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RESEARCH ARTICLE

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REVIEW ON WHEAT VALUE CHAIN ANALYSIS IN OROMIA REGINAL STATE ETHIOPIA

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ABSTRACT
Wheat is increasingly becoming a key staple food in Africa and sub-Saharan as a result of income growth and rapid urbanization. Wheat production in Ethiopia during the last twenty years dramatically increases from 1.6 million metric tons to 4.2 million metric tons but still lower than fifty percent's of the demand. The focus of the study was, reviewing and identifying wheat value chain actors and channels in the Region and reviewing different constrains of wheat value chain in Oromia regional state. The study utilized secondary data that were collected from relevant sources. The main actors along the core processes of wheat value chain are Input suppliers, Producers/ Farmers, Transporters, Processing industries, Traders and Consumers. Processors purchase wheat at market price from traders and farmers, and the imported at subsidized price from government. The wheat value chain was characterized by unfair share of benefit; producers received only 16%, traders 33% and Processors 51% of the profit margin. The Major constraints are: poor product quality, lack of market information, shortage of working capital, price instability and unreasonable broker interferences are the major constraints. Strengthening horizontal and vertical linkages of wheat value chain actors is an important.
Key Words: Wheat, Value chain, Market, Actors, Constraint,

1. Introduction

Wheat is a major staple food crop in many countries and is an important source of nutrition, providing on average 40 percent of per capita calorie intake (WRDGP, 2014). Wheat (Triticum aestivum L.) is one of the world's leading cereal grains serving as a staple food for more than one-third of the global population. The wheat economies of Africa are characterized by a growing gap between wheat supply and consumption. According to Negassa, *et al*. (2012), showed the gap between supply and demand of Wheat production and consumption, between the year 2009-2011, Africa produced about 23 million tons of wheat and consumed 59 million tons by importing about 36 million tons.

Form the world's more than 60 percent of the population depends on agriculture for survival. Form this, sub Saharan Africa and Latin America takes the highest percentage (90%) so that the economy of most African countries is dependent on agriculture. In Ethiopia, it, contributes 70% of the domestic industries raw materials, generates 90% of export earning value and covers about 43% of Gross Domestic Products (Dubale, 2018). Therefore, the agricultural sector is crucial for the overall performance of the many developing countries

Over the past twenty years, wheat production and consumption have both increased in

Ethiopia despite the existence of strong markets for potential substitute grains. The Ethiopian government has played an active role in wheat markets, such as making large investments in extension programs and adopting protectionist policies to ensure government control of all commercial grain imports. Despite these efforts, Ethiopia is expected to face a growing supply deficit in the absence of increased domestic productivity and/or changes to government policy (EPAR, 2012)

Wheat is increasingly becoming a key staple food in Africa and sub-Saharan as a result of income growth and rapid urbanization. But sub-Saharan countries and Africa as a whole produce only about 30% and 40% of their domestic requirements respectively, causing a heavy dependence on imports and making the region highly vulnerable to global market and supply shocks (Negassa *et al.,* 2012). Wheat is an important staple food in the diets of many Ethiopians, providing an estimated 12% to the daily per capita caloric intake for over 90 million population of the country's (FAO, 2015). Wheat is not only one of the most widely produced cereals in the country; it is also the most important staple food crop that the government imports from abroad (AACCSA, 2017). The two major Wheat producing regions in Ethiopia are Oromia and Amhara accounts for 58%, and 28% in 2014/15 cropping season, respectively (CSA, 2015).

According to FAO, (2017) international wheat production statistics come from the Food and Agriculture Organization from FAOSTAT database, "Grain Market Report." (2017), data collected from 37 countries for the last 20 years from 1996 to 2014 around the world shows that Ethiopia wheat production grows from 1.6 million metric tons in 1996 dramatically increase to 4.2 million metric tons of Wheat production. During these years there is an increment of 162.5 percent.

Even though there is such huge increment, our countries wheat production still under 40 percent's of the demand. These is due to shortage of improved seed variety, low price of wheat products, high price of fertilizer, pesticides and seed, price instability problems for agricultural products, high costs of combine harvesting, reduced soil fertility, lack of sustainable market outlet, poor infrastructure, grass weed and disease are the major constraints of wheat production (EAAPP, 2012 and Sultan Usman 2016).

To reverse this situation and improve wheat production and productivity different efforts are made at different time. The finding of this review can assist in developing improved market strategies to benefit all stakeholders that are participating in wheat value chain with the following specific objectives.

1. To review wheat value chain actors and channels in the Region
2. To review different constrains of wheat value chain in Oromia regional state.

2. Methodology

This review was conducted by identifying relevant key actors along the Wheat value chain in Ethiopia. The study utilized secondary data that were collected from relevant sources such as the CSA, Ethiopian Grain Trading Enterprise (EGTE) and FAO database, workshop proceedings, published and unpublished documents. The information and findings collected were reviewed and organized to develop this document.

The value chain was described and popularized by Michael Porter in 1985 in his Competitive Advantage: Creating and sustaining superior performance. The value chain categorizes the general value adding activities of an organization into primary and support activities. The primary value chin activities include: inbound logistics (production), outbound logistics (marketing and sales, and Services or maintenance). The support activities include: Procurement Technologies Human resource managements and infrastructures (Porter, M. 1985).

3. LITERATURES REVIEWED

In Ethiopia wheat is cultivated on over 1.6 million hectares of land, accounting for 13.33% of the total grain crop area, with an annual production of 4.2 million tons, contributing about 15.81% of the total grain production (CSA, 2015). According to CSA (2013) report, Wheat is among the most important

crops in Ethiopia, ranking fourth in total cereals production 13.25% next to maize, sorghum and teff (CSA, 2013). It is grown as a staple food in the highlands at altitudes ranging from 1500 to 3000 masl. Nearly all wheat in the country is produced under rain-fed conditions predominantly by small scale farmers. A few governments owned large-scale (state) farms and commercial farms also produce wheat (Demeke and Di Marcantonio, 2013).

According to Tadele, M. *et al*. (2018),.Value chain mapping is the first and most essential core task of any value chain analysis and it is the task of drawing or visualizing the chain system to represent the business operations, chain operators and their linkages, as well as the chain supporters within the value chain.

Abu, T. (2012) Ethiopia Grain and Feed Annual Report shows Ethiopia is the second largest wheat producing country in Africa behind South Africa. Wheat is mainly grown in the central and south eastern highlands during the main (Meher) rainy season (June to September) and harvested in October-November. Arsi, Bale, and parts of Shoa are considered the wheat growing belt. Bread wheat is the major variety of wheat grown in Ethiopia. However, farmers grow durum and bread wheat (mixed together) in some parts of the country. Wheat is produced on large state- owned farms covering around 124,000 ha of land in the Arsi and Bale regions.

In Ethiopia, increasing crop production is crucial for attaining food security and providing inputs for the industrial sector. Grain production constitutes the major share of agricultural production and contributes significantly to the national domestic product. Around 98 percent of cereals are produced by small landholder farmers. Only two percent are produced by commercial farms mainly for seed purposes. The average land holding is less than one hectare. The fragmented nature of land holdings and low use of agricultural inputs contributes to low levels of grain productivity in the country. The country also doesn't produce its own fertilizer supply and farmers use a generic fertilizer blend applied regardless of soil type.

According to the research conducted by Afro Universal Consult & General Trading P.L.C for Addis Ababa Chamber of Commerce & Sectorial Associations (AACCSA, 2017) Value Chain Study on Wheat Industry in Ethiopia, concerning *Wheat production and productivity:* a significant efforts were made from the government and diverse stakeholders to increase wheat yield per unit area in Ethiopia, as a result, major achievement was made in the past twenty years of increased production all over major wheat growing regions. But, the greatest achievements scored in wheat productivity are far from attaining the vision of food self-sufficiency in the sector.

Additionally, a favorable climate to grow wheat; a gap wide open to reach the potential productivity of improved wheat varieties; the demand for more pasta, macaroni, and bread wheat due to urbanization and life style change; and increased wheat consumption indicate underperformance of immediate wheat growers and a very demanding and realistic support on the part government bodies and stakeholders in related businesses.

Therefore, to meet the growing demand from consumers, milling industries, and to save currency from rising imported and subsidized wheat, to create more social benefits in the value chain, increasing wheat yield sustainably will still remained a critical task ahead.

According to the study made on Wheat Value Chain: Ethiopia by Evan school of policy analysis and Research (EPAR- 2012) Over the past twenty years, wheat production and consumption have both increased in Ethiopia despite the existence of strong markets for potential substitute grains. The Ethiopian government has played an active role in wheat markets, such as making large investments in extension programs and adopting protectionist policies to ensure government control of all commercial grain imports. Despite these efforts, Ethiopia is expected to face a growing supply deficit in the absence of increased domestic productivity and/or changes to government policy. Different studies by different researchers shows the Ethiopia

Wheat Value Chain Highlights from input suppliers to end market as shown bellows**.**

Input suppliers:

The most widely used inputs by wheat producers farmers are seed, fertilizer, herbicides and pesticides. These inputs are supplied to farmers by cooperative/unions and private traders.

Seed: - OSE, (2018) found that there is high shortage and price of improved seed, the users of improved seeds in Oromia are less than 50%.The Oromia seed enterprise and Federal seed enterprise Asella branch multiplying improved seeds. The Oromia seed enterprise Asella branch supplied seed to farmers of Arsi zone by 32 markets out let in 8 districts and 4 farm market out lets. In 2017, about 22,000 quintals of wheat seed were supplied and in 2018 about 39,000 quintals wheat seeds were supplied on cash base to farmers directly. The out lets found at different Districts are: Four out let in Munesa, three outlets in Digalu and Tijo, two out lets in Lemu and Bilbilo, two outlets in Sirka, One outlet in onkolo wabe, Three outlets in Tiyo, two outlets in Hetosa, two outlets in Lode Hetosa, one outlet in Sire, three outlets in Robe, two outlets in Aminya, one outlet in Bale, one outlet in Sude, and one outlets in jeju. There are also four farms out lets such as Lole, Tamela, Garadella, Adelle. There is no individual person which multiplies and distributes improved seeds.

There is a strong seed research system, Seed distribution remains largely informal; Ethiopian Seed Enterprise (ESE) and Oromia Seed Enterprise (OSE) were the public organization involved in seed production/ distribution and role of private sector was limited. Extension efforts have increased input use, but with limited effect on productivity. About 56% of area planted with wheat was treated with fertilizer, but often with sub-optimal amounts. From total area planted with wheat only 3% used improved variety seed.

Fertilizers: - According to data obtained from Oromia Agricultural Bureau the most widely used fertilizer is blended. Nitrogen, Phosphors, Sulfur and Boron (NPSB) and Urea which supplied by unions and Agricultural Input Supply Enterprise (AISE). But there are problems in time and quantity of supply. Most of the times farmer's uses less than the recommended quantity. This is due to untimely supply and high price of the fertilizers.

The recommended rate for NPSB is 150kgs per hectors and 100 kg Urea per hectors. Arsi Zone agricultural office report (2018) showed that the average utilization of fertilizers used by farmers was 54kgs per hectors. Regarding utilization of urea, some farmers uses one times during planting only, some farmers two time during planting during cultivation, and others uses three times during planting during cultivation and when flowering. Those farmers which utilized three time gots high return.

Chemical application: - The types of agro chemical used in the region are, Herbicide and pesticide, the most widely used are: Pallas 45-OD, Topic, 2.4-D, Tilt, Rexoudo. Farmers use these chemicals without safety and over dilute due to high price of the chemicals. Among the total farmers in the region less than 50% of farmers uses chemicals in proper way.

Production: From Sub-Saharan Africa the largest wheat producer region is Oromia. The majority of wheat is produced by smallholders with average landholdings less than one hectare. They sell wheat to downstream actors such as assemblers, WPI, wholesalers, retailers and end users. About 80% of wheat marketed surplus was sold to wholesalers at farm gate, warehouses and spot market. Each activity in wheat producer value chain function associated with its costs, namely land preparation, planting activities, fertilizer application, weeding and harvesting. To produce Wheat, it's partially demands for tractors and combine harvester for land preparations and harvesting in Arsi and Bale Zones of Oromia region.

Grain trades and Transportation: - During harvesting time merchant farmers act as traders, brokers and commission agents involves to the markets to facilitate between farmers and processors, between processors and retailers. Government invested in transportation infrastructure because transport is particularly important for wheat because its production is highly concentrated. Sixty percent of grain stocks are held

by the Ethiopia Food Security Reserve Administration (EFSRA) for use in emergencies.

Wheat processing industries (WPI)

According to the study by Afro universal AACCSA (2017) Wheat goes through different sectors and activities with significant value addition before it reach final consumers. Wheat processing industries convert wheat into wheat flour and barn, flour into *biscuits*, *pasta*, *macaroni* and bread that add value to the product and to satisfy market requirement.

Wheat processing industries purchase domestically produced wheat at market price from traders and farmers, and imported wheat at subsidized price from government. They sell former one to wholesalers and retailers at market price and distribute later one to bakeries at subsidized fixed price. All of the wheat processing industries found in the region are working under capacity because of supply shortage.

According to Tadele, M. *et al*. (2018), there are weak linkage among the wheat value chain actors in the study area. One of the indicators for this weak linkage is the absence (very low level) of linkage between producers and processors as only 3% of the wheat produced is directly sold to the milling industries.

Bakeries

Baking industry is processing wheat flour into final wheat products (bread) and delivering it to retailers and final consumers. They purchase government quota flour from flour factories at fixed price. Amount of wheat flour quota varies across places and number of industries in particular area based on the size of consumers.

Wheat Market chain

The study conducted by *Tadesse, et al. (2017)* Exploring Wheat Value Chain Focusing on Market Performance, Post-Harvest loss, and Supply Chain Management in Ethiopia: The Case of Arsi to Finfinnee Market Chain wheat market analysis, the study identified the wheat market chain post-harvest losses of producers, collectors, wholesalers, retailers, and processors which constituted about 21%, 3%, 4%, 6%, and 5%, respectively. With the highest loss happening at producers' stage, this stage was identified as loss-hot-spot point.

The assessed wheat value chain was characterized by unfair share of benefit among the chain. The producers who were in a position of adding the highest portion of value to the wheat received only 16% of the profit margin. The traders jointly and processors shared 33% and 51% of the profit margin, respectively. The study also noted that the wheat chain assessed was characterized by disintegrated chain where businesses were self-oriented and mutualism has not well-developed. Working towards supply chain management and relational view of business has been recommended based on the problems identified in the study.

1. According to the study by ZEF (2017), Center for Development Research, University of Bonn the Wheat Sector in Ethiopia: Current Status and Key Challenges for Future Value Chain Development, Wheat markets in Ethiopia have two supply sources –domestic production and import. Unlike other staple grains, wheat is imported in large volumes. During the period of 2010 - 2014, Ethiopia imported on average 1.65 million metric tons of wheat commercially, which accounted about 50 percent of the domestic production during these periods as imported wheat exclusively imported by the government with primary objectives of food price stabilization, the government has made effort to insulate the marketing channel of this administratively operated imported wheat from domestically produced and freely marketed.

The distribution of imported wheat is also seasonal, with most of the wheat delivered between May and October, the six months prior to the beginning of the major wheat harvest. This aims is to smooth out the Supply of wheat in the domestic market (Minot *et al*., 2015). The overall goal of this arrangement is to maintain the competitiveness of the wheat market in general and to decouple the subsidy to wheat import from domestic wheat producers in particular. In this way, the domestic wheat market is presumed to remain competitive and may not affect supply responsiveness of producers to price changes coming from imported wheat.

The government/EGTE controls the import as well as the supply chain of imported wheat that is sold at subsidized price primarily to large-scale millers and bakeries. In doing so, the government aims to eventually subsidize the poor consumers and to stabilize wheat and other substitutable grain prices (Minot *et al*., 2015). This, however, might affect the two most important wheat value chain actors, wheat producers and consumers, differently

The findings indicate that the Ethiopian Grain Trade Enterprise had a substantial role in the domestic market, especially at the wholesale level. Disincentives were greater at the wholesale level than at farm gate. The restricted export of wheat and high level of cheap wheat imports, which are sold at subsidized prices by the EGTE, do likely depress the domestic wheat market. Additionally, during periods of low expected domestic prices (for instance, at periods of bumper harvest), the EGTE bought wheat from the domestic market, thus supporting producer prices but overtook wholesalers (FAO, 2017).

Some studies have evaluated the government's decision to focus on wheat import for its price stabilization policy, by assessing the rationales and cost-effectiveness of public wheat imports vis-à-vis local procurement. Rashid and Lemma (2014), for instance, indicate that except in 2008 and 2009, local procurement of wheat would have been justified and provided better incentives for farmers to grow wheat at a higher price, which is still below import parity. This could encourage wheat producers to adopt new technologies and boost wheat production.

Actors in flows of Wheat Value Chain

From reviewed or discussion above the typical actors in wheat value chains are input suppliers, wheat producers, assemblers, cooperatives, grain wholesalers, grain retailers, and wheat product consumers, WPI, baking industry, wholesalers and retailers of processed food and service providers. Services include storages, rented tractors, combine-harvesters and oxen, supervision of production, market information, technical expertise and business advice, training, fumigation (outsourcing) and credit and savings. The value of services is estimated with the help of labor input method and direct price of rented tractor, combiners and oxen per hectare and then estimated value of services for total wheat farm for both private and governmental enterprises. These services are delivered by private enterprises, government and non-governmental organizations.

Retailers: -there are different retail shops in towns of Oromia region which supplies wheat product to different consumers.

Constraints along the wheat value chain

According to the study by ZEF (2017), Interviewed key informants indicate a range of problems in the wheat value chain. A range of problems that include poor product quality, contract default, lack of market information and shortage of working capital and price instability were reported as major problems. According to key informants the supply market and price, especially in *Ehil-Berenda* and Adma markets, is unreliable and suffers by excessive and unreasonable broker interference. Price is reported to be set by brokers

According to (Sultan 2016) the major constraints of wheat value chain are, grass weeds during production due to wheat mono-cropping farming systems. High input cost, low soil fertility, shortage of seeds of improved varieties, less awareness of farmers about improved crop management practices, spread of weeds and difficulty of saving pure seeds from farmers' own harvest in combine harvested areas, and high cost of combine harvesting are among constraints reducing the productivity, production and return from the crop.

The major marketing constraints were: unfair pricing and cheating of traders on balance; lack of timely and sufficient market information; low price of commodities at harvest time; high price of seeds, chemical fertilizers and pesticides; weak market linkages among value chain actors and less bargaining power of farmers in the market were among the highlighted constraints.

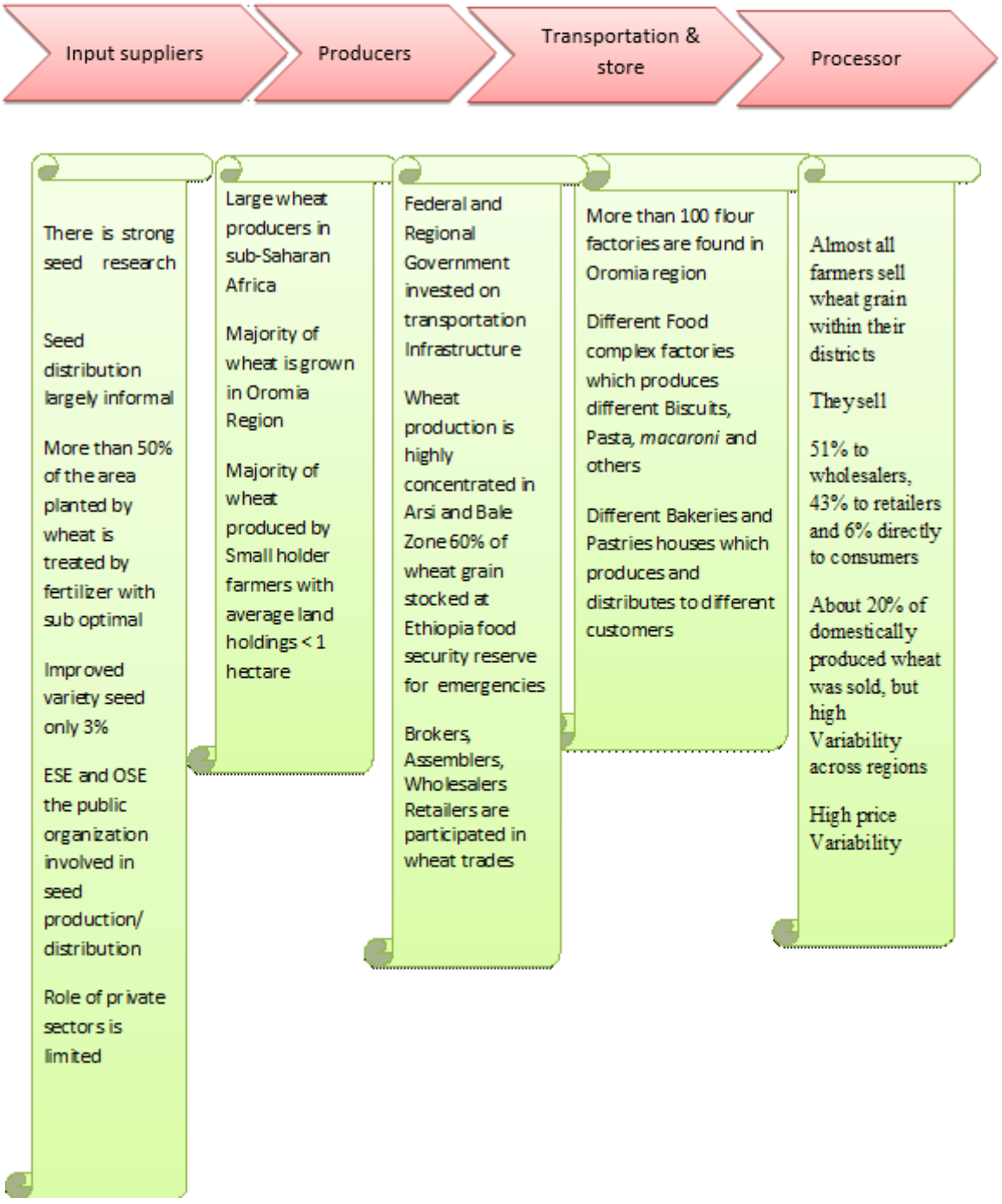

Figure 1: Actors along the core processes of wheat value chain in Oromia

Source: Dirriba 2016 and own design

4. CONCLUSIONS

Wheat is increasingly becoming a key staple food in Africa and sub-Saharan as a result of income growth and rapid urbanization.

To meet the growing demand from consumers, milling industries, and to save currency from rising imported and subsidized wheat, to create more social benefits in the value chain, increasing wheat yield sustainably will still remained a critical task ahead

Even though Ethiopia wheat production during the last twenty years dramatically increase

from 1.6 million metric tons to 4.2 million metric tons wheat production still under fifty percent's of the demand.

The most widely used inputs by farmers are fertilizer, seed, herbicides and pesticides. These inputs are supplied to farmers by cooperative/unions and private traders but most of wheat producer farmer's utilized under the recommended quantity due to untimely distribution and high Price of the inputs.

Wheat processing industries purchase domestically produced wheat at market price from traders and farmers, and imported wheat at subsidized price from government.

The assessed wheat value chain was characterized by unfair share of benefit among the chain actors. The producers who were in a position of adding the highest portion of value to the wheat received only 16% of the profit margin whereas the traders jointly and processors shared 33% and 51% of the profit margin, respectively.

Major constraints of wheat value chain are: poor product quality, contract default, lack of market information and shortage of working capital and price instability and unreasonable broker interferences are the major constraints.

Strengthening agricultural extension services should be considered as important input for producing value added products, helps farmers for proper utilization of inputs and reduce large volumes of wheat imports.

Creating access to flexible credit system for traders and Strengthening horizontal and vertical linkages of the wheat value chain actors is also an important input that improves the marketing system.

The enhancement of wheat producers' bargaining power through cooperatives is the best measure that should target increasing farmer's share of benefit from marketable produce.

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