

ANALYZING VALUE CHAIN OF BEEF- CATTLE AND CASSAVA FOR SOUTH CENTRAL COASTAL VIETNAM

Ho Cao Viet and Le Van Gia Nho

ABSTRACT

In the context of project SMCN/2007/109, the study on analysis of beef-cattle and cassava value chain is carried out since 2009 in 3 provinces of Binh Dinh, Phu Yen and Ninh Thuan. The analysis of chains has been done in 2011. The key findings are following: (i) Farmer and enterprise agents play a very important role in these chains; of which processing factory & industrial slaughter are major factors influenced to whole chain; (ii) Market & price information, transparency of information are factors that affected to farmer's benefit & income; (iii) Awareness of farmer in market-driven approach is important and generate income for farmer; (iv) Cooperation of farmers, vertical coordination of farmer and business are the best choices to reduce risk and loss due to of price falling; (v) Interaction of cassava production and cattle husbandry is effectively in existing farming system; (vi) Upward trend of beef meat consumption and demand exceeds supply given opportunities for cattle value chain; (vii) Small-scale starch processing unit is adapted with price fluctuation of cassava root and mitigate risks.

INTRODUCTION

This four-year study in carried out under the context of the project (SMCN/2007/109) official commenced in January 2010 and is entitled "Value chain analysis for sustainable and profitable farming systems on the South Central Coast Vietnam". The study focused on analysis of value chain of beef-cattle and cassava in the 3 provinces of Binh Dinh, Phu Yen and Ninh Thuan with coordination by the group of researchers in Department of Agricultural Systems Research (DASR) of Institute of Agricultural Sciences for Southern Vietnam (IAS), Institute for Southern Central Coastal of Vietnam (ASISOV), Department of Agriculture & Food, Western Australia (DAFWA) and Department of Agriculture & Rural Development of these provinces.

OBJECTIVES

This study aims to fulfill the objectives as following:

- Analyze markets and positioning value chain of beef-cattle and cassava.
- Implement support activities and policies to improve performance of these value chains.
- Identify short-term solutions and long-term strategies for these value chains based on stakeholders and agents.

METHODOLOGY

- Apply the Participatory Rural Appraisal (PRA) for carrying out the surveys in villages to collect primary data, interviewing agents (producers/farmers, middlemen/collectors, small and large scale traders, processors, entrepreneurs, etc.).
- Organize informal interview with check list (with DARD, Agriculture & Rural Development of district, leaders and local staffs of Commune People Committee

(CPC), Agricultural cooperative leaders, representative farmer households and local food companies).

- Secondary data collection: annual reports of CPC at village, district and provincial level, statistical data, scientific report and other information from MARD, DARD, NGO. These databases are being updated every year and analyzed by specific software.
- Organize formal survey (by using questionnaires) for all agents & stakeholders in chains.
- Analyze financial parameters of each agent by using the following equations:

$$\text{Total value (P)} = \text{Value of primary products} + \text{Value of secondary products}$$

$$\text{Intermediate Costs (IC)} = \text{Primary input} + \text{Material supplies} + \text{Energy} + \text{Other costs}$$

$$\text{Value added (VA)} = \text{Labor cost} + \text{Communication cost} + \text{Transportation cost} + \text{Financial cost} + \text{Gross Profit (GPr)}$$

In which:

$$\text{Gross profit (GPr)} = \text{Net Profit (NPr)} + \text{Depreciation cost}$$

Equilibrium financial equation:

$$P = IC + VA$$

RESULTS & DISCUSSION

The description of a typical beef-cattle value chain in South Central Coastal (SCC) is showed in Figure 1.

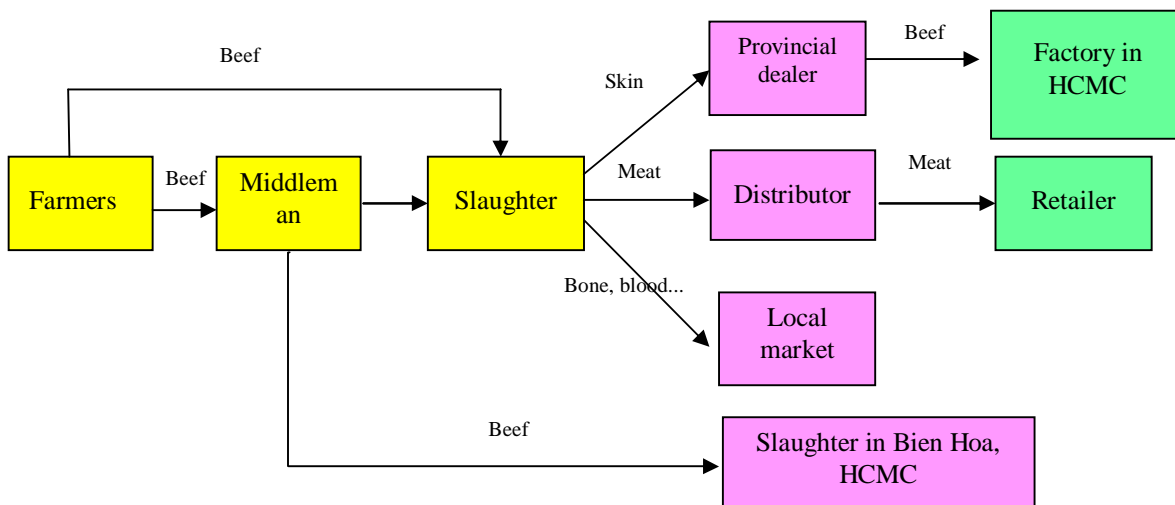


Figure 1. Beef cattle value chain in South Central Coastal (SCC) Region

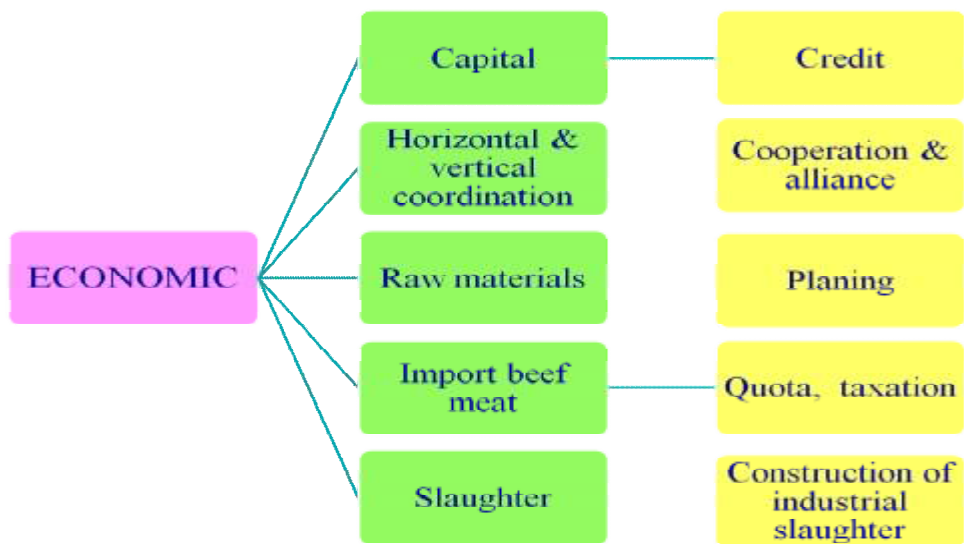


Figure 2. Economic factor influenced to beef-cattle value chain in SCC region

There are 3 main factors affected to value chain of cattle in SCC region. In which, the 2 first important ones are economic (Figure 2) and market factors (Figure 3). The changes of production factors and agents in value chain is presented in table 1

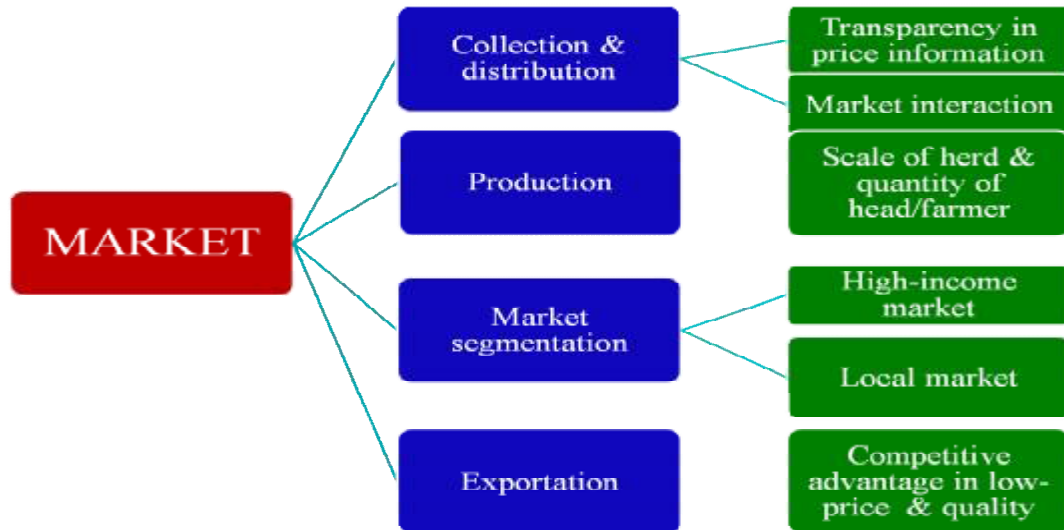


Figure 3. Market & marketing influenced to beef-cattle value chain in

Table 1. Change of production factors and agents in cattle value chain in SCC, 2009-2011

Factor/agents	Trend	Cause	Impact
Number of cattle heads/household & scale of herd	Slight upward	<ul style="list-style-type: none"> - high price of live cattle - convenient consumption market - facilitate of national program on cattle (credit, training, policy) 	<ul style="list-style-type: none"> - improve income & keep balance cash-flow in household - enhance efficiency of farming system based on beef-cattle husbandry
Market	High demand of beef meat	<ul style="list-style-type: none"> - import large amount of meat (unbalance of demand-supply of beef meat in domestic market) - high demand of beef meat in big southern cities, where buy cattle from SCC 	<ul style="list-style-type: none"> - give more chances for farmers - high price of meat ⇒ increasing income & benefit for farmers - encourage farmers to enlarge herd scale & quality of beef meat (crossbred species of cattle)
Techniques	- Feed more hybrid & crossbred species; more fattening cattle	<ul style="list-style-type: none"> - high & fast demand of beef meat - high-quality requirement of meat - high economic efficiency of beef-cattle production 	<ul style="list-style-type: none"> - need to improve quality of herd - supply more beef meat - improve farmers' benefit & contribution of beef-cattle husbandry into family income

Source: Survey of DASR (2011)

The main problems in cattle value chain, short-term and long-term solutions and agents is presented in Table 2.

Table 2. The main problems in cattle value chain, solutions and engaged agents

Problem	Solution	Involved agent
Techniques/ Technology	- Program to improve cattle species, artificial insemination	- Extension service & private
- Beef species	- Transferring techniques of micro-elements modification (in dry season), planting grass, use of cassava powder & byproducts	- Extension service & communication
- Nutrient supply	- Vaccination and predict diseases	- Veterinary service & communication
- Veterinary	- Planting new varieties of grass (tolerance of drought & high yield), water-saving irrigation techniques	- Extension service, communication, institutes & enterprises
- Feed supply	- Training on marketing knowledge & skills	- Extension service, institutes, universities
- Marketing knowledge		
Economic factors	- Credit program animals husbandry, particularly for cattle	- Credit organization, Bank, Mutual organization, farmer-group of cooperation
- Money capital	- Adjust the planning of cattle husbandry by market signal & resources (land, labor)	- Local government, farmer households, enterprises
- Supplied materials	- Quota restriction to importation of beef meat, tariff & non-tariff policies	- Government
- Importation of beef meat	- Re-organize cattle husbandry system & value chain by horizontal & vertical coordination, speedup scale of cattle herd	- Government, enterprise & farmer households
- Coordination (horizontal & vertical)	- Plan & build slaughter in the region	- Enterprise & government
- Slaughter		
Market	- Transparent policies on price & market,	- Government & private companies
- Distribution system	- Large scale of heads & heads/household	- Enterprises & government
- Production	- Focus on both of diverse high-quality & high-price cattle husbandry (high rate of meat & quality) to supply for big southern markets and local markets (small weight calf/beef)	- Enterprises & government
- Market fragmentation	- Access to exportation market with price competitive advantage & quality (favor meat, natural feeding, less use of industrial feeds...)	- Government & enterprises
- Exportation (beef meat)		

Source: Survey of DASR (2011)

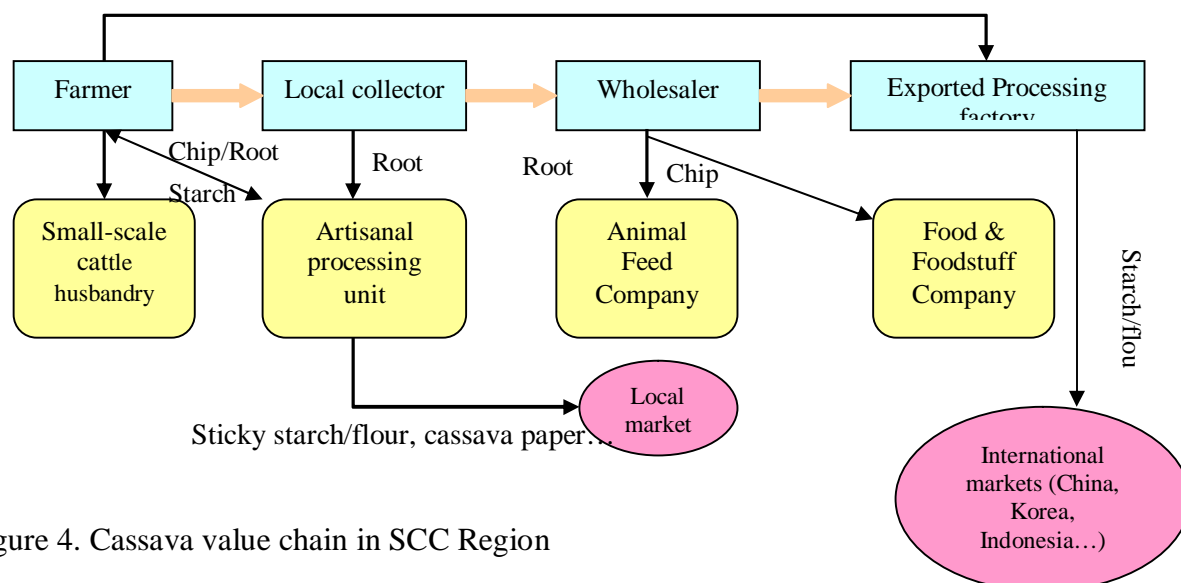


Figure 4. Cassava value chain in SCC Region

Table 3. Financial analysis of cassava dried chip production in Binh Dinh, 2010
Unit: 1,000 VND/ha

Item	Amount	%
1. Total production (P)	30,000	100.0
2. Intermediate Cost (IC)	9,156	30.5
Variety	470	
Urea, NPK, Manure, Pesticides	8,786	
3. Value Added (VA)	21,314	69.5
4. Net Profit	12,264	

Source: Survey of DASR (2011)

Table 4. Financial analysis of processing root into sticky (wet) starch in Binh Dinh, 2011
Unit: 1,000 VND

Item	Amount	%
I. Total Production	2,580	100.0
1. Main product (sticky starch)	2,100	81.4
Grade 1	1,925	
Grade 2	175	
2. By products	480	18.6
II. Costs	1,988	100.0
1. Fresh root	1,400	70.4
2. Labor	450	22.6
3. Other costs (fuels, electricity, package, communication fee, maintenance & reparation, depreciation)	138	6.9
III. Profit		
Gross profit (included depreciation)	592	
Net profit	558	

Remark: Fresh root grade 1 with 25% of starch

Source: Survey of DASR (2011)

Table 5. The main problems in cassava supply chain, solutions and involved agent

Problem	Solution	Involved agent
Techniques/ Technology - Cassava varieties - Fertilizer application - Processing & storing - Marketing knowledge	- Trials and introduce high-yield, short-duration, high-potential starch (in comparison KM94) cassava varieties - Farmer organize themselves to produce cassava varieties in region (reducing cost of varieties) - Transfer techniques of fertilizer application & manure - Transfer techniques of draft processing & storage at farm-level and combine with animal husbandry - Training on marketing knowledge of accession	- Extension service, private, institutes & universities - Extension service & communication - Extension service, institutes & universities - Extension service, institutes, universities - Extension service, institutes
Economic factors - Material-supplied production area - Cassava exportation - Coordination (horizontal & vertical) - Processing factory & artisanal processing unit	- Adjust the planning of cassava by market signal & resources (land, labor) Access to new market and avoid depending on Chinese market - Re-organize cassava value chain by vertical coordination - Cooperate farmers into cooperatives, mutual groups & contracting with factory - Invest for small processing unit with diversified products (sticky starch, dry powder, chip) - Enhance processing technology for factory to product high-value products (pharmaceutical, cosmetics chemical, bio-fuel)	- Local government, farmer households, enterprises - Enterprises & government - Enterprises, government & farmer - Government, enterprise & farmer households - Enterprises & government - Enterprises
Market - Distribution system - Production - Market fragmentation	- Transparent policies on price & grading in buying root - Contract with farmer (factory-farmer) - Market diversification: supply for feed & food factories, exportation, diversify products (fresh & dried starch, chip, ethanol, pharmaceutical, high-quality & functional food...	- Processing factories - Processing factories, farmers - Enterprises & government

Source: Survey of DASR (2011)

CONCLUSIONS & RECOMMENDATIONS

Conclusions

- *Cassava value chain*

- In recent years, especially in 2009-2010, reducing of selling farm-gate price by 20% combined with increasing of input costs leads profit in 2011 is lower 30% than that of 2010.
- Artisanal and small-scale processing unit (sticky and dried starch processing) generates stable benefit and mitigates risk of price falling in last few years.
- Storage of cassava root by traditional method and use it as a feed for fattening the cattle or as a source of modified feed in dry season is a high-efficiency option for the farmer households in the context of cassava price falling.
- Processing of cassava chip has generated high efficiency in the case of fresh root price is fluctuation. However, this processing way depends on much on weather, small-scale capacity & needs many labor forces.
- Processing factory plays a very important role in cassava value chain, but it still depends too much on Chinese market – where is very unstable and risk.

- *Beef-cattle value chain*

- Cattle husbandry contributes an important part in family income in SCC region, particularly in 3 studied provinces. Price of live cattle and beef meat tends to move upward, market force of beef meat is relatively high in southern, especially in big cities that affected to whole value chain of beef-cattle in SCC region.
- A large amount of farmers have changed gradually their awareness on animal husbandry, especially on beef feeding by capital investigation & improvement of cattle species.
- Scale of herds and productivity of cattle could be increased if introduction of new species, application of technologies, modify of feed & element nutrients in dry season are available.
- The policies for slaughter installation, veterinary service, program of artificial insemination, enlarge of pastures & forages area, etc. with the support of government and participation of private enterprises will improve both quality and quantity of cattle herds in SCC region.

- *Interaction of beef-cattle and cassava production*

- Cattle husbandry can use cassava product & by-products as a feed source in the dry season whereas shortage of feed and for fattening. On the contrary, manure of cattle is a fertile component that may improve quality of degraded soil in SCC.
- Cattle husbandry can keep balance of family budget and cash-flow. Income of cattle is a source of capital that is available for cassava cultivation and vice versa in the farming system.

Recommendations

- *Cassava value chain*

- Should have a master plan on chains of cassava processing factories, focusing on cassava chip processing in SCC region.
- Cassava processing factories should diversify the target market; avoid the dependence on Chinese market and improve processing technology that can produce high-value products.
- Select and release the high-starch (>30%) cassava varieties, short-term duration, and adapt well with low-land condition, particularly in Binh Dinh province.

- Scale up and disseminate the small-scale cassava processing units by gathering groups of farmer households and horizontal coordination.
- Apply the method of traditional storage of root in rainy season, combined with use it as a modified feed source for fattening cattle in dry season.
- Train on marketing knowledge & skill for farmers and extension staffs.
 - ***Beef-cattle value chain***
- Maintain and strengthen program of support cattle species, focusing on remote areas where farmer is difficult to access on veterinary service.
- Share a large area for planting grass by introducing new varieties (with high potential biomass and tolerance of drought), use by-products of crops for cattle (fermented straw, maize stem, cassava leave and peel of root) and modify nutrients & micro-elements (nutrient lick block) in dry season.
- Organize the pilot of agents included of animal households and local middlemen into a vertical coordination for beef consumption and business.
- Plan to build the slaughter, processing factory in order to supply beef meat and other processing products to large market in southern.
- Train for farmers & extension staffs on marketing skill and knowledge.

REFERENCES

- Bureau of Statistic of Binh Thuan (2011). Statistical Data in 2010.
- DARD of Phu Yen (2009). Planning for Agriculture & Rural Development, 2006-2010.
- DARD of Phu Yen (2011). Annual Report on agriculture in 3rd quarter of 2011.
- DARD of Ninh Thuan (2011). Annual Report on agriculture in 2011.
- DARD of Ninh Thuan (2006). Project on development of beef-cattle husbandry in Ninh Thuan, 2006-2010.
- DASR (2010). Annual Report on the analyzing value chain of beef-cattle and cassava for South Central Coastal Vietnam
- General Statistic Office (2011). Statistical Data in 2010. Statistic Publishing House.
- People Committee of Cat Trinh village (2011). Annual Report in 3rd quarter of 2011.