



Research Article

Value Chain Interventions and Business Performance: A study of Beneficiary Shea Value Chain Actors in Northern Region, Ghana

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The study was done in the Sagnarigu and Kumbungu districts of Northern region of Ghana in 2017. Primary data on value chain interventions and business performance were collected from the shea actors using questionnaires. Secondary data was also collected from Sekaf Ghana Limited and Stichting Nederlandse Vrijwilligers (SNV). T-test (Paired Sample T-test), eta squared and descriptive statistics were employed to assess the value chain interventions and business performance of shea actors. A paired sample T-test was conducted to evaluate the impact of the interventions on shea actors which revealed a statistically significant difference as a result of the interventions. Both generic interventions and specific interventions have impacted positively on beneficiaries. We also recommend, based on the results and conclusion, that Government and Developmental Organizations and other actors should put much emphasis on skills development among actors in the shea value chain. Government and Developmental Organizations should be more support in the area of horizontal and vertical coordination to enhance the potential of building up shea business. Government should set up shea board to come out with regulatory framework that will guide the conduct of all the actors in the shea value chain in terms of regulating price of shea nuts.

Keywords: value chain, value chain interventions, business performance, shea actors (shea pickers/collectors, shea butter processors and shea butter marketers)

INTRODUCTION

In 2010, Njanja and Ogutu's study of performance is defined in terms of output terms such as quantified objectives or profitability. Performance has been the subject of broad and increasing experimental and conceptual investigation in business (John, 2009). According to Global Entrepreneurship Monitor (GEM, 2005) performance is defined in relation to positive outcomes as a result of equitable use of resources and it entails the act of doing something successfully using knowledge as distinguished from only owning it.

In the study by Abdelrahim and MBA (2007), business performance is when set targets are achieved in terms of output and profit. Thus, in this study, shea actors are assessed on how the various value chain interventions

(credit, training, access to market and equipment) have impacted in the shea business. Meshack (2014) and Kessy (2009), defined business performance as success of the business and it is achieved when the business is financially growing and profit is adequate, where success is seen as job satisfaction derived from achieving the business desired goals.

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Value chain has been looked at generally as adding value to a product and activities involved includes design, production, marketing, distribution and support to the final consumer (Kaplinsky and Morris, 2001; Schmitz, 2005; Ahmed, 2007; Stonehouse and Snowdon, 2007). According to Mitchell, Coles and Keane (2009), upgrading strategies are interventions to improve the efficiency and equity of the value chain, and thereby maximise the benefits received by its participants. They are applied to chain actors and may be characterized as follows:

- i. Process and product upgrading is increasing the efficiency of production and improve product quality (von Braun and Webb, 1989; Bassett, 2009).
- ii. Horizontal coordination is developing relationships among actors within functional nodes (production, processing and marketing), thus, forming and strengthening groups (Walker, 2001; Naved, 2000).
- iii. Vertical coordination is developing relationships among actors between nodes (production node, processing node and marketing node (Raynolds, 2002; USAID, 2007).

Value chain interventions have become a common phenomenon as a development tool. In recent times, several organisations employ the value chain approach in empowering their beneficiaries. Value chain interventions are categorized into two forms: specific and generic interventions. The specific interventions are interventions given to beneficiaries' based on their gender needs these interventions includes linking women to market, provision of assets to women (machines; crackers, roasters, grinders, presses and kneaders, and credit), linking women to other value chain actors, (Feder, Lau, Lin and Xiaopeng, 1989; Lovett, 2004; Petrick, 2004; Bawa, 2007; Cai, Chen, Fang and Zhou, 2009; Karlan, Osei-Akoto, Osei and Udry, 2011; SEND-GHANA, 2014). The generic interventions these are interventions given to beneficiaries irrespective of their sex these interventions include improving market linkages, improving skills (training), improving product quality and prices, (Lovett, 2004; Mitchell and Ashley, 2009; Riisgaard, Fibla and Ponte, 2010; SEND-GHANA, 2014).

According to Humphrey and Navas-Alemán (2010), value chain interventions aims at providing extension services, generic skills development, improving organizational capacities, creating new value chains, forging or strengthening new links within a value chain and increasing the capabilities of target groups to improve the terms of value chain participation, promoting of women's empowerment, poverty reduction and employment generation.

The Northern sector of Ghana about 3,000 households are engaged in the shea industry (TechnoServe, 2004). It is estimated that the average household size is 13 persons and that these households produce and market 4 million USD worth of shea butter annually. On the other hand, it is

stated that about 39,000 rural poor processed and sold 34.2 billion cedis (GHS 3,420,000.00) worth of shea butter in year 1999 (GSS, 2010).

The main participants in the shea industry in Ghana fall into four main categories (Kletter, 2002) and these are shea pickers or collectors, first line traders who buy directly from the pickers, shea butter processors and exporters or marketers. Lovett (2004), indicated that the role played by Non-Governmental Organisations (NGOs) and other developmental organizations in their search to develop the industry has gained considerable level of importance and described an extended value chain of shea industry as village pickers and post-harvest processors of dry kernel, local buying agents (LBAs), rural or urban traditional butter processors and large-scale exporters of shea kernel. Other players in the value chain include large scale processors of shea butter based 'In-country' and small-scale entrepreneurs formulating cosmetics based on shea butter in Africa.

It is often emphasised that incentives matter and influence an individual decision in choosing an enterprise to engage in. Several development practitioners have seen the need to empower women in a form of incentives to enable them have access to resources (material, human as well as social) these aids in addressing the needs of women (Mac Kune-Karrer, 1997). The value of high earnings motivates an individual and influence one's decision or choice to go into a particular enterprise (Chow and Ngo, 2011).

A number of NGOs contribute to or influence economic development and livelihood improvement in Ghana in the context of training by facilitating knowledge and technology transfer to shea actors, equipment, credit and market. Training activities include storage of shea nuts and butter and provision of technical advice.

According to (Singh and Sharma, 2011), rural women can play a significant role by their effectual and competent involvement in business activities. They have basic indigenous knowledge, skills and potential to establish and manage enterprise (Singh and Sharma, 2011). This argument is factual in the context of rural women found in the Shea butter industry because they have basic indigenous knowledge and skill in the Shea butter making and have gained resources in managing an enterprise. According to Shugufta, Yasmeen and Gangaiah (2014), empowering women through micro enterprise results in "better living for families and leads to "improvement in the involvement of women in household decision-making in male headed families with regard to credit, disposal of household assets, education of children and healthcare" (Pragathy, 2004, cited in Shugufta, Yasmeen and Gangaiah, 2014).

The research therefore examines value chain interventions and business performance of beneficiary shea value chain actors in northern region, Ghana.

METHODOLOGY

Sample Size and Sampling Procedure

They are many organisations working with shea actors in the Northern region. JICA, Christian Mothers, World vision, Sekaf Ghana limited, SNV, Techno-Serve Ghana and African 2000 Network-Ghana (A2N) are some of the organisations given interventions to shea actors in the Northern region.

SNV and Sekaf Ghana limited were randomly selected, shea actors in the two districts working with SNV and SEKAF constituted the population of the study. There are 5000 shea pickers/collectors, 180 butter processors and 70 marketers working with Sekaf Ghana Limited in Sagnarigu district, and with SNV there are 400 shea pickers/collectors and 448 shea processors and 52 marketers in the Kumbungu district. All these shea actors were accordingly sampled for this study.

For the purpose of data collection and to ensure representativeness, shea actors were stratified into two thus SNV and SEKAF respondents. Sagnarigu district was targeted for SEKAF and Kumbungu district for SNV.

Simple random sampling was used in selecting the communities from each district. For Sagnarigu district two (2) communities was selected. The sampled communities are Kasalgu and Wayamba, and for Kumbungu district three (3) communities were selected too namely Kukuo, Gupanarign and Bogrianili. From the communities sampled from each district, the lottery method of simple random sampling technique was used to sample 40 beneficiaries from each of the communities to form a total sample size of 200 shea actors.

The sample size was determined using Fisher's method formula for 95% confidence level (Fisher, Laing, Stoeckel and Townsend, 1983).

$$n = \frac{pqZ^2}{d^2}$$

Where;

n = sample size for infinite population

$Z = 1.96$ (at 95% Confidence level)

p = estimated proportion of shea actors (0.1)

$q = 1 - p$ d = precision of the estimate at 5% (0.05)

The sample size was;

$$n = \frac{(1.96)^2 \cdot 0.1 \times 0.9}{(0.05)^2}$$

$n = 138$

The adjusted sample sizes for the finite population of 6150 shea actors are:

$$n^1 = 1 / (1/n + 1/N)$$

Where;

n^1 = adjusted sample size

n = estimated sample size for infinite population

N = Finite population size

$$n^1 = 1 / (1/138 + 1/6150)$$

$n^1 = 135$

Data Collection

Both primary and secondary data were collected for this study. Personal interview with the aid of semi-structured questionnaires was used in collecting primary data.

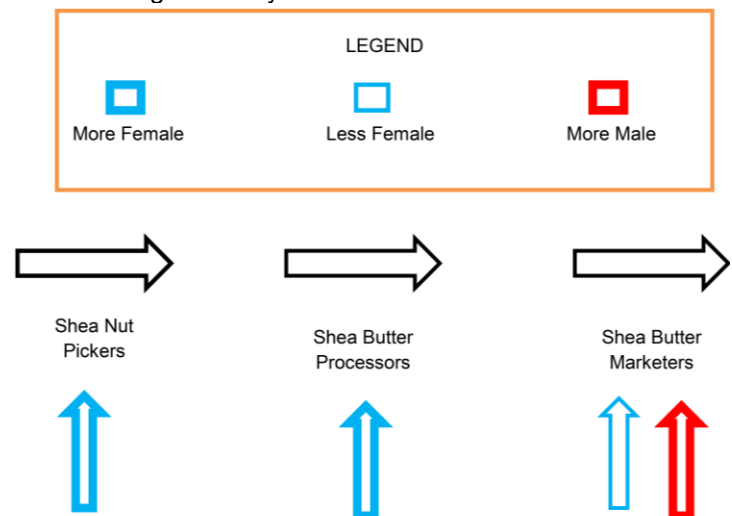
Data Analysis

Data was analysed by the aid of Statistical Package for Social Sciences (SPSS) computer software, using the appropriate analytical tools (Bourque and Clark, 1992) and results were discussed using descriptive statistics (frequencies and percentages counts), T-test (paired sample T-test) and Eta squared statistic. The eta squared according Cohen (1988), represents the proportion of variance of the dependent variable that is explained by the independent variable. Where 0.1-0.3 is small effect size, 0.4 is medium effect size and 0.5 above is large effect size.

RESULTS AND DISCUSSION

Demographic Characteristics of Shea Actors

The study provides confirmatory evidence that the most proactive people in shea butter industry are women. This is in consonance with Ademola, Oyesola and Osewa (2012) and Garba, Sanni and Adebayo (2015), who reported that women are mostly into shea butter activities than men, as the study revealed that, 84 % of the respondents were female with the rest (16 %) being male and majority of the workforce were young and virile people below the ages of 50 years.



Most studies in the shea butter industry (Abujaja, Adam and Zakaria, 2013; Matanmi, Adesiji, Olasheinde and Oladipo, 2010), reveal that majority of shea actors generally, lack formal education. The results of this study is in agreement with the findings of previous research as seen from the study, with majority of the respondents (43 %) not attaining any form of formal education with basic education having (18 %) only 7 % having higher education whiles 32 % had non-formal education.

Table 1: Demographic Characteristics of Shea Actors

Demographic Characteristics	Shea Actors	
	Frequency	Percentage
Sex:		
Female	167	84.0
Male	33	16.0
Age:		
18-24	7	3.5
25-31	25	12.5
32-38	34	17.0
39-45	42	21.0
46-52	43	21.5
53-59	32	16.0
60-66	17	8.5
Educational level:		
No formal education	87	43.0
Non-formal education	64	32.0
Basic education	35	18.0
Higher education	11	7.0

Source: Field Survey Data, 2017.

Impact of Interventions on Business Performance

This section assesses how value chain influence one's decision to engage in shea business or not, through the identification of lessons picked up by respondents from various interventions and how it has influenced their choice of enterprise as well as their business' performance. In the context of this study, Business performance; is perceived as improvement in quantity and quality of shea processed; amount of time spent in processing shea butter, revenue generated from the shea products. This section adopts these categories and reports subsequently on these areas of impacts in the sections below.

Impact of Interventions on Duration of Shea Butter Processing

A paired sample T-test was conducted to examine whether a statistically significant relationship could be established in the mean scores before and after interventions in the shea value chain and how this could reflect on the duration involved in processing Shea butter before and after the interventions.

Table 2a: Duration to Process Shea Butter

Duration	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Before	3.70	70	.840	.100
After	2.01	70	1.000	.120

Source: Field Survey Data, 2017.

Table 2b: Differences in Duration to Process Shea

Duration	Paired Differences				t	df	Sig. (2-tailed)	
	Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 Before and After	1.686	.498	.059	1.567	1.804	28.343	69	.000

Source: Field Survey Data, 2017.

The Paired Sample T-test table is presented below and shows the following:

- i. There is a significant difference between the scores before and after the interventions. Thus, this shows an overall significant difference in the duration involved in processing Shea butter before and after the interventions. The probability value in table (2b) is .000, which is less than .0005. This value is substantially lower than the specified alpha value of .05 and indicates a significant decrease in the number of days in processing shea butter before and after the interventions.
- ii. The next statistic reveals, in terms of the scores, which score is lower than the other before and after the intervention. The mean scores, before the intervention was 3.70; and that after the intervention was 2.01. Therefore, we can conclude that there was a significant decrease in the number of days in processing shea butter after benefiting from the interventions.
- iii. The results presented show that the difference obtained in the two sets of scores was unlikely to occur by chance; and does reveal the magnitude of the interventions effect. Using the eta squared statistic, an effect size of 0.92 was obtained. Based on the guidelines provided by Cohen (1988), where an effect size of 0.5 and above is interpreted as a large effect; this impact represents a large effect of the interventions on the number of days in processing shea butter after the interventions.

A paired sample T-test was conducted to evaluate the impact of the interventions on the number of days in processing shea butter. There was a statistically significant decrease in the on the number of days in processing shea butter after benefiting from the interventions scores from before (M=3.70, SD=.840) to after [M=2.01, SD=1.000, t(69)= 28.343, p<.0005]. The eta squared statistic (0.92) indicated a large effect size.

The results are in agreement with Farinde, Soyebó and Oyedekun (2005), who asserted that training, influences the adoption of new technologies, ideas or techniques in business activities.

Table 3a: Quantity of Shea Nuts Processed to Process Butter

Quantity	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Before	19.66	70	18.001	2.151
After	26.11	70	21.500	2.570

Source: Field Survey Data, 2017.

Table 3b: Differences in Quantity of Shea Nuts Processed to Process Shea Butter

Quantity	Paired Differences				T	Df	Sig. (2-tailed)	
	Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 Before and After	6.457	5.269	.630	5.201	7.713	10.254	69	.000

Source: Field Survey Data, 2017.

Impact of Interventions on Processing Capacity of Shea Processors

A paired sample T-test was conducted to determine whether a statistically significant relationship could be established in the mean scores before and after interventions in the shea value chain and whether this reflected on quantity of shea nuts processed to process shea butter after the interventions.

The Paired Sample T-test table is presented below and shows the following:

- i. There is a significant difference between the scores before and after the interventions. This shows an overall significant difference on quantity of shea nuts processed to process shea butter after the interventions. The probability value in table (3b) is .000, which is less than .0005. This value is substantially lower than the specified alpha value of .05 and points to a significant difference on quantity of shea nuts processed to process shea butter after the interventions.
- ii. The next statistic reveals, in terms of the scores, which score is higher than the other before and after the intervention. The mean scores, before the intervention was 19.66; and that after the intervention was 26.11. Therefore we can conclude that there was a significant increase in quantity of shea nuts processed to process shea butter after benefiting from the interventions
- iii. The results presented show that the difference obtained in the two sets of scores was unlikely to occur by chance; and reveal the magnitude of the interventions effect. Using the eta squared statistic, an effect size of 0.60 was obtained. Based on the guidelines provided by Cohen (1988), where an effect size of .05 is interpreted as a large effect; this impact represents a large effect of the interventions on quantity of shea nuts processed to process shea butter after the interventions.

A paired sample T-test was conducted to evaluate the impact of the interventions on quantity of shea nuts processed to process shea butter after the interventions.

There was a statistically significant increase on quantity of shea nuts processed to process shea butter after benefiting from the interventions scores from before (M=19.66, SD=18.001) to after [M=26.11, SD=21.500, $t(69)=10.254$, $p<.0005$]. The eta squared statistic (0.60) indicated a large effect size.

Impact of Interventions on Quantity of Shea Butter Processed

A paired sample T-test was conducted to determine whether a statistically significant relationship could be established in the mean scores before and after interventions in the shea value chain and whether this reflected in the quantities of shea butter processed before and after the interventions.

The Paired Sample T-test table is presented below and shows the following:

- i. There is a significant difference between the scores before and after the interventions. This shows an overall significant difference in the quantities of shea butter processed before and after the interventions. The probability value in table (4b) is .000, which is less than .0005. This value is substantially lower than the specified alpha value of .05 and points to a significant difference in the amounts of shea butter processed before and after the interventions.
- ii. The next statistic reveals, in terms of the scores, which score is higher than the other before and after the intervention. The mean scores, before the intervention was 490.36; and that after the intervention was 653.93. Therefore, we can conclude that there was a significant increase in the quantities of shea butter processed after benefiting from the interventions
- iii. The results presented show that the difference obtained in the two sets of scores was unlikely to occur by chance; and reveal the magnitude of the interventions effect. Using the eta squared statistic, an effect size of 0.61 was obtained. Based on the guidelines provided by Cohen (1988), where an effect size of .05 is interpreted as a large effect; this impact represents a large effect of the interventions on the quantity of shea butter processed.

Table 4a: Quantity of Shea Butter Processed before and after the Interventions

Quantity	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 After	653.93	70	538.578	64.372
Before	490.36	70	451.127	53.920

Source: Field Survey Data, 2017.

Table 4b: Differences in Quantity of Shea Butter Processed

Quantity	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 After and Before	163.571	130.837	15.638	132.347	194.768	10.460	69	.000

Source: Field Survey Data, 2017.

Table 5a: Revenue that Shea Nut pickers generate

Revenue	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Before	240.65	90	97.439	10.271
After	555.78	90	148.377	15.640

Source: Field Survey Data, 2017.

Table 5b: Differences in Revenue that Shea Nut Pickers generate

Revenue	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Before and After	-315.128	95.211	10.036	-335.069	-295.186	-31.399	89	.000

Source: Field Survey Data, 2017.

A paired sample T-test was conducted to evaluate the impact of the interventions the quantities of shea butter processed. There was a statistically significant increase in the quantities of shea butter processed after benefiting from the interventions scores from before (M=490.36, SD=451.127) to after [M=653.93, SD=538.578, $t(69)=10.460$, $p<.0005$]. The eta squared statistic (0.61) indicated a large effect size.

This result is in consonance with the findings of Kabeer (2003); and Caldwell (1966), who agree that education serves as a means of enhancing women for effective and efficient production and productivity.

Impact of Interventions on Revenue of Shea Nut Pickers

Shea nut pickers' revenue was calculated as the product of a unit price of the nuts by quantity. It is the income received by the shea nut pickers after selling their goods in a certain time period (bags per week).

A paired sample T-test was conducted to determine whether a statistically significant relationship could be established in the mean scores before and after interventions in the shea value chain and whether this reflected on revenue of shea nut pickers before and after the interventions.

The Paired Sample T-test table is presented below and shows the following:

- There is a significant difference between the scores before and after the interventions. This shows an

overall significant difference on revenue of shea nut pickers before and after the interventions. The probability value in table (5b) is .000, which is less than .0005. This value is substantially lower than the specified alpha value of .05 and points to a significant difference on revenue of shea nut pickers before and after the interventions.

- The next statistic reveals, in terms of the scores, which score is higher than the other before and after the intervention. The mean scores, before the intervention was 240.65; and that after the intervention was 555.78. Therefore, we can conclude that there was a significant increase on revenue of shea nut pickers after benefiting from the interventions.
- The results presented show that the difference obtained in the two sets of scores was unlikely to occur by chance; and reveal the magnitude of the interventions effect. Using the eta squared statistic, an effect size of 0.91 was obtained. Based on the guidelines provided by Cohen (1988), where an effect size of .05 is interpreted as a large effect; this impact represents a large effect of the interventions on revenue of shea nut pickers.

A paired sample T-test was conducted to evaluate the impact of the interventions the on revenue of shea nut pickers. There was a statistically significant increase on revenue of shea nut pickers after benefiting from the interventions scores from before (M=240.65, SD=97.439) to after [M=555.78, SD=148.377, $t(89)= -31.399$, $p<.0005$]. The eta squared statistic (0.91) indicated a large effect size.

Table 6a: Revenue that Shea Butter Processors generate

Revenue	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Before	4754.64	70	4653.831	556.239
After	7460.89	70	6840.208	817.561

Source: Field Survey Data, 2017.

Table 6b: Differences in Revenue that Shea Butter Processors generate

Revenue	Paired Differences				T	df	Sig. (2-tailed)	
	Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 Before and After	-2706.250	2446.108	292.366	-3289.504	-2122.996	-9.256	69	.000

Source: Field Survey Data, 2017.

This result is in consonance with Riisgaard *et al.* (2010) and Carr and Hartl (2008), who reported that interventions provided to rural peasants and agro-processors not only empower them socially but also improve their economic wellbeing.

Impact of Interventions on Revenue of Shea Butter Processors

Shea butter processors revenue was calculated as the product of a unit price of the shea butter by quantity. It is the income received by the shea butter processors after selling their goods in a certain time period (kilogram per week).

A paired sample T-test was conducted to determine whether a statistically significant relationship could be established in the mean scores before and after interventions in the shea value chain and whether this reflected on revenue of shea butter processors before and after the interventions.

The Paired Sample T-test table is presented below and shows the following:

- i. There is a significant difference between the scores before and after the interventions. This shows an overall significant difference on revenue of shea butter processors before and after the interventions. The probability value in table (6b) is .000, which is less than .0005. This value is substantially lower than the specified alpha value of .05 and points to a significant difference on revenue of shea butter processors before and after the interventions.
- ii. The next statistic reveals, in terms of the scores, which score is higher than the other before and after the intervention. The mean scores, before the intervention was 4754.64; and that after the intervention was 7460.89. Therefore, we can conclude that there was a significant increase on revenue of shea butter processors after benefiting from the interventions
- iii. The results presented show that the difference obtained in the two sets of scores was unlikely to occur by chance; and reveal the magnitude of the interventions effect. Using the eta squared statistic, an effect size of 0.55 was obtained. Based on the guidelines provided by Cohen (1988), where an effect size of .05 is interpreted as a large effect; this impact represents a

large effect of the interventions on revenue of shea butter processors.

A paired sample T-test was conducted to evaluate the impact of the interventions the on revenue of shea butter processors. There was a statistically significant increase on revenue of shea butter processors after benefiting from the interventions scores from before ($M=4754.64$, $SD=4653.831$) to after [$M=7460.89$, $SD=6840.208$, $t(69) = -9.256$, $p<.0005$]. The eta squared statistic (0.55) indicated a large effect size.

Moreover, the result is in consonance with the findings of Riisgaard *et al.* (2010), who asserted that interventions such as credit, training, equipment, market linkages, improving product quality and prices, improve the efficiency of the shea actors and leads to increase level of revenue of shea actors.

Impact of Interventions on Revenue of Shea Butter Marketers

Shea butter marketers' revenue was calculated as the product of a unit price of the shea butter by quantity. It is the income received by the shea butter marketers' after selling their goods in a certain time period (kilogram per week).

A paired sample T-test was conducted to determine whether a statistically significant relationship could be established in the mean scores before and after interventions in the shea value chain and whether this reflected on revenue of shea butter marketers before and after the interventions.

The Paired Sample T-test table is presented below and shows the following:

- i. There is a significant difference between the scores before and after the interventions. This shows an overall significant difference on revenue of shea butter marketers before and after the interventions. The probability value in table (7b) is .000, which is less than .0005. This value is substantially lower than the specified alpha value of .05 and points to a significant difference on revenue of shea butter marketers before and after the interventions.

Table 7a: Revenue that Shea Butter Marketers generate

Revenue	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Before	33799.23	40	50861.004	8041.831
After	64520.85	40	89392.973	14134.270

Source: Field Survey Data, 2017.

Table 7b: Differences in Revenue that Shea Butter Marketers

Revenue	Paired Differences				T	df	Sig. (2-tailed)	
	Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 Before and After	-30721.625	42982.954	6796.202	-44468.240	-16975.010	-4.520	39	.000

Source: Field Survey Data, 2017.

- ii. The next statistic reveals, in terms of the scores, which score is higher than the other before and after the intervention. The mean scores, before the intervention was 33799.23; and that after the intervention was 64520.85. Therefore, we can conclude that there was a significant increase on revenue of shea butter marketers after benefiting from the interventions.
- iii. The results presented show that the difference obtained in the two sets of scores was unlikely to occur by chance; and does not reveal the magnitude of the interventions effect. Using the eta squared statistic, an effect size of 0.34 was obtained. Based on the guidelines provided by Cohen (1988), where an effect size of .05 is interpreted as a large effect; this impact represents a small effect of the interventions on revenue of shea butter marketers.

A paired sample T-test was conducted to evaluate the impact of the interventions on the revenue of shea butter marketers. There was a statistically significant increase on revenue of shea butter marketers after benefiting from the interventions scores from before (M=33799.23, SD=50861.004) to after [M=64520.85, SD=89392.973, $t(39) = -4.520$, $p < .0005$]. The eta squared statistic (0.34) indicated a small effect size.

Shea Business and Empowerment Outcomes

The results in Table 8a reveal that, before the interventions majority of the females and males (84.4 % and 54.5 %) had clothing respectively, 7.8 % of females and 6.1 % of males had cauldrons and 2.4 % females and 30.3 % males had television whiles, 5.4 % and 9.1 % males had switch stove.

Table 8a: Assets of Respondents before the Interventions

Assets	Female		Male	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Clothing	141	84.4	18	54.5
Cauldrons	13	7.8	2	6.1
Television	4	2.4	10	30.3
Switch Stove	9	5.4	3	9.1
Total	167	100	33	100

Source: Field Survey Data, 2017.

Table 8b shows the assets of respondents after the intervention. From the table, majority of the respondents have acquired some assets/household assets/business implements (such as clothing, cauldrons, wardrobes, motor bicycles, bicycles, land, house, gas stoves and jewelries) from the shea business after benefiting from the interventions given to the shea actors (nut pickers, shea butter processors and shea butter marketers). After the interventions given the results shows that shea actors have switched from acquiring more clothing to other assets. These are indication of increased production and income levels of respondents and improved their living standard.

Aside assets acquisition, the respondents also use some of their income to support household activities, pay rent and also pay school fees of their wards. This is in agreement with Olaleye, Umar and Ndanitsa (2009), who found out that, paying expenses on education is one of the benefits that people gain from their business ventures.

Table 8b: Assets of Respondents after the Interventions

Assets	Female		Male	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Clothing	55	32.9	12	36.3
Wardrobes	3	1.8	4	12.1
Land	2	1.2	3	9.0
House	1	0.6	2	6.1
Jewelries	9	5.4	2	6.1
Gas Stoves	5	3.0	2	6.1
Cauldrons	89	53.3	4	12.1
Bicycle	2	1.2	2	6.1
Motor bicycle	1	0.6	2	6.1
Total	167	100	33	100

Source: Field Survey Data, 2017.

Impact of Value Chain Interventions on Shea Business

This section identifies how interventions given to shea actors improved shea business among actors.

Various interventions were enumerated among which shea actors had access to thus improving market linkages, improving skills, improving product quality and price,

Table 9: Influence of Value Chain Interventions on Shea Business

Interventions	Level of Improvement					
	High		Moderate		Low	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Generic Interventions	175	87.5	25	12.5	0	0.0
Improving market linkages						
Improving skills	91	45.5	68	34.0	41	20.5
Improving product quality and price	158	79.0	38	19.0	4	2.0
Specific Interventions	119	59.5	36	18.0	12	6.0
Linking women to market						
Access to assets	121	60.5	68	34.0	11	5.5
Access to credit	133	66.5	66	33.0	1	0.5

Source: Field Survey Data, 2017.

Table 10: Influence of Value Chain Interventions on Shea Picking

Interventions	Level of Improvement					
	High		Moderate		Low	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Generic Interventions	70	77.8	20	22.2	0	0.0
Improving market linkages						
Improving skills	43	47.8	28	31.1	19	0.0
Improving product quality and price	66	73.3	20	22.2	4	4.4
Specific Interventions	54	60.0	25	27.8	11	12.2
Linking women to market						
Access to assets	65	72.0	25	27.8	0	0.0
Access to credit	60	66.7	30	33.3	0	0.0

Source: Field Survey Data, 2017

linking women to market, access to assets and access to credit. Table 9 below, present how the interventions given have improved shea business.

The result in Table 9 below shows that, the generic interventions given to shea actors in the shea value chain had improved their shea business activity. Majority (87.5 %) of the shea actors had highly improved access to market linkages. On improving skills, majority (45.5 %) of the shea actors had highly enhanced their skills. Majority (79.0 %) of the shea actors had highly improved their product quality and price.

The specific interventions given to shea actors in the shea value chain have improved their shea business activity. Linking women to market was only rated by women, majority (59.5 %) of the shea actors had high improvement on their business while, 18.0 % had moderate improvement on their business and the rest 6.0 % had low improvement on their business. For access to assets, majority (60.5 %) of the shea actors had high improvement on their business while 34.0 % had moderate improvement on their business and the rest 5.5 % had a low improvement on their business. Moreover, on access to credit, majority (66.5 %) of the shea actors had high improvement on their business while, 33.0 % had

moderate improvement on their business and the rest 0.5 % had a low improvement on their business.

Influence of Value Chain Interventions on Shea Picking

The result in Table 10 below shows that, the generic interventions given to shea nut pickers in the shea value chain have improved their shea picking activity. From the results, majority (77.8 %) of the shea nut pickers had high access to market linkages while the rest 22.2 % had moderate improvement on their business. On improving skills, majority (47.8 %) of the shea nut pickers had high improvement on their business while as much as 31.1 % had moderate improvement on their business and the rest 21.1 % had a low improvement on their business. In the area of improving product quality and price, majority (73.3 %) of the shea nut pickers had high improvement on their business while 22.2 % had moderate improvement on their business and the rest 4.4 % had a low improvement on their business.

The specific interventions given to shea nut pickers in the shea value chain have improved their shea nut picking activity. It is evident that linking women to market, majority (60 %) of the shea nut pickers had high improvement on

Table 11: Influence of Value Chain Interventions on Shea Butter Processors

Interventions	Level of Improvement					
	High		Moderate		Low	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Generic Interventions	65	92.9	5	7.1	0	0.0
Improving market linkages						
Improving skills	29	41.4	27	38.6	14	20
Improving product quality and price	54	77.1	16	22.9	0	0.0
Specific interventions	58	82.9	11	15.7	1	1.4
Linking women to market						
Access to assets	38	54.3	25	35.7	7	10.0
Access to credit	48	68.6	22	31.4	0	0.0

Source: Field Survey Data, 2017.

their business whiles, 27.8 % had moderate improvement on their business and the rest 12.2 % had low improvement on their business. In terms of access to assets, majority (72 %) of the shea nut pickers had high improvement on their business whiles; the rest 27.8% had moderate improvement on their business. Moreover, on access to credit, majority (66.7 %) of the shea nut pickers had high improvement on their business while the rest 33.3 % had moderate improvement on their business.

Influence of Value Chain Interventions on Shea Butter Processors

The result in Table 11 above shows that, the generic interventions given to shea butter processors in the shea value chain have improved their shea butter processing activity greatly. From the analysis, majority (92.9 %) of the shea butter processors had high improvement on their business whiles; the rest 7.1 % had moderate improvement on their business. On improving skills, majority (41.4 %) of the shea butter processors had high improvement on their business whiles, 38.6 % had moderate improvement on their business and the rest 20.0 % had a low improvement on their business. On improving product quality and price, majority (77.1 %) of the shea butter processors had high improvement on their business whiles the rest 22.9 % had moderate improvement on their business.

The specific interventions given to shea butter processors in the shea value chain have improved their shea butter processing activity. The results revealed that, on linking women to market, majority (82.9 %) of the shea butter processors had high improvement on their business while 15.7 % had moderate improvement on their business and the rest 1.4 % had low improvement on their business. In terms of access to assets, majority (54.3 %) of the shea butter processors had high improvement on their business while 27.8 % had moderate improvement on their business and the rest 10.0 % had low improvement on their business. On access to credit majority (68.6 %) of the shea butter processors had high improvement on their business

whiles, the rest 31.4 % had moderate improvement on their business.

Influence of Value Chain Interventions on Shea Butter Marketers

The result in Table 12 below shows that, the generic interventions given to shea butter marketers in the shea value chain have improved their shea butter marketing activity. From the results, all the shea butter marketers (100 %) had high access to market linkages. On improving skills, majority (47.5 %) of the shea butter marketers had high improvement on their business whiles, 32.5 % had moderate improvement on their business and the rest 20.0 % had a low improvement on their business. On improving product quality and price, majority (62.5 %) of the shea butter marketers had high improvement on their business while 35.0 % had moderate improvement on their business and rest 2.5 % had low improvement on their business.

The specific interventions given to shea butter marketers in the shea value chain have improved their shea butter marketing activity. The result reveals that, linking women to market was only rated by women and only 17.5 % of the shea butter marketers had high improvement on their business. For Access to assets, (45 %) of the shea butter marketers had high improvement on their business, 45% representing 18 respondents had moderate improvement on their business and the rest 10.0% had low improvement on their business. On access to credit majority (62.5 %) of the shea butter marketers had high improvement on their business whiles, 35.0 % had moderate improvement on their business and the rest 2.5 % low improvement on their business.

Involvement in Decision Making at the Community Level

Women are not necessarily consulted on development issues nor involved in decision making (Chambers and Conway, 1992). It has become clear that the involvement of women in development agendas is a prerequisite for successful development planning and implementation

Table 12: Influence of Value Chain Interventions on Shea Butter Marketers

Interventions	High		Moderate		Low	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Generic Interventions	40	100.0	0	0.0	0	0.0
Improving market linkages						
Improving skills	19	47.5	13	32.5	8	20.0
Improving product quality and price	25	62.5	14	35.0	1	2.5
Specific interventions	7	17.5	0	0.0	0	0.0
Linking women to market						
Access to assets	18	45.0	18	45.0	4	10.0
Access to credit	25	62.5	14	35.0	1	2.5

Source: Field Survey Data, 2017.

(Evans, 1992). Indeed, women play pivotal roles in development by contributing to household income, providing care to children, managing household resources and mobilising resources for community development and decision making.

As shown below, Table 13a indicates, before the interventions given to shea actors majority of females, 91.6 % of the women were not involved in decision making at the community level but majority (66.7 %) of their male counterpart were involved in decision making at the community level. After the interventions given, the observation (Table 13b below) is that, majority of the shea actors (57.5 % females and 84.8 % males) are involved in decision making at the community level.

Table 13a: Involvement in Decision Making at the Community Level

Decision	Female		Male	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Yes	14	8.4	22	66.7
No	153	91.6	11	33.3
Total	167	100	33	100

Source: Field Survey Data, 2017.

Table 13b Involvement in Decision Making at the Community Level

Decision	Female		Male	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Yes	96	57.5	28	84.8
No	71	42.5	5	15.2
Total	167	100	33	100

Source: Field Survey Data, 2017.

CONCLUSION

A paired sample T-test was conducted to evaluate the impact of the interventions on shea actors. The results reveal that, there was a statistically significant difference as in the on the number of days in processing shea butter, the quantity of shea nuts processed to process shea butter, the quantities of shea butter processed and revenue for the shea actors before and after the interventions.

The results of the survey further revealed that, before the interventions majority of males and females had acquired some assets/household assets (such as clothing, cauldrons, switch stoves and television but after the interventions given shea actors (nut pickers, shea butter processors and shea butter marketers) both males and females had acquired some assets/household assets (such as clothing, cauldrons, wardrobes, motor bicycles, bicycles, land, house, gas stoves, jewelleries) from the shea business after being benefited from the interventions given to them leading to increase in shea production and subsequently improving their living standard. Shea actors have switch from acquiring more clothing to other assets like cauldrons, wardrobes, motor bicycles, bicycles, land, house, gas stoves and jewelleries. These are indication of increased production and income levels of shea actors and improved their living standard.

RECOMMENDATIONS

We recommend that, based on the results and conclusion, the Government and Developmental Organizations and other actors should put much emphasizes on skills development among actors in the shea value chain. Also, Government and Developmental Organizations should be more support in the area of horizontal and vertical coordination to enhance the potential of building up shea business. Government should set up shea board to come out with regulatory framework that will guide the conduct of all the actors in the shea value chain in terms of regulating price of shea nuts. Finally, the study recommends that, protective clothing's and tools should be given to the women to safe-guard their activities especially shea nut pickers in other to avoid injuries.

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