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ASSESSING THE EFFICIENCY OF SOYA BEAN MARKETING IN THE EJURA-SEKYEDUMASI AND NKORANZA SOUTH DISTRICTS OF GHANA

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ABSTRACT: *The study aimed at assessing the efficiencies of soya bean marketing channels in the Ejura-Sekyedumasi and Nkoranza South Districts, Ghana. The multi-stage sampling technique was employed in selecting thirty-seven soya bean farmers, two wholesalers, seven retailers, two small-scale processors and one large-scale processor of soya beans for the study. Gross Margin analysis was employed in determining the marketing costs and margins whereas the Shepherd's Method was used in analyzing the efficiencies of the marketing channels. The study revealed that nine different channels existed through which soya bean was marketed in the study areas, with the simplest channel (Channel 1) being where farmers sell directly to consumers. Analysis of marketing cost and margins revealed that comparatively, Channel 1 had the least cost (GH₵2.40) and margins (GH₵10.50) since farmers dealt directly with consumers without any interference from market intermediaries, who usually increase transaction cost. From the study, Channel 1 was the most efficient channel with an Efficiency Index of 37.71. Thus, its marketing cost constituted a smaller proportion of the consumer price. The study recommends that farmers use Channel 1 where they sell directly to consumers to market their produce and also form co-operatives to protect them against price fluctuation and give them assurance of buyers. Moreso, the central government is directed to intervene in the form of road construction and improvement to help reduce the excessive transportation cost associated with the soya bean trade in Ghana*

KEYWORDS: Efficiency, Soya Bean, Marketing, Marketing Channel, Ghana

INTRODUCTION

Agricultural marketing is of much relevance to agricultural production. (Olukosi and Isitor, 1990). It involves market structures/systems, marketing channels/chains, market participants, marketing functions and risks and market information (Ibid). The marketing channels are the pathways through which an agricultural commodity passes from the producer to the consumer whilst the market participants are the market agents performing various marketing functions at each stage of the chain (Ibid). In Ghana, the marketing of introduced agricultural commodities such as soya beans is still not fully developed. More emphasis is usually placed on policies to increase food production with little or no consideration on how to distribute the food produced efficiently and in a manner that will enhance increased productivity (Aidoo *et al.*, 2012). According to Gage et al. (2012), producers of soya bean have been experiencing frustration due to producing the bean without much regards to the local marketing systems. In a study by Chigabatia (2007), the Managing Director of Savanna Farmers Marketing Company, Ghana, she stated: that "farmers have all along been supported with extension services with the view that that would help farmers to improve upon their incomes, but after twenty or more years, those activities in terms of just extension services did not translate into improved incomes for the farmers, and the missing link, was marketing". Further, most marketing operations mainly

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pre- and post-harvest activities are generally poorly performed. Added, transport methods are outdated and packing containers are much unsuitable (Ibid). The points of unloading and loading are unsuitable and this grants access to pilfering and burglary (Ibid). In effect, high post-harvest losses are recorded. It is estimated that more than 28 percent of soya bean produce in Ghana are wasted and lost through poor post-harvest operations (Atiim, 2011). These inefficiencies result in consumers paying an exorbitant price for produce whereas the producers receives a very low price for their production making marketing channels less efficient, hence, very uncompetitive (Galor, 1990).

The study is therefore aimed at assessing the efficiencies of soya bean marketing channels in the Ejura-Sekyedumasi and Nkoranza South Districts. Specifically, the study seeks to determine the various channels through which soya bean marketing takes place in the study areas, undertake cost and marketing margin analysis along the various marketing channels, compute marketing efficiencies and suggest possible means of strengthening the soya bean marketing channels.

LITERATURE REVIEW

Soya bean *(Glycine max, L),* is a multifarious plant with its uses and benefits transcending beyond agriculture to include the health and industrial sectors. The seed is the richest in food value of all plant foods consumed in the world (Osho, 1995). Health wise, soya beans help in the prevention and treatment of chronic diseases such as heart ailments, osteoporosis, cancer, kidney ailments and menopausal syndromes (Myaka, 1990). Its industrial uses include the manufacturing of glycerin, inks, margarine, vegetable oil, paints, varnishes, linoleum; antibiotics etc. (www.nda.agric.za, October, 2012). In Ghana, soya bean was introduced in the year 1910 and this was to get farmers to grow the crop as an additional food item and as an export crop for England (Plahar, 2006). Wonderful food recipes prepared from soya beans in Ghana includes koko (porridge), soup, milk etc. (Atiim, 2011).

Global production of Soya bean was over 250 million MT in 2010, rising at a Compound Annual Growth Rate (CAGR) of 4.4 percent between 1991 and 2010 (FAOSTAT), yet, Africa's contribution to global soya trade is only 1 percent, with the greatest contributor being Nigeria, keenly followed by South Africa and Uganda (Sanginga *et al.,* 2003). In Ghana, production between the years 2003 to 2005 amounted to 118,103 MT (Martin, 2006). The country's soya bean producing regions include the Northern, Upper East, Upper West, Volta, Brong Ahafo and the Ashanti Region. The Ghanaian soya bean sector is dominated by small scale farmers with only a few commercial producers such as Adventist Development and Relief Agency (ADRA), Irrigation Company of Upper Region (ICOUR) Limited, Savanna Agricultural Research Institute (SARI), Crop Research Institute (CRI), and Ejura Farms (Adade, 2006). Indigenous varieties of soya are still used by the local farmers and these are the late maturing and shattering types such as the Anidaso, Bengbie, Salintuya, Nakpanduri, except Jenguma and Quarshie, the non-shattering types developed by SARI (Plahar, 2006).

Soya bean has a well-established and growing global market. According to USDA (2011), approximately 35 percent of global soya bean production was traded in bean form with only 34 percent and 24 percent traded in soya bean meal and oil respectively between the years of 2009 and 2010. Ghana's soya bean market is highly driven by the poultry industry. More than 100,000MT of soya bean meal is demanded annually by the poultry industry. The vegetable oil market in Ghana comprises soya bean oil and palm oil, with the latter dominating the market. Although the Ghanaian vegetable oil is dominated by palm oil, major stakeholders in the

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market attest to the fact that properly refined and bottled soya bean oil for the consumption market will command a premium of about 15 percent to 20 percent above similarly packaged and marketed palm (Gage *et al.*, 2012).

Marketing of agricultural commodities has been defined in various concepts and descriptions as the number of specialist and authors in the field. Galor (1990) stated that there is only agreement in principle as to the definition and role of marketing. He argues that production and marketing both require a chain of services, so that there is no clear-cut distinction, as to where one ends and the other begins. Courtland and John (1992) defined marketing as the process of planning and executing conception, pricing, promotion and the distribution of ideas, goods and services to create exchanges that satisfy individual and organizational objectives. Kohls and Uhl (1990) saw marketing in a broad perspective. They said marketing is the performance of all business activities involved in the flow of food products from the point of initial agricultural production until they are in the hands of the final consumer. They argue that agricultural marketing starts with the conception and development of goods, services and ideas and then channeling them to the market for purchase by buyers. They considered pricing and promotion of these goods and services as a facilitative function performed by market intermediaries.

This study adopted Kohls and Uhl (1990) definition of agricultural marketing since it exposes the activities involved in agricultural marketing and does not limit marketing to only the non – farm activities in the food industry. Thus, agricultural marketing is viewed as the flow of agricultural products and services from producers to consumers through the interplay of market participants. These participants are those people and firms that facilitate the movement of products from the producer to the final consumer (Beierlein and Michael, 1991). They are mainly wholesalers, retailers, brokers, manufacturers' representatives and sale agents that specialize in performing various marketing functions involved in the purchase and sale of foods. They are known as middlemen or market intermediaries (Kohls and Uhl, 1990)

According to Baker (1981), the various operations carried out in the movement of a produce to the final consumer is termed marketing function. He explains that marketing functions are major specialized activities performed in accomplishing the marketing processes of concentration, equalization and dispersion. Kerin *et al.*, (1992) divided marketing functions into three basic categories, namely the transactional functions: buying and selling and marketing risks; the logistics functions: assorting, storing and transportation and finally the facilitating functions comprising financing, grading and market information and research. These marketing functions are performed by intermediaries in definite routes or pathways for every commodity. The pathways through which commodities are traded are termed as marketing channels. Sarfo (1982) suggested that the greater or longer the channel, the higher the consumer price. This is due to high cost of transportation, handling charges and the risks involved in the handling of agricultural produce because of its high perishability. In the simplest marketing channel, producers sell directly to consumers (Kwarteng and Towler, 1994).

Marketing channels differ in the number of intermediaries and the efficiency levels. Efficiency of marketing channel, as defined by Olukosi and Isitor (1990) is the value added by marketing activities (market margins) as a percentage of the costs incurred in marketing. Thus, Efficiency of marketing channels depends directly on the relationship between marketing costs and margins of the intermediaries or players in a given channel. Marketing cost are the costs incurred by channel players in moving a produce from one stage to the other whereas the

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marketing margins are the difference in the actual prices paid by the consumer and the prices received by the farmer for an equivalent quantity of the produce.

METHODOLOGY

The research was conducted in both the Ejura-Sekyedumasi and Nkoranza South Districts which are in Ashanti and Brong Ahafo regions respectively. The districts were purposively selected since they are the main soya bean growing areas in the southern part of the country. The districts were stratified into four strata on the basis of geography (Northern stratum, Southern stratum, Western stratum and Eastern stratum); out of which five communities were then selected at random from each stratum. The farmers were then selected at random from each community. The other channel members (wholesalers, retailers and processors) were identified through the farmers. Both primary and secondary data were used in this study. In the analysis of data, the study employed a combination of descriptive and inferential statistics. The marketing margins of the channel players were determined using Gross Margin Analyses where the price paid by the first buyer is deducted from the price paid by the final buyer, computed as:

Gross Marketing Margin = Price paid by final buyer – Price paid by the first buyer

The Shepherd's Method was employed in computing the marketing efficiency for the different channels identified in the study areas and this is denoted as follows:

Shepherd's Method: ME = (V / I) – 1

Where: **ME: Marketing Efficiency Index**

V: Consumer Price

I: Total Marketing Cost of Channel

The constraints facing channel actors with respect to marketing their produce were accumulated, evaluated and ranked according to the most pressing.

RESULTS AND DISCUSSION

Marketing Channels of Soya bean

Figure 1 presents the nine different marketing channels identified in the study areas through which soya bean is marketed. It is evident from the figure that the shortest channel is Channel 1 where farmers sell produce directly to consumers whereas the longest is Channel 9 where farmers sell produce to village traders who in turn sell to retailers, then to small scale processors and finally to consumers for consumption.

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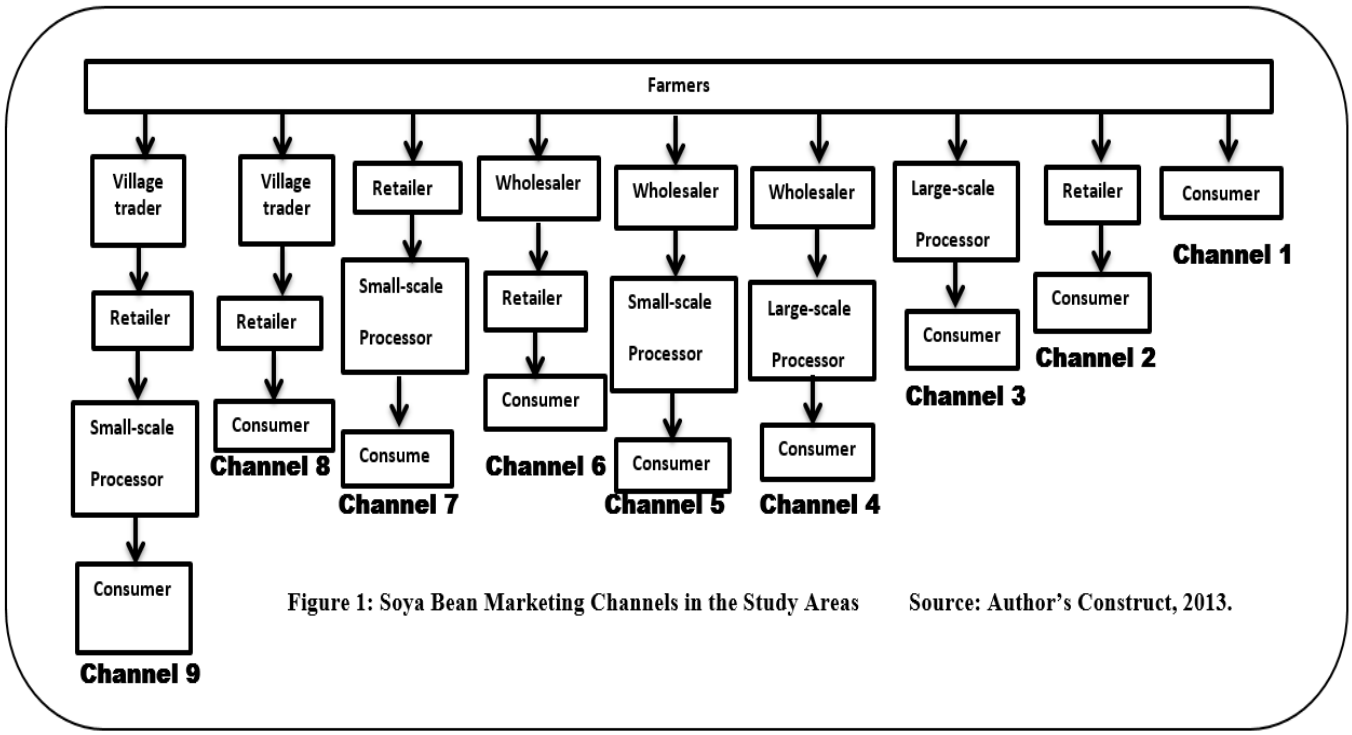

Figure 1: Soya Bean Marketing Channels in the Study Areas **Source: Author's Construct, 2013.**

The source of soya bean in the study areas was the farmers. On the average, a farmer within the study areas produces about 17 bags per production season at 50kg per bag. After production, sixteen percent (16 percent) of farmers' production is purchased by agents / village traders whereas eight percent (8 percent) is sold directly to processors. Forty – five percent (45 percent) and thirty – one percent (31 percent) are sold to wholesalers and retailers respectively. This shows the significant contribution of wholesalers and retailers in the soya bean trade. Most of farmers' produce were sent to Techiman, Ejura, Nkoranza, Atebubu, Ahyiem and Accra for on-ward sale. It was also identified that most of the physical handling and distribution functions such as transportation, packaging, loading and off-loading as well as grading activities were mainly borne by the other members of the chain with the farmers incurring mostly only transportation cost, hence less marketing cost.

In terms of prices, wholesalers most often set the price when dealing with farmers and retailers whilst retailers set the price when dealing with small-scale processors and final consumers. Generally, the middlemen (retailers and wholesalers) asserted that the prices of soya bean were fair. However they complained of slow market of soya bean as compared to other produce such as maize and cowpea. It should be noted that small scale processors in this study are persons who locally process soya beans into soya Kebab whereas the large scale processors are firms that process soya beans into meal and oil. Approximately, 2834 sticks of soya Kebab is derived from a bag (50kg) of soya beans. In terms of oil and meal, approximately 40.68Kg of meal and 8.59 litres of oil can be obtained from a bag (50kg) of soya beans.

Marketing Costs and Margins of Actors in the Different Channels

The study analyzed the marketing costs and margins of seven of the channels identified in the study areas. Those channels which included village traders were excluded in the analysis due to unavailable data on them since they could not be contacted. The analysis was carried out on a unit basis of one bag of soya bean at 50kg per bag throughout each channel. With the

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exception of Channel 1, farmers in the other channels did not bear marketing costs since all their produce were purchased at the farm gate.

Table 1 shows the marketing costs and margins of the actors in the different marketing channels. In channel 1 where farmers sold produce directly to consumers, it was realized that the average value of one bag of soya beans (50kg) was found to be GH₵ 92.90 in the main district markets whilst the average cost of produce at the farm gate was GH₵80.00. Thus, farmers who sold their produce at the district markets obtained a gross margin of GH₵12.90 per one bag of soya beans more than farmers who sold soya bean at the farm gate. However, an average cost of GH₵2.40 was incurred on various activities that got the produce onto the market. Farmers realized a net marketing margin of GH₵ 10.50 per one bag of soya bean sold in the market by them.

It is evident from Table 1 that the active actors in Channel 2 are farmers and retailers only. In this channel, a unit bag of soya bean was sold at GH₵80.00 at the farm gate whilst at the retail market it sold at GH₵122.90. Retailers in Channel 2 made gross margins of GH₵42.90 per unit bag of soya bean. Marketing costs in this channel were borne only by retailers. A typical retailer in Channel 2 incurs averagely GH₵5.90 as marketing cost and earned GH₵37.00 as net marketing margins appropriately, as shown in Table 1.

Table 1 shows that in Channel 3, farmers produce are sold at the farm gates to large scale processors who in turn process the produce into meal and oil for sale to consumers. It reveals that in channel 3, a unit bag of soya bean was sold at GH₵72.50 at the farm gate. Large scale processors in this channel made gross margins of GH₵65.40 and incurred GH₵7.80 as marketing costs in the soya bean trade. They however earned a net marketing margin of GH₵57.60.

In channel 4 farmers sold their produce at the farm gate to wholesalers who in turn moved the produce to the premises of large scale processors for further processing into meal and oil. It should be noted that averagely, a bag (50kg) of soya bean generate 40.68kg of meal and 8.59 litres of oil. From the table in channel 4, a bag of soya beans was sold at GH₵80.00 at the farm gate whilst at the wholesale market it was sold at GH₵95.00. Wholesalers and Large scale processors made gross margins of GH₵15.00 and GH₵42.90 per unit bag of soya beans respectively, implying that large scale processors in this channel earned more gross margins than wholesalers. In Channel 4, wholesalers and large scale processors incurred GH₵6.70 and GH₵4.70 as marketing cost respectively, implying that wholesalers in this channel incurred more marketing costs than large scale processors. In terms of net marketing margins, wholesalers had the least margins (GH₵8.30) whilst the large scale processors had the highest margins (GH₵38.20) due to large scale processors minimizing their marketing costs considerably.

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Table 1: Marketing Costs and Margins of Actors in the Different Channels

ITEMS	CHANNELS 1 GH¢		2 GH¢		3 GH¢		4 GH¢		5 GH¢			6 GH¢			7 GH¢		
REVENUE	F	F	R	F	LP	F	W	LP	F	W	SP	F	W	R	F	R	SP
A. Selling price per bag	92.9	80.0	122.9	72.5	137.9	80.0	95.0	137.9	80.0	120.0	283.4	80.0	108.9	122.9	87.9	118.9	283.4
B. Cost price per bag	80.0	-	80.0	-	72.5	-	80.0	95.0	-	80.0	120.0	-	80.0	108.9	-	87.9	118.9
C. Gross Margin (A-B)	**12.9**	-	**42.9**	-	**65.4**	-	**15.0**	**42.9**	-	**40.0**	**163.4**	-	**28.9**	**14.0**	-	**31.0**	**164.5**
MARKETING COST																	
Transportation	2.3	-	4.9	-	3.1	-	4.4	0.0	-	4.4	3.5	-	4.4	2.9	-	2.9	3.5
Storage	0.0	-	0.0	-	0.0	-	1.3	0.0	-	1.3	0.0	-	1.3	0.0	-	0.0	1.0
Marketing Tolls	0.1	-	1.0	-	0.0	-	0.5	0.0	-	0.5	0.0	-	0.5	1.0	-	1.0	0.0
Loading/off-Loading	0.0	-	0.0	-	1.7	-	0.0	1.7	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
Marketing Labour	0.0	-	0.0	-	0.0	-	0.0	0.0	-	0.0	33.5	-	0.0	0.0	-	0.0	33.5
Packaging/Bagging	0.0	-	0.0	-	3.0	-	0.5	3.0	-	0.5	1.2	-	0.5	0.0	-	1.2	1.2
D. Total Marketing Cost	**2.4**	-	**5.9**	-	**7.8**	-	**6.7**	**4.7**	-	**6.7**	**38.2**	-	**6.7**	**3.9**	-	**5.1**	**39.2**
NET MARKETING MARGIN	**10.5**		**37.0**		**57.6**		**8.3**	**38.2**		**33.3**	**125.2**		**22.2**	**10.1**		**25.9**	**125.3**

Source: Field Survey, 2013. F= Farmer, W= Wholesaler, LP= Large Scale Processor, SP= Small Scale Processor, R= Retailer

Further, table 1 shows the marketing costs and margins of the actors in Channel 5. In Channel 5 wholesalers and small scale processors made gross margins of GH ¢40.00 and GH¢163.40 per unit bag of soya bean respectively, implying that small scale processors in this channel earned more gross margins than wholesalers. Averagely, a typical wholesaler and small scale processor in this channel incurred GH¢6.70 and GH¢38.20 as marketing cost respectively. This shows that small scale processors in this channel incurred more marketing cost than wholesalers. In terms of net marketing margins, wholesalers had the least margins (GH¢3.30) whilst the large scale processors had the highest margins (GH125.20) and this is attributed to the high gross margins earned by the small scale processors.

In Channel 6 as shown in the table 1, the active actors are the farmers who sell produce at the farm gate; wholesalers who purchase produce at the farm gate and retailers who sell produce at retail markets. It is evident from table 1 that a unit bag of soya bean was sold at GH¢80.00 at the farm gate whilst at the wholesale market it sold at GH¢108.90. Nevertheless, a unit bag of soya bean was sold at GH¢122.90 at retail markets. Wholesalers and retailers in Channel 6 made gross margins of GH¢28.90 and GH¢14.00 per unit bag of soya bean respectively, implying that wholesalers in this channel earned more gross margins than retailers. In terms of net marketing margins, wholesalers had the highest margins (GH¢22.20) whilst the retailers had the least margins (GH¢10.10). This is as a result of the wholesalers earning a relatively high gross margin.

In channel 7 farmers sold produce at the farm gate to retailers who in turn move the produce to retail markets for onward sale to small scale processors. From table 1, retailers and small scale processors in channel 7 incurred on the average GH¢5.10 and GH¢39.20 as marketing cost respectively, implying that small scale processors in this channel incurred more marketing costs than retailers. With respect to net margins, retailers had the least margins (GH¢25.90) whilst

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the small scale processors had the highest margins (GH¢125.30), as shown in Table 1. This is attributed to the relatively high gross margins earned by small scale processors.

Marketing Costs and Margins along Channels

Table 2 shows the marketing costs along the various channels. It is evident from the table that, producers incurred marketing costs (GH¢2.40) only in Channel 1 since it is the only channel where the farmer moves the produce to consumer market for sale to consumers. In all the other channels, farmers produce were purchased at the farm gate. Also, Table 2 reveals that wholesalers marketing costs (GH¢6.70) were constant in all the channels. In the case of retailers, their marketing costs were much higher in channel 2 (GH¢5.90) due to them incurring a high transportation cost in that channel. The marketing cost incurred by small scale processors were similar along the channels whereas that of the large scale processors were higher (GH¢7.80) in channel 3 than the other channels due to the transportation cost borne by them in channel 3.

Further, table 2 reveals that along the channels, channel 5 incurred the highest cost of GH¢44.88 with channel 1 incurring the least cost (GH¢2.83). This is attributed to the high marketing labour cost borne by small scale processors in channel 5. It is also evident from the table that, the longer the channel, the higher the marketing cost. Thus, channels consisting of three actors had marketing costs higher than channels with one and two actors. In this case, channels 4, 5, 6 and 7 had marketing costs higher than channels 1, 2 and 3 as shown in the table.

Table 2: Marketing Costs in the Different Channels

	Channels						
Respondents' Marketing Cost	**1 GH¢**	**2 GH¢**	**3 GH¢**	**4 GH¢**	**5 GH¢**	**6 GH¢**	**7 GH¢**
Producers'	2.40	0.00	0.00	0.00	0.00	0.00	0.00
Wholesalers'	-	-	-	6.70	6.70	6.70	-
Retailers'	-	5.90	-	-	-	3.90	5.10
Small Scale Processors'	-	-	-	-	38.20	-	39.20
Large Scale Processors'	-	-	7.80	4.70	-	-	-
Total Marketing Cost	**2.40**	**5.90**	**7.80**	**11.40**	**44.90**	**10.60**	**44.30**

Source: Field Survey, 2013

Table 3 shows the marketing margins along the various channels. From the table, producers' margin was GH¢ 10.50 whereas the wholesalers margin was highest in channel 5 (GH¢33.30) and least (GH¢8.30) in channel 4. This is as a result of a relatively high gross margin (GH¢40.00) earned by wholesalers in channel 5. In the case of the retailers, their margin was quite high in channel 2 (GH¢37.00) as they earned a relatively higher gross margin due to them purchasing produce directly from farmers. Large scale processors' margins were higher in channel 3 since they purchased produce directly from farmers in this channel and this transcended into higher gross margins.

From table 3, channel 5 obtained the highest marketing margin along the channels whilst channel 1 gained the least margin. The difference is as a result of actors in channel 5 earning relatively higher margins than the other actors in the other channels.

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Table 3: Marketing Margins in Different Channels

Respondents' Margin	Channel 1 GH¢	2 GH¢	3 GH¢	4 GH¢	5 GH¢	6 GH¢	7 GH¢
Farmers'	10.50						
Wholesalers'	-	-	-	8.30	33.30	22.20	-
Retailers'	-	37.00	-	-	-	10.10	25.90
Small Scale Processors'	-	-	-	-	125.20	-	125.30
Large Scale Processors'	-	-	57.60	38.20	-	-	-
Total Marketing Margin	**10.50**	**37.00**	**57.60**	**46.50**	**158.50**	**32.30**	**151.20**

Source: Field Survey, 2013.

Price Spread and Marketing Efficiency Analysis of Channels

Table 4 shows the contribution or share of each actor towards the consumer price in each channel. The Price Spread is the difference between consumer price and producer price for an equivalent quantity of farm produce and in this case one bag (50kg) of soya bean. From the table, producers' contribution was 13.89 percent in Channel 1, implying that the sum of their marketing costs and margins constituted a smaller proportion of the price paid by the final consumer. The table reveals that in channel 2, retailers contributed 34.91 percent towards the price paid by consumers whilst in channel 3, large scale processor's earned 47.43 percent of the consumer price. In channel 4, large scale processors received a significant share (31.11%) of the consumer price than the other actors in the channel. Added, table 4 shows that small scale processors significantly gained a greater share of the price paid by consumers in all the channels that they were involved in; thus approximately 58.05 percent in all the channels. In the case of channel 6, wholesalers had the greatest share (23.52%) with retailers receiving 11.39 percent of the consumer price.

In Table 5, the marketing efficiency of the various channels has been computed. The Shepherd method was used in the efficiency computation where the consumer price of each channel is expressed as a ratio of its marketing cost. The assertion is that, the larger the value, the more efficient the channel is as the proportion of the marketing cost to the consumer price would be smaller implying that the channel minimized its cost and rather increased its margins. In the table, the efficiency of Channels 1, 2, 3, 4, 5, 6, and 7 are 37.71, 19.83, 16.68, 11.10, 5.31, 10.59 and 5.40 respectively. It is therefore evident from the table that channel 1 was the most efficient channel with channel 5 being the least efficient. This follows that, channel 1 had its marketing cost constituting a smaller proportion of the consumer price signifying that the channel minimized its cost considerably and rather increased its margins extremely to the benefit of the actors, in this case the farmers. However, channel 5 had its marketing cost constituting a greater proportion of its consumer price implying that the channel had increased cost and a reduced margin to the detriment of the actors involved, in this case the farmers, wholesalers and small scale processors. The other channels followed in the order of efficiency respectively.

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Table 4: Price Spread Analysis of the Different Channels

		Contribution of channel members to consumer price					
	Farm gate price (Gh¢)	**Producer**	**Wholesaler**	**Retailer**	**Small scale processor**	**Large scale processor**	**Consumer price (Gh¢)**
Channel1	**80.00**	Gh¢12.90 13.89%	- -	- -	- -	- -	**92.90**
Channel 2	**80.00**	- -	- -	Gh¢42.90 34.91%	- -	- -	**122.90**
Channel 3	**72.50**	- -	- -	- -	- -	Gh¢65.40 47.43%	**137.90**
Channel 4	**80.00**	- -	Gh¢15.00 10.88%	- -	- -	Gh¢42.90 31.11%	**137.90**
Channel 5	**80.00**	- -	Gh¢40.00 14.11%	- -	Gh¢163.40 57.66%	- -	**283.40**
Channel 6	**80.00**	- -	Gh¢28.90 23.52%	Gh¢14.00 11.39%	- -	- -	**122.90**
Channel 7	**87.90**	- -	- -	Gh¢31.00 10.94%	Gh¢164.50 58.05%	- -	**283.40**

Source: Field Survey, 2013.

Table 5: Marketing Efficiency of Channels

Particulars	**Channel**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Consumers' price	92.90	122.90	137.90	137.90	283.40	122.90	283.40
Marketing Cost	2.40	5.90	7.80	11.40	44.90	10.60	44.30
Marketing Efficiency*	**37.71**	**19.83**	**16.68**	**11.10**	**5.31**	**10.59**	**5.40**
Ranking Efficiency	**1st**	**2nd**	**3rd**	**4th**	**7th**	**5th**	**6th**

Source: Field Survey, 2013. *Shepherd Method was used in efficiency calculations.

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Constraints Analysis

It was observed that farmers were faced with the most constraints with respect to their marketing operations relative to the other players. Central among farmers' constraints was low prices received for their produce. This was the case since most farmers dealt individually with the other channel actors. Added, farmers faced the challenge of low market, lack of access to finance, poor harvesting methods, bad roads and high transportation costs.

Wholesaler indicated that they were faced with challenges such as high transportation cost, seasonality of produce and high storage cost. On the part of small scale processors, high prices of produce and limited supply of produce were identified as constraints facing them with respect to their marketing operations. Large scale processors specified that they were faced with challenges in the form of high prices of produce, unavailability of inputs and farmers' unfaithfulness. They explained that farmers were unfaithful with market contract since after their production, farmers tend to sell their produce to other parties rather than the large scale processors, even though processors had supplied them with all required inputs for production.

CONCLUSION

The study revealed that nine different channel existed in the study areas through which soya bean was marketed. The shortest channel was identified as Channel 1 where farmers sold produce directly to consumers at consumer markets. Further, analysis of marketing costs revealed that whilst small scale processors marketing costs were similar in almost all the channels that they were involved in, the marketing costs of wholesalers were rather constant in all the channels they actively involved themselves in. Retailers and large scale processors earned a relatively higher cost in channels 2 and 3 respectively due to them bearing the transportation costs in those channel. The study showed that channel 5 had the highest marketing cost relative to the other channels due to the high cost of marketing labour borne by this channel. Margin analysis indicated that farmers earned the least net margin as against retailers who earned the highest net margins and the difference is as a result of the relatively higher gross margins earned by retailers. In the same vain, channel 5 earned the highest net margins compared to the other channels due to actors in channel 5 earning relatively higher margins than others in the other channels.

Analysis of price spread revealed that channels 5 and 7 had the highest consumer price with channel 1 having the least consumer price. This is attributed to the presence of small scale processors in channels 5 and 7 who performed numerous marketing functions, bore the necessary cost and hence earned the associated margins. Channel 1 where farmers sold produce directly to consumers was identified as the most efficient marketing channel for marketing soya beans in the study areas; thus it's the channel that minimized its marketing cost considerably and rather increased its margins extremely. Relatively, farmers were faced with numerous constraints with respect to their marketing functions. Central among farmers' constraints was low prices of produce and low market.

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RECOMMENDATION

From the study, Farmers are encouraged to use channel 1, where they sell produce to consumers directly in consumer markets, in marketing their produce since it's the channel that farmers will be better off in terms of margins. However, due to the difficulty in locating consumers directly, they are strongly advised to form unions, co-operatives and farmer based organizations to strengthen their bargaining power in their dealings with the other channel actors. Moreso, farmers are directed to use strategies such as hedging and contract farming when dealing with the other channel players to protect them against price fluctuations and also give them assurance of buyers. Finally, the study recommends the central government's intervention in the form of road construction and improvement to help reduce the excessive transportation cost associated with the soya bean trade in Ghana.

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