

# Analysis of the Rice Value Chain in North Western Ethiopia

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**Abstract:** Rice was introduced to Ethiopia in the 1970s and became a livelihood source of food, income, and job opportunities for smallholder rice producers, processors, and traders. This research aims to identify the major rice value chain actors and their role, mapping the rice value chain and the benefit of each actor along the rice value chain. 180 rice producers were taken using systematic and random sampling methods. In addition to these 20 traders and 4 processors were taken to see the characteristics of the rice value chain in the study area. Smallholder rice producers were almost illustrated, infant on the experience of rice production, less than half of them accessed credit, cooperative membership, and got technical training. The major rice value chain actors are input suppliers, producers, assemblers, processors, traders, and consumers. Even though rice producers earned a higher profit share (56.40%), the processors benefited more from the rice value chain due to owning paddy rice milling service and participating in rice trading activities on aggregation. Smallholder rice producers can benefit more by accessing improved rice varieties, gaining technical training on rice production, and being members of cooperatives by owning milling machines through their cooperatives and participating in the milling paddy rice industries. Therefore, Governmental and non-governmental organizations should stand for smallholder rice producers by delivering timely inputs, and technical training and creating awareness to be members of cooperatives and to buy milling paddy rice machines in cooperatives to raise their rice products and earn more price premium per quintal.

**Keywords:** Rice, Value Chain, Producer, Processor, Wholesaler, Retailer and Consumer.

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## 1. INTRODUCTION

Rice is the family of the *Oryza Sativa* line and more than half of the world's population depend their food on it. Rice is a food security and staple crop and more than 3.5 billion people are consuming it worldwide [1]. Rice was introduced to Ethiopia in the 1970s and it became a means of livelihood, source of food, income, and job opportunities for rural households in Ethiopia. Smallholders are cultivating rice due to its high productivity, and use it as food in different forms such as Injera, "Nifro", and "Genfo", a source of income as well as it's straw used for mud house making and animal feed, particularly during the dry season which animal feed is scarce. Rice has a vital role at the household level as well as national level to tackle the problem of food insecurity. Hence, the Government of Ethiopia(GE) has given due emphasis on [2]production and productivity of the sector both at smallholder farmer and investor levels to feed its people as well as to secure food security at the national level [3]

To accomplish its aim, the GE launched and established a federal and regional research center to innovate new and improved rice varieties, released and disseminated to smallholder farmers in Ethiopia since the 1990s. Among the Federal research

centers that are mentioned in the front line by innovating, releasing, multiplying, and disseminating new and improved rice varieties are Pawe in Benshangul Gumuz, Fogera in Amhara, Abobo in Gambella, and Werer in Afar. It also launched rice research centers at the regional level like Adet in Amhara, Shire in Tigray, and some other research centers in Somali, Oromia, and South regional states to raise the production and productivity of the rice sector as well as to benefit smallholder farmers from the sector. Both the Federal and Regional rice research centers have been released 43 improved rice varieties that suitable for low-land and upland agroecologies as well as for irrigated lands [4].

Due to these reasons, rice production and productivity have shown a fold increment both in area coverage and production. The area coverage under rice production has grown by 13.67-fold during the last one and half decades from 6,241.16 ha to 85,288.87 ha in 2020. The production of rice under smallholder farmers was also grown by 23.85-fold during the same decades from 12,443.11 quintals to 2,682,235.14 quintals. The productivity of rice also almost doubled during the same decade from 18.02 quintals per ha to 31.45 quintals per ha [5]. [6]Amhara and Benshangul Gumuz regions are among the potential rice grower regions which share 80.10% and 82.26% of the total rice area coverage and production in Ethiopia respectively [7].

Governmental and Non-governmental organizations have made a tremendous effort to boost rice production and productivity during the last one and half decades in Benshangul and Amhara regional states to benefit the smallholder farmers from the rice sector. Moreover, Agricultural experts, researchers, and leaders of the agricultural office have been working closely with smallholders of North Western Ethiopia to improve the productivity, income, food security, and livelihood of smallholder farmers in North Western Ethiopia. To raise the awareness, knowledge, skills, and capacity on the use of improved rice varieties, agronomic practices, inorganic fertilizers, and modern agricultural machinery a lot of biological and socio-economic research has been conducted to benefit smallholder farmers from the rice sector.

However, a lot of factors have hindered or limited the benefit of smallholder farmers from the production and marketing of rice along the value chain. Smallholder farmers in North Western Ethiopia are limited in input supply, especially on the timeliness of the input deliverables like inorganic fertilizer, improved seed, milling paddy rice machine, tractor, access credit, market integration with agro-processing and low adoption of these technologies as well as the interaction of these factors [8]. Moreover, massive production of rice is not sufficient to earn better income unless marketing integration along the value chain and supporting rice producers to grade, process, and store their product and supply directly to industries and rice consumers. Some rice producers are selling their rice product immediately after harvesting rice without milling the paddy rice at low prices due to financial constraints and other institutional factors. This is an indicator that rice producers are less innovative, sell their rice product without adding value and low market integration along the value chain, and force rice producers to produce below the potential of rice productivity. Japan, China, and Indonesia are the leading rice-producing countries which produced 58, 56, and 43 quintals per hectare respectively which is higher than the world rice productivity of 35 quintals per hectare [9]. Compared to our country rice productivity which is 31.45 quintals per hectare implies rice productivity has an immense potential to increase its production and productivity through marketing integration worldwide. However, little research was conducted related to the rice value chain in Ethiopia and these are outdated. Some of these are [9]stated that the rice value chain is constrained by poor market linkage among rice marketing actors and smallholder rice producers faced shortages and quality millers to upgrade their rice product. Another author [8] also stated that assemblers gained a higher market margin than the smallholder rice producers. This is due to the oligopoly characteristics of rice marketing in the Fogera district. It is obvious that the market can encourage households to produce marketable surplus rice products and supply them to district markets to earn more income, specialize in their absolute and comparative advantages due to less production cost, and earn more welfare gains from trade [10]. However, rice producers in Ethiopia benefit less from the rice value chain that has a long chain, less linkage either vertically or horizontally, and poor input supply of modern agricultural technologies like plowing tractors, combines, harvesters, threshers, and milling paddy rice machines as well as limited delivery of the required amount, types of improved rice variety, its deliver of timeliness. Hence, investigating of rice value chain, mapping the rice value chain map, and alternative rice marketing options in the current rice marketing in North Western Ethiopia is necessary to benefit rice producers from rice production and marketing. Thus, this research aimed to identify major rice actors and their roles, mapping the value chain and the benefit of each actor in the value chain.

## 2. RESEARCH METHODOLOGY

### 2.1 Description of the study area

Pawe is one of the seven districts in Metekel Zone Benshangul Gumuz Regional State. The district has 20 potential rice-producing kebeles which are found 21 kilometers from the capital city of Metekel zone, Gelgel Beles town, 335 kilometers from the region's capital city, Assosa, and 568 kilometers from Addis Ababa, the capital city of the country to northwest direction. Its geographical location is 36°28'22 86'' longitude and latitude of 11°19'03.90''. The district is practicing both cultivations of crops and livestock rearing with the dominant of cereals oil crops. Among cereal crops, Rice is ranked second in terms of productivity [7].

Jawi is one of the six districts in Awi Zone Amhara Regional State. The district has 25 potential rice-producing kebeles which are found 156 kilometers from the capital city of Awi zone, Injibara town, 272 kilometers from the region's capital city, Bahrdar, and 608 kilometers from Addis Ababa, the capital city of the country to northwest direction. Its geographical location is 36°27'21 94'' longitude and latitude of 11°16'49.42''. The district is practicing both cultivations of crops and livestock rearing with the dominant of cereals oil crops. Among cereal crops, Rice is ranked second in terms of productivity [7].

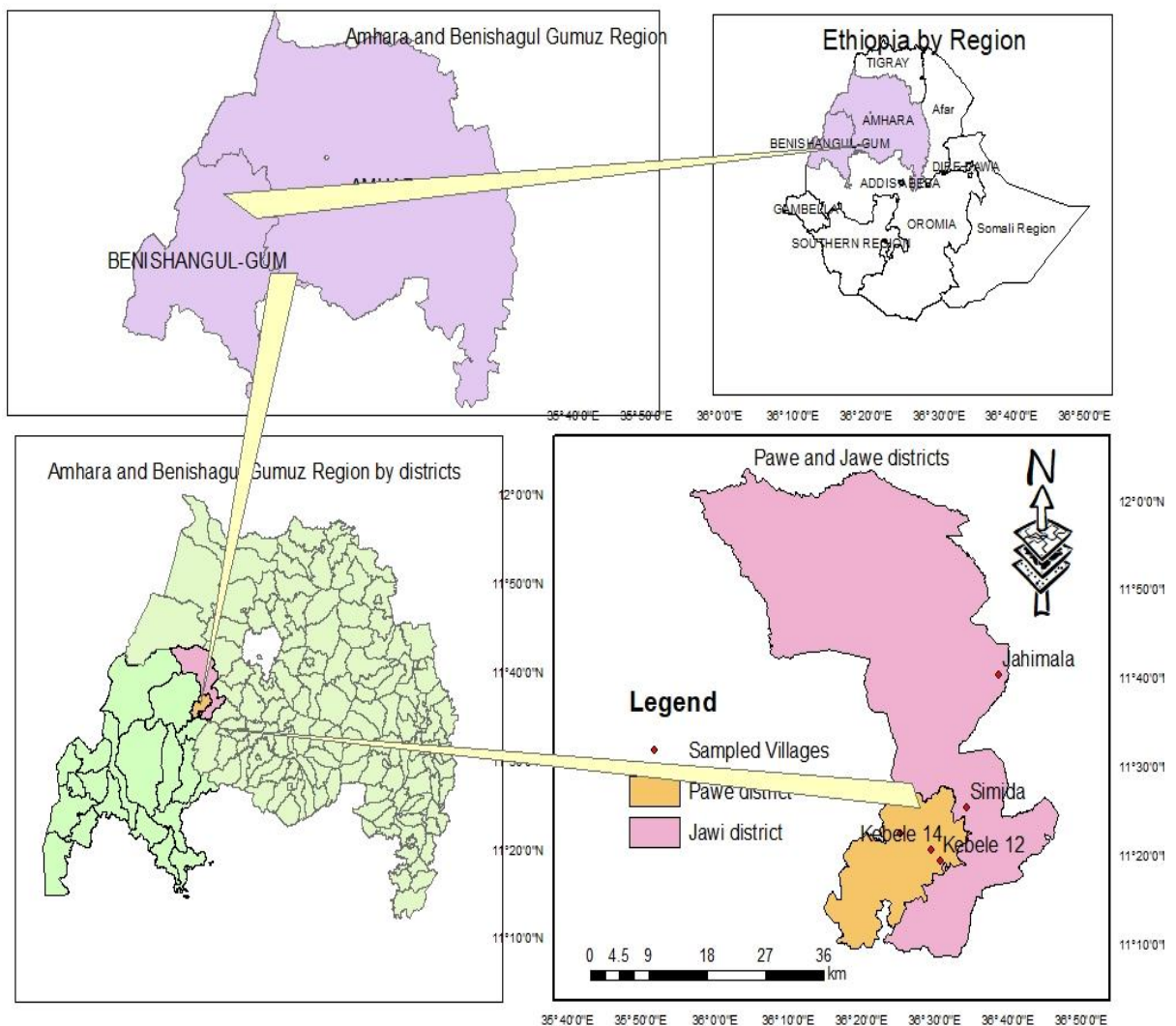


Figure 1. Map of the Study Area

**2.2 Sampling method and sample size determination**

The study used multi-stage probability sampling methods. Awi and Metekel zones are the major Rice producers in the Amhara and Benshagul Gumuz regions respectively in North Western Ethiopia which were the target population for this study. In the first stage of probability sampling methods, Rice producer districts were listed and one district from each zone using simple random sampling methods. Based on this Pawe and Jawi districts were selected randomly from Metekel and Awi zones respectively. In the second stage of the probability sampling method, Rice producer kebeles were listed with consecutive serial numbers in each district, and two and two kebeles were selected from Pawe and Jawi respectively using simple random sampling methods. In the third stage smallholder Rice producers were listed in consecutive serial numbers in each randomly selected kebles. Finally, Rice producer smallholder farmers were selected using a systematic sampling method and probability proportion to sample size.

Size was taken based on the following formula [11]. 
$$n = \frac{Z^2 (P Q)}{e^2} \dots \dots \dots 1$$

Where

- n - Is the number of sample size, Z - Is 95% confidence
- p - Is 0.4 (proportion of the population to be included in the sample i.e 30%)
- q - Is 0.6 proportion of the population not to be included in the sample i.e 60%)
- e - Is the margin of error or degree of accuracy desired (0.05)

According to this formula, 180 sample households were taken from two districts. The sample distribution is illustrated as follows.

**Table 1. Selected Sample Rice Producers by Districts and Kebles**

District	Keble	# of sample units selected	Share of sample in %
Pawe	Keble 12	45	25
	Keble 14	50	27.78
Jawe	Smida	35	19.44
	Jahimala	50	27.78
Total		180	100

Source: (Survey data, 2019)

**2.3 Types and method of data collection**

The study used primary and secondary data collected through structured questionnaires and checklists respectively. Trained enumerators collected primary data from sample households of Rice producers through face-to-face interviews. In contrast, secondary data were collected from published and unpublished documents of zonal and district administrative offices. In addition to this, personal observation, focus group discussion, and key informant interviews were conducted to support the interpretation of the results obtained from the field survey

**2.4 Rice value Chain Conceptual Frame Work**

Value Chain embraces a full range of activities and services accomplished to supply a product or service from its production to consumption [12]. In This case, the Rice value chain embraces a wide range of activities that have been performed starting from input supplying, and land preparation up to harvesting, threshing, and milling to supply rice output to consumers. In the rice value chain, a lot of actors have participated like input suppliers, producers, assemblers, processors, traders, and consumers. Rice producers are the starters of the rice value chain whereas rice consumers are at the end of the rice value chain and eat rice in different forms like Injera, Gonfo, and Nifro. However, in the middle of rice value chains are hundreds of individuals and firms that have been participating and at least each performing one small step in the chain. Most of the middle actors are accomplishing different activities like Transporting, processing, storing, packaging, selling, buying, monitoring, evaluating, and making decisions about where, when, and to whom to sell as well as the amount of quintal to be sold. It also consists of technical supporters like financial providers, extension providers, and information providers that interact in different ways starting from local up to national as well as international levels.

The multitude of functions that are performed to produce goods and make them available to consumers is also expressed in the concept of the market chain. The market chain refers to the system that consists of actors and organizations, relations, functions, products, and cash and value flows that make possible the transfer of goods or services from the producer to the final consumer.

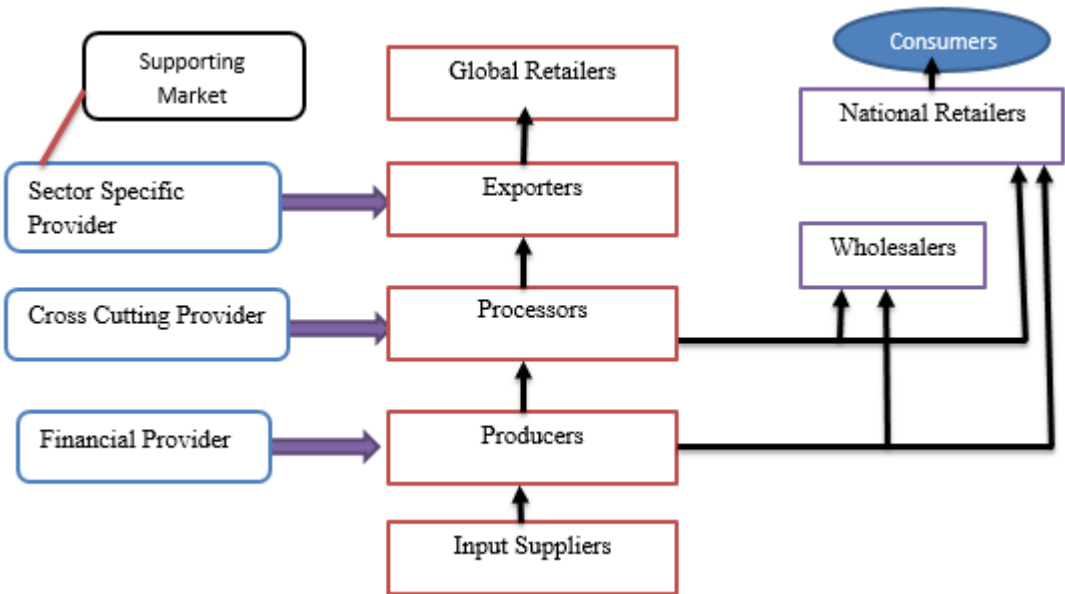
Figure 2. Rice Value Chain Functions



Source: Adopted from (Bezabih and Mensgistu, 2011)

According to [13] farmers who are involved in the supply chain functions have little negotiating power make little money and have no incentive to improve their products. Rice producers may benefit through their associations like cooperatives, that can enable them to negotiate a deal with a trader who buys a certain amount of high-quality product. The traders in turn have a contract with the consumers. Value Chain is a function through which each actor is prepared to invest and support other actors to maximize the benefit from the chain performance. This makes the chain function smoothly and develops the sense of benefiting all actors by having a smooth supply of top-quality products sustainably. The Rice Value chain includes direct actors and indirect actors illustrated below.

Figure 3. Rice Value Chain Actors and Support Framework



Source: Adopted from (Bezabih and Mensgistu, 2011)

The chains can be simple when producers directly sell to the consumers but long and complex when the other actors play a role in buying, processing, transporting, and selling to the consumer. The complex chain, however, offers a multitude of choices to rice producers. They may choose to supply a specific market segment and produce the rice that is tailored to that segment. They may also try to process their produce to add value to it: they may be milling paddy rice rather than selling paddy rice. Farmers need to understand the players in the chain and the requirements of the different branches so they can supply the products that each branch requires. That will increase their bargaining power in the chain, and improve the price they get for their product. This in turn increases farmers’ comparative advantage by increasing the volume of supply, quality of the product, and consistency of supply, which is often possible when farmers act as a group [14]

**2.5 Value Chain Study Approaches**

Value Chain analysis follows four types of approaches that depend on the research question raised and the appropriate approaches used to answer these questions [15]. Especially, the Agriculture sector has a complex value chain that follows the four aspects of value-chain analysis: In This case, the rice value chain used the first two approaches extensively.

**1. Value chain mapping:** a value-chain analysis systematically maps the actors participating in the production, distribution, processing, marketing, and consumption of a particular product or product. This mapping assesses the characteristics of actors, profit and cost structures, flows of goods throughout the chain, employment characteristics, and the destination and volumes of domestic and foreign sales.

**2. Identifying the distribution of benefits of actors in the chain:** Through the analysis of margins and profits within the chain, one can determine who benefits from participation in the chain and which actors could benefit from increased support or organization. This is particularly important in the context of developing countries (and agriculture in particular), given concerns that the poor in particular are vulnerable to the process of globalization.

**3. Examining the role of upgrading within the chain:** Upgrading can involve improvements in quality and product design that enable producers to gain higher value or through diversification in the product lines served. An analysis of the upgrading process includes an assessment of the profitability of actors within the chain as well as information on constraints that are currently present. Governance issues play a key role in defining how such upgrading occurs. In addition, the structure of regulations, entry barriers, trade restrictions, and standards can further shape and influence the environment in which upgrading can take place. Possible forms of upgrading include process upgrading, product upgrading, and function upgrading.

**4. Role of governance in the value chain:** Governance in a value chain refers to the structure of relationships and coordination mechanisms that exist between actors in the value chain. Governance is important from a policy perspective by identifying the institutional arrangements that may need to be targeted to improve capabilities in the value chain, remedy distributional distortions, and increase value-added in the sector

**3. RESULT AND DISCUSSION**

**3.1 Demographic Characteristics of Sample Households**

**3.1.1 Sex of Sample Household Head**

The majority of rice producers (87.2%) are male-headed households while the rest 12.8% female-headed households in the study area. According to Ethiopia's demographic context, it is a good representative of the total population of sex composition in the study area. The Ethiopian rural households are led by male-headed households and only windows are considered as female-headed households and they are few.

**Table 2. Sex of Rice Producers in North Western Ethiopia**

Sex of Rice Producers		
	Frequency	Percentage(%)
Male	157	12.8
Female	23	87.2
Total	180	100

Source: (Survey data, 2019)

**3.1.2 Socio-Economic Characteristics of Sample households**

The average age of rice producers in Northwestern Ethiopia is 42.39 years old with a minimum of 24 and a maximum of 77 years old. Rice cultivation is a new farm activity mostly farmers who have swamp areas have cultivated it. The rice farm experience of rice producers in the study area is in line with this concept which is 5.21 years old with a minimum of 2 and maximum 16 years of experience in rice cultivation during the survey. The land is a critical economic asset that produces or generates income for smallholder farmers by cultivation of crops and rearing livestock. Rice producers own 2.96 hectares of land on average and allocate about 0.59 hectares of land for rice production. Rice producers have 2.4 in the equivalent of the labor force on average to accomplish their daily farm activities in the study area.

**Table 3. Socio-Economic Characteristics of Rice Producers in North Western Ethiopia**

Variables	Mean	Std.	min	max
Age in years	42.39	7.76	24	77
Educational Background in years	1.22	1.43	0	7
Rice Farm Experience in years	5.21	2.6	2	16
Total own land in ha	2.96	0.63	1	4.25
Land allocated for rice in ha	0.59	0.28	0.25	1
Labor force	2.40	0.91	0.80	5.40

Source: (Survey data, 2019)

**3.1.3 Access to different institutional services of rice producers in North Western Ethiopia**

A lot of governmental institutions are supporting rice producers to boost their agricultural production, particularly the rice sector by accessing credit, improved rice seeds, and inorganic fertilizers. In addition to this, they give advising and technical training. Among the governmental institutions, Agricultural, Cooperatives, research centers, and Microfinance institutions take the lion's share by helping the rice producers. About 36.7%, 34.4%, and 52.8% of the rice producers are getting extension services, training on rice production, and access to micro-credits to enhance their rice production during the survey in the study area. 47.2%, 46.1%, and 36.7% of the sample households are responding member of cooperatives, their rice farmland is fertile and works some off-farm activities besides of the Agricultural activities respectively.

**Table 4. Accessibility of Rice Producers to Institutional Service in North Western Ethiopia**

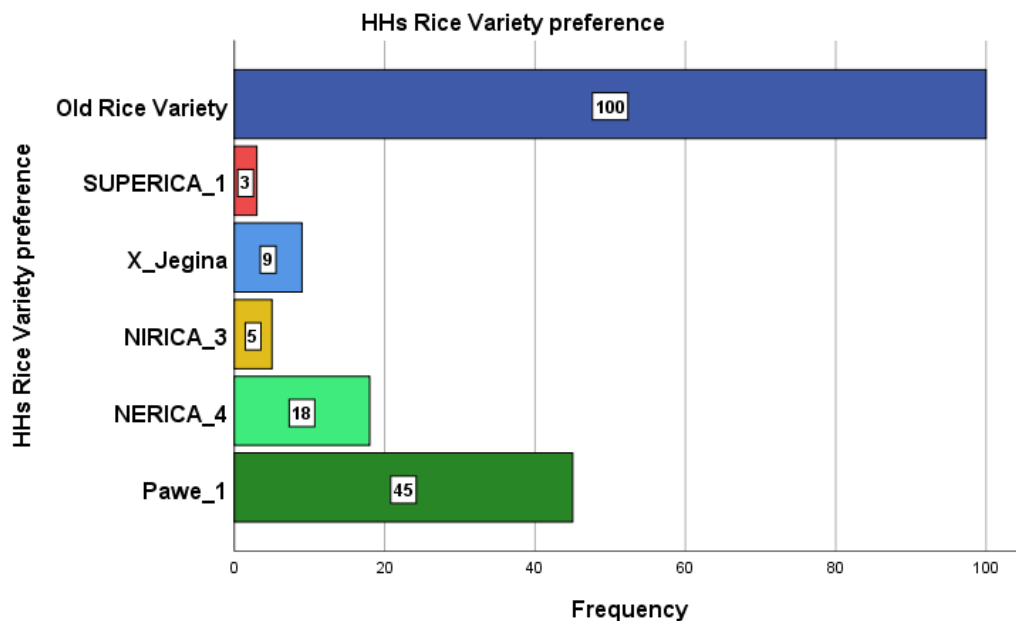
Institutional Variables	Frequency	Percentage (%)
Access to credit	180	100
Yes	66	36.7
Access to extension service	180	100
yes	95	52.8
Participate in farm activities	180	100
yes	66	36.7
Member of cooperative	180	180
yes	85	47.2
Status of Soil fertility	180	100
yes	83	46.1
Getting training in rice production	180	100
yes	62	34.4

Source: (Survey data, 2019)

**3.1.4 Adoption of Improved rice varieties by Rice producers in North Western Ethiopia**

According to the rice producers, they prefer and cultivate different improved rice varieties based on the color of the rice, white color is preferred, and their rice land suitability to specific rice varieties to grow. They responded that Pawe\_1 of improved rice variety is more adopted due to its white color, productivity, suitability to their rice land, and making injera for consumption. NERICA\_4 and X\_Jegina are also the more adopted improved rice varieties next to Pawe\_1. However, more than 55% of the rice producers preferred old rice varieties for different reasons during a survey in the study area.

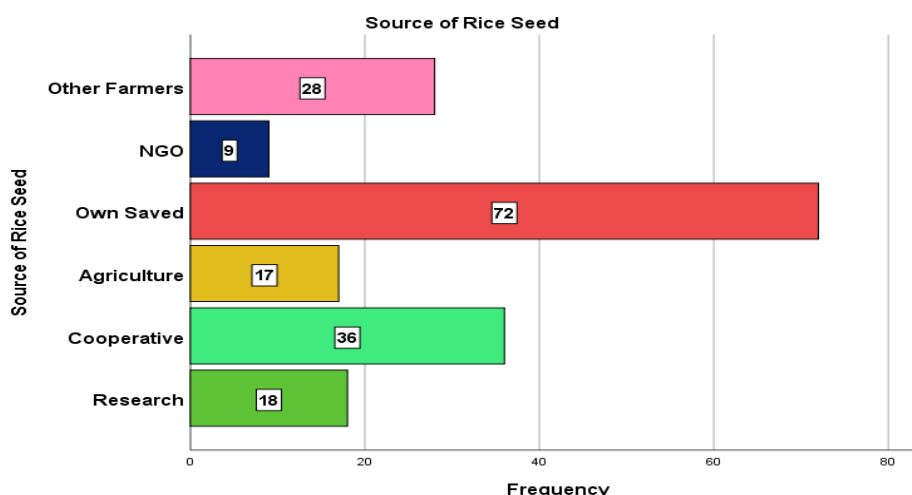
Figure 4. Improved Rice Variety Cultivated by Respondents in North Western Ethiopia



### 3.1.5 Source of Rice Seed in North Western Ethiopia

Among the Agricultural technologies, improved seeds have a great value to enhance the productivity of the agricultural sector. Hence, delivering improved rice seeds on time has value in boosting rice production and productivity in the study area. Due to these reasons, a few numbers of institutions are participating in the delivery of improved rice seeds in different modes. Cooperatives, Research centers, and Agricultures are the main sources of improved rice seed respectively in the study area. However, more than 55% of the rice producers still used uncertified rice seeds from their saved seeds or other farmers

Figure 5. Source of Rice Seed in North Western Ethiopia



### 3.2 Major Actors of the Rice Value Chain and Their Role Along the Value Chain

This research aims to identify the main actors of the rice value chain in North Western Ethiopia and identify possible market options to improve rice productivity as well as the income of rice producers to ensure their food security from rice production. The research identified six main rice value chain actors in the study area. The main value chain actors and their roles are mentioned as follows.



**3.2.1 Input Suppliers**

Rice producers are getting different inputs like improved rice seed, inorganic fertilizer, pesticides, and insecticides from different input suppliers of organizations. Improved rice seeds and fertilizers are mainly supplied by Cooperatives, Agriculture, and research centers to boost the rice production of smallholder farmers in the study area. Most of the Agro-chemicals and rice milling machines are supplied by private traders. The milling machine has great value in the rice value addition by removing its husk and making rice more valuable for marketing and consumption.

**3.2.2 Rice Producers**

The second main actors in rice value chains are smallholder farmers of rice producers. They produce rice in small cultivated areas by combining different inputs like seeds, fertilizer, land, labor, and capital to produce rice products. Smallholder rice producers are playing a key role in the rice value chain by producing the quality and vast quantity of rice in the chain. The rice producers have contributed massive value to the value chain by accomplishing different roles. Some of the rice producers’ roles are mentioned as follows, these are plowing two to three times their rice land, purchasing inputs like rice seed, and fertilizer, sowing seed, applying fertilizer, weeding, spraying pesticides, harvesting, threshing, transporting, storing, milling and marketing their rice products.

**3.2.3 Rice Assemblers**

The third main rice value chain actors identified were rice assemblers. The assembler’s main role is collecting paddy and milled rice products and selling them to processors or wholesalers and they get a commission of about 2 to 5 % per quintal. They have a facilitating role in rice marketing that earns a profit either by selling rice or getting a commission.

**3.2.4 Rice Processors**

Rice processors are private licensed milling machine owners that have great value in the rice value chain. They played a vast role in the value-adding of the rice product by removing its husk-added quality and making it ready for marketing and consumption. In addition to milling the rice product, they also participate in sorting, packaging, grading, and transportation of rice.

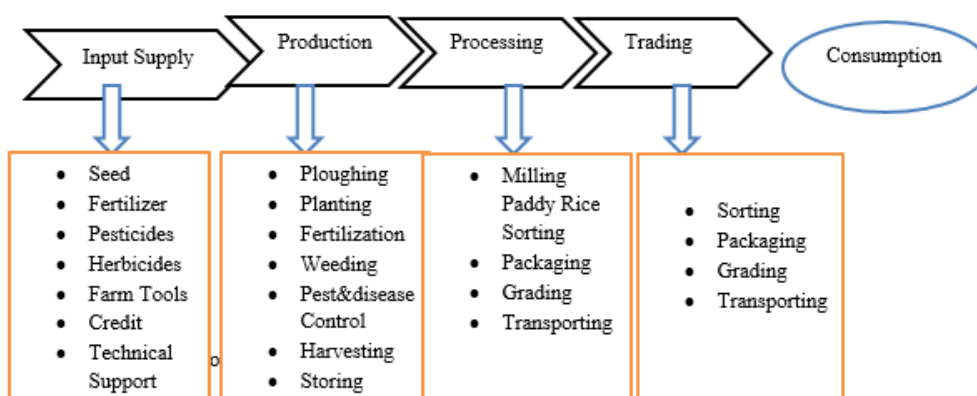
**3.2.5 Rice Traders**

Rice traders play a huge role in rice marketing by collecting, sorting, packaging, grading, and transporting rice to different parts of the country to scarce areas. Rice traders are licensed traders who participate in the trading of rice by collecting, storing, retailing, and wholesaling activities.

**3.2.5 Rice Consumers**

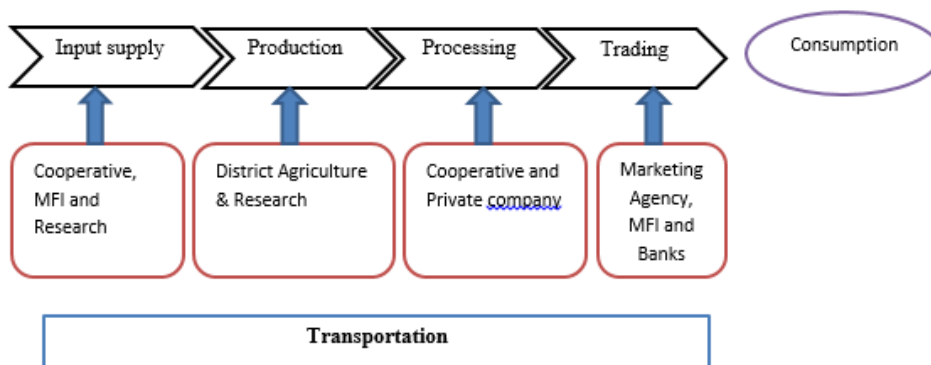
Consumers are the final and important actors in the rice value chain. Consumers are consuming rice in the form of Injera, soup, and porridge. Rice is consumed by all wealthy rank both in rural and urban areas due to its good characteristics in making Injera especially the white rice products that are mixed with white teff to make Injera has a good character and increased number of Injera as compared to teff alone. Rice consumers are rural, and urban dwellers and rice producers themselves who consume rice up to 70% of their product because primary they produce rice for consumption purposes.

**Figure 6. Processes and functions in the Rice value chain in North Western Ethiopia**



In the rice production and marketing process, many institutions are supporting the rice production and marketing process to benefit all actors in the value. Among the supporting services Cooperatives, Microfinance institutions, and research centers are supporting the rice value chain by giving financial products like savings and credit, and technical advice, Agricultural and research centers are giving technical training on rice production, improved seed importance, and application of fertilizers that raised awareness about the production of rice at smallholder farmer level. Moreover, Cooperatives and private milling companies give a milling service to paddy rice that adds value to rice products and encourages them to expand their rice production. However, cooperative rice millers were broken during the survey data. Furthermore, Marketing agencies are giving licenses, technical training on grain trading, and advice to traders to participate in rice trading. Besides finance and banks are lending traders to tackle the capital shortage of traders to buy rice products.

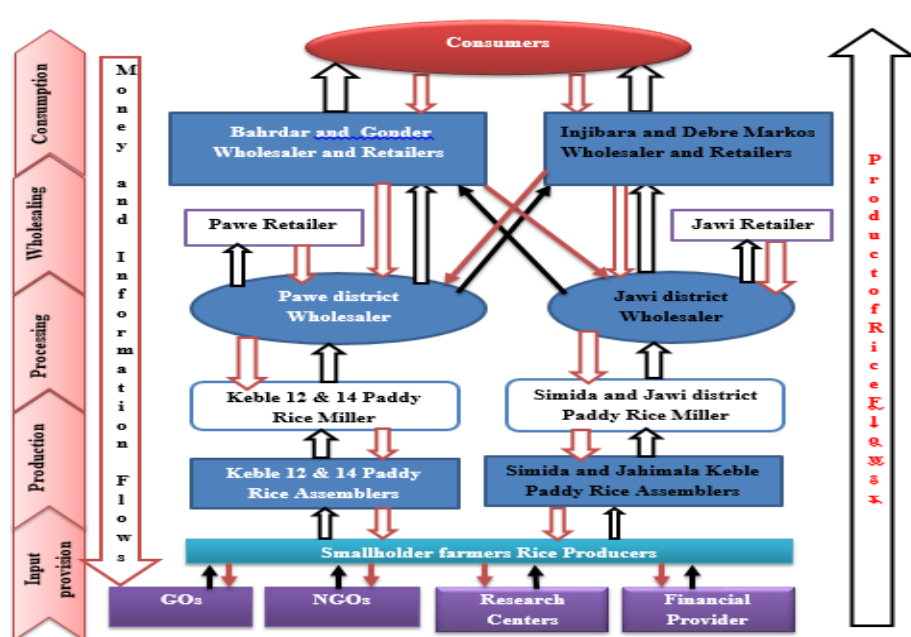
Figure 7. Map of support service providers for Rice



3.3 Map of Rice Value Chain in North Western Ethiopia

Identifying the main value chain actors and interaction among them showed the possible sketch of a value chain map. Sketching the value chain map indicated the rice product, money, and information flows. According to the rice producers' responses, key informant interviews, focus group discussions with producers, experts, and traders, and personal observation the main rice value chain actors involved in input supply, rice production, processing, marketing, and consumption are illustrated as follows in the study area, particularly Pawe and Jawi districts.

Figure 8. Rice Value Chain Map in North Western Ethiopia



Source: Main Rice Value Chain in North Western Ethiopia

**3.4. Marketing cost and Margin of rice producers and assemblers in North Western Ethiopia**

Rice cultivation is a common agricultural activity in Northwestern Ethiopia. It is more productive relative to other staple crops and its production cost is also lesser than other crops. (Meron, 2016). Smallholder farmers are incurring a cost of inputs such as seed, fertilizer, draft power cost, labor cost, and farm tools to produce rice products. On average, they incur the cost of 18,560.21 Ethiopian birr per hectare to produce 24.32 quintals of milled rice from one hectare of land. According to the rice producers' response, they are selling one quintal milled rice at 1500.28 ETB and 1300 ETB for paddy rice on average. In addition to this, they are getting 10,500 ETB by selling rice straw per hectare. They also reported that they incurred a cost of 75 ETB per quintal of rice for milling services on average. The rice producers are getting 36,486.82 ETB and **17,926.59** ETB of gross revenue and net profit from the cultivation of rice per hectare. This indicated that rice production is a profitable enterprise in Northwestern Ethiopia. However, the revenue from straw and costs for milling services were not included in the calculation of market margin.

The main roles of assemblers in the value chain are collecting paddy or milled rice, sorting, packing, transporting rice from producers to processors, and selling the paddy rice to processors. They are also working as brokers and they get a commission from collecting paddy rice and milled rice. For this study purpose, the research takes the paddy rice the assemblers collected and sells to processors and wholesalers. Accordingly, they are getting 200 ETB and 108.28 marketing margin and net profit from the selling and buying of rice in the value chain.

**Table 5. Marketing Cost and Margin of Rice Producers and Assemblers in North Western Ethiopia**

Description	Unit	Cost or margin
<b>1. Smallholder Rice Producers</b>		
<b>Rice production cost</b>		<b>18,560.21</b>
• Cost of rice seed	Birr per ha	1057.70
• Cost of fertilizer	Birr per ha	6131.41
• Cost of oxen	Birr per ha	3525.46
• Cost of labor	Birr per ha	7845.64
• <b>Selling Paddy rice</b>	<b>Birr per quintal</b>	<b>1300</b>
• Cost of Milling Service	Birr per quintal	75
<b>Revenue from Rice production</b>	<b>Birr per hectare</b>	<b>36,486.80</b>
• Rice production in quintal	Yield per ha	24.32
• Selling Price of milled rice per quintal	Birr per quintal	1500.28
<b>Marketing margin of Rice producers</b>	<b>Birr per hectare</b>	<b>17,926.59</b>
<b>Net profit of rice producers</b>	<b>Birr per quintal</b>	<b>737.12</b>
• Profit share of Rice Producers		44.13
<b>2. Assemblers Marketing cost &amp; margin</b>		
Buying price of paddy rice	Birr per quintal	1300
Selling price of Milled rice	Birr per quintal	1500.28
<b>Marketing cost</b>		<b>92</b>
• Transport Cost	Birr per quintal	50
• Loading and unloading	Birr per quintal	20
• Packing cost	Birr per quintal	12
• Miscellaneous ( rent and communication )		10
• <b>Marketing margin of Assemblers</b>	Birr per quintal	<b>200</b>
• <b>Net profit of assemblers</b>	Birr per quintal	<b>108.28</b>
• Profit share of Rice Assembler		44.13

Source: (Survey data, 2019)

**3.5. Marketing cost and Margin of rice Processors and Wholesaler in North Western Ethiopia**

Millers or rice processors are privately licensed companies whose main activity is the milling of paddy rice. They are giving service of milling i.e removing rice husk and adding value to rice products. They are getting a service payment of 75 ETB per quintal. They are also working as selling and buying of paddy or milled rice from producers and assemblers. Rice millers play a vital role in the rice value chain by employing permanent and casual labor, purchasing milling machines and managing the overall operation of the milling process, maintaining machine spare parts. They are giving milling services to

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traders, producers, and consumers who have paddy rice. Accordingly, they are giving 560 quintals of milling rice service per month and get 42,000 ETB gross revenue per month and 23,105 ETB of net profit by incurring a monthly cost of 18,895 for operating costs like permanent and causal labor cost, cost of spare parts, oil, gasoline, and other miscellaneous expenses. In addition to this, processors are working on buying and selling milled rice and earned 109.72 ETB of marketing margin.

The wholesalers are other important actors in the rice value chain. They buy a lot of milled rice from processors, collectors, and rice producers and their main role in the value chain is storing, sorting, packing, transporting setting rice prices, and selling to retailers and other wholesalers. They are getting ETB 150 and 60 of marketing and profit margin.

**Table 6. Marketing Cost and Margin of Rice Processors and Wholesalers in North Western Ethiopia**

Description	Unit	Cost or profit
3. Processor at Keble 14,12 and Simida		
Buying rice	Birr per quintal	1500.28
Marketing cost	Birr per quintal	90
Selling milled rice	Birr per quintal	1700
Marketing margin of processor	Birr per quintal	109.72
<b>Service of milling</b>	<b>Birr per quintal</b>	<b>75</b>
Milling capacity quintal per month	Quintal per month	2250
Income earned from milling service 25% of its potential	Birr per month	560 * 75 = 42,000
<b>Marketing revenue of Processors</b>		<b>42,000</b>
<b>Marketing Cost</b>	<b>Birr per month</b>	<b>18,895</b>
<b>Net profit of Processors</b>	<b>Birr per month</b>	<b>23,105</b>
• Permanent labor salary	Birr per Month	1400
• Causal labor salary	Birr per Month	700
• Cost of spare part	Birr per Month	6500
• Cost of oil	Birr per month	800
• Cost of gasoline	Birr per month	3000
• Cost of Coshoneta	Birr per month	165
• Cost of Mej	Birr per month	6000
• Cost of Chinga	Birr per month	330
• Transport Cost	Birr per quintal	50
• Loading and unloading	Birr per quintal	20
• Packing cost	Birr per quintal	12
4. Wholesaler		
Buying milled rice		1700
Selling of milled rice		1850
Marketing Margin		150
Marketing Cost		90
• Transport Cost	Birr per quintal	50
• Labor cost for loading and unloading	Birr per quintal	20
• Cost of storage		10
• Tax (35% of the profit)		10
• Net Profit of wholesalers		60

Source: (Survey data, 2019)

**3.6. Marketing cost and Margin of rice Retailers in North Western Ethiopia**

The retailers are the five actors of the rice value chain that play retailing of rice to end users the main activities of retailers are sorting, transporting rice to market marketplace, shopping, and selling rice in small quantities to end users, they are getting ETB 150 and 80 of marketing and profit margin.

Consumers are the end actors of the rice value chain which consumes rice in different forms. They are consuming rice in Injera, soup, and porridge forms. They are consumed by mixing with teff or alone, particularly in rural Ethiopia. Mixing

rice with Teff flour can increase the number of Injera compared to Teff alone four. Especially white rice is especially suitable to eat and it is attractive to see that all rural and urban dwellers prefer to eat it in the form of Injera mixed with teff. Consumers bought rice at 2000 per quintal the main source of income for retailers in the rice value chain.

**Table 7. Marketing Cost and Margin of Retailers in North Western Ethiopia**

Description	Unit	Cost or profit
5. Retailers		
Buying milled rice		1850
Selling milled rice		2000
Market margin		150
Marketing Cost		70
• Transportation ( from store to shop)		50
• Sorting Cost		10
• Miscellaneous (rent, communication and taxes)		10
<b>Profit margin of Retailers</b>		<b>80</b>
6. Consumer Buying Price (Bahridar and Gonder, Injibara and mebremarkos)	Birr per quintal	2000

Source: (Survey data, 2019)

#### 4. SUMMARIES AND CONCLUSION

The Analysis of rice value chain research was conducted in Jawi and Pawe districts in the Awi and Meteke Zone of Amhara and Benshangul Gumuz regional states respectively in Northwestern Ethiopia. This research aims to investigate the rice value chain, map the rice value chain map, identify major rice actors and their roles, and the benefit of each actor in the value in Northwestern Ethiopia. The descriptive statistics stated that smallholder rice producers were 42.39 years old and 5.21 years of rice farm experience on average with an educational background of one class completed on average with a minimum zero class complete and a maximum grade seven complete. Besides, less than half of smallholder rice producers have access to institutional services such as credit (36%), members of cooperatives (47%), and technical training on rice production (34%) this might have constrained to aware and access to improved rice varieties as well as rice production and productivity at the household level. The majority (55%) of smallholder rice producers used their saved rice varieties and the rest (45%) got improved rice varieties from different institutions of improved rice variety providers.

This research also identified six major rice value chain actors such as input suppliers, producers, assemblers, processors, wholesalers, retailers, and consumers as well as their roles. Rice producers gained 56.40% of the profit share in the rice value chain and the rest gained about 43.60% of the profit share from the rice production and marketing activities. Even though the profit share of processors and wholesalers was smaller than the producer's profit share, they got a lot of profit in aggregation that the whole rice product goes through the market channel of wholesalers and processors to end users. In addition to this, the processors earned 100 birr per quintal for milling service for home consumption at household levels. In this case, the processors were the service providers in the rice value chain and earned and accommodated a lot of money from the rice value chain in Northwestern Ethiopia. Smallholder rice producers can benefit more by accessing improved rice varieties, gaining technical training on rice production, and being members of cooperatives by owning milling machines through their cooperatives and participating in the milling paddy rice industries.

Therefore, Governmental and non-governmental organizations should stand for smallholder rice producers by delivering timely inputs, and technical training and creating awareness to be members of cooperatives and to buy milling paddy rice machines in cooperatives to raise their rice products and earn more price premium per quintal.

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