THE ROLES AND CONTRIBUTIONS OF COOPERATIVE IN THE SMALLHOLDER BEEF CATTLE COMMODITY CHAIN IN EAST JAVA, INDONESIA

INTERNATIONAL CONFERENCE ON COOPERATIVES

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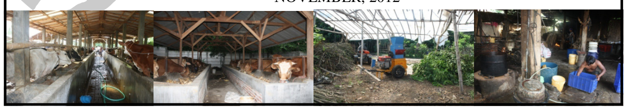


BACKGROUND OF THE STUDY

- ❖ Beef cattle have the largest contribution in the Indonesian economy → 80% of ruminant population & 3rd meat production
- ❖ Beef cattle production is concentrated in East Java (25.5%), West Java (17.95%), and Central Java (12.75%)
- ❖ East Java Province is a primary buffer zone of beef cattle → Population: 2.7 M, export: 142,000 heads
- ❖ Superior commodity → 9% in PDRB
- ❖ Rate of beef cattle population growth is only 1.4% a year
- ❖ The demand for beef cattle tends to increase at about 12.4% a year
- ❖ Thus government implement importation policy → price, profit and sales of beef cattle decreased

BACKGROUND OF THE STUDY ...

- ❖ The structure of livestock industry:
  - Smallholder farmers (60-80%) → low income, traditional, no economic incentive
  - Large farmers (few feedlots) → big scale, intensive, good marketing system and large share
- ❖ Government policies are not effective → low participation, lack of funding
- ❖ Beef cattle industry has problem in all chains of agribusiness such as input procurement, cultivation, processing and marketing and also government support.
- ❖ Cooperatives are the actors that have contribution in this industry either as an input suppliers or processors.

OBJECTIVE OF THE STUDY

- ❖ analyze the status of the beef cattle industry and government policies and programs affecting the industry and actors involved especially cooperatives,
- ❖ analyze the roles and contributions of cooperatives from production to slaughter of beef cattle industry,
- ❖ evaluate the performance of the cooperatives in the beef cattle commodity chain in terms of the profitability, operational efficiency ratio and marketing efficiency,
- ❖ assess the value-added contribution of the cooperatives in the beef cattle commodity chain,
- ❖ determine which government interventions are needed in order to address the problems in the beef cattle industry.

THEORETICAL FRAMEWORK

- ❖ Type of market
- ❖ Commodity chain analysis
- ❖ Actor network theory
- ❖ Value-added

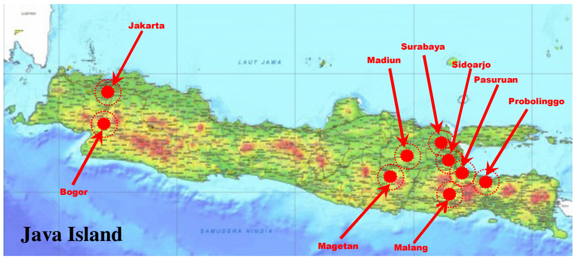
METHODOLOGY

Location of the study

East Java Province

METHODOLOGY …

Location of the study…



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METHODOLOGY …

DATA

TYPE OF DATA	METODE OF COLLECT	SOURCES
Primary	Interview	input suppliers → cooperative beef cattle farmers traders operators of slaughter houses
Secondary	Desk study	Statistical Bureau, Ministry of Agriculture, Directorate General of Livestock, East Java Livestock Office, East Java Trade and Industry Office, farmers' associations, cooperatives and other relevant institutions

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METHODOLOGY …

RESPONDENT

TYPE OF RESPONDENT	SAMPLING METHOD	NOTES
Small farmers	Simple random sampling (Yamane, 1973)	•Commercial farmers in Turen (418 farmers) •81 respondents (with e=0.1) •Each farmer has 1 – 10 beef cattle •They have productive activity at least a year ago
Input supplier, Trader and Processor	Snowball sampling	•Based on the information from smallholder and large farmers.

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ANALYTICAL TOOLS

OBJECTIVE		ANALYTICAL TOOLS
No	Description	
1	The status of the beef cattle industry	Descriptive Analysis
2	Government policies and programs	Descriptive Analysis
3	Commodity chain	•Actor network •Functional analysis
4	Market performance	•Profitability ratio •Efficiency ratio
5	Value-added contribution	Value-added analysis

RESULTS AND DISCUSSIONS

Status of the National Beef Cattle Industry

Beef cattle population (000 heads), Indonesia

YEAR	EAST JAVA	GROWTH RATE (%)	CENTRAL JAVA	GROWTH RATE (%)	OTHERS	GROWTH RATE (%)	INDONESIA	GROWTH RATE (%)
2001	3,312		1,331		6,495		11,138	
2002	3,312	-	1,338	0.50	6,648	2.36	11,298	1.44
2003	2,517	(24.01)	1,345	0.55	6,642	(0.09)	10,504	(7.02)
2004	2,519	0.09	1,357	0.89	6,657	0.22	10,533	0.27
2005	2,524	0.22	1,390	2.45	6,654	(0.03)	10,569	0.35
2006	2,584	2.38	1,393	0.16	6,898	3.66	10,875	2.89
2007	2,706	4.69	1,416	1.71	7,393	7.17	11,515	5.88
2008	3,385	25.11	1,442	1.81	7,430	0.50	12,257	6.44
2009	3,459	2.19	1,525	5.77	7,776	4.66	12,760	4.11
2010	3,816	10.33	1,617	6.00	8,200	5.45	13,633	6.84
2011	4,727	23.87	1,938	19.84	8,160	(0.49)	14,824	8.74
Average Growth Rate (%)		4.49		3.97		2.34		2.99

•2003 → decreased due to # slaughtered > birth rate (especially East Java 24%)
•Meat self-sufficiency program since 2000 → increase population
•Contribution of East Java 31.9%

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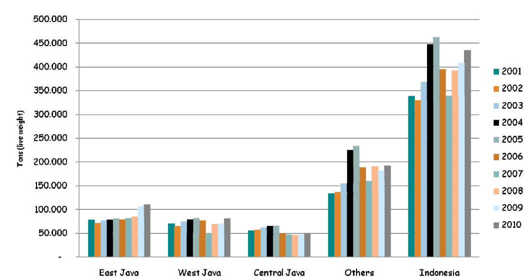
RESULTS AND DISCUSSIONS

Status of the National Beef Cattle Industry

Beef cattle production, Indonesia



•Share : East Java (34%) and West Java (20%) → import from other areas
•Production areas ≠ population areas

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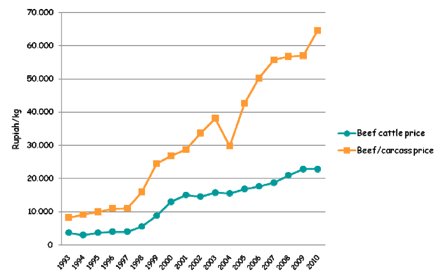
RESULTS AND DISCUSSIONS

Status of the National Beef Cattle Industry | Price of beef cattle and beef, Indonesia



- Beef cattle price was relatively stable but in 2002 increased due to decreasing in beef cattle population
- Importation policy affect to the beef cattle price (remain stable) → no economic incentive for the farmers
- Beef price tend to increase → economic incentive for trader and processor

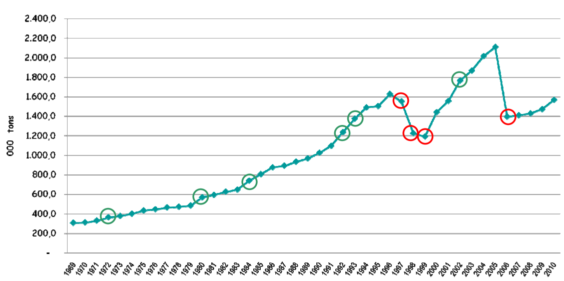
YEAR	BEEF CATTLE PRICE (Rp/kg)	GROWTH RATE (%)	BEEF/CARCASS PRICE (Rp/kg)	GROWTH RATE (%)
1993	3,725		8,220	
1994	2,998	(19.52)	9,203	11.96
1995	3,738	24.68	10,002	8.68
1996	4,012	7.33	10,991	9.89
1997	4,053	1.02	11,062	0.65
1998	5,591	37.95	15,971	44.38
Avg. growth rate 1993 - 1998 (%/year)		10.29		15.11

YEAR	BEEF CATTLE PRICE (Rp/kg)	GROWTH RATE (%)	BEEF/CARCASS PRICE (Rp/kg)	GROWTH RATE (%)
1999	8,806	57.50	24,488	53.33
2000	13,042	48.10	26,834	9.58
2001	15,069	15.55	28,750	7.14
2002	14,554	(3.42)	33,676	17.13
2003	15,759	8.28	38,146	13.27
2004	15,597	(1.03)	29,800	(21.88)
2005	16,850	8.04	42,673	43.20
2006	17,700	5.04	50,250	17.76
2007	18,750	5.93	55,800	11.04
2008	20,969	11.83	56,750	1.70
2009	22,886	9.14	56,973	0.39
2010	22,902	0.07	64,615	13.41
Avg. growth rate 1999 - 2010 (%/year)		13.75		13.84

- Growth rate of carcass is higher than beef cattle
- Difference of both was relatively smaller in period 2

RESULTS AND DISCUSSIONS

Status of the National Beef Cattle Industry | Supply of beef, Indonesia



- Avg growth rate 4.6%
- 1998 → lowest supply of beef cattle due to economic crisis affects the farmers
- 2005 → Largest demand (slaughter productive cow) → population decreased and supply also decreased

RESULTS AND DISCUSSIONS

Status of the National Beef Cattle Industry | Importation of beef cattle (volume), Indonesia

COMMODITY	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	AVG. GROWTH RATE (%/ YEAR)
Livestock (000 heads)													
Cattle breed	1.9	0.2	0.5	4.6	6.5	5.8	4.2	4.6	6.2	0.1	1.3	0.1	176.1
Feeder steer	49.9	118.4	267.7	168.1	141.7	208.8	235.8	256.2	265.7	414.2	570.1	657.3	35.6
Total Head	**51.8**	**118.6**	**268.2**	**172.7**	**148.2**	**214.6**	**240.0**	**260.8**	**271.9**	**414.3**	**571.4**	**657.4**	34.6
Livestock products (tons)													
Material food													
Bovine	8,813.8	10,552.9	26,962.3	16,516.6	11,473.8	10,671.4	11,772.0	21,484.5	25,949.2	39,400.0	45,708.5	67,908.2	29.9
Bovine liver	6,228.9	7,746.0	30,403.1	24,626.2	31,400.5	35,778.5	36,277.2	34,436.4	36,107.7	40,203.4	5,776.0	3,392.1	20.4
Other Meat & liver	1,041.3	4,612.9	14,929.8	2,369.0	1,791.3	1,502.5	2,201.2	8,394.3	8,569.4	7,886.6	48,988.9	43,617.4	115.8
Total Meat	**16,084.0**	**22,911.8**	**72,295.2**	**43,511.8**	**44,665.6**	**47,952.4**	**50,250.4**	**64,315.2**	**70,626.3**	**87,490.0**	**100,473.4**	**114,917.7**	29.4
% bovine of total meat	93.5	79.9	79.3	94.6	96.0	96.9	95.6	86.9	87.9	91.0	51.2	62.0	
Non material food													
Bone (ton)				17.5	99.8	112.1	153.8	64.9	2.5	1.1	0.1	1.1	152.4

- Businessman prefer feeder steer than cattle breed
- Importation of feeder steer and meat increased → dependency also increased

RESULTS AND DISCUSSIONS

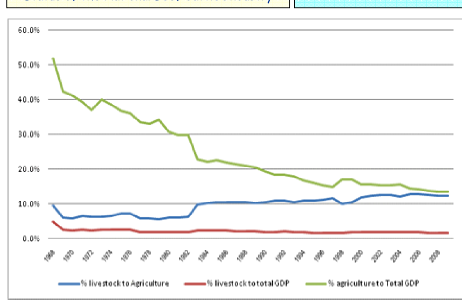
Status of the National Beef Cattle Industry | Importation of beef cattle (value/000 USD), Indonesia

COMMODITY	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	AVG. GROWTH RATE (%/ YEAR)
Livestock													
Cattle breed	568.8	73.2	225.4	2,009.0	3,054.3	2,843.8	2,291.8	1,921.6	2,545.1	15.1	2,647.1	74.3	1,653.5
Feeder steer	20,004.6	39,405.4	92,443.4	57,947.6	44,517.5	66,543.8	88,989.6	107,731.3	108,596.7	217,720.5	378,106.6	464,104.2	43.0
Total Value of Livestock	**20,573.4**	**39,478.6**	**92,668.8**	**59,956.6**	**47,571.8**	**69,387.6**	**91,281.4**	**109,652.9**	**111,141.8**	**217,735.6**	**380,753.7**	**464,178.5**	42.0
Livestock product Material food													
Bovine	10,327.1	15,244.2	41,047.0	23,791.5	18,586.2	18,566.0	27,113.0	43,646.4	49,077.2	92,846.6	126,146.9	202,838.1	41.7
Bovine liver	4,900.7	5,240.9	20,521.5	16,671.9	22,730.9	23,142.3	24,837.9	31,090.2	35,759.8	56,650.5	8,774.9	5,131.5	27.1
Other Meat	1,341.9	3,414.6	10,501.5	2,225.6	2,299.6	2,808.8	3,416.8	10,289.2	11,742.0	12,629.1	142,811.3	85,166.5	140.3
Total Value of Meat	**16,569.7**	**23,899.7**	**72,070.0**	**42,689.0**	**43,616.7**	**44,517.1**	**55,367.7**	**85,025.8**	**96,579.0**	**162,126.2**	**277,733.1**	**293,136.1**	40.5
% bovine of total of meat	91.9	85.7	85.4	94.8	94.7	93.7	93.8	87.9	87.8	92.2	48.6	70.9	
Non material food													
Bone	-	-	-	42.6	38.1	125.3	153.0	100.8	16.8	6.8	3.2	13.4	41.3
Total Value of Livestock and Meat	**37,143.1**	**63,378.3**	**164,738.8**	**102,645.6**	**91,188.5**	**113,904.7**	**146,649.1**	**194,678.7**	**207,720.8**	**379,861.8**	**658,486.8**	**757,314.6**	40.5

- High dependency on the other countries especially Australia

RESULTS AND DISCUSSIONS

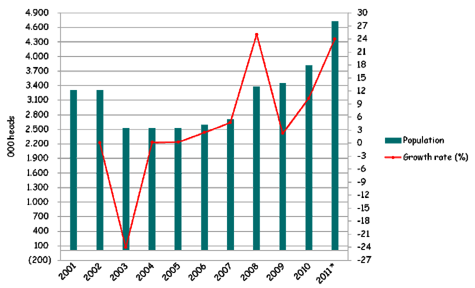
Status of the National Beef Cattle Industry | Contribution to Gross Domestic Product, Indonesia



- Structural transformation happened
- livestock contributes significantly to growth of the agriculture sector (13%) and the gross domestic product (2%)

RESULTS AND DISCUSSIONS

Cattle Situation in East Java | Population of beef cattle, East Java



•Average growth rate 4.5%
•Extremely decrease in 2003 (24%) → the same with national phenomenon

RESULTS AND DISCUSSIONS

Cattle Situation in East Java | Production of livestock meat (ton), East Java

MEAT TYPE	2006	2007	2008	2009	2010	AVG. GROWTH RATE (%/YEAR)
Beef Cattle	71,857	74,009	92,653	96,948	98,821	8.7
Dairy Meat	7,234	7,530	11,203	10,820	10,195	10.9
Buffalo Meat	488	417	385	381	501	2.1
Goat Meat	14,577	15,308	17,123	17,371	17,386	4.6
Sheep Meat	9,047	9,229	4,659	4,597	4,640	(12.0)
Total	103,204	106,491	126,024	130,117	131,544	**6.5**

•Contribution of beef was 70% of total meat.
•Related to the Islamic activity and holliday

RESULTS AND DISCUSSIONS

Cattle Situation in East Java | Consumption of meat (ton), East Java

ITEM	2006	2007	2008	2009	2010	AVG. GROWTH RATE (%/YEAR)
Meat (beef only)	66,762	74,965	92,608	99,414	103,809	11.9
Meat (beef and non beef)	297,326	335,521	306,971	324,209	343,655	4.0
Egg	205,757	261,648	253,842	253,358	257,085	6.4
Milk	217,796	385,376	332,429	375,771	383,380	19.6
Total	787,642	1,057,511	985,850	1,052,751	1,087,929	9.4

•The increasing price of gasoline in 2008 affected the growth rate of livestock consumption.

RESULTS AND DISCUSSIONS

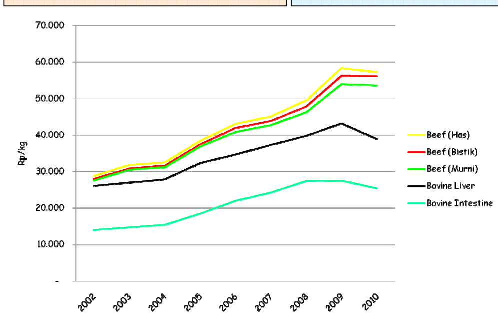
Cattle Situation in East Java | Price of beef cattle (Rp/kg), East Java

YEAR	PRICE OF BEEF CATTLE (Rp/kg)	% CHANGE
2001	11,603	
2002	11,912	3%
2003	12,221	3%
2004	12,971	6%
2005	15,823	22%
2006	18,515	17%
2007	19,030	3%
2008	21,157	11%
2009	23,539	11%
2010	22,579	-4%
Lowest	11,603	
Highest	23,539	

•In 2010, price of beef cattle decreased → might be due to importation activity

RESULTS AND DISCUSSIONS

Cattle Situation in East Java | Price of beef (Rp/kg), East Java



•Slope of good quality was steeper than low quality
•The change in price of good quality beef is higher than that of low quality beef

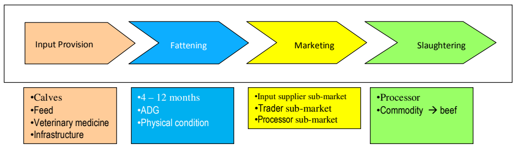
RESULTS AND DISCUSSIONS

GOVERNMENT POLICIES

TOPIC	PROVISION	NUMBER OF LAW
Human resources development	- Extension system - Method of agricultural extension	1 1
Production system	- Conservation and utilization of livestock genetic resources - Establishment and release clumps or strains of livestock - National livestock breeding system - Animal husbandry and health → Cooperatives - Basic provision of livestock - Feed registration → Cooperatives - Meat self-sufficiency 2014 → Cooperatives	1 1 2 1 1 1 1
Financial support	- Beef cattle breeding system → Cooperatives	2
Marketing system	- Importation of beef cattle - Distribution of imported beef cattle and carcass	1 1

RESULTS AND DISCUSSIONS

COMMODITY CHAIN ANALYSIS | The core processes od beef cattle commodity chain



RESULTS AND DISCUSSIONS

COMMODITY CHAIN ANALYSIS | Main actors and their roles of smallholder chain

STAGE OF THE CHAIN	FUNCTION	ACTOR	OUTPUT
Input provision	Providing feed	Poultry shop, feed mill/cooperative	Feed
	Providing veterinary medicine	Poultry shop	Veterinary medicine
	Providing calf	Calf supplier	Beef cattle
	Artificial insemination	Inseminator	Calves
	Providing working capital	Financial institution/ company	Fund
Fattening	Raising beef cattle	Farmer	Beef cattle
	Feeding	Farmer	Animal health
	Animal health	Veterinary paramedic	Animal health
Marketing	Product advertising	Input supplier	Product information
	Selling input (feed and medicine)	Poultry shop, feed mill/cooperative	Transaction services
	Buying input (feed, medicine, calves)	Farmer	Transaction services
	Selling beef cattle	Calf supplier	Transaction services
	Buying and selling beef cattle	Trader	Transaction services
	Buying beef cattle	Processor	Transaction services
Slaughtering	Slaughtering beef cattle	Butcher	Meat
	Selling meat	Processor	Meat

RESULTS AND DISCUSSIONS

COMMODITY CHAIN ANALYSIS | Main actors and their roles of smallholder chain

- ❖ The businesses of "Agro Niaga" cooperative are livestock input supplier such as concentrate, feed supplement, calve milk replacer and milk can; dairy farming with capacity 30,000 liter per day; saving-lending activity; trading; and transportation service.
- ❖ Cooperative also have cooperation with international organizations, i.e. Canadian Cooperative Association, Cooperative Centre Denmark, Victoria Government, Australia Business Volunteer, JICA, HIVOS, ADB and ILO

RESULTS AND DISCUSSIONS

COMMODITY CHAIN ANALYSIS | Main actors and their roles of smallholder chain

- ❖ One of the leading suppliers of beef cattle feed is Agro Niaga Cooperative-Jabung. It contributes about 1.5 tons of concentrate per 15 days for the farmers in Turen. It also supplies many kinds of feed such as concentrate, complete feed and polar.
- ❖ The proportion of products sold in Turen is relatively smaller than the total product of livestock feed of Agro Niaga Cooperative Jabung of about 900 tons per month.

RESULTS AND DISCUSSIONS

MARKET PERFORMANCE | Profitability and efficiency ratio

ACTOR	TYPE OF BEEF CATTLE CHAIN				
	Smallholder				
	Revenue	Cost	Profit	RC	PR
calf supplier	5.9	6.5	-0.6	0.91	-0.09
Cooperative	7.5	6.4	1.0	1.19	0.16
Village trader	7.8	7.5	0.3	1.04	0.04
Sub-district trader	9.3	8.8	0.5	1.06	0.06
District trader	12.6	11.8	0.8	1.07	0.07
Provincial trader	12	10.6	1.4	1.13	0.13
Village processor	9.6	9.2	0.4	1.04	0.04
Sub-district processor	9	8.3	0.7	1.08	0.08
Provincial processor	16.6	13	3.6	1.28	0.28

RESULTS AND DISCUSSIONS

MARKET PERFORMANCE | Trend of selling price and cost per unit of beef cattle (smallholder chain)

RESULTS AND DISCUSSIONS

VALUE-ADDED CONTRIBUTION | Actor contribution (million rupiah)

ACTOR	TYPE OF BEEF CATTLE CHAIN		
	Smallholder		
	Value	%	VAR
Calf supplier	75	2.8	0.04
Farmer	296	11.0	0.17
Cooperative	350	12.9	0.24
Poultry shop	322	11.9	0.21
Village trader	45	1.7	0.04
Sub-district trader	53	2.0	0.07
District trader	64	2.4	0.07
Provincial trader	97	3.6	0.13
Village processor	298	11.0	0.07
Sub-district processor	621	23.0	0.11
Provincial processor	482	17.8	0.26

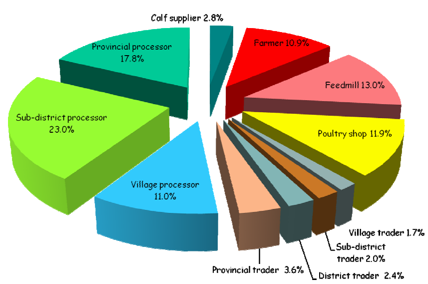
RESULTS AND DISCUSSIONS

VALUE-ADDED CONTRIBUTION | Actor contribution in smallholder chain (000 rupiah)

ACTOR	OUTPUT	INTER-MEDIATE INPUTS	VALUE-ADDED					DEPRE-CIATION	NET PROFIT	VALUE-ADDED RATIO
			Personnel Remune-ration	Financial Charges	Tariff and Taxes	Gross Profit	Total			
	a =(b+g)	(b)	(c)	(d)	(e)	(f)	g = (c+d+e+f)	(h)	i=(f-h)	j=(g/a)
Calf supplier	1,810,875	1,735,969	151,395	3,750	9	(80,248)	74,906	29,957	(110,205)	0.0414
Farmer	1,762,600	1,466,798	117,330	13,450	877	164,145	295,802	36,879	127,266	0.1678
Feedmill	1,474,675	1,124,216	148,474	-	10,511	191,473	350,459	5,961	185,513	0.2377
Poultry shop	1,543,311	1,220,950	137,400	8,000	10,200	166,761	322,361	16,900	149,861	0.2089
Village trader	1,010,250	965,268	4,030	1,000	355	39,597	44,982	400	39,197	0.0445
Sub-district trader	820,600	767,149	7,181	1,050	22	45,198	53,451	600	44,598	0.0651
District trader	921,250	857,249	3,103	-	20	60,879	64,001	1,100	59,779	0.0695
Provincial trader	757,500	660,829	825	-	2,617	93,230	96,671	4,000	89,230	0.1276
Village processor	4,282,815	3,984,735	86,340	9,450	44,340	157,950	298,080	2,808	155,141	0.0696
Sub-district processor	5,906,400	5,285,774	71,235	7,500	75,860	466,031	620,626	6,933	459,098	0.1051
Provincial processor	1,878,000	1,396,075	49,420	-	18,027	414,478	481,925	7,976	406,501	0.2566
Total	22,168,276	19,465,012	776,733	44,200	162,838	1,719,493	2,703,264	113,515	1,605,978	0.1219

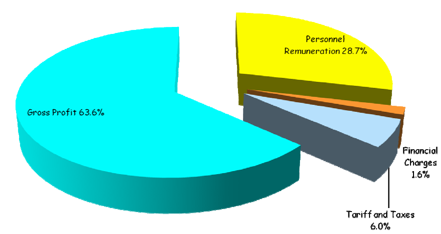
RESULTS AND DISCUSSIONS

VALUE-ADDED CONTRIBUTION | Actor contribution in smallholder chain



RESULTS AND DISCUSSIONS

VALUE-ADDED CONTRIBUTION | Value-added componenets in smallholder chain



SUMMARY AND CONCLUSIONS

❖There are goverment programs that support the roles of cooperative in the smallholder commodity chain such as working capital and technical asistance

❖The contribution of cooperative in this research was still in the upstream sector. They just provided input such as concentrate and complete feed,

❖In term of performance assessment, the cooperative has positive ratio of profitability and operational efficiency,

❖The share of cooperative's value added was 12.96% that distributed as follow: 5.49% was personal remuneration and 0.39% was tariff and taxes and 7.08% was gross profit.

POLICY RECOMMENDATIONS

1. Smallholder development program for the beef cattle industry. The government should develop programs that will focus on good breeding and farming practices and marketing strategies. The government has to provide smallholder farmers with economic incentives so that they can increase their business scale of operation. If the smallholder farmers are able to raise more animals, the population of beef cattle will increase significantly. It will have a positive impact in achieving the meat self-sufficiency goal of the government.

2. Partnership network among government, cooperative and farmer. This partnership will be useful for the calf suppliers and farmers in the smallholder commodity chain. Bigger roles for the extension worker, animal paramedic and cooperative are needed. A specialized extension program on formula and feed processing, breeding activity, animal health and raising calves should be implemented.

3. Strengthening the roles and contribution of cooperative. It is needed the program to support the roles and contribution of cooperative in both downstream and upstream sectors. Is related to input suppliers activity such as feed, veterinary medicine for the downstream sectors and buying and seliing beef cattle and meat for the upstream sectors.

THANK YOU