
Total	30	100.0	33	100.0	56	100.0	32	100.0	16	100.0	335	100.0	502	100.0		

Source: Field Survey, 2009

Table 3: Distribution of Respondents by Marital Status per State in the Study Area

Characteristics	Respondents in Six States in Southwest, Nigeria															
	Ekiti n=30		Lagos n=33		Ogun n=56		Ondo n=32		Osun n=16		Oyo n=335		Total N=502		Mode	Mean
Marital Status	freq	%	freq	%	freq	%	freq	%	freq	%	freq	%	freq	%		
Married	30	100.0	33	100.0	45	80.4	32	100.0	15	93.8	183	54.6	338	67.3	Married	89.5
Widowed	0	0.0	0	0.0	11	19.6	0	0.0	1	6.2	152	45.4	164	32.7		
Total	30	100.0	33	100.0	56	100.0	32	100.0	16	100.0	335	100.0	502	100.0		

Source Field Survey, 2009

Table 4: Distribution of Respondents by Years of Experience per State in the Study Area

Characteristics	Respondents in Six States in Southwest, Nigeria															
Experience	Ekiti n=30		Lagos n=33		Ogun n=56		Ondo n=32		Osun n=16		Oyo n=335		Total N=502		Mode	Mean
	freq	%	freq	%	freq	%	freq	%	freq	%	freq	%	freq	%	>50 years	22years
Below 10 years	30	100.0	29	87.9	4	7.1	16	50.0	1	6.2	21	6.3	101	20.1		
10-20 years	0	0.0	0	0.0	7	12.5	4	12.5	2	12.5	66	19.7	79	15.7		
21-30 years	0	0.0	0	0.0	7	12.5	4	12.5	7	43.8	42	12.5	60	12.0		
31-40 years	0	0.0	4	12.1	4	7.1	5	15.6	1	6.2	24	7.2	38	7.6		
41-50 years	0	0.0	0	0.0	12	21.4	2	6.2	4	25.0	89	26.6	107	21.3		
Above 50 years	0	0.0	0	0.0	22	39.3	1	3.1	1	6.2	93	27.8	117	23.3		
Total	30	100.0	33	100.0	56	100.0	32	100.0	16	100.0	335	100.0	502	100.0		

Source: Field Survey, 2009

Table 5: Distribution of Respondents by Household Size per State in the Study Area

Characteristics	Respondents in Six States in Southwest, Nigeria															
Household Size	Ekiti n=30		Lagos n=33		Ogun n=56		Ondo n=32		Osun n=16		Oyo n=335		Total N=502		Mode	Mean
1-3	0	0.0	0	0.0	1	1.8	0	0.0	0	0.0	6	1.8	7	1.4		
4-6	30	100.0	17	51.5	22	39.3	24	75.0	9	56.2	143	42.7	245	48.8		
7-9	0	0.0	16	48.5	33	58.9	8	25.0	7	43.8	186	55.5	250	49.8		
Total	30	100.0	33	100.0	56	100.0	32	100.0	16	100.0	335	100.0	502	100.0		

Source: Field Survey, 2009

Table 6: Frequency Distribution of Economic Efficiency Estimates of Soap Processors.

Economic Efficiency	No of Respondents (freq)	% Distribution
10- 0.20	-	-
21.0-0.40	-	-
0.41-0.60	183	44.96
0.61-0.80	108	26.53
0.81-1.00	116	20.50

Maximum value = 0.99,
Minimum value = 0.47,
Mean Economic Value = 0.7014
Source: Field Survey, 2009 s