

Understanding Uncertainty in the Rice Supply Chain in Ayeyarwaddy Region, Myanmar

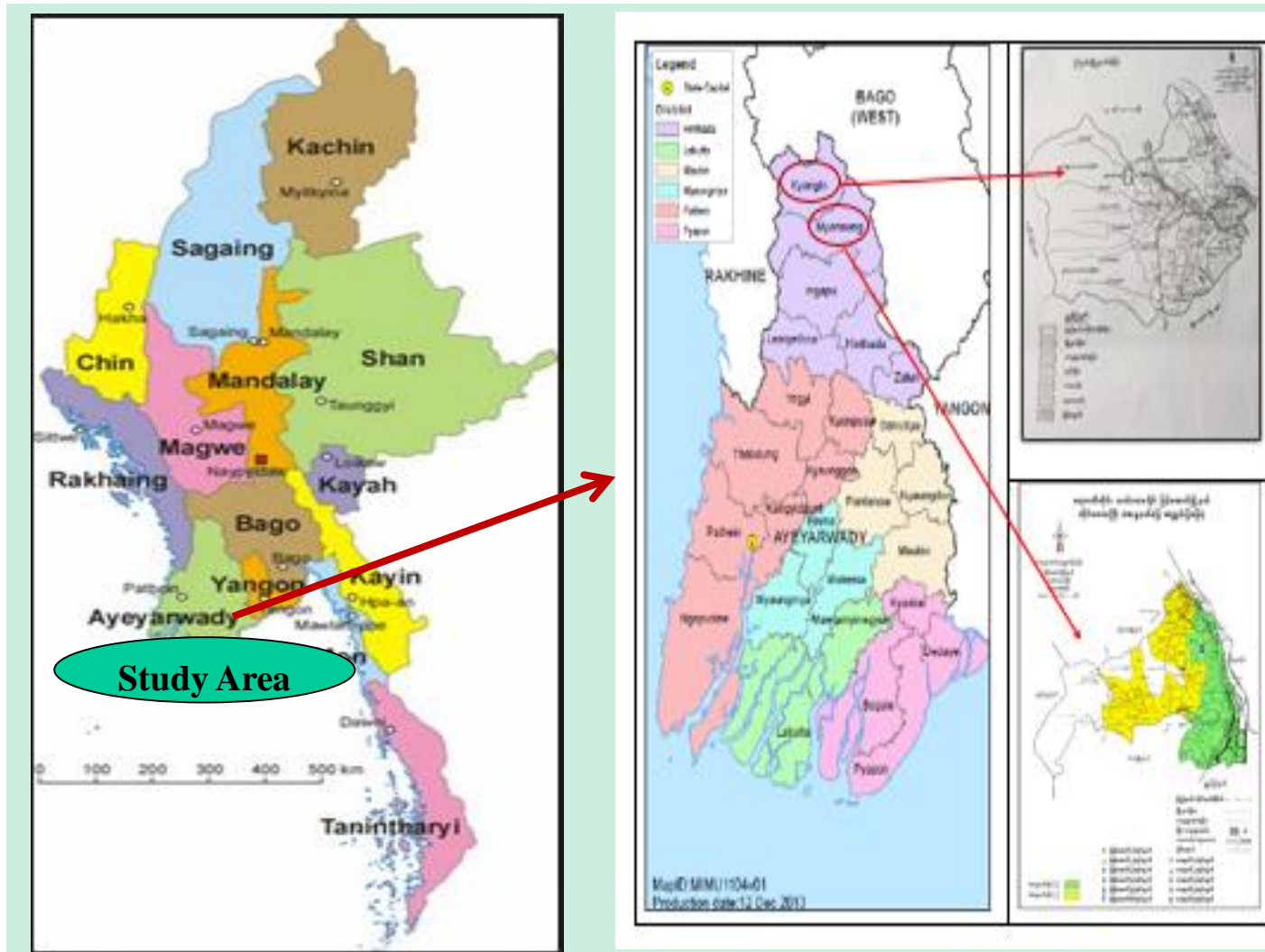
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Research Methodology

Situation: We study the understanding uncertainty in the rice supply chain in Ayeyarwaddy Region, Myanmar

Research Objectives:

- To describe the uncertainty perceived by the various actors in the supply chain in the Ayeyarwaddy Region, Myanmar
- To investigate some mitigation strategies to mitigate the uncertainty identified in the rice supply chain



Sample size

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

Total – 215 respondents

Sampling Method

- Purposive and stratified random sampling method

Data Collection

- Primary data (A 7-point Likert scale data)
- Secondary data (FAOSTAT, MOALI and other sources)

Data Analysis

- Descriptive statistics
- Factor Analysis (After testing Cronbach alpha, Kaiser-Meyer-Olkin Measure (KMO) and Bartlett's Test, construct validity by EFA)

Results

Table: Descriptive statistics of the uncertain factors in the rice supply chain (N=215)

Items	Code	Disagree (Scale 1-3)	Neutral (Scale 4)	Agree (Scale 5-7)	Mean
Supply Uncertainty (SU)	SU1	15.82	3.72	80.46	5.66***
	SU2	17.22	2.79	79.99	5.53***
	SU3	17.68	4.19	78.14	5.30***
Demand Uncertainty (DU)	DU1	7.91	4.19	87.90	5.79***
	DU2	8.84	4.65	86.51	5.73***
	DU3	4.66	14.42	80.93	5.47***
Process Uncertainty (PU)	PU1	8.84	9.30	81.87	5.47***
	PU2	6.06	13.95	80.00	5.50***
	PU3	8.38	14.88	76.75	5.22***
Planning and Control Uncertainty (PCU)	PCU1	43.25	13.02	43.71	3.88***
	PCU2	36.74	13.02	50.24	4.08***
	PCU3	34.88	13.95	51.17	4.14***
Competitor Uncertainty (CU)	CU1	15.82	9.77	74.41	5.17***
	CU2	21.4	10.23	68.37	4.82***
	CU3	21.86	8.84	69.31	4.84***
Government Uncertainty (GU)	GU1	14.88	8.37	76.74	5.40***
	GU2	12.56	9.77	77.68	5.44***
	GU3	24.18	13.95	61.85	4.84***
Climate Uncertainty (CLU)	CLU1	10.7	4.65	84.64	5.80***
	CLU2	12.56	4.65	82.79	5.73***
	CLU3	7.91	3.26	88.84	6.00***
	CLU4	8.38	3.72	87.91	6.00***



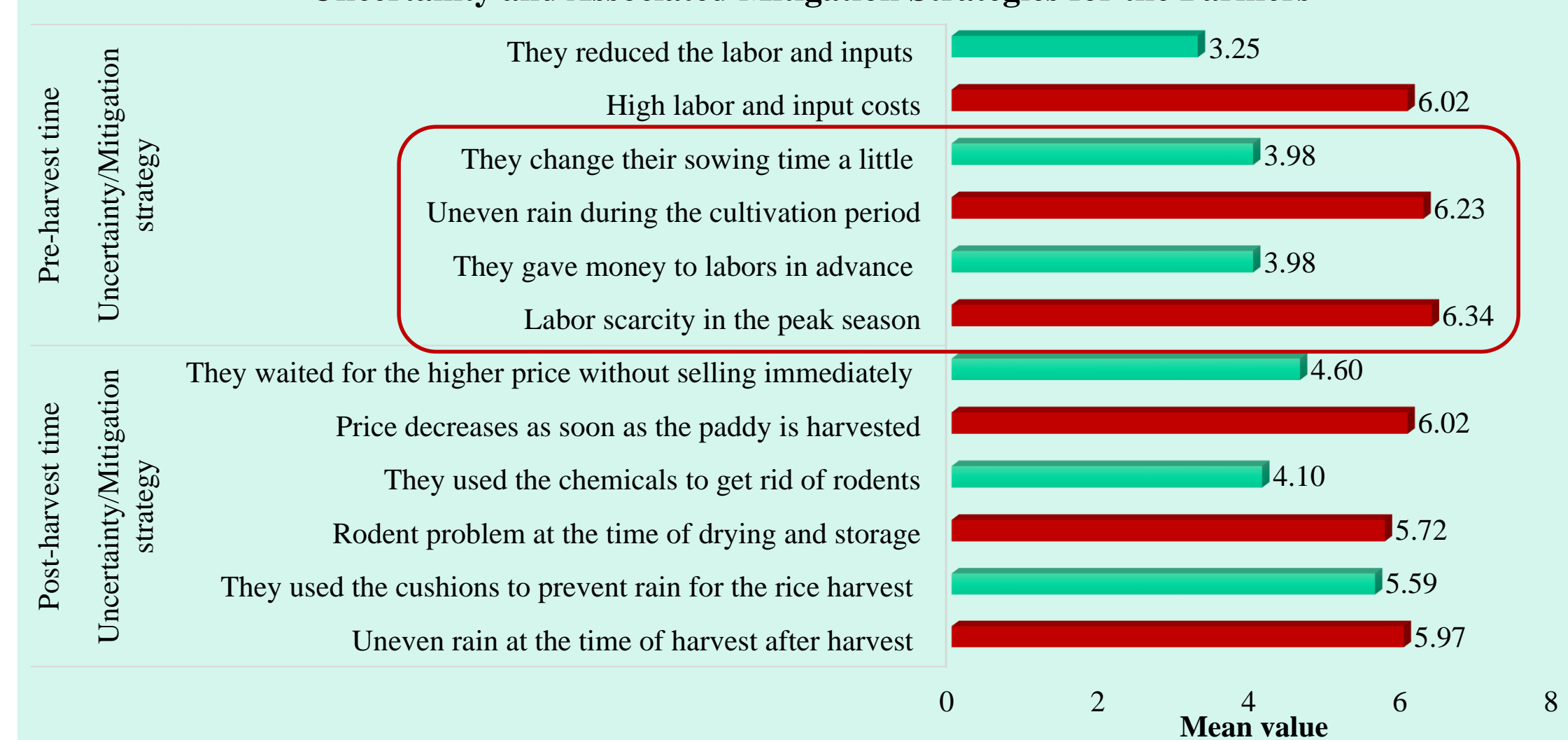
CLU3: Flooding occurrences affecting farms are unpredictable in each year and
CLU4: The duration of flooding is unpredictable over the years have the highest mean values

Table: Structure of component matrix for the rice supply chain (N=215)

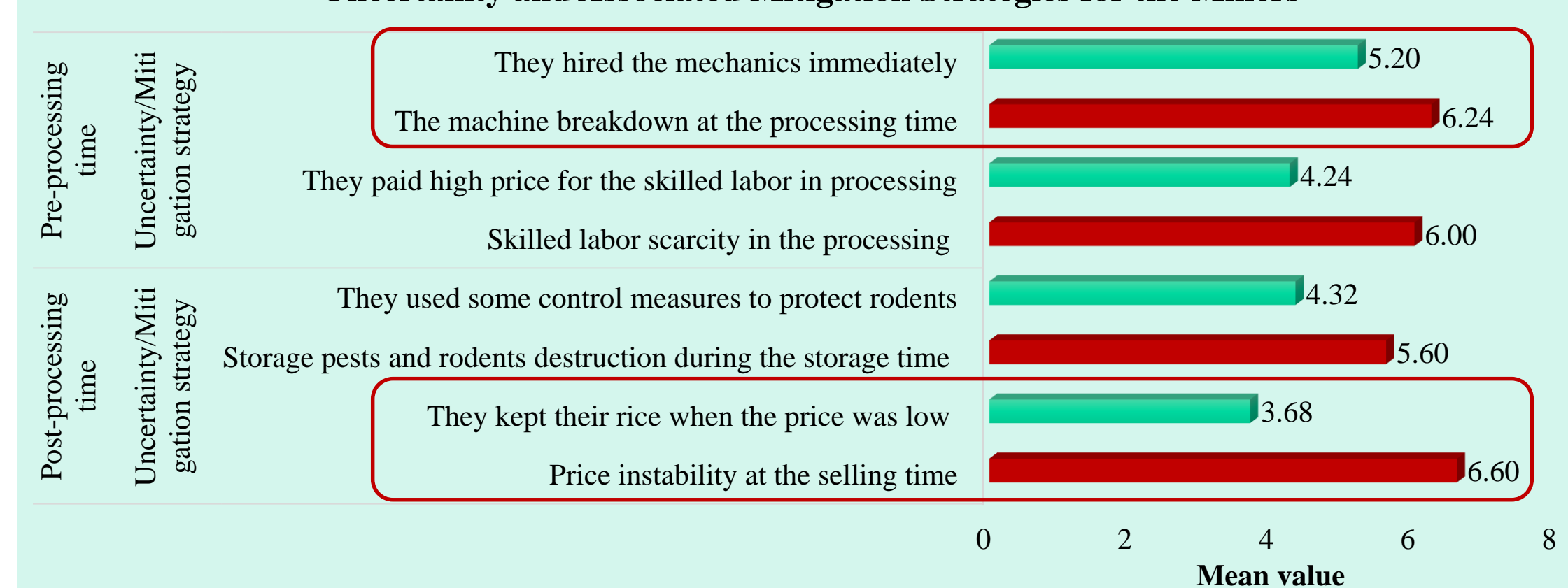
Types of uncertainty	Code	Component						
		1	2	3	4	5	6	7
Climate Uncertainty (CLU)	CLU3	.890						
	CLU2	.889						
	CLU4	.887						
	CLU1	.830						
Planning and Control Uncertainty (PCU)	PCU2		.953					
	PCU3		.950					
	PCU1		.833					
Competitor Uncertainty (CU)	CU2			.952				
	CU3			.944				
	CU1			.668				
Government Policy Uncertainty (GU)	GU1				.825			
	GU3				.800			
	GU2				.758			
Process Uncertainty (PU)	PU2					.824		
	PU1					.771		
	PU3					.714		
Supply Uncertainty (SU)	SU1						.840	
	SU2						.808	
	SU3						.678	
Demand Uncertainty (DU)	DU2							.832
	DU3							.727
	DU1							.700
Eigen value		3.270	2.706	2.393	2.085	2.004	1.989	1.978
% of Variance		14.864	12.298	10.879	9.478	9.108	9.039	8.989
Cumulative % of variance		14.864	27.161	38.041	47.519	56.627	65.667	74.656

- The **unpredictable climate** is an essential component because it effects on the agricultural and socio-economic systems in both directly and indirectly especially in developing countries.
- Planning and control uncertainty** referring to “on time and correction of information involved production and inventory availability”. This likely means that the information technology is not implemented in Myanmar rice industry.

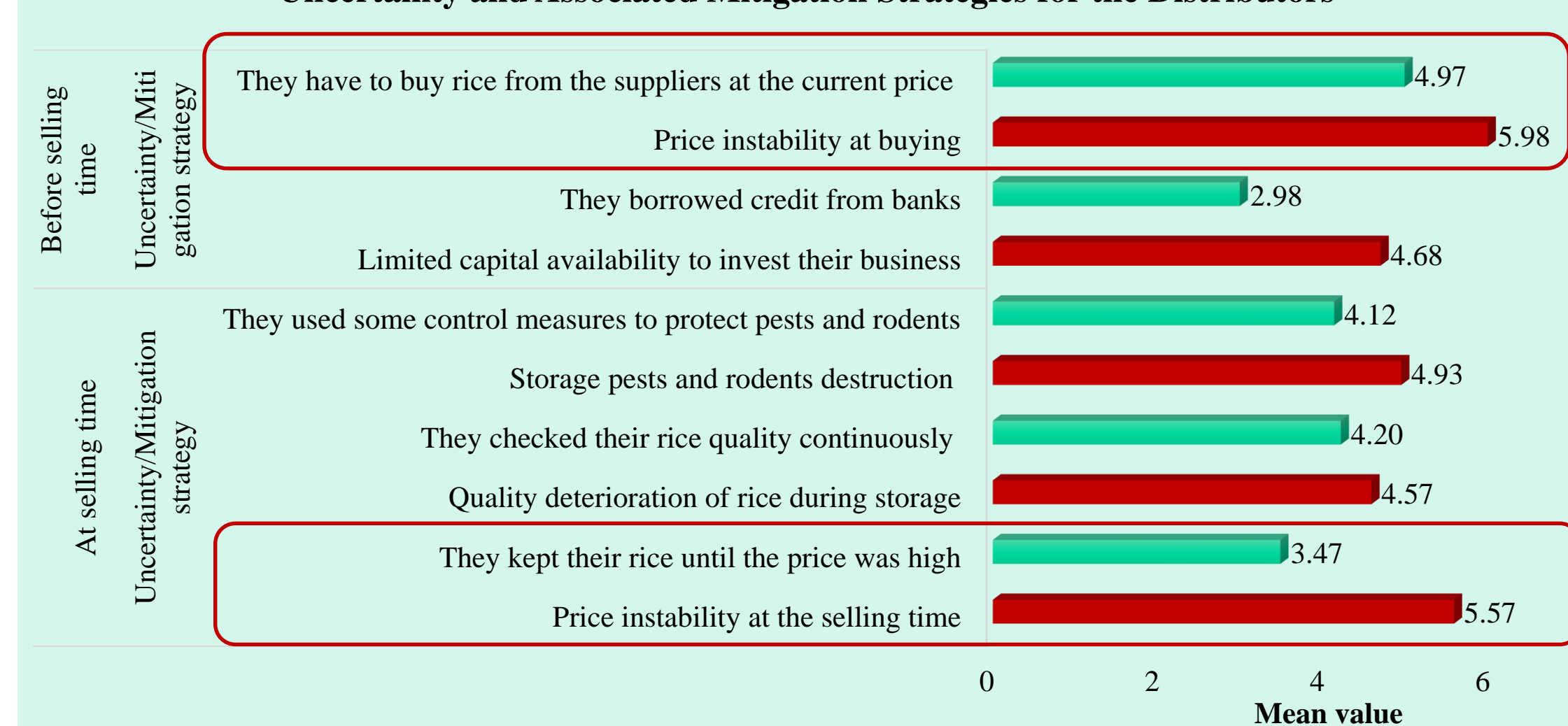
Uncertainty and Associated Mitigation Strategies for the Farmers



Uncertainty and Associated Mitigation Strategies for the Millers



Uncertainty and Associated Mitigation Strategies for the Distributors



Conclusion

- Among seven uncertainty factors, disaster for rice supply chain is serious source of uncertain factor. Moreover, the actors should take into account to handle the *planning and control uncertainty*.
- Department of Agriculture cooperating with the Department of Meteorology should educate the farmers how to effectively use the information for their agricultural activities, especially rice cultivation. The transparent information exchange is essentially needed to improve the rice supply chain.
- The findings of this study confirm that the rice supply chain actors perceive several sources of uncertainty and employ different mitigation strategies. All rice supply chain actors especially highly perceive the *price instability* for their product in the rice supply chain.

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