Opportunities for Upgrading the Banana Value Chain in Uganda

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Abstract

As one of the major staple foods in Uganda, the banana industry is important for providing food and income to producers and other value chain actors. However, the sector is vastly underdeveloped, hence limiting its contribution to the economic wellbeing of actors. This paper assesses opportunities for upgrading the banana value chain as a basis for identifying the potential entry points for developing the banana sub-sector in Uganda. A cross-sectional research design was adopted where interviews with 240 value chain actors and focus group discussion were conducted. Additional information was collected from a desk review of relevant literature. The value chain analysis approach was adopted for data analysis as a basis for identifying opportunities for improvement and upgrading options. Results showed that banana farmers apply inputs at the farm level and they are involved in value addition post harvest, but on a very low scale. On average 27% of the bananas produced by smallholder farmers were set aside for value addition. The most common forms of value addition adopted by farmers and traders included ripening and roasting the bananas, brewing local alcohol (tonto and waragi), making crafts and juice. The study observed an increasing number of firms that are involved in modernized value addition techniques. However there was a poor link between value chain actors, especially banana producers, input suppliers and providers of financial services. The study identified numerous opportunities for product, process, functional, channel and inter-sectoral upgrading in the banana value chain as well as value chain governance as important entry points towards boosting the general performance of the banana value chain.

Keywords: *Opportunities, upgrading, value chain, Uganda.*

Introduction

The banana industry in Uganda is important both for provision of food and income to a wide range of actors. Like many developing countries in Africa, agricultural value chains in Uganda are largely underdeveloped (Schaffnit-Chatterjee, 2014). The banana value chain is among the main agricultural value chains in Uganda; it is characterized by a long chain of actors making the trading system inefficient (Asiimwe, 2011). Brokers and small scale traders are the main market access points for farmers and they often offer low prices (Nowakunda *et al.*, 2010). As such, banana producers have limited bargaining power since they sell their produce individually- each selling a few bunches at a time (Nowakunda *et al.*, 2010). Nonetheless, farmers have unexploited opportunities including the adoption of improved banana varieties and agricultural inputs such as fertilizers. The International Fertilizer Development Center-IFDC (2002) noted that the input supply system in Uganda is underdeveloped, hence constraining accessibility by farmers.

The underdeveloped level of the banana value chain in Uganda (Ngambeki *et al.*, 2010) is primarily attributable to its complex nature, which has contributed to interconnectivity challenges that ultimately lead to minimal long-term relationships between the various actors. As a result, the relationship between the chain actors is based on mistrust and exploitative attitudes, thereby yielding minimal benefits for some actors (Larsen *et al.*, 2009). This situation is further complicated by the short shelf life of fresh bananas, which contributes to huge losses in value chain activities beyond the farm gate. This necessitates the adoption of upgrading strategies in the value chain.

A value chain is defined as a full range of activities necessary to avail a specific product from the conception stage through production, consumption and disposal after use (Kaplinksy and Morris, 2001). Upgrading involves raising something (an activity) to a higher standard by either adding or replacing components/methods. Upgrading has also been defined as an innovation with the aim of increasing value (Dunn *et al.*, 2006; Rabellotti, 2008). Kaplinksy and Morris (2001) define upgrading as the acquisition of technological capabilities and market linkages that enable firms to improve their competitiveness and move into higher value activities along the chain. Upgrading can also be undertaken outside firms, by groups or individuals (actors in a chain).

Value chain upgrading can therefore be defined in terms of improvement of the value chain activities as a basis for increasing productivity and efficiency (Dunn, 2014). Value chain upgrading can be done in terms of the process, product (including packaging and branding), function (in sourcing and distributional aspects), channel (seeking new markets) and inter-sectoral upgrading which entails linkage of one value chain to another (Dunn *et al.*, 2006). Value chain governance is important in upgrading, it refers to the organizational nature of activities in a given value chain.

The underdeveloped nature of the banana value chain in Uganda has contributed in various in ways to undermine its production and marketing systems and thus the need to identify and adopt upgrading opportunities. Hence, this study aimed at assessing the upgrading opportunities in the banana value chain in Uganda to identify the potential entry points in the development of the banana sub-sector. To achieve the study objective, three research questions were adopted: (i) Do opportunities for banana value chain development exist? (ii) What kinds of upgrading options exist for banana value chain development? (iii) Is upgrading necessary in banana value chain for developing the value chain. To address these study objectives and relevant research questions a systematic methodology was developed

Research Methodology

This study was conducted in Mbale district located in the Eastern region of Uganda while Kabale and Mbarara districts are in the South Western part of the country. These areas were chosen because they have varying banana production levels and different market arrangements which enabled the study to have a representative sample for Uganda to ease replication. Mbale district has low production levels, Kabale district has moderate, while Mbarara district has high levels. Mbale borders Kenya while Kabale borders Rwanda, as such, the districts are avenues for cross border trade.

The study used a cross-sectional research design, employing quantitative and qualitative research methods (mixed methods) as championed by McCormick and Schmitz (2001). To increase the reliability and precision of data, a triangulation method (involving interviews, focus group discussion and literature review) was adopted (Creswell; 2009; Grajek and Kretschmer, 2009). Two focus group discussions involving farmers and traders were organized in each district where the number of participants ranged from 8-15. The study employed a multi stage sampling technique where in the first stage three districts (Kabale, Mbale and Mbarara) were

purposively selected. The second stage, involved purposive selection of two sub-counties from each district where the banana value chain was strong, followed by purposive selection of two parishes from each sub-county, making a total of four parishes per district. The selection was based on the availability of all the targeted value chain actors. The third stage involved a simple random selection of 20 value chain actors from each of the selected parish. The sample constituted input dealers (1), banana farmers (10), loaders (1), transporters (2), bulk traders (1), retailers (1), processors (1), advisory service providers (1) and consumers (2). A total of 240 value chain actors were selected for the study. The exploratory method of research was highly useful in identifying the actors especially in areas where some value chain actors were not present. As a result the nearest parish where such a value chain actor could be found was used for the study. The study employed the value chain analytical framework and considered key value chain actors within the banana sub-sector from production and consumption to inform the study.

To identify the value chain upgrading opportunities, the value chain analysis approach was adopted. Data was analysed through descriptive techniques; means, percentages and frequencies using Microsoft Excel and STATA.

Results and Discussion

Upgrading opportunities

The study revealed various upgrading opportunities in the three districts (Mbale, Kabale and Mbarara) such as; input use, value chain governance, value chain financing and value addition.

Input Use

The study established that 18% of the farmers applied manure in their plantations but none used mineral fertilizers. Across the study area mulching (using overgrown weeds, grass, banana stems and leaves) of banana plantations was found to be one of the best option for banana value chain upgrading with respect to increasing productivity. The study estimated the cost of mulching one acre at Ugx[1] 0.9 million[2] and revenue flows of Ugx 4.2 million from sale of 400 bunches at Ugx 10500 each thereby making a profit of Ugx 3.3 million. Returns from a non-mulched acre of banana were estimated to be Ugx 1.6 million; indicating an additional benefits (200 bunches) associated with mulching hence,

[1]Ugx is Uganda Shilling

[2] Ugx2500 = 1USD

increased productivity. However, this increased productivity was subject to change depending on the intensity of mulching as well as other general agronomic practices.

The study observed a limited network of input dealers across the three districts in the study area, which resulted in a weak link between input dealers and banana producers. However, very few banana producers were used weed control inputs in their banana plantations, especially in Mbale district. These findings deviate slightly from the findings of Bagamba *et al.* (2007) who established that none of the banana producers applied inorganic inputs. The current study established that banana producers used their own farm inputs in for maintaining their banana plantations and for expansion. Such inputs included banana suckers, farm yard manure and mulch, the finding which was consistent to those reported by Bagamba *et al.* (2007).

The study discerned various avenues for upgrading banana products, which included: fertilizer application, using tissue culture seedlings, mulching and application substances for disease control substances as strategies for upgrading the banana value chain (product upgrading). The increased use of inputs is associated with improved productivity, better banana quality (size and appearance). Moreover, such increased productivity and quality would influence the decision among banana farmers to sell at the higher price, thus earning higher returns. The study established that there was only one nursery operator for banana tissue culture in the study area (in Mbarara district), illustrating the constraints to value chain upgrading in this respect.

A study by Kabuye (2008) concurs with this study's findings regarding the beneficial effects of mulching and manure application. However, Karamura (2011) cites input use as a production constraint in the banana sub-sector characterized by low adoption. Bayite-Kasule (2009) and the World Bank (2013) also identified poorly functioning (inefficient) agricultural input markets as a major constraint in developing countries especially in Africa. In Uganda, farmers used approximately 1 kg of fertilizers per hectare compared to the recommended average of 200 kg/ha (Bayite-Kasule, 2009). This low fertilizer application is further confirmed by data from UBOS (2007), which indicated that only 1% of the farmers across the country used inorganic fertilisers while 6.3% used improved seeds. This is an indicator of the huge gap that agricultural stakeholders need to fill up. Low adoption of improved seeds (including tissue culture technology) and fertilizer translates into low sale volumes thus unwillingness of individuals or groups in input market to invest more in their businesses. The agricultural input sector in Africa is highly underinvested, fragmented and faces volatile

funding from governments leading to high prices; at least 30% higher than in Asia (World Bank, 2013). Experience from Asia and elsewhere in the world (Brazil, China and Thailand) reveals that the adoption of recommended input presents enormous potential for growth and development of the banana sub-sector in Uganda.

Value Chain Governance

Value chain governance remains an important entry point that is geared towards boosting the general performance of the banana value chain although its full potential has not been exploited. In Mbale district, banana traders are organized in a group at Nakaloke Township, their scale of association is limited to a merry go round - a mode of saving with no interest which is potentially beneficial to members as a basis for capital accumulation. However, the transport together but they have not ventured into banana purchase as a group. They operate individually in production and marketing thus incurring higher transaction costs. (Table 1).

Table 1: Average prices[3] per bunch during low supply seasons

Per bunch	Mbale	Kabale	Mbarara	Overall
Farm gate price (Ugx)	7,203.93	7,759.25	5,941	6,968.06
Micro traders (Ugx)	10,291.33	10,345.67	8,083	9,573.33
Bulk Traders price (Ugx)	18,388	14,470	13,353	15,404
Consumer/retail price (Ugx)	20,875	15,099	15,230	17,119
Cost of production (Ugx)	5,035	6,234	3,828	5,032.33
Traders' transport and marketing costs (Ugx)	3,042	2,023	2,417	2,494

Although 18% of the farmers were members of farmer groups, the study showed that only 3% of these sold their banana as a group while the overwhelming majority sold their produce individually. This is an indicator of inactivity of the existing farmer groups as had been illustrated during farmer group discussions, and can further be attributed to low trust among farmers within their groups. Trust is lost due to delayed payments and poor transaction management among actors, thus making them unable to sell their banana produce collectively. The results were similar to the findings of Ngambeki *et al.* (2010) who found that only about 19% of banana farmers sold their banana produce through farmer groups and contracting. The relationship between group membership and the proportion of farmers

[3] Average prices are for average cooking banana bunches (*matooke*)

who sold through these groups was an indication of the low gains from collective banana marketing (above).

The study established that 55% of the transactions between farmers and micro traders were actually on credit basis, where micro traders were supposed to pay farmers after making sales. Farmers cited this as a risky method of payment because in some instances micro traders paid part of the dues to farmers and sometimes they defaulted altogether. This is an indication of the importance of collective marketing as a basis for established relationship with the banana buyers and as such security for their dues which could be a basis for increased benefits emanating from increased bargaining power.

In Rwanyamahemebe, Mbarara district, farmers have been able to organize in groups but have limited group activities. For instance Abomugisha, Rwenshonzi, Kitookye Matookye and Akatoomamatookye farmers groups are inactive in collective banana value chain activities. The groups lack functional leadership structures, partnerships and resource mobilization road maps as well as the vital market linkages. A common characteristic among most farmer groups is resuscitation when donors are within sight, only for them to become moribund after receiving funding.

Results from the study indicated that through well-organized farmer groups and cooperatives, farmers were able to sell in bulk to big traders, thereby sidestepping exploitation by micro traders. Farmers selling in bulk would realize the average price per bunch offered to micro traders (Table 1) which are higher than farm gate prices. Promoting farmer groups' as avenues for collective marketing, information empowerment, savings and credit access are critical avenues for upgrading (process upgrading). These findings are in line with EHC (2010), which presented access to market model that emphasizes the importance of collective marketing and its innovation to foster value chain development.

Value Addition

The common forms of value addition done by farmers and traders ranged from ripening (e.g. Apple[4] banana), roasting (e.g *Gonja* variety), *tonto* (fermented banana juice) and *waragi* (local gin) making. *Kiasubi Kayinja* banana is the main variety used in *tonto* and *waragi* making. However due to increasing incidences of Banana Bacterial Wilt (BBW) and its effect on beer banana varieties brewers are switching to cooking varieties (e.g.

[4]are round-tipped with thin yellow skin that splits once fully ripe

Nakabululu, Muvubo) that have high supply. Others value addition techniques included hand-craft and juice making. The common value addition form established by the study was local brewing, which was common in Mbarara and Kabale compared to Mbale.

The study established that farmers in Mbale, Kabale and Mbarara practiced value addition techniques such as packing in sacks, making chips and crafts. The study found that 23% of banana producers were involved in value addition where 27% of their produce underwent value addition. Banana brewing (*tonto* and *waragi*) was established to be practiced by 10% of the respondents. Generally, the cooked banana juice and brew are culturally used for home consumption, in some stages of wedding and funeral rites. The study further established the use of banana crop parts (stem and leaves) in different forms which included leaves are used in the steaming food, sheaths are used to make ropes and craft and pseudo stems provide fodder and for making components of charcoal briquettes.

There has been considerable change in the banana sub-sector in recent years in terms of value addition. According to study findings, Excel Hort Consult Ltd, Presidential Initiative on Banana Industrial Development (PIBID), Afri Banana Products Ltd, Bibilical wines and Centre for Textile Innovations (TEXFAD) were identified as modernized value addition leads in banana juice, banana flour, fresh vacuum sealed matoke, wine and banana textile making; respectively. This is an indicator of improvement of traditional (cottage) technology and in some instances adoption of appropriate technology.

The study found that value addition led to increased benefits among banana value chain actors including farmers in Uganda. Through simple and traditional methods of value addition such as roasting, farmers and traders were able to accrue more benefits rather than selling fresh banana bunches. Other value addition techniques such as making banana crisps, juice and wine were even more beneficial (Table 2 and 3). In Mbale-Busiu, a female farmer narrated her involvement in banana crisps making: "*I have been making banana crisps for a while now; I sell to the neighboring villages and shopping centers. For sure this has improved my income and has contributed to the wellbeing of my family. In addition, if I am unable to sell all the crisps made in a day they do not spoil I can sell them the next day thus reducing losses compared to fresh banana*".

Table 2: Commercialization opportunities in the banana values chain (wine)

Wine production		Cottage level (60L)	Commercialization (18,000L)
Cost centers	**Per unit cost**	**Cost (Ugx)**	**Cost (Ugx)**
2 banana bunches (approximately 25kg each)	12,000.00	24,000.00	5,760,000.00
Yeast (60g)	400	24,000.00	5,760,000.00
Yeast nutrients (60g)	180	10,800.00	2,592,000.00
Sugar (12.5kg)	3,500.00	43,750.00	10,500,000.00
Citric acid (12g)	5	60	14,400.00
Sodium agent (20g)	14	280	67,200.00
Bottle cocks (80)	300	24,000.00	5,760,000.00
Bottles (80, 750ml each)	1,800.00	144,000.00	34,560,000.00
Tamper proof seals (80)	300	24,000.00	5,760,000.00
Labels (80)	300	24,000.00	5,760,000.00
Potassium (150g)	27	4,050.00	972,000.00
Benzoate agent (12g)	180	2,160.00	518,400.00
Water (100L)	2.8	280	67,200.00
Labour (3people-16 hours each)	5,000.00	30,000.00	7,200,000.00
Charcoal (3 basins)	6,000.00	18,000.00	4,320,000.00
Cost of production (COP)		373,380.00	89,611,200.00
Marketing cost (MC)	10% COP	37,338.00	8,961,120.00
Total (production cost +Marketing cost)		410,718.00	98,572,320.00
Miscellaneous costs	10% (COP+MC)	41,071.80	9,857,232.00
Total cost		451,789.80	108,429,552.00
Cost of production per bottle (750ml)		5,647.37	4,517.90
REVENUE AND PROFIT			
Selling price per bottle (750ml)		9,000.00	9,000.00
Profit margin per bottle		37%	50%
Anticipated losses	Number of bottles	1bottle (1%)	480 bottles (2%)
Total revenue		720,000.00	216,000,000.00
Total profit (60L)		268,210.20	107,570,448.00

Table 3: Banana juice production

Cost centers	Production of 90 litres juice	Production of 9,000 litres
Banana (4 bunches @ Ugx 10,000)	40,000	4,000,000
Labour	40,000	1,500,000
Power/electricity	1,000	70,000
Additives	5,000	1000,000
Charcoal/firewood	20,000	0
Transport	15,000	1,000,000
Packaging	32,500	2,275,000
Sugar	16,000	1,120,000
Total cost	169,500	10,965,000
Sale per unit (5L)	15,000	14,000
Revenue	270,000	25,200,000
Total Gross margin/per 5L	100,500(5583)	14,235,000 (7908)

Another farmer from Mbale roasts banana harvested from his farm and sold them at the neighborhood shopping center. He explained, "*Comparing returns from sale of fresh banana and roasted banana, roasting value addition is more profitable. For instance, a fresh banana bunch with 150 fingers can be sold at Ugx 10,000 but if roasted can raise approximately Ugx. 25,000. This is a business I will keep doing*". These findings were consistent with TRIAS (2012) which reported that there are increasing efforts in Uganda towards value addition especially in effort to address the perishability problem. This initiative is geared towards tapping local, regional and international opportunities through products such as fresh peeled packaged *matooke*, charcoal briquettes, wine, crisps and flour. Processing bananas to extend the shelf life has also been cited as an avenue to reduce seasonal fluctuations in the banana sub-sector and reduce dependence on imports, especially on wheat by substituting wheat baking flour with banana flour (Table 9). The adoption of these value addition avenues will eventually lead to upgrading the banana value chain (product upgrading).

Value Chain Financing

Another avenue identified by this study for upgrading the banana value chain in Uganda is the linkage between financial service providers and banana value chain actors. As it was established earlier, many value chain actors especially farmers, traders and processors face monetary capital challenges, which translates to inability to exploit their potential. Farmers

were unable to adopt technologies such as use of inorganic fertilizers, tissue culture seedlings and agrochemicals in their banana plantations owing to the huge investment required. As a result farmers continue to cling to traditional production methods, thus low productivity. This observation is similar to findings by TRIAS (2012), which established that there is a financing gap. Financial service providers often do not provide credit services to banana value chain actors such as transporters and traders. Karamura (2011) also cites credit as a barrier to entry in the banana wholesale and retail markets, an observation that is in line with the narrations of traders during Focus Group Discussions held in Mbale, Kabale and Mbarara: "*monetary capital is the biggest impediment from getting involved in the banana trade. Even when opportunities arise in the market such as requirements to supply institutions in bulk, one is unable to take up such a market. Financial institutions are often unwilling to lend money to traders without security* (Evd 3)."

Upgrading Options

The various upgrading options identified during this study could be summarized as shown in Table 4. There are many products which banana value chain actors can specialize or diversify in. However, such specialization faces to major challenges: protecting the intellectual property rights by the actors who have acquired patents and the initial capital base required. Acquisition of appropriate technology would be the best strategy for product upgrading, coupled with value chain financing efforts.

As discussed earlier, the governance structures of the banana value chain are weak, thus requiring revitalization. Collective marketing, contract farming and use of information and communication technology tools emerged as the best options for improving the chain's efficiency through improved market access. However, mistrust and local politics are the main constraints limiting the desire to establish well structured and functional associations. In the process of functional upgrading, functions for the provision of input and financial functions are critical. A noticeably weak link exists between input dealers, financial services providers and banana value chain actors. This necessitates functional upgrading in order to bridge the existing gaps to ensure efficient and timely delivery of inputs and financial services to facilitate input acquisition and reduce other cost

Channel upgrading was also found to be critical in the provision of advisory and quality compliance services to banana value chain actors. Such services

would enable actors to access new market pathways, especially local high end and international markets which are keen on product quality.

Table 4. Value chain upgrading options

Upgrading options	Opportunities	Constraints	Strategies	Key actors
Product[5]	Fresh vacuum sealed matoke Charcoal briquettes Crafts Beer Wine Juice Crisps Pancakes Animal feeds Flour Biogas	Intellectual property rights Actors awareness Capital requirements Resistance to change Market access	Acquisition of appropriate technology Improvement of existing technology (cottage technology) Diffusion of innovations Value chain financing	Processors Farmers Traders Research & development organizations
Process[6]	Collective marketing Contract farming Cross border trade relationships Use of information communication technology	Mistrust Local politics Communication infrastructure in remote areas	Formation of structured organizations Market linkages to the East African Community Easy to use mobile phone tools for information	Farmers Wholesale traders Government Consuming institutions Processors Exporters
Functional[7]	Input provision Financial facilitation	Actor awareness Willingness to adopt Credit default	Reaching & training banana value chain actors Computing a friendly financial package for actors	Input dealers Farmers Transporters Traders Processors Exporters
Channel[8]	Advisory services Quality compliance services	Skilled human capital Willingness to pay for services Financing	Set up of advisory centres near the actors Guidance on quality code for easing entry of actors	Input dealers Farmers Transporters Traders Processors Exporters
Inter-sectoral[9]	Baking industry Tourism market	Resistance to change Level of inter connectivity	Offering incentives to banana flour producers and industrial users Linkage of tourism promotion with banana craftsmanship designs	Craft persons Processors Exporters Tourism agents

Source: Field Survey

[5]Benefits and costs associated with the product upgrading strategies (Table 5)
[6] Benefits and costs associated with the process upgrading strategies (Table 6)
[7] Benefits and costs associated with the functional upgrading strategies (Table 7)
[8] Benefits and costs associated with the channel upgrading strategies (Table 8)
[9] Benefits and costs associated with the inter-sectoral upgrading strategies (Table 9)

Finally, the study established potential of inter-sectoral upgrading by linking the banana sub-sector to tourism sector as well as substitution of wheat flour for banana flour in the baking industry. However, resistance to change was projected as the biggest constraint for this upgrading option.

Table 5. Benefits and costs of product upgrading to actors

Key actors	Strategies	**Benefits**	**Costs**
Farmers	Acquisition of appropriate technology e.g fertilizer and manure use, tissue culture banana seedlings, upscale plantation management (pruning, scouting, gapping and thinning)	Increased productivity Improved banana quality Improved disease resistance Increased returns	Capital requirement
Processors	Improvement of existing technology (cottage technology)	Improved efficiency and productivity Increased demand for banana Improved relationships among actors Create employment	Securing of patents rights Approval by Uganda Bureau of standards Awareness creation/advertising
Traders	Transport improvement e.g improved packaging	Reduce losses Quality retention	Time requirement Packaging materials
Research & development organizations	Acquisition of appropriate technology Diffusion of innovations	Improvement of products Increased distribution	
Financial facilitators	Develop appropriate financial products	Enable value chain actors to adopt appropriate technology	Interest rates

Source: Field Survey

Table 6. Benefits and costs of process upgrading to actors

Key actors	Strategies	Benefits	Costs
Farmers	Formation of structured organizations Market linkages to the East African Community Easy to use mobile phone tools for information	Improved market access Enables bypass brokers Increased returns Improved credit access	Cost of running the association
Wholesale traders	Market linkages to the East African Community	Increased sales volume Increased returns	Transport and marketing costs
Government	Formation of structured organizations Market linkages to the East African Community Easy to use mobile phone tools for information	Offer a conducive environment Boosting relations with other countries Improved production and market information	Infrastructure cost

Source: Field Survey

Table 7: Benefits and costs of functional upgrading to actors

Key actors	Strategies	Benefits	Costs
Input dealers	Training	Linkage with banana producers Increased sales and returns	Awareness creation and training costs
Farmers	Training	Increased input use Improved quality Increased productivity Increased returns	Cost of input acquisition
Transporters	Training	Reduced losses during transport Improved quality of banana	Packaging materials cost
Traders	Training	Improved banana handling Reduced losses Improved quality	Handling costs
Processors	Training and financing	Adoption of appropriate technology	Interest and maintenance cost
Exporters	Training and financing	Adoption of appropriate technology Market linkage	Interest cost Market survey costs

Source: Field Survey

Table 8: Benefits and costs of channel upgrading to actors

Key actors	Strategies	Benefits	Costs
Input dealers	Advisory services	Linkage with banana producers Increased sales and returns	Awareness creation and training costs
	Advisory services	Increased input use Improved quality Increased productivity Increased returns	Cost of input acquisition
Transporters	Advisory services	Reduced losses during transport Improved quality of banana	Packaging materials cost
Traders	Advisory services	Improved banana handling Reduced losses Improved quality	Handling costs
Processors	Financial facilitation	Adoption of appropriate technology	Interest and maintenance cost
Exporters	Advisory and financial facilitation	Adoption of appropriate technology Market linkage	Interest cost Market survey costs

Source: Field Survey

Table 9: Benefits and costs of inter-sectoral upgrading to actors

Key actors	Strategies	Benefits	Costs
Craft persons	Linkage of tourism promotion with banana craftsmanship designs	Awareness creation Expanded market	Marketing cost
Processors	Offering incentives to banana flour producers and industrial users	Expanded market for the banana sub-sector Increased returns to the economy	Awareness creation costs
Exporters	Linkage of tourism promotion with banana craftsmanship designs	Expanded market	Marketing cost
Tourism agents	Linkage of tourism promotion with banana craftsmanship designs	Expanded market	Marketing cost

Source: Field Survey

Conclusions and Recommendations

Findings from the study reveal that upgrading opportunities in the banana value chain do exist. Upgrading opportunities were identified at process, value addition and functional levels along the banana value chain for downstream and upper stream points of the value chain. Input use, value

chain governance, value chain financing and value addition were established as the main opportunities for upgrading and they serve as options for value chain actors' investment.

Upgrading opportunities have high potential for improving the efficiency of the value chain but they have not been sufficiently exploited. The study recommends efforts should be taken to improve linkages among input dealers, financial providers and value chain actors. The actors (especially producers) require technical support to improve value chain governance as a means for improving the efficiency of trade systems. A comprehensive Business Plan is required to enable and guide the value chain actors' investment decisions, as well other innervations in banana value chain development in Uganda.

The identified opportunities were summarized in the form of upgrading options at the level of; the product, processes, functional relations, channel and inter-sectoral linkages. These options indicate that all the value chain actors have a role to play in the process upgrading of the banana value chain. The study highlights existing opportunities in the banana value chain. From the evidence presented in this study it is clear that upgrading is necessary for value chain development in Uganda.

Acknowledgements

The authors are grateful to acknowledge the assistance of Karani Charles, Tusigwire Sarah, Muhumuza Osbert and Byarugaba Chris for the support during data collection as part of the study process.

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