PhD Program in Ghent University

Mapping and Analyzing Value Chain of Rice Crop in Ayeyarwaddy Region, Myanmar

Thuzar Linn[1], Prof. Dr. Broos Maenhout[2]

UNIVERSITEIT GENT

Situation: We study the mapping and analysis of the value chain of rice crop in Ayeyarwaddy Region, Myanmar

Research Questions:

☐ To understand and identify the constraints in the value chain and to develop strategies to overcome these bottlenecks

☐ To structure the rice value chain map and describe the socio-demographic characteristics of the value chain actors along the chain

☐ To determine marketing costs and marketing margins of the various actors along the rice value chain

Study area and Sampling

Sample size
- 130 farmers
- 21 primary collectors
- 7 wholesalers
- 25 millers
- 28 retailers
- 4 exporters

Total – 215 respondents

Sampling Method
- Purposive and simple random sampling method

Ayeyarwaddy Region (Study Area)
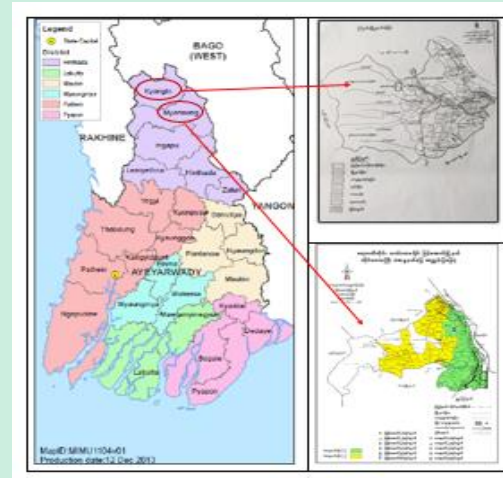
Data Collection
- Primary and secondary data
- Qualitative and quantitative data

Methodology

➢ Descriptive statistics
➢ Cost and Return analysis for rice production
➢ Marketing costs and marketing margin analysis

Data Analysis

Cost and return analysis for rice production

Measurement (1)

$$Return\ above\ variable\ cost\ (Gross\ margin) = Total\ gross\ benefit - Total\ variable\ cost \quad [1.1]$$

Measurement (2)

$$Return\ per\ unit\ of\ capital\ invested = \frac{Total\ gross\ benefit}{Total\ variable\ cost} \quad [1.2]$$

Source: Olsan (2009)

Marketing costs and marketing margin analysis

Table 1. Formulae for calculation of marketing costs, profits and margins along the value chain

Value Chain Actors	Costs			Revenues	Profits		Margins	
	Unit Total cost	Unit Added Cost	% Added cost	Unit Price	Unit Profit	% Total Profit	Unit Margin	% Total Margin
Farmers	A	-	A/F	G	G-A	(G-A)/(K-F)	G	G/K
Primary collectors	G	B	B/F	H	H-B-G	(H-B-G)/(K-F)	H-G	(H-G)/K
Millers	H+C	C	C/F	I	I-C-H	(I-C-H)/(K-F)	I-H	(I-H)/K
Wholesalers	I+D	D	D/F	J	J-D-I	(J-D-I)/(K-F)	J-I	(J-I)/K
Retailers/ Exporters	J+E	E	E/F	K	K-E-J	(K-E-J)/(K-F)	K-J	(K-J)/K
Total		F=A+B+C +D+E	100		K-F	100	K	100

Source: M4P (2008) [8]

$$Unit\ margin = Unit\ selling\ price - Unit\ buying\ price \quad [1.3]$$
$$Unit\ profit = Unit\ margin - Unit\ total\ cost \quad [1.4]$$
$$Unit\ total\ cost = Unit\ buying\ price + Unit\ added\ cost \quad [1.5]$$
$$Percent\ total\ profit\ of\ each\ actor = (Unit\ profit\ of\ each\ actor/Unit\ total\ profit\ of\ all\ actors) \times 100 \quad [1.6]$$
$$Percent\ total\ margin\ of\ each\ actor = (Unit\ margin\ of\ each\ actor/Unit\ total\ margin\ of\ all\ actors) \times 100 \quad [1.7]$$

Results

Table 2 Benefits and costs of the paddy production for Emata rice group by the farmers (N=130)

Items	Unit	Mean	Minimum	Maximum	Std. Deviation
Yield	kg/ha	3000.11	516.44	5164.39	818.50
Paddy price	MMK/kg	236	191	278	26.05
Total Gross Benefit	**MMK/ha**	**707324**	**133434**	**1359050**	**213563.32**
Total material costs	MMK/ha	154120	42007	287041	46045.35
Total family labor costs	MMK/ha	150070	14826	352118	82774.65
Total hired labor costs	MMK/ha	240307	13000	514490	80339.18
Total interest costs	MMK/ha	19721	6926	37091	4589.13
Total Variable Costs	**MMK/ha**	**564219**	**269212**	**808565**	**103932.64**
RAVC	MMK/ha	143105	-401396	766883	199758.16
Benefit cost ratio		**1.28**	**0.31**	**3.14**	**0.42**
Break even yield	kg/ha	2421.18	1125.30	3630.29	500.05
Breakeven price	MMK/kg	210	84	840	107.10

Figure 1. Rice value chain from the study area to domestic consumers

Input suppliers → Farmers → Primary collectors → Millers → Wholesalers → Retailers → Domestic consumers

Table 3 Marketing profits and margins of farmer, primary collector, miller, wholesaler and *retailer* for the *Emata* rice value chain

Actor	Costs (MMK/kg)			Revenues (MMK/kg)	Profits (MMK/kg)		Margins (MMK/kg)	
	Unit total cost	Unit Added Cost	% Added Cost	Unit Price	Unit Profit	%Total Profit	Unit Margin	%Total Margin
Farmer	210	210	77.5	236	26	9.9	236	44.1
Primary collector	236	0	0.0	241	5	1.9	5	0.9
Miller	255	39	14.4	402	122	46.2	161	30.1
Wholesaler	413	11	4.1	448	35	13.3	46	8.6
Retailer	459	11	4.1	535	76	28.8	87	16.3
Total		**271**	**100.00**		**264**	**100.0**	**535**	**100.0**

Note: Unit total cost of miller (255) = unit price of primary collector (241) - return from byproduct (25) + unit added cost (39)
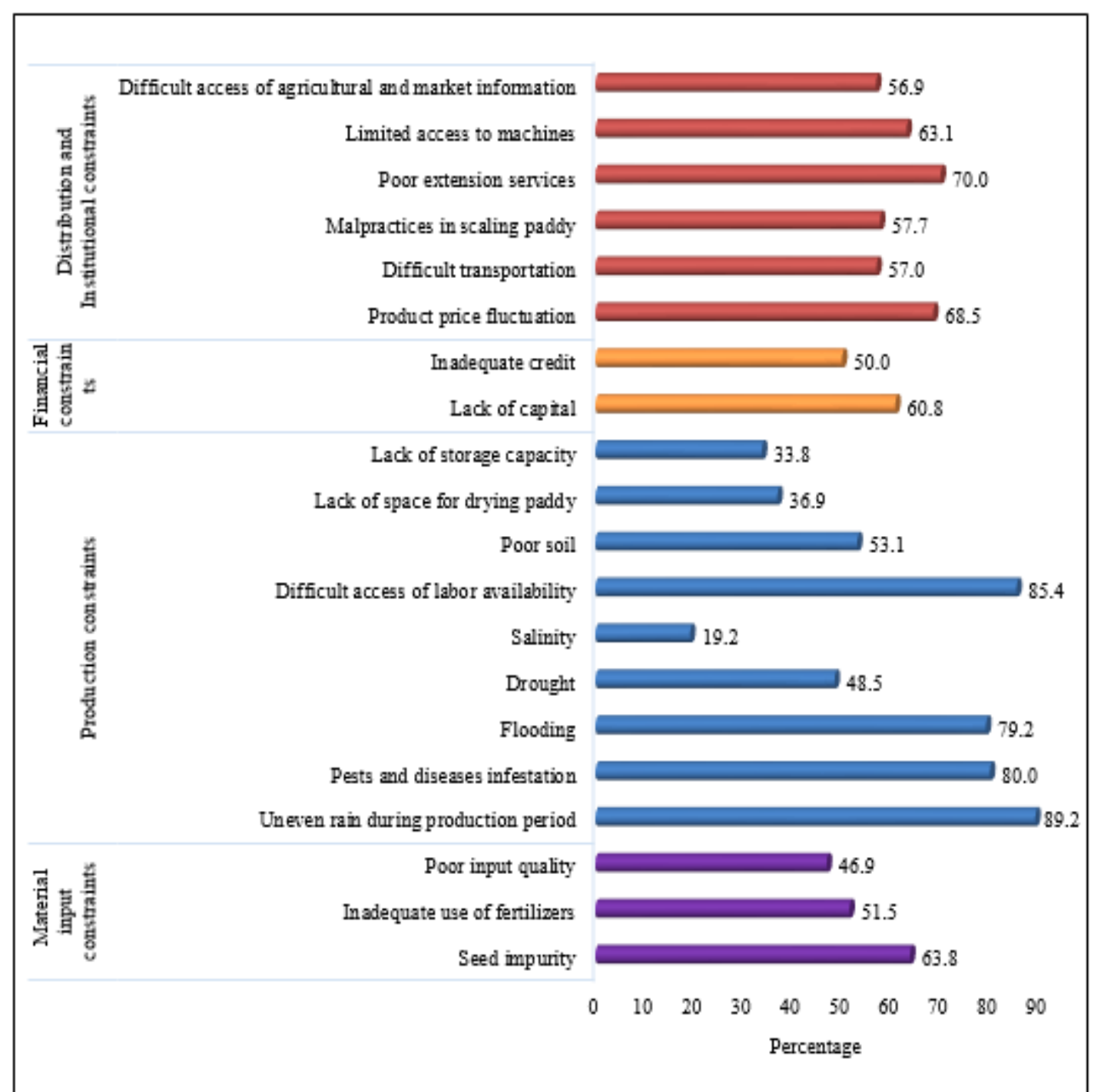
Figure 2. Rice value chain from the study area to the foreign exporters

Input suppliers → Farmers → Primary collectors → Millers → Wholesalers → Exporters → Consumers in other countries

Table 4 Marketing profits and margins of farmer, primary collector, miller, wholesaler and *exporter* for the *Emata* rice value chain

Actor	Costs (MMK/kg)			Revenues (MMK/kg)	Profits (MMK/kg)		Margins (MMK/kg)	
	Unit total cost	Unit Added Cost	% Added Cost	Unit Price	Unit Profit	%Total Profit	Unit Margin	%Total Margin
Farmer	210	210	64.8	236	26	11.8	236	43.3
Primary collector	236	0	0.0	241	5	2.3	5	0.9
Miller	255	39	12.0	402	122	55.2	161	29.5
Wholesaler	413	11	3.4	448	35	15.8	46	8.4
Exporter	512	64	19.8	545	33	14.9	97	17.8
Total		**324**	**100.0**		**221**	**100.0**	**545**	**100.0**

Note: Unit total cost of miller (255) = unit price of primary collector (241) - return from byproduct (25) + unit added cost (39)
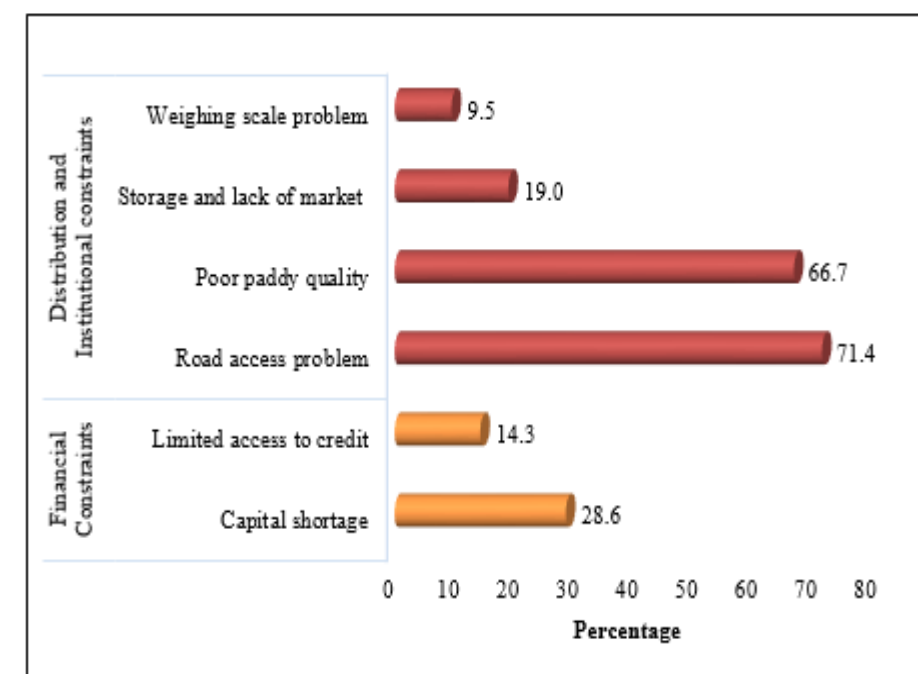

Figure 3 Constraints faced by the sample farmers

Major constraints faced by the farmers:
- ❖ Uneven raining during the production period
- ❖ Labor scarcity
- ❖ Pests and diseases infestation
- ❖ Flooding

Figure 4 Constraints faced by the sample primary collectors

Major constraints faced by the primary collectors:
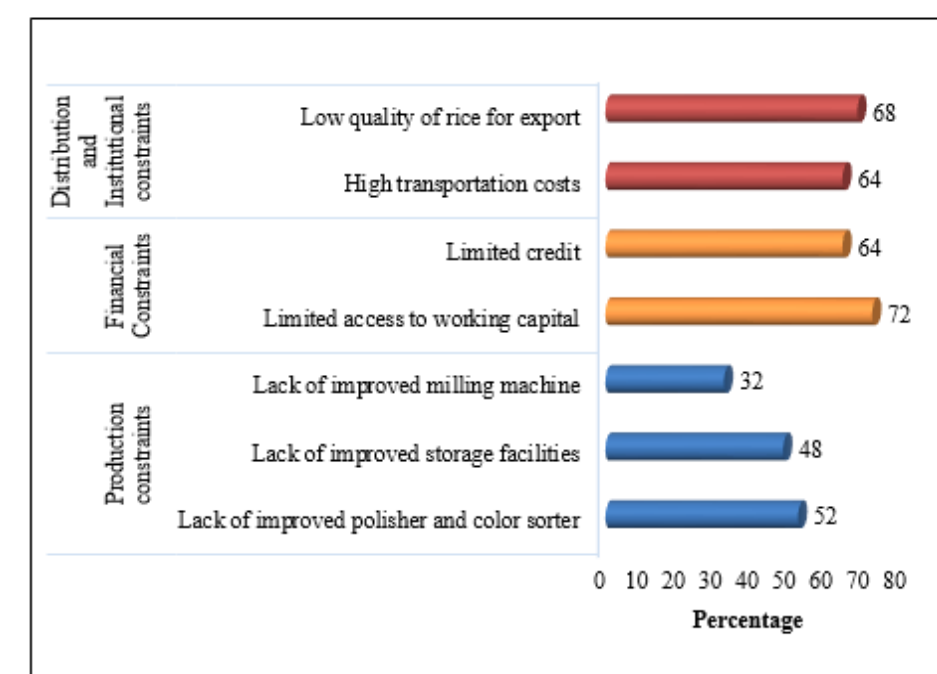- ❖ Poor road access problem
- ❖ Poor paddy quality

Figure 5 Constraints faced by the sample millers

Major constraints faced by the millers:
- ❖ Limited access to working capital, Low quality of rice for export
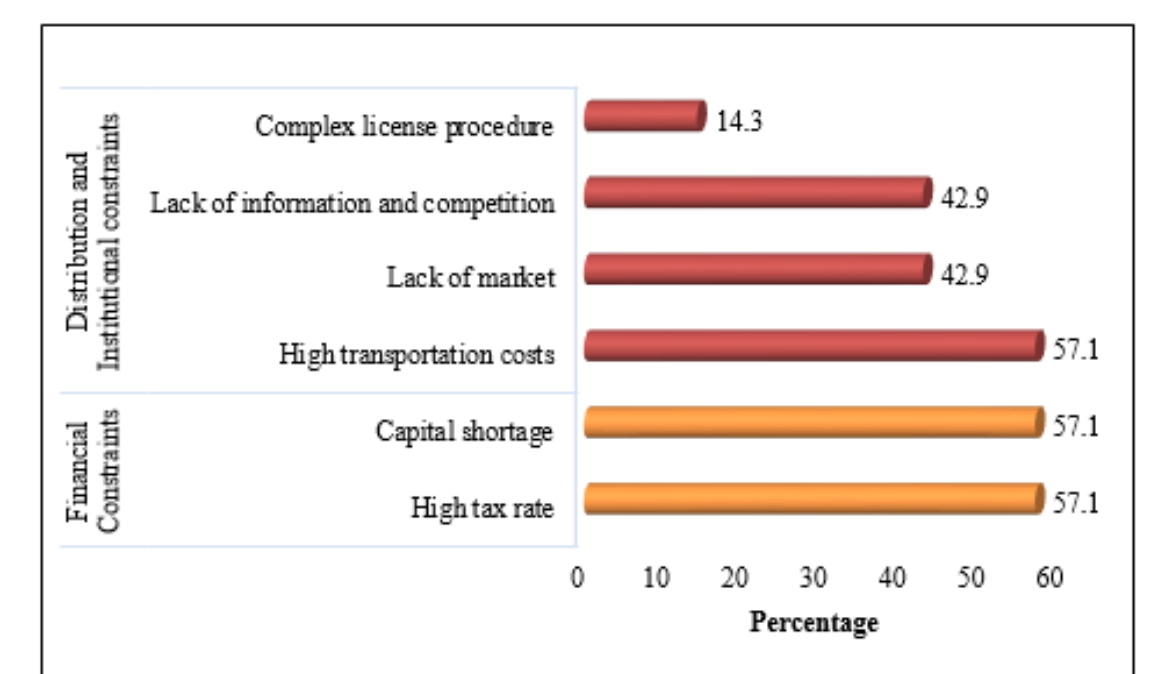- ❖ Limited access to credit, High transportation costs

Figure 6 Constraints faced by the sample wholesalers

Major constraints faced by the wholesalers:
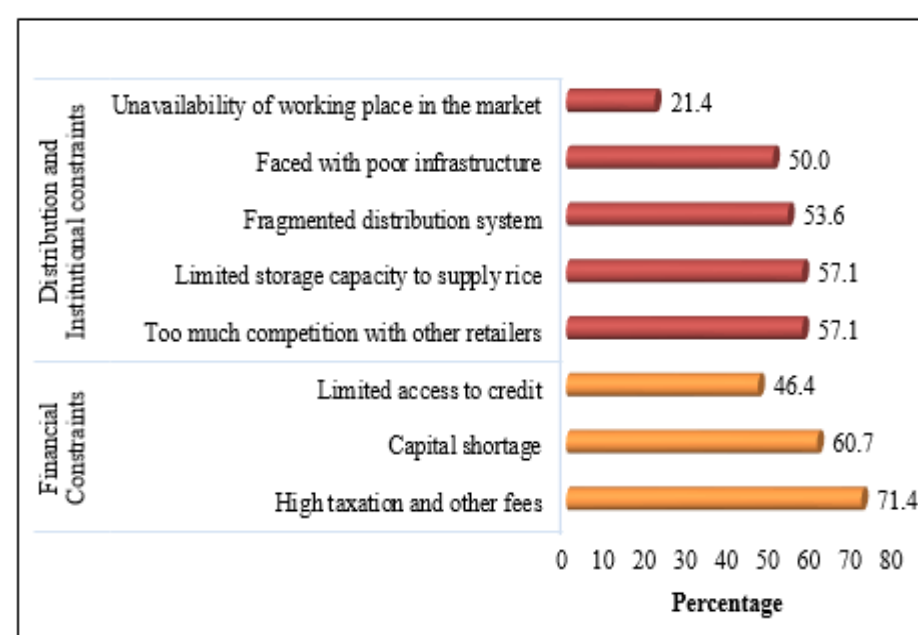- ❖ High transportation cost
- ❖ Lack of capital
- ❖ High tax rate

Figure 7 Constraints faced by the sample retailers

Major constraints faced by the retailers:
- ❖ High taxation and other fees, Capital shortage
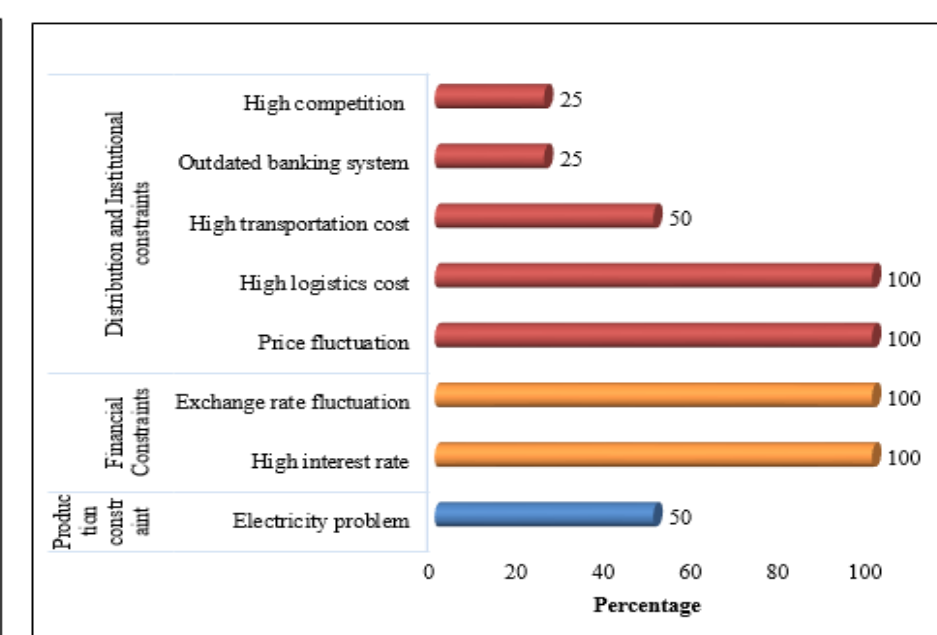- ❖ Too much competition with other retailers
- ❖ Limited storage capacity

Figure 8 Constraints faced by the sample exporters

Major constraints faced by the exporters:
- ❖ Exchange rate fluctuation, High logistic costs
- ❖ Price fluctuation, High interest rate

Conclusion
- ❖ The gross marketing margins for both rice value chains (for domestic consumers and international consumers) are very wide.
- ❖ The rice value chains in the study area are not efficient because the actors do not receive reasonable profits based on the extra marketing costs.
- ❖ The rice miller is the most profitable actor and the primary collector and farmer are vulnerable actors in the rice value chain.

Further Studies
➢ Comparative studies for rice value chain in other study areas are needed.
➢ The value chains for other rice value added products are needed to study.

[1] PhD candidate (Operations Management) E-mail: thuzarlinn.eco@gmail.com
[2] Professor, Department of Business Informatics and Operations Management, Faculty of Economics and Business Administration, Ghent University, Belgium