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Empirical Analysis of Wheat Profitability the Case of Debre Elias Woreda, North Western Ethiopia

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***Abstract* – This research attempted to analyze profitability of wheat in Debre Elias woreda. Specifically aims to analyze profitability of wheat production. To collect primary data, 154 wheat producers and 31 traders were selected using simple random sampling method and purposively respective- -ly. To address the objectives of the study, descriptive statistics were employed. Moreover, the markets were overwhelmed by information asymmetry with low degree of market transparency. Producer has reach positive net profit of Birr 3460.651 per hectare (102.6 birr per quintal) for wheat. Although trading of wheat is profitable across all sample farmers and trader. Processers were obtained the highest net profit per quintal than that was 66 birr. Farmer traders obtained least net profit per quintal that was 16.49 birr. Financial institutions should design a mechanism to address the challenges of financial access to smallholder farmers and traders.**

***Keywords* – Wheat, Profitability, Trader and Producer.**

I. INTRODUCTION

1.1 *Background*

The agricultural sector is the most important sector in the Ethiopian economy that features strongly in the overarching economic policy of the country-agricultural development led industrialization (ADLI). It serves as source of income and employment for the majority of the country's population. Currently, agriculture is contributes over 35.8% to the national GDP, almost 90 percent of export and 72.7 percent of employment (CIA, 2018).

Wheat (*Triticum aestivum L.*) is one of the most important grain crops used in the world. Among the world cereal crops, it ranks first accounting 30 % of all cereal food in the world and is a staple food for more than 10 billion people in the world (Mahipat and Dhanai, 2017).

According to Amare Aleminew *et al.* (2015), currently wheat is one of the major cereals of choice in Ethiopia, dominating food habits and dietary practices, and is known to be a major source of energy and protein for the highland population of the country. In spite of its tremendous importance, wheat production in Ethiopia faced large production constraints that are affecting both its economic and straw yield. Moreover, wheat has been selected as one of the target crops in the strategic goal of attaining national food self-sufficiency. But, inefficiency of domestic agricultural markets is mentioned as one of the detrimental factors for the reduced productivity of farmers and for the poor performance of the agricultural sector in the developing countries. According to Roduner (2004) several factors affect market orientation of households by affecting the conditions of commodity supply and demand, factor and output prices, and marketing costs and risks faced by producers, traders and other market actors.

Although it has shown an increasing trend, wheat production in the study woreda characterized by relatively subsistence mode. Although the proximity of the Woreda to various urban centers (like Debre markos, Addis Ababa, Bahir dar and Dejen) makes the woreda to have a comparative advantage to get potential markets with better prices, the farmers couldn't yet reap the benefits from wheat business as expected. This fact indicates that the price of wheat is highly fluctuating (ANRAO, unpublished 2016), and this in turn resulted from lack of appropriate market infrastructure that can create linkage and information flow in a regular manner among these potential markets. That is, the storage facilities, transportation, linkages with traders, quality controlling mechanisms, market information, and price settings seem weak in the study area to reach the smallholder farmers dispersedly populated at various villages of the woreda. Thus, this study in general proposed aiming to address profitability of wheat both producer and trader.

II. RESEARCH METHODOLOGY

2.1 *Description of the Study Area*

Debre Elias woreda is one of the eighteen woreda, which found in East Gojjam Zone, Amhara Regional state of Ethiopia (DEWOA, unpublished 2017). Based on the 2007 national census conducted by the CSA of Ethiopia, Debre Elias woreda had a total population of 82,150, of whom 41,109 were men and 41,041 women; and 7,928 or 9.65% were urban inhabitants (CSA, 2007).

2.2 *Methods of Data Collection*

The study used both primary and secondary data collected from main actors of wheat market chain in Debre Elias woreda, from various research, office reports and documents. Formal and informal sample survey methods were used to collect primary and secondary data. The Primary data were collected at all levels of the marketing chain that includes producers, middlemen, traders,

wholesalers, processors and supporting institutions (such as agriculture office and trades).

2.3 *Sample Size and Sampling Method*

Two-stage sampling techniques were used to select rural households from a population of wheat producing farmers in Debre Elias woreda. In doing so, at the first stage, in consultation with agriculture and rural development office of the Woreda, four kebeles were selected randomly among the total sixteen wheat producing kebeles. These are Guayi, Gofichema, Genet, and Dejiba. In the second stage, a sample of 154 wheat producers household were selected among a total of 9814 rural households from the selected four kebeles by using simple random sampling technique taking into account probability proportional to size of each sample kebele. The sample size of rural households were determined by using the following formula developed by (Yamane, 1967). The numbers of sample trader were determined in collaboration with the Woreda trade and industry and SMEs. A significant amount of sample was selected purposively from each marketing agents involved in the overall marketing of this particular crop. As a result, 31 wheat traders were selected purposively for the purpose of the study.

2.4 *Methods of Data Analysis*

This study was used descriptive analytical techniques. The descriptive statistics include percentages, ratios, means, variances and standard deviations in the process of examining and describing marketing functions, farm house hold characteristics, resource ownership.

2.4.1 *Profitability Analysis*

To analyze the profitability of extension package inputs for wheat and barley in Ethiopia (Dejene Legese, 2008) used Value-Cost Ratio (VCR) for hectare of land. In this study, the usual gross profit formula was used to analyze profitability based on the price and cost information.

$$Gross\ profit = PQ - \sum_{i=1}^{n} p_i q_i$$

Where
p = Price of produce.
Q = Total production per hectare.
P_i = Price of input i.
q_i = Quantity of input i used per hectare.

III. Results and Discussion

3.1 *Demographic Characteristics of Traders*

Age is one of the demographic factors that are useful to describe traders experience and networking. As depicted in Table 1, the age of sample traders ranged from 25 to 56 years. The average age of wheat traders was 37.45 years and its standard deviation was 7.099 years. With respect to sex, 83.87% of wheat traders were male the remaining 16.13% were female. While 87.10% of wheat traders were married and 12.90% single. In case of religion, 93.55% of sample traders were followed orthodox and the remaining 6.45% Muslim.

Table 1. Demographic characteristics of traders.

Variable	Categories	Frequency	Percent
Sex of HHH	Traders is male	26	83.87
	Traders is female	5	16.13
Educational status	Traders is illiterate	5	16.13
	Traders is literate	26	83.87
Religion	Traders is orthodox	29	93.55
	Traders is Muslim	2	6.45
Marital status	Traders is married	27	87.10
	Traders is single	4	12.90
Age	Mean	37.45	
	St. dev.	7.09	
Family size	Mean	4.13	
	St. dev.	1.77	
Trade experience in years	Mean	8.84	
	St. dev.	5.27	

Source: Own survey (2017).

Experience plays an important role in improving trading activities and marketing efficiency. The trading experience of sample wheat traders ranges from 3 up to 25 years (Table 1). The average trading experience of sample traders' respondents was 8.84 years and the standard deviation was 5.27 years. The average family size of all sample traders was 4.13 with standard deviation of 1.77. The family size of sample traders ranges from 1 and 7.

3.1.1 *Fixed Assets and Working Capital of Traders*

The presence of fixed and liquid assets is important for smooth functioning of the marketing activities. Key players of the market require access to finance to expand their business and improve their performance. This section attempts to discuss issues related to ownership of fixed and liquid assets of traders involved in wheat trading activities.

Table 2. Traders fixed assets and financial resource ownership.

Variables	Categories	Freq.	Percent
Separate house store	Traders have separate house store	18	58.06
	Traders have no separate house store	13	41.94
Residence store	Traders have residence store	13	41.94
	Traders have no residence store	18	58.06
Mobile telephone	Traders have mobile telephone	30	96.77
	Traders have no mobile telephone	1	3.23
Weighting scale	Traders have weighting scale	17	54.84
	Traders have no weighting scale	14	45.16
Vehicle	Traders have Vehicle	8	25.81

Variables	Categories		Freq.	Percent
Source of working capital	Traders have no Vehicle		23	74.19
	Own		21	67.74%
	Loan		9	29.03%
	Gift		1	3.23%
	Min	**Max**	**Mean**	**St.dev.**
Separate capacity	100	2500	1283.333	661.99
Residence capacity	5	25	13.77	5.39
Initial working capital	500	4000000	134558.1	717476.2
Current working capital	800	5000000	754548.4	1225788

Source: Own survey data (2017)

Table 2 clearly depicted that about 58.06 % of sample traders reported that they had a separate place to store their produce. Average storage capacity of traders who use a separate storage facility was 1283.333 quintals. With respect to telephone ownership, 96.77% of the sample traders' respondents had mobile telephones. About 54.84% of the sample trader respondents had their own weighing scale while the remaining traders rented or borrowed weighing scale from other traders. Furthermore, about 25.81% of sample wholesalers and processors had their own truck.

Table 2 revealed that the average nominal value of current working capital of sample traders (Birr 754548.4) was much higher than their initial working capital of Birr 134558.1. The initial average working capital of traders ranged from Birr 500 to 4 000000 with the average amount of Birr 134558.1. Likewise, the amount of traders' current working capital ranged from Birr 8,000 to 5,000, 000 with an average amount of Birr 754548.4. Furthermore, 67.77% sample traders used their own capital for trading activities, 29.03% loan from relative/family, banks, Micro finance institution and Friend where as 3.23% gift.

3.2 *Analysis of Wheat Profitability*

3.2.1 *Producers' profitability analysis*

Whenever profitability analysis of any activity is under taken, production costs and revenues (benefits) obtained must be included in the analysis. In the case of wheat, production costs are costs related to production and production process. Either in economics terms, these costs are termed as fixed or variable costs a farmer incurred in the production and production process of wheat. Fixed costs are costs that do not change with a change in output (production). On the other hand, fixed costs simply mean costs incurred regardless of the presence or absence of production. Land rent, oxen rent are some of the fixed costs a farmer incurred in the study area. However, variable costs are costs that are liable to change with a change in production. These are costs of fertilizer, seeds, chemical herbicides, labor costs etc.

First, in order for sample farmers understood well the detailed production cost structure and profitability of wheat production, data were collected on the bases of 'timad' unit which is equal to quarter of a hectare. Later on for the purpose of data, analysis and readers understanding the 'timad' units were converted in to hectare so that it can fulfill the standard unit of measurement.

Table 3. Cost structures and profitability of sample farmers.

Lists of Expenses	Birr per ha
Oxen rent and Tillage	1906.167
Weeding/herbicides	99.42
Harvesting and Threshing	2698.79
Transportation	337.35
Laborers	278.39
Fertilizer for DAP	1187.12
Fertilizer for UREA	1182.96
Seed	1098.65
Sack	202.41
Total cost (A)	**8991.25**
Average qt produced per ha	33.73
Revenue from wheat	12104.58
Revenue from wheat straw	347.40
Total revenue(B)	**12451.9**
Net profit (B-A)	**3460.65**

Source: Own survey (2017)

As presented in Table 3, the survey result indicated that the average productivity of wheat production in the survey area was 33.73 quintals per hectare. The average cost of production per hectare was Birr 8991.249 (266.57 ETB per quintal) for wheat.

The total revenue obtained from the production of wheat per hectare was simply estimating the sum of average revenue from wheat and average revenue from wheat straw a farmer received in the production year. The total revenue a sample farmer owned from hectare of land from production of wheat was Birr 12451.9. Subtracting the average production costs i.e. 8991.249 from the value of total revenue, it would reach positive net profit of Birr 3460.651 per hectare (102.6 ETB per quintal) for wheat. This showed the profitability farm business. Higher productivity and profitability made wheat production more competitive implying that the need for encouragement of wheat production in the study area from economic as well as food security perspective. Similarly, research conducted by Muhammed Urgessa (2011) on market chain Analysis of teff and wheat Production in Halaba Special Woreda and Sultan Usman (2016) on the Analysis of Wheat Value Chain: the Case of Sinana District, Bale Zone, both were stated that wheat production is profitable for farmers.

3.2.2 *Profitability analysis of Wheat Traders*

Table 4 clearly depicted analysis of profitability of the different traders of wheat namely farmer traders/ rural assemblers, urban assembler, regional wholesaler, regional

retailer, urban retailers and processers described in detail across the markets. During analysis of profitability, the average purchased price of a quintal of wheat and the different average transaction costs associated with the marketing process of a single quintal till it reached the next dealer was assessed. As a survey result indicates, the amount of average transaction costs incurred across traders varies. Accordingly, the total costs incurred by farmer traders, urban assemblers, regional wholesalers, regional retailers, urban retailers and processers of wheat were Birr 16.49, 23.67, 25.02, 21.71, 30.01 and 66 in the same order until possession is transferred to the next marketing agent. The survey result also indicated that the amount of transaction costs per quintal incurred by farmer traders Birr 18.5 for wheat. Since buying and selling of the product by farmer traders had taken place on their nearby village market, they were not liable to different costs associated with marketing process.

Table 4. Analysis of profitability of wheat traders (Birr/qt).

Lists of average costs	Farmer trader	Urban assemblers	Regional wholesaler	Regional retailer	Urban retailer	Cooperative	Union	Processers
Purchase price	823.33	857.14	863.33	821.33	996.66	677	760	1080
Sack price	6	6.14	7	6.6	7	7	6	15
Loading unloading	0	1.71	4.67	0	2.67	3	3	7
Broker / commission man fee	0	0.86	1.89	0.2	1.33	0	1	3
Transportation	6.67	6.43	43.33	8	5	10	12	20
Storage	0.17	0.86	1.33	0	1	2	2	2
Infrastructure	0.67	1	1	0.8	1	1	1	4
Permanent and temporary workers	3.5	5.57	7	4.4	4.33	18	17	20
Other costs	1.5	1.43	3.2	1	1	2	1	3
Total cost	18.51	24	69.42	21	23.33	43	43	74
Selling price	858.33	902.85	957.77	866	1050	760	863	1220
Net profit	16.49	21.71	25.02	23.67	30.01	40	60	66

Source: Own survey data (2017)

As a result, Farmer traders exercised lowest average transaction costs per quintal than any other traders. The survey result also indicated that the amount of transaction costs per quintal incurred by processers for wheat was Birr 74. Processers transaction cost was higher than any other sample trader. This could be due to higher costs related to permanent and temporary workers and transportation of the product during product preparation.

With respect to the profitability of the commodity, the overall average profitability of wheat across the different markets indicates that at every stage of transaction, trading business was profitable. However, Table 4 revealed that processers were traders who obtained the highest net profit per quintal than that was 66 ETB. Farmer traders obtained least net profit per quintal that was 16.49. Similarly Muhammed Urgessa (2011) and Sultan Usman (2016) stated that wheat trade is profitable for all traders.

IV. Conclusion and Recommendations

The estimated farmers average production cost per hectare was Birr 8991.249 (266.57 ETB per quintal) for wheat. The total revenue obtained from the production of wheat per hectare was simply estimating the sum of average revenue from wheat and average revenue from wheat straw a farmer received in the production year. The total revenue a sample farmer owned from hectare of land from production of wheat was Birr 12451.9. Subtracting the average production costs (8991.249 ETB) from the value of total revenue it would reach positive net profit of Birr 3460.651 (102.6 ETB per quintal) for wheat per hectare. With respect to the profitability of trader, the overall average profitability of wheat across the different markets indicates that at every stage of transaction, trading business was profitable. However, processers were traders who obtained the highest net profit per quintal than that was 66 ETB. Farmer traders obtained least net profit per quintal that is16.19 ETB.

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