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Profitability Analysis of Banana (*Musa balbisiana*) Industry in Bato, Leyte, Philippines: A Value Chain Approach

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Banana is one of the top crops in terms of production and value-adding potential in Bato, Leyte, Philippines. Unfortunately, the farmers are constrained by various factors that in effect reduce the income they receive from their produce. Thus, this study aimed to look for effective pathways and linkages for upgrading the industry, transforming it to a highly competitive and profitable system for the banana farmers of Bato, Leyte. Examination of the value-creating flow of the industry, from the input supply sector, production, trading until the finished goods are delivered to the end consumers was done. Key informant survey data were analyzed and used to examine the profitability and efficiency of an existing value chain, identify problems and areas for improvement for banana industry in Bato, Leyte, Philippines. Detailed value chain mapping revealed that fresh bananas from other neighboring municipalities converged in Bato market and brought by traders to buyers in Cebu and other areas in Leyte. Closer look at the data showed that an excess demand of about 54% of the current supply traded across the chain is chiefly due to bugtok disease infestation and poor condition of farm-to-market roads, accounting to about 40% of the in-transit losses. In addition, chain performance analysis revealed that medium traders and processors are the most benefited along the chain due to high economies of scale and value added. Moreover, identified logistics issues along the value chain showed among others that upgrading strategies at the farmers' node, call for strengthening extension support through trainings and expanding banana plantations. Also, there is a need to strengthen rural-based organizations of banana farmers to provide an enabling mechanism of governance for an improved value chain. Moreover, provision of common service facilities is necessary to expand the local processing activity into products with higher value-adding and longer shelf life. All these are recommended as the optimal upgrading strategies to bring the entire value chain to a higher plain of competitiveness and profitability.

Keywords: Value chain analysis, banana, upgrading strategies, key informant survey

Introduction

Banana is the common name for an edible fruit produced by several kinds of large herbaceous flowering plants of the genus *Musa*. The Philippines is considered as the third largest producer of banana in the world. Banana is

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considered as the most economically important fruit crop in terms of volume of production and export earnings as it contributes significantly not only to the national income but also to employment (Tacio, 2013). Among the most cultivated varieties of banana in the country are the latundan, lacatan, saba/cardaba and bungulan. The most popular variety is the *Musa balbisiana* or commonly known as "cardaba" or "saba".

In the province of Leyte, banana is one of the top crops in terms of production and value-adding potential according to the Philippines' Department of Agriculture (DA) on the implementation of the National Farmers' Registry System (NFRS) in Eastern Visayas Region. Leyte has a very promising banana industry with most of the lands devoted to banana production. This crop is of great importance to small scale farmers in the province, in which, one out of five farmers has areas planted with banana along with other crops such as coconut, cassava, etc.

Support services have been continuously provided by various government agencies and private institutions to improve the market orientation and competitiveness of the banana farmers in the town. There has been an increase in areas planted with bananas which are mostly of the "cardaba" variety. However, these technical assistance were not sufficient to support the emerging problems and constraints of the banana industry in the municipality. Among these problems are the occurrence of pests and diseases; high cost of inputs; poor road condition; and lack of marketing information/skills. There has been no clear and established process or procedure in implementing investment plans and budget proposal over the years. The process, wherein the DA identifies and prioritizes programs and projects at the local level, remains undocumented.

Hence, there is a need to analyze or examine more closely the existing interrelationship among players and stakeholders. This is a more targeted and focused method of identifying appropriate and sustainable intervention measures to improve the profitability and competitiveness of the industry to ensure a more sustainable stream of economic benefit to all chain actors in the future, preserving the viability of essentital livelihood of stakeholders in the banana value chain.

Generally, this study aimed to assess the profitability of banana industry in Bato, Leyte, Philippines using value chain analysis (VCA). Specifically, it aimed to: 1) provide an overview of the banana industry in Bato, Leyte; 2) identify and map-out the specific value chains of the banana industry in Bato, Leyte; 3) analyse the performance of players at each stage of the value chain; 4) evaluate the activities and practives of the value chain players; and 5) draw policy implications to develop the banana value chain for enterprise sustainability and competitiveness.

Materials and Methods

Site selection

The study was conducted in the municipality of Bato, Leyte involving key informants of the banana value chain: farmers, farmer-trader, processors and final buyers. The town was selected due to its promising banana industry according to the Department of Agriculture. The municipality belongs to the third cluster of banana areas in the province and has a total of 116 banana farmers, 63 of whom have a farm size of 5,000 m^2 and above.

Data gathering procedure

Industry assessment which involved obtaining secondary data from the Philippines' Bureau of Agricultural Statistics (BAS) was done to put VCA to proper context. Primary data gathering employed snowball sampling technique wherein collection of data started from the downstream players (relevant market) up to the upstream players (farmers) through key informat survey using the conventions of six key questions for value chain analysis i.e: 1) Who are the key customers and what are their product requirements in terms of species, volume, quality, packaging, delivery schedule, as well as grades and standards? 2) Who are the key players in the chains and what are their respective roles? 3) What are the activities and processes along the chain? 4) What is the flow of product, information and payment along the chain? 5) What are the logistic issues? and 6) What are the external infences (e.g. ordinances, regulatory requirements, police, etc.) (Brown, 2010).

Value chain analysis

Focus group discussion (FGD) was conducted in addition to key informant survey to ensure high degree of validity and reliability of the data obtained from the value chaina actors. Chain mapping was done to identify opportunities for chain upgrading using the six key questions in VCA. On the other hand, activity-based costing, estimation of value additions and cost and return analysis were done to analyse and examine the performance of the banana value chain.

Opportunities and constraints along the value chains were identified and examined using the market maps, estimates of value additions, and insights drawn from the focus group discussion, key informants and other stakeholders. These set of opportunities and constraints constituted the primary basis of

upgrading strategies. Opportunities were in terms of improving the value chain efficiency for value chain upgrading.

Results and Discussion

Banana Industry in Leyte Province

Industry data showed an increase in the production of banana in Leyte from 2002 to 2009 with the highest at 53,556.28 metric tons (MT) in the year 2009 (Figure 1). The increase in production volume was mainly attributed to the expansion of areas for banana farming. There was a slight decline in volume produced in 2011 which was 4% lower than the year 2009. This may be due to various factors such as typhoons and other natural phenomenon, occurrence of pests and diseases, and other interacting factors. The aggregate consumption during the year 2010 is at 33,586 MT which is significantly lower than the actual production volume of 52,252.42 MT during that year. This implies that there is an excess supply of banana in the province and this excess supply go to buyers in other areas outside the province.

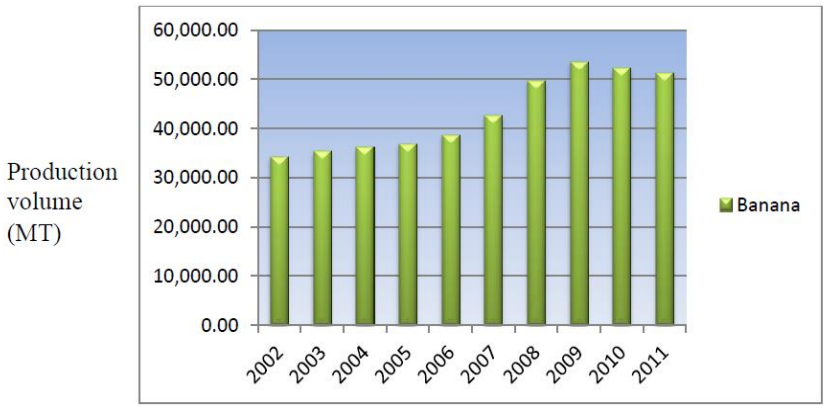

Figure 1. Volume of banana production in Leyte province (MT), 2002-2011

From the year 2002 to 2011, there was a consistent increase in the number of bearing trees with a huge increase of about 4% during the year 2006 to 2007. In terms of the area planted or harvested, there was also a consistent increase observed for the last ten years. As of the year 2011, Leyte has about 6,249 hectares (ha) planted/harvested with banana, of which, 1,615 and 93 ha are planted/harvested with “cardaba” and “lacatan” varieties, respectively. Green “latundan” and “cardaba” at farm gate are priced at Php 11.48/kg and Php 10.22/kg, respectively. In retail, ripe “lacatan” had the highest retail price than latundan and “cardaba” varieties reaching to Php 2.62/pc. Bananas are

usually sold in per hand, per piece and per kilo basis. Prices are significantly dictated by demand and supply.

Value Chain Mapping

Trading Routes of Banana in Bato, Leyte: Bananas are traded in the municipality and neighboring areas as either fresh or processed. Bananas produced by small farmers are sold to small-scale traders in the municipality and other neighboring areas. As shown in Figure 2, bananas from other neighboring municipalities converge in Bato, Leyte. Then, bulk of these bananas is handed over by the medium trader to traders and retailers in Carbon, Cebu City on a weekly basis. Most of these bananas traded are sourced from small and medium farmers of neighboring municipalities (Inopacan, Hilongos, Matalom, Maasin, Sogod and Bontoc), and only a few volume comes from Bato. For small-scale processors, processed banana products, except for banana chips, are only sold to walk-in and regular buyers within the municipality due to the high perishability of the product.

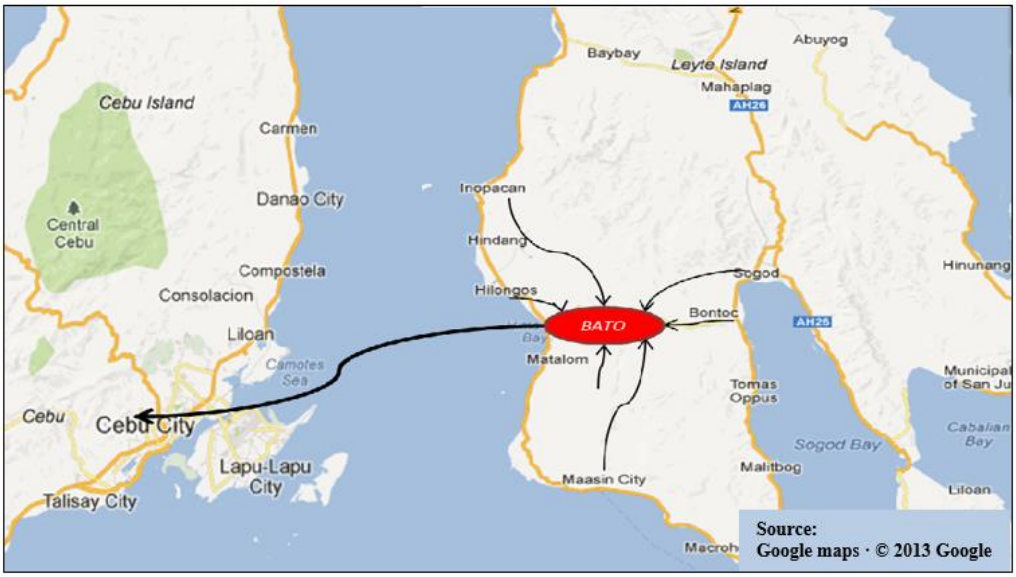

Figure 2. Banana trade routes in Bato, Leyte, Philippines, 2012

Key Customers and Product Requirements: Cardaba banana is an important commodity to the residents of Bato, Leyte, with local buyers and buyers outside the municipality and province as its key customers. For fresh bananas, the customers are typically traders/wholesalers, processors and some

end-consumers; while retail stores and mostly regular and walk-in buyers are the customers of processed bananas. Generally, key customers of fresh and processed cadaba banana across the value chain have more or less the same product requirements and differ only in terms of volume traded. Buyers outside Leyte trade most of the bananas with about 85% of the supply, while only about 11% are traded to customers in other municipalities. Only an actual volume of 133,200 pieces or only 4% of the supply are processed per year by banana processors along the value chain in Bato. Key customers of fresh bananas are particular with the product/fruit's appearance and quality – smooth and large-sized, free from bugtok disease. For processors of banana cue, pinaypay and sinaging buy ripe bananas for processing, while some buy raw and let it ripened before processing. Similarly, the key customers of processed bananas are also particular with the products' appearance and quality.

Key Players and Their Roles: The major players of the banana value chain in Bato, Leyte are; the local farmers, outside farmers (Massin, Bontoc, Matalom, Hilongos and Inopacan), local traders, outside traders (Maasin, Hilongos, Hindang, Sogod, Bontoc), traders/retailers in Cebu, local processors, processors in Baybay and Matalom, and buyers in Cebu and other areas. The local traders and those traders/retailers in Cebu, local processors, processors in Baybay and Matalom and buyers in Cebu and other areas are the downstream players; while the farmers within and outside Bato are the upstream players of the value chain. They perform important roles along the different segments of the value chain (Figure 3).

Downstream Players. Traders along the value chain of Bato are classified in terms of volume of bananas traded – the small (< 1 ton) and the medium-scale (actual volume of 1 to 5 tons) traders. Traders/retailers in Cebu purchase on a weekly basis of about 60,000 pieces of bananas from Bato, Leyte. About more than 2 million pieces of bananas are traded by these traders per year to processors and end consumers in the area. Bulk of these bananas does not only come from Bato, Leyte but also from other areas. The processors along the value chain of Bato, Leyte are characterized as small-scale processors processing daily of about 100-500 pieces of bananas. Processors in the municipality procure bananas from local traders and even directly to farmers to minimize cost. Likewise, processors in the municipality purchase fresh bananas for processing from local traders. The major role of the processors is to constantly deliver the requirements of the consumers of processed banana products (banana cue, "pinaypay" and banana chips). Processors must see to it

that the products they sell are safe and will not compromise the health of the consumers.

Upstream Players. An estimated volume of 3,655,300 pieces of bananas are traded by farmers along the value chain of Bato, Leyte. Farmers are classified based on the effective area planted with banana as small (≤ 1 ha) and medium farmers (> 1 ha). These farmers trade their harvested bananas to traders and some trade directly to local processors within and outside the municipality. As upstream players, the participation and contribution of the farmers in the value chain is huge as they are the ones that perform production activities such as planting, care and management, harvesting and post-harvest activities such as dehanding, sorting, packaging and etc. It is also the role of the farmers to continuously provide the requirements of the traders and processors in terms of volume and quality. Along the value chain of Bato, farmers have vertical coordination or network relationship among buyers/traders in the area. This relationship is shown in terms of selling agreements and other marketing tie-ups ("suki" system) they have with them for generations.

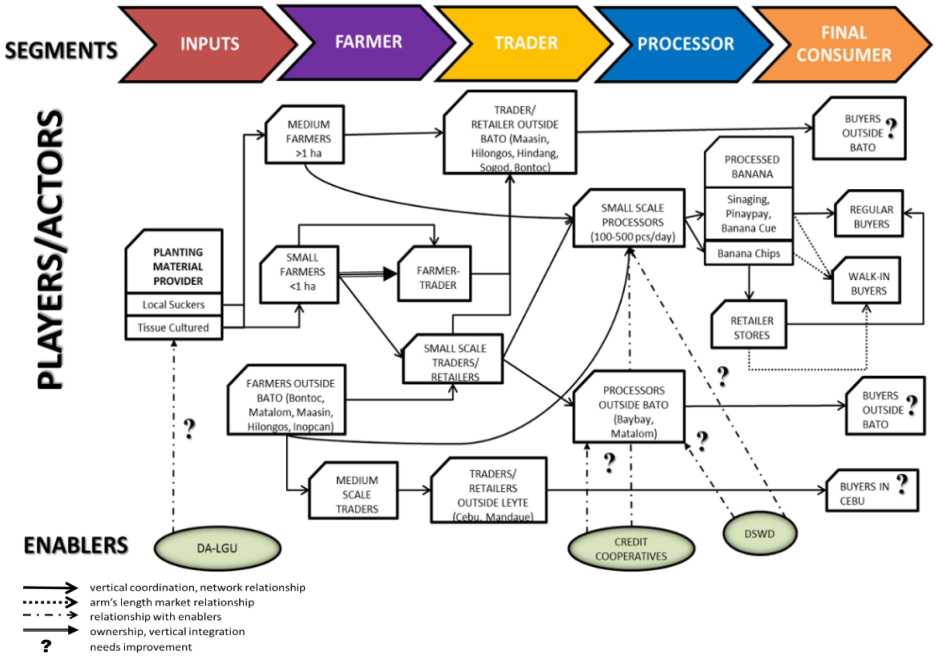

Figure 3. Value chain map for fresh and processed banana in the municipality of Bato, Leyte, Philippines, 2012.

Activities/Processes and Cost: A number of activities are carried out in the production, trading and processing of banana along the value chain. Value chain mapping of activities is necessary since every activity has a corresponding cost. Eliminating redundant activities or carrying out important activities correctly is often an important means of chain upgrading (Brown, *et al*., 2010).

Farmers' Level. Results showed that care and management activities contributed the highest percentage (55%) to the total cost per piece (Php 0.63) (Figure 4A). Care and management activities include among others desuckering, deleafing and deblossoming. These activities contributed higher labor costs since these are most frequently done in one year. On the other hand, planting activities gave the lowest cost contribution to total cost per piece with a 3% or Php 0.02/pc. Across activities, labor, food and transportation contributed higher costs.

Traders' Level. In trading fresh bananas, purchasing, sorting and hauling are among the main activities performed by small and medium-scale traders. Among these, the largest portion (79%) of the total cost per piece was attributed to purchase of fresh bananas (Figure 4B). At an average, the cost for trading fresh bananas is at Php 0.96/pc.

Processors' Level. Activities and costs differed among types of processed banana at this node. Common among processors in the value chain is the processing of banana chips, banana cue and pinaypay. Across products, processing activities such as peeling and frying contributed the largest portion (94%) of the total cost per piece (Figure 4C). Of these activities, labor and direct material costs contributed the highest. The cost of processed banana products on average is at Php 2.27/pc.

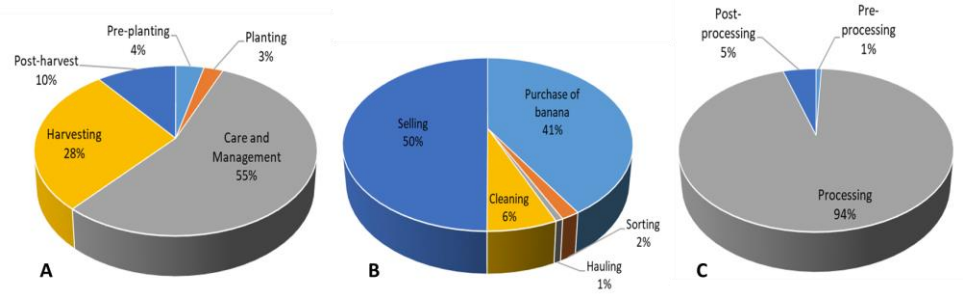

Figure 4. Activities at each level and their percentage (%) contribution to total cost/piece: A) Farmers', B) Traders', C) Processors' level

Product, Information and Payment Flow: A viable value chain and supply chain have characteristically three types of flows, namely: the product, information and payment flows. These flows somehow dictate the effectiveness and efficiency of the value chain as these provide implications to the functioning of the entire chain.

Product flow. Product flow is the quantity or volume of commodity flowing along the value chain as determined by the total production per area and the actual marketable volume traded along the chain. Results showed that medium scale trader has the highest volume transacted per year accounting to 55 % of the bananas traded since this trader delivers bananas to Cebu on a weekly basis. On the other hand, only about 3% and 5% are traded by small-scale traders and those traders outside Bato, Leyte, respectively. An estimated annual volume of 5,626,400 pieces of bananas per year are transacted by traders along the value chain of Bato, Leyte. This is equivalent to about 37,500 bearing plants in a year or about 20 ha banana plantation. This actual volume traded is not enough to satisfy the desired volume of fresh bananas by processors and final buyers (Table 1). Hence, there is a need for an increase production.

It is estimated that at current state of demand, the market can absorb as many as 12,152,000 fruits pieces of banana per year (equivalent to about 43 hectares of banana plantation). It showed that there is a 54% gap between the desired volume by final buyers and actual volume traded by farmer-traders.

Table 1. Average quantity of banana actually traded by traders along the value chain in Bato, Leyte, Philippines, 2012

TRADERS	Actual Volume of Bananas Traded (pcs/year)	Desired Volume of Bananas Ordered per Trading (pcs/year)
Small Scale Traders/Retailers (including Farmer-Trader)	286,000	1,352,000
Medium Scale Trader	3,120,000	5,200,000
Traders/Retailers Outside Bato (Maasin, Hilongos, Sogod, Bontoc)	140,400/1	300,000
Traders/Retailers Outside Leyte (Cebu, Mandaue)	2,080,000/2	5,300,000
Estimated Annual Volume (pc/year)	**5,626,400**	**12,152,000**

1/Net volume already; Actual volume of 351,821 less 286,000 from small scale traders/retailers to avoid double counting. Same with the desired volume.
2/Net volume already; Actual volume of 5,200,000 less 3,120,000 from medium scale trader to avoid double counting. Same with the desired volume.
Source: Primary data sources (key informant interviews)

Payment flow. Payments are either revenue to a particular chain actor or cost to another as they engage in trading of the goods along the chain (Abamo, Teves and Quimbo, 2010). Across value chain, the product passed through at least two intermediaries before reaching the final customer. A price difference of about PhP 3.00 per piece is observed between the first and the final intermediary – the farmer and the processor. Likewise, as banana moves down the value chain, an almost 30% shrinkage cost is absorbed by the farmers (Table 2). This shrinkage absorbed by farmers is mostly because of the bugtok infestation to their farm produce. Meanwhile, about 8% shrinkage cost is absorbed by the traders of which almost are also disease-infected bananas and others are due to handling and transport losses. Only about less than 1% shrinkage cost is absorbed by banana processors in the municipality. Across the value chain, cash-on-delivery is the usual mode of payment among players/actors.

Table 2. Mode of payment and trading agreement observed across the banana value chain in Bato, Leyte, Philippines, 2012

Value Chain Players	Payment		Trading Agreement	
	Buying Price (PhP/pc)	% Loss or Shrinkage	Mode/ Terms of Payment	Other Trading Agreements
Farmer	0.84	28.25	COD	none
Trader	1.04	8	COD	none
Processor	3.83	0.01	COD	none

Source: Primary data sources (key informant interviews)

Information flow. Critical information flowing along the value chain are either related to price and technical information. These information are essential to value chain decision making and upgrading as it drives the normal functioning of the entire chain. In terms of the price, farmers and traders in the municipality normally source out price information through comparison and canvass directly from local traders and co-growers. Meanwhile, processors directly canvass to local traders in the area to verify price information. End-buyers of fresh and processed bananas mainly canvass price information to local processors and retailers in the area through direct communication. Processors and end buyers consider word-of-mouth as an effective means of discovering price information from the local traders.

Technical production information that included planting techniques and prevailing diseases and its control were generally sourced out from their own or other growers' experiences. These informations however, need validation.

Logistics Issues along the Banana Value Chain: Value chain analysis can be critically important in gaining and sustaining competitive advantage by being especially efficient along the various parts of the value chain. Several logistics issues have been identified that exert strong influence on the overall performance of the chain affecting the movement of the product from farmers to the relevant market. No established organizations, inadequate capital and poor service facilities have been the primary problem of stakeholders in the banana industry (Figure 5A). Additionaly, low yield due to "bugtok" infestation accounts to almost 30% of harvest losses. Poor production knowledge and resistance to adopt modern technologies were also identified as major problems affecting farm operations that in effect reduce supply of bananas. Although there are seminars and trainings conducted to enhance the farming orientation, some of the farmers are still hesitant to adopt the recommended practices.

External issues identified such as high transportation cost, unstable weather, lack of extension support and poor road conditions are common among farmers and traders in the area (Figure 5B). Difficult farm-to-market roads for instance, changes from bad to worse especially during rainy season. These roads are not passable and isruptions in the flow of farm products are more severe. Processors also seen lack of extension support from government and private sectors in terms of provision of processing facilities and produc R&D.

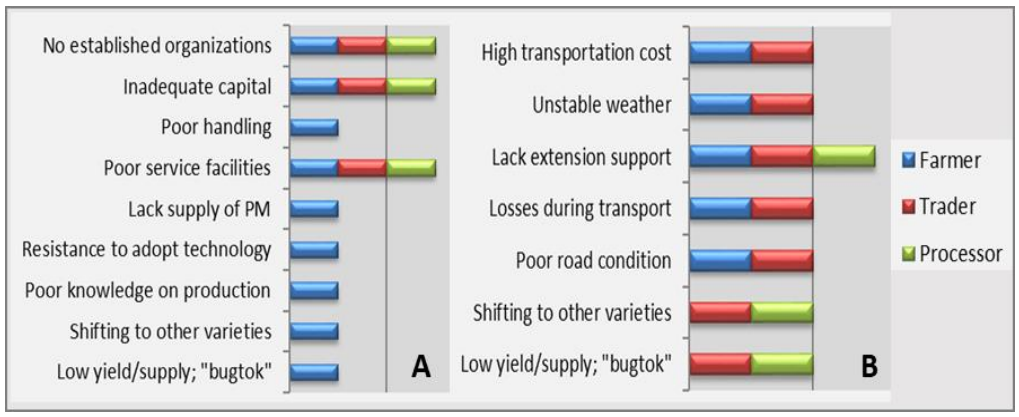

Figure 5. Logistics issues along the banana value chain in Bato, Leyte, Philippines, 2012: A) Internal, B) External

External Influenes along the Banana Value Chain: External influences are drivers of the value chain that are outside of the chain and are not within the relative control of the chain players. External drivers include the government and private support to the banana value chain as well as the involvement of

such support or program, financial assistance and other external influences. Linkages among farmers, processors, NGOs and financial institutions have been made along the value chain, but are needed to be strong enough to respond the emerging challenges (diseases, changes in market dynamics, etc.). These linkages or external influences driving the banana value chain in Bato, Leyte are the support coming from the municipal agriculture office (DA-LGU), Department of Social Welfare and Development (DSWD) and by some lending institutions such as credit cooperatives.

Value Chain Performance Analysis

Calculations of the value added and cost and return analysis at each node of the value chain is presened in Figure 6.

Results showed that processors in Bato, Leyte earned the highest value added (maximum at 3.28/pc) compared to other chain players. This is because they only incur a small amount of material cost then selling the finished product at Php 5.00/pc; thus creating higher value adding. They also directly sell their product at a reasonable price deriving a 66% return on investment (ROI) and 190% net profit margin (NPM) at maximum. Processors are considered as the most benefitted along the chain. Traders had the lowest value added (up to Php 0.16/pc). This amount is merely small but considering thousands of pieces of bananas traded per week, this could translate to a large return per week. NPM and ROI showed lower values on this node.

FARMERS				TRADERS			PROCESSORS			FINAL CUSTOMERS
Pre-planting	Planting/ Care & Mgt	Harvesting	Selling	Collection	Sorting/ Sacking	Trading	Pre-processing	Processing	Selling	
Clearing Underbrushing	Procurement Digging Planting Desuckering Deleafing Weeding Cultivation Deblossoming	Hauling Sorting	Transporting	Purchase of fruits	Counting Hauling Cleaning	Transporting Shipping	Purchase of banana	Peeling Soaking in water Slicing Frying Draining Sticking Packing	Selling	Bato Hilongos Bontoc Matalom Baybay Sogod Cebu Mandaue
					Small Traders	Medium Traders	Banana Chips	Banana Cue	Pinaypay	
Selling price/pc			0.84		0.97	0.10	4.00	2.50	5.00	
Cost/pc			0.63		0.98	0.94	3.03	2.06	1.72	
Value Added			0.21		0.02	0.16	0.97	0.44	3.28	
Net Returns			40,134.85		(4,463.75)	511,200.00	43,687.50	19,782.73	147,447.23	
ROI			25%		-	15%	24%	18%	66%	
NPM			34%		-	18%	32%	21%	190%	
Time Period			12 months			1 week			1 day	

Figure 6. Summary of banana value chain map performance analysis.

Cost and return analysis revealed that chain players earned income from its operations, except for small traders. However, medium traders earned the highest net returns reaching Php 511,200 anually. This happened since this trader has relatively higher volume of bananas carried out every week. The larger the trader it becomes, the higher will also be the expected return. Meanwhile, processors earned a net return reaching 147,447 at maxixum annually; mainly because of the high value added to the product. Farmers on the other hand, were observed to have the lowest net returns, recording a 25% ROI and 34% NPM. This implies that farmers were effective by only 25% in terms of generating profits with its available assests and 34% effective in turning sales to profit.

Value Chain Visioning and Upgrading Strategies

Banana farmers, traders and processors of Bato, Leyte envisioned bringing its existing industry into a higher level of competitiveness and profitability. This can be carried out through increasing the production volume in their respective areas and offering new processed products for the local market. This vision was determined through the conduct of focus group discussion. Specific strategies to address the stand-up issues are shown in Table 3. Upgrading covers the process, product, function or the overall chain itself. Process upgrading aims to reduce costs by improving internal processes and efficiency within the business. Product upgrading may be achieved through the introduction of new products or improving existing ones. Changing the activity mix may result in function upgrading. Overall chain upgrading entails shifting the whole chain to new and higher value products. Upgrading may also be achieved through interventions of entities external to the chain. Policy and institutional reforms or improvements in infrastructure may go a long way towards improving the effectiveness and efficiency of a particular value chain (Brown *et al.*, 2010).

At the farmers' node, the most important activity where concrete measures can readility be undertaken is the management practices of the farmers since this is the single most contributing factor of the product throughout the value chain. This may be achieved through extension support (training and adoption of new farming technologies) that would enhance the quality of produce of farmers. Through this, issues on bugtok disease infestation can be addressed. Additionally, there is a need to improve or rehabilitate farm-to-market roads to ease accessibility for farmers and processors and be able to procure bananas satisfying the volume required by buyers at a lesser cost. Proper post-harvest and transport handling is very vital

since quality may deteriorate along the chain when bananas are not handled and transported correctly.

Table 3. Upgrading strategies for banana industry in Bato, Leyte, Philippines

Value Chain Problem/Issue	Suggested Solution	Upgrading Strategy
Poor knowledge on production activities	Training and adoption of new production technologies	Process/Product
Poor common service facilities	Provision of facilities (transportation, bagging materials, etc.)	Process/Product
Poor road condition (farm-to-market roads)	Improvement/rehabilitation of farm to market roads.	Process
Undesirable weather condition	Extension support for climate change adaptability	Process
Insufficient capital	Credit facilitation for production, trading	Process/Product
Declining productivity of banana farms	Farm expansion to new sites that conform to site selection criteria	Process/Product
Less empowered farmers	Organization of farmers into associations	Function
High incidence of "bugtok" diseases	Adoption of new production technologies	Process/Product
Low quality of banana produced	Trainings on post-harvest techniques	Process/Product
Insufficient support from enablers	Intensification of support services from government agencies	Process/Product

Source**:** Primary data sources (key informant interviews)

Upgrading the processors' node may necessitate expansion of local processing activity from their existing traditional processed products into products with higher value-adding potential and longer shelf life. Upgrading strategies may include creation of new high value adding banana products, training, and providing processors on new processing technologies as well as capital support for expansion of business operation. Training banana processors in the municipality would make them equipped with sufficient knowledge on new processing technologies that could create products with higher value adding options, thereby making them more competitive in the industry.

Most importantly, pulling all players in the value chain can be critical as this would mean establishment of relationships among them. At the farmers' node, the way to make an endeavor is by making farmers in the area organized through forming associations or cooperatives. These are seen as the key factors in enhancing the farmers' access in the market. By forming farmers' organization, farmers will have more power to stand up and regulate the prices. In addition, it would be easier for them to access support from private and

public sectors, and benefits can be spread out among farmers in the value chain. Correspondingly, consolidation center can be brought into actuality through this association.

Conclusion

Several issues, problems, gaps and constraints were found in the current value chain. Some of these include the occurrence of "bugtok" disease, poor condition of farm-to-market roads, and insufficient support from enablers. Meanwhile opportunites are available to upgrade the value chain to a higher level of competitiveness and profitability. These include the following: input provision or credit facilitation support programs to farmers, traders and processors, organization of farmers into associations, extension support to farmers relating to production and post-production techniques and the adoption of new farming technologies. The value chain analysis specifically identified appropriate and sustainable intervention measures to improve the profitability and competitiveness of the banana industry in Bato, Leyte, Philippines. This will ensure a more sustainable stream of economic benefit to all chain actors in the future. However, it is recommended that suggested upgrading strategies be further studied and implemented carefully since these may have unexpected and undesired side effects to the whole system.

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