

Analysis Of The Role Of Actors In The Rice Commodity Supply Chain In Ropang District, Sumbawa Regency, West Nusa Tenggara

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ABSTRACT

Rice is a strategic commodity that plays an important role in supporting food security. This study was conducted in Ropang Village, Ropang District, Sumbawa Regency, West Nusa Tenggara Province, from April to June 2026. The data used in this study consisted of primary and secondary data. Primary data were obtained through direct observation and in-depth interviews. Secondary data were obtained from documents, regulations, photographs, daily records, websites of the Central Statistics Agency (BPS) of Sumbawa Regency, the Sumbawa Regency Agriculture Office, the Sumbawa Regency Office of Cooperatives, Industry and Trade, and relevant scientific literature. Data collection methods included observation, interviews, questionnaires, documentation, and literature review. The sampling method employed purposive sampling and snowball sampling to trace the network of actors involved in the rice supply chain. The study involved 31 respondents. The data were analyzed using descriptive analysis and the Miles and Huberman analysis model. The results showed that rice farming and supply chain activities were predominantly carried out by actors who were relatively mature in terms of age. Male respondents dominated particularly among farmers, collectors/middlemen, and rice milling operators. Female respondents were more commonly involved in trading activities. The main actors in the rice supply chain in Ropang Village consisted of farmers, collectors/middlemen, rice millers, and rice traders.

INTRODUCTION

Rice is a strategic commodity in Indonesian agricultural development because it plays a major role as a national food source and supports food security. West Nusa Tenggara (NTB) Province is a key rice production area in Indonesia. The Central Statistics Agency of West Nusa Tenggara Province (2026) noted that the rice harvest area in NTB in 2025 reached 322.90 thousand hectares with a production of 1.71 million tons of dry grain, an increase of 17.56% compared to 2024. This large production needs to be supported by an efficient

distribution system to ensure optimal supply, especially in Sumbawa Regency. Sumbawa Regency has a significant agricultural base in supporting regional food supply (Central Statistics Agency of Sumbawa Regency, 2026).

Ropang District, particularly Ropang Village, is an area with quite intensive rice farming activities. The publication of Ropang District in Figures 2025 shows the characteristics of the area and agricultural activities of Ropang District that support the development of rice commodities (Central Statistics Agency of Sumbawa Regency, 2025). Field data shows the area of irrigated and rain-fed rice planting in Ropang District is approximately 1,253.98 hectares. However, in practice, farmers still face problems such as limited market access, fluctuations in grain prices, dependence on intermediaries, and limited storage and post-harvest processing facilities. Muliana and Amrullah (2022) showed that rice supply chain management at Perum Bulog Sub Divre Sumbawa still faces fluctuations in procurement and sales. In the context of Sumbawa Regency, Rafiq et al. (2025) identified obstacles in the form of limited logistics infrastructure, weak bargaining position of farmers, and distribution inefficiencies in the rice and corn agribusiness. More generally, limited logistical facilities, road conditions, handling equipment, and limited information exchange between actors are factors that can reduce the efficiency of the food supply chain (Che Hassan & Osman, 2025). Supply chain vulnerability can increase due to climate change and economic uncertainty, necessitating a more adaptive and resilient food system (Tirado-Kulieva et al., 2022).

Supply chain management is an approach that integrates activities and relationships between actors from upstream to downstream through the management of product, information, and financial flows. In rice, the supply chain begins with rice production by farmers, through collection, processing, distribution, and marketing to consumers. Structure, business processes, resources, and governance are essential components in building an effective supply chain (Marzuki et al., 2023). Sustainable supply chain management integrates economic, social, and environmental dimensions in supply chain management. In the agricultural sector, its application is directed at increasing resource efficiency, reducing loss or waste, enhancing traceability, strengthening collaboration, and improving the welfare of actors. Innovation and technology play a role in increasing operational efficiency while strengthening the sustainability of the agrifood supply chain (Astrima et al., 2025). Strengthening the role of actors, coordination, and institutions can improve farmers' bargaining position and value distribution in the agricultural supply chain (Limbong & Harsanto, 2025). Strengthening supply chain efficiency through collaboration between actors, utilization of technology, and process improvement can increase productivity and competitiveness of the agricultural sector (Safitri et al., 2025).

Each region has its own supply chain characteristics influenced by social, economic, geographic, infrastructure, and institutional conditions. Therefore, more contextual research is needed to understand the condition of the rice supply chain at the local level. Most previous

research has been conducted at the regional, company, or specific marketing chain levels. Therefore, studies that describe in detail the dynamics of actors, distribution flows, and specific problems at the village level are still needed, particularly in Ropang Village, Ropang District, Sumbawa Regency. The purpose of this research is to identify the actors involved in the rice supply chain in Ropang Village, Ropang District, Sumbawa Regency, West Nusa Tenggara.

RESEARCH METHODS

Study held in Ropang Village , District Ropang Sumbawa Regency , West Nusa Tenggara Province from April-May 2026. The data used in study This consists of from secondary data and primary data. Primary data is obtained through observation directly in the field , interviews in-depth (in-depth interview) to farmer rice , collectors / middlemen , mills rice , trader with using questionnaires and questionnaires as instrument research that has been prepared previously. Interview done For get explanation deep related phenomenon chain supply rice . Secondary data in study covering location geographical location research , demographics population , area , area harvest and production rice , price data regional rice , production volume paddy and rice , prices paddy and rice in every level chain supply , cost distribution and transportation , time distribution from farmer to consumers , and policy government related food . The data originate from books , magazines , documents , regulations , photos , notes daily , internet site of the Central Statistics Agency (BPS) of Sumbawa Regency , Department of Agriculture Sumbawa Regency , Department of Cooperatives , Industry and Trade Sumbawa Regency , literature scientific (journals , books , theses). Data collection methods in study namely : 1) observation . Observation done For see the distribution process grain until become rice , observing activity milling rice , knowing condition facilities and infrastructure (roads , transportation , warehouses), as well as verify the result data interview .; 2) Interview in research this , done For get information about structure chain supply , pattern connection between perpetrators , (farmers rice , collectors / middlemen , entrepreneurs milling rice , and traders rice).; 3) Questionnaire . Questionnaire used For collect quantitative data from respondents ; 3) Documentation . Documentation method done with collect data from document written and archives official , including report from agency government , production data and area harvest , price data commodities , and photos activity research ; 5) Literature study. Literature study the done For give information deep about problems that will investigated in study This . Method of determination sample in study This use purposive sampling For choose relevant respondents , as well snowball sampling For browse network perpetrator in chain supply rice . Amount sample determined based on principle data saturation so that the data obtained truly in-depth and comprehensive . The number sample in study namely 30 people consisting of from : 20 farmers , 3 collectors , milling 2 units of rice , and traders rice for 5 people. Analysis method in study use analysis

Descriptive and analysis of Miles and Hubberman . Analysis descriptive respondents will tabulated and presented as a percentage with formula (Nusraningrum *et al.* , 2021):

$$P = \frac{f_i}{\sum f_i} \times 100\%$$

Information :

- P = Percentage respondents who have category certain
 f_i = Amount respondents who chose category certain
 $\sum f_i$ = Total answers

Miles and Hubberman's analysis is a method used to analyze actors in the supply chain management activities of rice commodities (paddy and rice). The data in this study were analyzed using several steps: data collection, data reduction, data presentation, and drawing conclusions.

RESULTS AND DISCUSSION

Results

a. Respondent Characteristics Based on Age

Age is one of the respondent characteristics that can provide an overview of the condition of human resources involved in rice supply chain activities. Research data shows that respondents' ages ranged from 27 to 67 years, with an average age of 50.97 years and a median of 53 years. To facilitate analysis, respondents' ages were grouped into five age groups as presented in Table 1. Age characteristics are relevant in agricultural research because the age structure of actors is related to issues of workforce sustainability and agricultural regeneration.

Table 1. Respondent Characteristics Based on Age

No.	Group Age (Years)	Number of people)	Percentage (%)
1	≤ 30	1	3.23
2	31–40	4	12.90
3	41–50	10	32.26
4	51–60	10	32.26
5	> 60	6	19.35
Total		31	100.00

Source: Primary data from research results, processed by researchers.

Table 1 shows that the 41–50 and 51–60 age groups have the largest number of respondents, with 10 respondents each, representing 32.26%. Furthermore, there were 6 respondents aged 60 and over, representing 19.35%, 4 respondents aged 31–40, representing

12.90%, and only 1 respondent aged 30 or younger, representing 3.23%. Combined, 26 respondents aged 41 and over represented 83.87% of all respondents.

b. Respondent Characteristics Based on Gender

Respondent gender was used to describe the composition of men and women involved in rice supply chain activities. The results showed that respondents were predominantly male, as presented in Table 2. Gender characteristics are important to examine because agricultural activities can involve men and women in different types of work and at different stages of the activity.

Table 2. Respondent Characteristics Based on Gender

No.	Gender	Number of people)	Percentage (%)
1	Man	25	80.65
2	Woman	6	19.35
Total		31	100.00

Source: Primary data from research results, processed by researchers.

Table 2 shows that 25 respondents, or 80.65%, were male, while 6 respondents, or 19.35%, were female. Thus, the study was predominantly male.

c. Actors in the Rice Commodity Supply Chain (Grain to Rice)

The rice supply chain is a series of activities involving numerous actors. Based on research conducted on 31 respondents in the study area, four main groups of actors were identified: rice farmers, collectors/middlemen, rice millers, and rice traders.

Table 3. Key Respondents in the Rice Supply Chain

No.	Perpetrator Chain Supply	Number of people)	Percentage (%)
1	Farmer paddy	20	64.52
2	Collectors / middlemen	3	9.68
3	Milling paddy	3	9.68
4	Trader rice	5	16.13
Total		31	100.00

Source: Primary data from research results, 2026, processed by researchers.

Discussion

a. Respondent Characteristics Based on Age

Age is one of the respondent characteristics that can provide an overview of the condition of human resources involved in rice supply chain activities. Based on research data, respondents' ages ranged from 27 to 67 years, with an average age of 50.97 years and a median of 53 years. This condition indicates that the majority of rice supply chain actors in the study were in the adult to elderly age group. The high proportion of this age group indicates that farming and rice supply chain activities are mostly carried out by actors who are relatively mature in terms of age. This condition is consistent with the issue of the age structure of the agricultural workforce discussed by Nurarifin and Kurniawan (2025). The

study indicates a regeneration problem because the younger generation tends to be less interested in working as farmers, while the presence of young farmers plays a vital role in supporting agricultural sustainability and food security.

b. Respondent Characteristics Based on Gender

The dominance of male respondents was particularly evident among farmers, collectors, and rice millers. Meanwhile, female respondents were more involved in trading activities. This indicates a division of male and female involvement at various stages of the supply chain, although overall, male actors remained more dominant in this study. This condition can be understood as a specific characteristic of respondents in the research location and does not mean that women's roles in agriculture are unimportant. Pratiwi *et al* . (2025) showed that women in agricultural areas in Indonesia can be involved in cultivation, post-harvest handling, marketing, income management, and production decision-making. The level of involvement is also influenced by access to economic resources and the social structure in each region.

c. Respondent Characteristics Based on Type of Supply Chain Actors

The predominance of farmer respondents indicates that farmers are the primary actors in the upstream part of the rice supply chain and the largest group in the researched supply chain structure. Farmers act as the primary producers of unhusked rice, which then connects with other actors in the marketing and distribution process. Meanwhile, collectors, rice millers, and traders are smaller in number but play a crucial role in collecting, processing, and marketing the produce. This is in line with Noer *et al* . (2025) who identified farmers as the initial actors in the rice supply chain, with the product then moving through collectors, grain traders, rice millers, rice traders, and retailers before finally reaching consumers. Each actor not only moves the product but can also perform value-creating activities such as drying, transportation, milling, sorting, packaging, and storage. This respondent composition indicates that the research has covered actors at several key stages of the supply chain, from production at the farmer level, through collection through collectors, processing unhusked rice into rice at the milling level, and finally through marketing through traders.

d. Actors in the Rice Commodity Supply Chain (Grain to Rice)

(1) Rice Farmer

Farmers are the primary actors in the upstream part of the rice supply chain because they produce unhusked rice as the initial product, which is then stored, marketed, or processed into rice. The role of farmers as the initial actors is evident in the research of Ramadhani *et al* . (2025), where all identified rice distribution patterns begin with farmers before the product moves to collectors, mills, traders, and finally consumers. The presence of farmers is the starting point for the formation of product flow in the rice supply chain.

(2) Collectors/Middlemen

Collectors or middlemen are actors who play a role in the collection and purchase of grain from farmers. All respondents stated that collectors purchase grain from farmers. This finding indicates that the most obvious function of collectors in the supply chain is as buyers and collectors of grain at the farmer level, making their presence one of the main links between farmer production and subsequent marketing stages. This finding is consistent with Nugroho *et al.* (2025), who, through an analysis of the rice supply chain network, found that collectors can occupy a position as *central brokers* or important links in the movement of grain between farmers and mills.

(3) Rice Mill

Rice mills are actors that carry out processing functions in the supply chain. All respondents stated that mills process unhusked rice into rice and play a role in determining the quality of the rice produced. Therefore, the primary function of milling in the supply chain lies in the physical transformation of the product, namely converting unhusked rice into rice with different shapes, qualities, and economic values. Mariyah *et al.* (2024) explain that mills perform several post-harvest functions, including drying, milling, storage, and packaging.

(4) Rice Trader

Rice traders play a key role in the downstream supply chain because they are involved in marketing rice to consumers. All respondents stated that traders play a role in determining the selling price of rice. These findings indicate that traders occupy a crucial role in the downstream sector because they are one of the actors directly interacting with consumers and also playing a role in determining prices at the final sales level. Ramadhani *et al.* (2025) showed that retailers are one of the final actors before rice reaches consumers in several distribution patterns. At this stage, traders perform a marketing function that connects processed products with end-consumer demand.

(5) Supply Chain Support Actors

In addition to farmers, collectors/middlemen, rice millers, and rice traders as the main actors, the sustainability of the supply chain is influenced by supporting actors. Supporting actors in this study include the government or related agencies, cooperatives or farmer groups, and consumers. Their role is not always in the form of ownership or physical transfer of the product, but can take the form of support, regulation, supervision, institutions, or final demand for rice products. Baga *et al.* (2023) showed that farmer group institutions function in increasing access to inputs, technology, information, and market opportunities. On the government side, Pane *et al.* (2025) showed that price policies, subsidies, post-harvest infrastructure development, and institutional strengthening are forms of intervention that can be used to improve the performance of agricultural product markets. Based on the results of the study, direct government involvement in rice distribution is relatively limited. Only 3 respondents (9.68%) stated that the government or related agencies are directly involved in rice distribution, while 28 respondents (90.32%) stated that they are not. These findings

indicate that the government is not a major actor in the physical flow of commodities in the rice supply chain in the study area. Mariyah *et al* . (2024) emphasized the need for government intervention through the provision of price information and stock management when price transmission mechanisms are not yet operating efficiently. This is relevant to Ropang's findings, as the significant influence of marketing actors on price formation demonstrates the importance of more equitable market information access by farmers.

CONCLUSION AND SUGGESTIONS

Main actor in chain supply rice in Ropang Village consists of on farmers , collectors / middlemen , mills rice, and traders rice . Farmers play a role as producers and do handling beginning post-harvest, collectors as buyers and collectors grain , milling as processor grain become rice , while trader play a role market rice to consumers . Government play a role as supporters and regulators, while group farmer or cooperative Not yet play a role in marketing results.

Based on the current rice supply chain situation in Ropang Village, institutional strengthening and coordination between supply chain actors are needed to ensure more efficient distribution of economic value, from unhusked rice to rice, and provide greater benefits to farmers. Farmers should not only be positioned as producers, but also have their capacity strengthened in post-harvest handling, grain quality management, price negotiation, and access to market information. This is crucial to reduce farmers' dependence on middlemen and improve their bargaining power in determining grain prices ..

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