

Small Enterprises Development Company's Value Chain Interventions for Marketing Efficiency of Vegetables Farmers in Eswatini: A Case of Shiselweni Region in Eswatini

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ABSTRACT— It has been realized that there is lack of consistent and adequate supplies of good quality of locally grown vegetable in Eswatini. Therefore, the Small Enterprises Development Company (Pty) Ltd. (SEDCO) embarked on a value chain intervention training programme for small-scale vegetable farmers on for improved marketing efficiency. However, the effect of the intervention training programme farmers' performance market efficiency remains unassessed. Hence, this study aimed at assessing the contribution of SEDCO's value chain interventions smallholder vegetable farmers' marketing efficiency in the Shiselweni region. A quantitative descriptive research design was employed on a sample 46 vegetable farmers based on information availed by SEDCO. The results indicated that most vegetable farmers were males (63.0%) and majority (34.8%) of them were aged between 45-65 years. Majority (43.5%) of the sampled farmers were earning income ranging between R500.00-R1000.00 per month. Further, the findings suggest that farmers' marketing efficiency (ME) improved from 4.561 to 5.125 after SEDCO's intervention, indicating a positive contribution of the training programme. The findings further indicate that farm income had a negative and significant influence on marketing efficiency of the sampled farmers. This suggests that farmers tend to re-invest relatively more in the marketing process of farm produce, thereby, increasing marketing costs and reducing marketing efficiency. The over reinvestment behaviour is attributable to limited knowledge on cost management. The study recommends that the government and development agencies should continue engaging farmers through trainings on the different methods/techniques of reducing marketing costs in addition to SEDCO's efforts. Furthermore, all stakeholders should join efforts of formulating and implementing policies that creates a less costly vegetable marketing environment along the value chain for improved marketing efficiency.

KEYWORDS: value chain, marketing efficiency, SEDCO, vegetable, Eswatini

1. INTRODUCTION

Agriculture has significantly contributed to the development of Eswatini's economy as it provides the necessary raw materials required by agro-based industries that form the major support of the manufacturing sector. Agriculture also acts as a source of income and food security to a large proportion of the rural households, and earner of foreign exchange and a market for industrial products, this is reflected by the roughly 75% of the population obtaining their living from agriculture of which 60% of this households' income comes from livestock and crops while the remaining 15% being derived from remittance and formal sector activities along with wages. Thompson [1] states that the different agricultural activities practiced in the country include amongst others citrus fruits, sugarcane production, cotton, forestry, maize, vegetable

crops, cereal crops and livestock production [1], [2].

Farmers in Eswatini, especially on Swazi Nation Land (SNL), produce maize in summer and vegetables in winter with the most commonly produced vegetables being cabbage, tomato, carrot and onion, known as the 'BIG FOUR' in the country. Due to the vegetable production being seasonal in nature, the 'big four' can be grown in any part of the country, thus, all vegetable growers usually produce them. Other vegetables like beetroot, green pepper, cauliflower, brussels sprouts, broccoli and potato are also grown in the country. From mid-winter to early summer these vegetables are usually plenty in the market, hence, a bulk of locally produced vegetables are sold within the country, but may also be exported outside the country if produced throughout the year and in significant quantities [3]. Fresh vegetable consumption in the country is estimated to be around 40 000 tonnes per annum, which translates into an annual per capita consumption of 40kg. The consumption of tomato, cabbage and onion has high income elasticity of demand, while the demand for carrot is almost inelastic [4]. Majority of the rural population and large proportion of the lower income households among the urban population consume very few vegetables, while the high-income households consume above the national calculated average [5].

Vegetables do not only have a significant probability to compete where there are a fewer government regulations and restrictions in the economy, but they are also beneficial for their contribution to the share of agriculture in the economy of Swaziland. Currently, local production is unable to meet the high local demand of vegetables, hence, the gap is filled by imports from South Africa. This explains why the National Agricultural Marketing Board's (NAMBoard) fresh produce market only sells 11% of locally produced vegetables and the rest coming from South Africa. A marketing strategy for the Swaziland Fresh Produce Market (SFPM) was developed by Coopers & Lybrand Management Advisory Services (Pty) Ltd along with other persons in November 1994 to mainly analyse the strengths, weaknesses, opportunities and threats of the SFPM and identification of the critical success. These factors ensure that the SFPM provides efficient, effective and fair systems and methods through which domestically and imported fruits and vegetables can be sold. This was upon realizing that smallholder farmers lack consistent and adequate supplies of good quality locally grown produce, consignment management, both markets agents, market management effective communication, information dissemination, lack of 'customer care', programmes on attitudes and skills of market management, especially among smallholder vegetable farmers.

Small Enterprises Development Company (SEDCO) realized that the current situation is such that local producers have limited access to markets, inability to satisfy the demands and requirements of markets, weak if not non-existent relationships with customers and other actors in the value chain, inconsistent production frequencies and unnecessary competition even in situations where collaboration would be most appropriate. This then necessitated the adoption of the Local Value Chain Development (LVCD) and market facilitation approaches which basically was aimed at seeking to build cooperation among producers. Then SEDCO mounted an intervention programme that provided a full range of basic business skills. This intervention was enrolled through activities that worked to develop strategic market linkages, and such activities included focused local value chain development training, market facilitation services and on-the-field business mentorship and coaching.

SEDCO is a category "A" public enterprise under the Ministry of Commerce, Industry and Trade established in 1970 to awaken, promote and support entrepreneurial talent with a vision and prime focus to create jobs and sustainable employment within the Small, Micro and Medium Sized Enterprises (SMME's) and thus make meaningful contribution in the larger socio-economic development of the country. Since establishment, a nationwide demand for SEDCO's business education, training and consultancy services has been observed

from active and potential entrepreneurs. Through their services, a substantial number of their clients have received financial support from local financial institutions, an indication of positive efforts made by SEDCO in facilitating and guiding entrepreneurial activities among the SMME sector. This continues to promote SEDCO as a critical driver of economic growth in the country.

SEDCO's vision is to be a centre of excellence for entrepreneurship in the Kingdom of Eswatini, committed to the development and promotion of Swazi-owned SMME's throughout the country. The organisation has been doing this since inception through the provision of a package of services that suits the needs of the market. The mission statement of this company is "to contribute to the country's economic development through facilitative interventions in entrepreneurial activities to ensure a vibrant SMME sector and meaningful support to Eswatini's poverty reduction programmes". The main objective of SEDCO is to help stimulate the Micro, Small and Medium Scale enterprise sector, which contributes to increased employment opportunities and the creation of wealth through turning job seekers to job makers.

According to [6], the Government of Swaziland has currently put more effort to address the challenges faced by the agriculture sector for improved productivity in rural areas. Efforts have been made to integrate and equip agro-marketing groups with business skills transfer in order to create an enabling environment for producers that have emerged as cooperatives or producer groups [7]. However there has not been any research done to ascertain the contribution of SEDCO's training interventions on farmers' market efficiency. Therefore, this study sought to fill this gap.

1.2 Vegetable production in Eswatini

NAMboard's report of 2017/18 indicated that the total production of vegetables and fruits was estimated at 39 646 MT, which translate to 99.36g uptake per day. Eswatini produces different types of vegetable crops in the various agro-ecological regions as a source of income and for food security [8]. Table 1 shows the vegetable crop status of the most commonly produced vegetables in Eswatini between the years 2005 to 2009. During the period 2005 to 2009, a total of 559 farmers were involved in the production of cabbages, tomatoes, carrots and onions under a total area of 353.7 hectares. The total contribution of the vegetables to gross domestic product was E278, 481 by 2009.

Table 1: Most grown vegetables in Eswatini

Vegetable Crop	Hectares	Number of farmers	Average returns/ ha	Cost of Production(E)	Contribution to GDP
Cabbage	154.8	310	83,332	18,481	64,852
Tomatoes	72.5	145	105,000	22,602	82,398
Carrots	96.8	37	105,000	15,170	89,829
Onions	30.4	61	62,500	21, 097	41,402
TOTAL	353.7	559	355832	77350	278481

Source: NAMBoard, (2009).

The government of Eswatini has been encouraging farmers to embark in baby vegetable production through the National Agricultural Marketing Board [1], [2]. This has been one of the efforts by government to encourage farmers to diversify crop production activities on their farms. NAMBoard [3] stated that farmers have willingly taken up the practice of baby vegetables production as they are 120 registered baby vegetable farmers in the country who are mostly located in the rural areas and cultivating on Swazi Nation Land [2]. NAMBoard also reported that local farmers are facing a great challenge in meeting external markets high quantity and quality demands [8]. Another key challenge mentioned was the lack of knowledge and skill in

order to predict amount of input and output that maximizes profitability. Lack of resources like water and capital is also a drawback to local production of vegetables and to vegetable farmers as they are often excluded from agricultural funds. Sithole and Grenoble [9] realized that the consumption of vegetables in Eswatini has been increasing over the years and the country is blessed with fertile soils which favours vegetable production. Although the performance of large farms and plantations on Title Deed Land (TDL) remains crucial to the gross domestic product, exports growth and overall economic development is increasing rural employment and income depends predominantly on the performance of agriculture on SNL.

Marketing is fundamental for the success of vegetable farmers and therefore, farmers rely on good infrastructure, appropriate transportation facilities, improved technology and communication links to effectively market their products. Market participation becomes more profitable if farmers are able to minimize transaction costs and produce goods or services at a lower opportunity cost [10]. Eswatini as a developing country requires an improved marketing system since the demand for vegetables is increasing very fast due to the growth in urban populations. Opportunities to earn foreign exchange by exporting high value-off-season vegetables with better prices are wide, which could further contribute to employment since agricultural production is labour intensive [11]. Eswatini has a wide range of marketing systems including farmers' markets, cooperative markets, contract markets and corporate markets. The interests of small-scale farmers are protected through farmers' markets and cooperative markets, while the contract and corporate markets mostly cater for the commercial farms. NAMBoard [3] stated that the traditional markets found in most towns receive vegetables from local vendors who buy at the farm gate and deliver to the markets. However, some of the big buyers opt to source the vegetables from bigger and more trustworthy farmers in South Africa due to the unevenly distributed areas of production and the unreliable of local supply of produce [1], [2].

The Small Enterprises Development Company [12] stated that the goal of the value chain is to ensure that those in charge of each stage are communicating with one another to fast-track the delivery of produce to end-users, as easily and as quickly as possible to strengthen the actors competitive advantage [12]. The value chain allows farmers to understand the environment in which they operate, to have an improved understanding of competitive challenge such as presence of middlemen, to identify key relationships and to gain greater visibility of the risk to which the organization's operations is exposed [13]. Any distribution channel member can benefit from reduced delivery times and transactions costs. The marketing, sales and service aspects of the value chain are important in improving customer relationships. In addition, revenue and profits are enhanced through the value chain, which is the ultimate bottom-line benefits of value chain management [13]. [14] stated that as with most agricultural value chains, the main functions in the vegetable value chain start with input supply, moving onto production, harvesting, post harvesting, handling, storage, marketing, processing and consumption [14]. Each of these functions is carried out by different types of actors, using different types of technologies and interacting with different participants in the value chain. This implies that farmers do not work alone, they work with actors before them and after them in the chain hence they can obtain inputs on credit since they communicate with others and have earned trust amongst them therefore farmers can be able satisfy the market hence successful production is guaranteed.

1.3 Marketing efficiency

According to Landesa Rural Development Institute [15], marketing efficiency is the ratio of inputs to outputs. Marketing efficiency is principally comprised of operational efficiency and pricing efficiency [15]. A market is efficient if the maximum amount of goods and services are being produced with the given level of resources, and if no additional output is possible without increasing the amount of inputs. Market efficiency was developed in 1970 by economist Eugene Fama, whose theory of efficient market hypothesis (EMH) stated

that it is possible for an investor to outperform the market because all available information is already built into all stock prices. At its core, market efficiency measures the availability of market information that provides the maximum amount of opportunities to buyers and sellers of securities to effect transactions without increasing transaction costs [16].

Market efficiency does not require that the market price be equal to true value at every point in time. All it requires is that errors in the market price be unbiased, thus, that prices can be greater than or less than true value as long as these deviations are random. The fact that the deviations from true values are random implies, in a rough sense, that there is an equal chance that stocks are under or over valued at any point in time and that these deviations are uncorrelated with any observable variables. For instance, in an efficient market, inventory with lower price-to-earnings ratio should be more or less likely to undervalue than inventory with higher price-to-earnings ratio. Ironically, investment strategies intended to take advantage of inefficiencies are actually the fuel that keeps a market efficient.

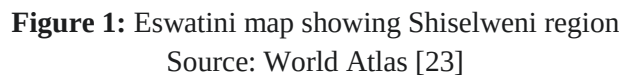
According to the economic theory, market efficiency is conducive to the optimum allocation of resources. In addition, the economic theory and empirical research indicate that market efficiency has a major impact on a country's economic performance [17]. In such circumstances, the price mechanism is thought to ensure that the products and services produced will end up in the hands of those that value them most and market efficiency is also thought to be welfare-optimizing [17], [18]. [19] showed that an economy's ability to reallocate resources effects its growth rate. Market efficiency may also lead to productive efficiency in a dynamic way. A study by [20] revealed that competition is, in fact, very important for firms to achieve efficiency.

Market efficiency has also been associated with economic resilience [21], in the sense that such efficiency enables a country to quickly absorb, withstand and bounce back from the negative effects of exogenous shocks. [21] argued that the existence of rapidly adjusted markets lead to resources being allocated or reallocated to reduce the negative impact of shocks. In the past decade, the nature and character of different demographic factors, which have the potential for influencing business performance have occupied the centre stage of the theory and practice of marketing strategy. Demographic factors such as age, gender, education, income and work experience have a considerable impact on business performance [22].

2. MATERIALS AND METHODS

2.1 Study Area

The Shiselweni region, which runs across the southwest of Eswatini, was chosen because SEDCO's three area programmes assessed in this study are implemented in this region. Moreover, about 80% of the producer groups of vegetable farmers operate within the region. Shiselweni has an area of 3,786.71 km² and a population of 208 454 (in 2007) and it is divided into 14 constituencies. The region borders the Lubombo region in the North-east and Manzini region in the North-west. The administrative centre of the region is Nhlangano, which is amongst some of the main market places for the farmers produce within the region. Nhlangano has a warm temperate climate, with much less rainfall in winter than in summer. In general, the average temperature in Nhlangano is 17.0 degrees Celsius and the average annual rainfall received is 870mm.



2.2 Analytical Approach

$$M.E. = \binom{V}{I} - 1 \quad (1)$$

The linear regression model (OLS) was used to establish the relationship between farmers' marketing

efficiency and their socio-economic characteristics was mathematically expressed as;

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu_i \quad (2)$$

Where: Y = Marketing Efficiency; β_0 = constant; $\beta_1 - \beta_4$ = parameters to be estimated; X_1 = Age (years); X_2 = Gender; X_3 = Years in schools (years); X_4 = Farm income (E); μ = Error term.

2.3 Explanatory variables and a priori expectations

Age (X_1): Age in agriculture is associated with experience or knowledge that the farmer has acquired in the industry. Age was expected to have a positive relationship.

Gender (X_2): Gender is important in agricultural production because the operations performed require a certain level of physical ability to be properly executed. Gender was expected to have a positive effect on production from males with the opposite being true for females.

Years in school (X_3): Vegetable production requires expertise to be profitable but with basic education one can successfully produce them. Years in school was expected to have a positive relationship with regards to marketing efficiency.

Farm income (X_4): Vegetable production requires constant cash inflow to cater for daily production costs, hence, farm income comes in as an essential tool as it would be used to further expand the vegetable production and keep production running smoothly. Farm income is expected to have a positive relationship with regards to marketing efficiency.

3. RESULTS AND DISCUSSION

3.1 Socio-economic characteristics of the respondents

The descriptive statistics of the socio-economic characteristics of the farmers are presented in Table 2.

Age of the Respondents

The survey carried out revealed that the mean age of the respondents is 50 years. It can be observed from the results that the majority of vegetable farmers (34.8%) are aged between 45-55 years and at least 6.5% of the vegetable farmers are aged between 23-33 years. This implies that vegetable production is dominated by the aging group with less young energetic youths participating.

Table 2: Socio-economic characteristics of the respondents (N=46)

Variable	Frequency	Percentage
Age		
23 – 33	3	6.5
34 – 44	13	28.3
45 – 55	16	34.8
56 – 66	10	21.7
67 – 77	4	8.7
Gender		
Male	29	63
Female	17	37
Income (E)		
500 - 1 099	20	43.5
1 100 - 1 599	14	30.4
1 600 - 2 099	7	15.2

2 100 +

5

10.9

Gender of Vegetable Farmers

Results obtained from the survey show that 63% of respondents were males while 37% were females. This implies that mostly male farmers were engaged in vegetable farming.

Income of Vegetable Farmers

The minimum income received by the sampled farmers was E500.00 and the maximum income amount was E5,000.00. The results obtained through a field survey shows that the mean income received was E1,463.04, which reflects that the farmers receive way above the proposed minimum wage rate set by the Government of Eswatini. This is a positive sign that vegetable production, as an enterprise, bear the potential to contribute meaningfully to the income of farmers' households, thereby reducing food insecurity and poverty.

3.2 Marketing efficiency before and after training

Table 3 presents a comparison of the marketing efficiency of the farmers before and after the implementation of the SEDCO value chain intervention training programme. To estimate the marketing efficiency of the smallholder vegetable farmers in the Shiselweni region, the Sheperd's formula of calculating the index of marketing efficiency was employed. The data were collected to obtain the value of vegetables sold (total revenue) and the total marketing costs incurred by the smallholder farmers. The total marketing cost data collected included transportation costs, packaging costs, tax paid and communication costs.

$$\text{Marketing Efficiency} = (\text{Average Value of Goods Sold} / \text{Average Marketing Cost}) - 1$$

$$\text{Marketing efficiency}_{\text{Before}} = \left(\frac{E972.39}{E174.85} \right) - 1 = 4.561 \quad (3)$$

$$\text{Marketing efficiency}_{\text{After}} = \left(\frac{E1537.83}{E251.09} \right) - 1 = 5.125 \quad (4)$$

The calculated Marketing Efficiency (M.E) results show that the mean difference value of vegetables sold was more after training amounting to E565.43, which may be due to improved production measures that were used by the farmers to increase. In addition, the marketing costs incurred when selling the vegetables increased after the training by E76.23, which may be due to expansion of marketing strategies. The farmers under study were efficient in marketing their produce both before and after, although there was an observed slight increment of 0.564 in marketing efficiency score after training intervention. It is also observed that there was a significant difference between the average value of vegetables produced after training and the average value of vegetables produced before training at 1% level of significance, and a significant difference in the average marketing cost before training and average marketing cost incurred by vegetable farmers after training at 5% level of significance, as presented in Table 3.

Table 3: Comparison of Marketing Efficiency

Variable	Mean	Std. Deviation	Mean Difference	t-value	P-value
Value of vegetables sold before SEDCO training (E)	972.391	745.354	565.435	-2.762	0.007
Value of vegetables sold after SEDCO training (E)	1537.826	1171.312			
Marketing Costs before SEDCO training (E)	174.848	152.436	76.239	-2.094	0.039
Marketing cost after SEDCO training (E)	251.087	194.255			
M.E before SEDCO training	4.561	14.331			

M.E after SEDCO training	5.125	24.241	0.563	-0.171	0.313
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3.3 Establish the factors that contribute to the market efficiency of the farmers

The results of the regression analysis are presented in Table 4. The dependent variable was marketing efficiency after training and the independent variables were; age, gender, years in school, and farm income. The R² as a measure of goodness of fit of the regression equation is 0.535, which means the variability in marketing efficiency is 53.5% jointly explained by the independent variables considered in the model. The F-ratio of 4.607 with a p-value of 0.000 indicates that the model provides a good fit for the data at 1% level of significance. Results of the linear regression model indicate that only farm income proved to be a significant factor contributing to the marketing efficiency of vegetables, this implies that an increase in farm income by E1.00 results in a decrease in marketing efficiency by 1.4%. This may imply that as the farmers earn more incomes, they tend to spend more on marketing costs, which may lead to reduced marketing efficiency.

Table 4: Estimates of Marketing Efficiency Factors

Variable	Coefficient	t-statistics	P-Value
Constant	10.289	0.560	0.579
Age	0.054	0.189	0.851
Gender	-0.966	-0.167	0.868
Farm income	-0.014	-2.754	0.009***
Years in school	0.305	0.515	0.609

R² = 0.535, Adjusted R² = 0.419, F-ratio = 4.607

3.4 Challenges faced by vegetable farmers

Results show that the majority of vegetable farmers (45.7%) are faced with perishability as a challenge they encounter during the marketing process. This may be so because vegetables are delicate and biological in nature calling for a well-established cold value chain system. About 13% responses indicate that farmers claim that vegetable marketing attracts low discouraging prices, since farmers lack access to markets with better prices. This may require farmers to carry out marketing research that may assist in identify niche markets offering better prices than low farm gate prices. Other challenges faced by the farmers were lack of transport for vegetables from farm to market, late payment of vegetables sold on credit, high vegetable demand from consumers and insufficient marketing skills.

Table 5: Estimates of Marketing Efficiency Factors

Challenge	Frequency	Percentage (%)
Perishability	21	45.7
No market	14	30.4
Low market price	6	13
Other	5	10.9
Total	46	100

4. CONCLUSION AND RECOMMENDATION

4.1 Conclusion

The results indicated that most vegetable farmers were males (63%) and most (34.8%) of the farmers were aged between 45-65 years. Majority (43.5%) of the sampled farmers were earning income ranging between R500.00-R1000.00 per month. The findings of this study suggest that farmers' marketing efficiency (ME) improved from 4.6 to 5.1 after SEDCO's intervention, indicating a positive though slight contribution related

to trainings offered by the same agency. The findings further indicate that farm income had a negative and significant influence on marketing efficiency of the sampled farmers. The results suggest that as farmer's income increase, they tend to spend relatively more in re-investing in marketing their produce thereby increasing their marketing costs and hence, reduced marketing efficiency. This may be attributed to limited knowledge related to cost management.

4.2 Recommendations

4.2.1 Recommendations for vegetable farmers

- I. It is recommended that vegetable farmers should not spend all farm income acquired on domestic use and transaction costs but rather they should consider reinvesting it back into the vegetable production as that would increase output, and value of vegetables sold, hence improved marketing efficiency.
- II. The youth should be encouraged to participate in vegetable production as the ageing group will soon be phased out leaving the vegetable production vulnerable.
- III. Since farmers cited big losses due to lack of facilities to handle the highly perishable vegetable, a well-developed cold value chain of the products should be considered by stakeholders including government-private partnerships to construct cold stores and carrier vehicles that can safely deliver the output when fresh.

4.2.2 Policy recommendation

- I. Organizations along with government should conduct trainings to educate vegetable farmers on effective and efficient vegetable production in order to increase sales hence yield more income.
- II. The government and stakeholders should form policies that create a less costly marketing environment, hence reduced marketing costs for improved marketing efficiency.
- III. Trainings provided by SEDCO on value chain should be continued and also encourage other stakeholders to join SEDCO's efforts.
- IV. Involve women and disadvantaged groups in the development and implementation of policies, processes and activities at all levels

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