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Structure, Conduct and Performance of Coffee Market in West Guji Zone Oromia Region Ethiopia

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ABSTRACT

Background: In West Guji zone, coffee is cash crop and source of income for the people. However number of challenges hindered development of market sector. Therefore this study was initiated to identify market chain actors and their roles and analyze structure conduct performance of market.

Methods: Primary and secondary data sources were used. Primary data were collected from 152 producers and traders by semi structured questionnaire. Secondary data were collected from, published and unpublished sources. Descriptive and structure conduct performance were used to analyze the data.

Result: Market chain actors are producers, cooperatives, union, collectors, wholesalers, retailers, Ethiopian commodity exchange, exporters and consumers. Nine coffee market channels were identified. There is a strong oligopoly markets with average value 65.11%. Capital shortage, administrative and security problems, price fluctuation, un-licensed traders, unfair taxation and lack of reliable price information were barriers of market entry. Highest total gross marketing margin was 85.47% and lowest was 27.9%. Highest producers share was 100% and lowest 14.53%. Highest gross profit was Birr 122.7/kg by wholesalers while lowest Birr 4.7/kg by collectors. It is a need to strengthen institutions, infrastructural, yield increasing technologies and post-harvest management practices in the study area to boost production and market efficiency.

Key words: Coffee, Conduct, Performance, Structure.

INTRODUCTION

Coffee is the most traded and consumed beverage commodity in the world (FAO, 2021). Coffee is one of the most important commodities in the international market. It is produced and exported by different nations, ranks as top cash crops in developing countries (Neeraj *et al*, 2020).

Ethiopia is the largest coffee producer in Africa and fifth largest producer in the world and accounts for 4.2% of global coffee production and 29% of African coffee trade. Ethiopians are the largest coffee consumers in Africa 50% of the country's coffee production is consumed domestically (NBE, 2019). It provides a livelihood of 15 million Ethiopians (ECFF, 2017). Coffee is Ethiopia's most important export crop, accounts 22 % of commodity exports (NBE, 2014).

According to CSA (2018) in Ethiopia from 725, 961.24 hectares of land Coffee produced is 4,492,298.08 quintals with productivity 6.19 qt/ha. From this 489,799.36 hectares and 3,101,927.33 qt with average productivity of 6.33qt/ha were produced in Oromia region According to west Guji Zone Coffee, Tea and Spices Office 116,000 hectares of zone is covered by coffee plantation and average productivity of zone is 7.36 quintal /hectare. Smallholder farmers in the area is highly relying on coffee production.

Increasing agricultural production and productivity accompanied by well performing marketing system which satisfies consumer demands with minimum margin between producers and consumer. Higher prices encourage farmers to adopt new technologies and increase production (Wolday, 1994). However, the sector has been underperforming with inefficient marketing and yields lower than global competitors (WB, 2021).

Coffee market in the area is not effective and competitive due to marketing system of the area is dominated by conventional system and producers are forced to sale directly for conventional transaction root which they do not get premium price for their coffee produce. And also Zone Coffee market chains have not been yet studied. To solve basic marketing problems and improve farmer's livelihood, analysis of coffee market based on structure, conduct and performance taking into product and location specify is useful to evaluate coffee market efficiency. Thus, this study was initiated to identify coffee market chain actors and their roles and to analyze structure-conduct - performance of coffee market in the study area.

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MATERIALS AND METHODS

Map of the study area

The research was conducted in West Guji Zone (Fig 1) during 2020-2021 GC with support of Bule Hora University. The area is well known in coffee production.

Data type, sources and method of collection

Primary and secondary data sources were used for qualitative and quantitative data type. Primary data collected from producers and traders using interview, questionnaire and FGD. Secondary data were collected from published and unpublished documents. Enumerators, who know local language were selected, trained and employed for data collection.

Sampling procedure

Multistage sampling procedure were used. Firstly, three districts were selected purposively based on potential area for coffee production. Secondly, 6 *kebeles* were randomly selected. Lastly, 152 samples of household heads were randomly selected, using probability proportional to size sampling technique. Sample size was resolved by (Yamane, 1967).

$$n = \frac{N}{1 + N\,(e)^2} \qquad \text{Equation 1}$$

Where,
n = Sample size.
N= Population size.
e = Margin of error = 8 %.
N = 5,514.

$$n = \frac{5{,}514}{1 + 5{,}514\,(0.08)^2} = 152$$

40 traders were selected randomly from three districts. Using Rapid Market Appraisal, 6 Village collectors, 4 cooperatives and 3 exporters were purposively selected and used.

Methods of data analysis

Descriptive analysis

Percentages, means and standard deviations.

Structure, conduct and performance paradigm

It examines the causal relationships between market structure, conduct and performance to evaluate market efficiency.

Market structure

Structural characteristics like market concentration, product differentiation, barriers to entry and diversification were considered. Barrier to entry is any advantage held by existing firms over those firms that might potentially produce in a given market.

Market concentration

The number and size, distribution of sellers and buyers in the market. Kohl and Uhl (1985) using rule of thumb, Concentration ratio (CR4) >50 % indicts strong oligopolistic, 33-50% a weak oligopoly and <33% indicates competitive market. The higher concentration the greater possibility of non-competitive market.

$$Si = \frac{vi}{\Sigma vi} \qquad \text{Equation 2}$$

Si = Market share of buyer i.
Vi = Amount of product handled by buyer i.
Σvi = Total amount of product handle.

$$c = \sum_{i=1}^{r} si \qquad i = 1, 2, 3... \qquad \text{Equation 3}$$

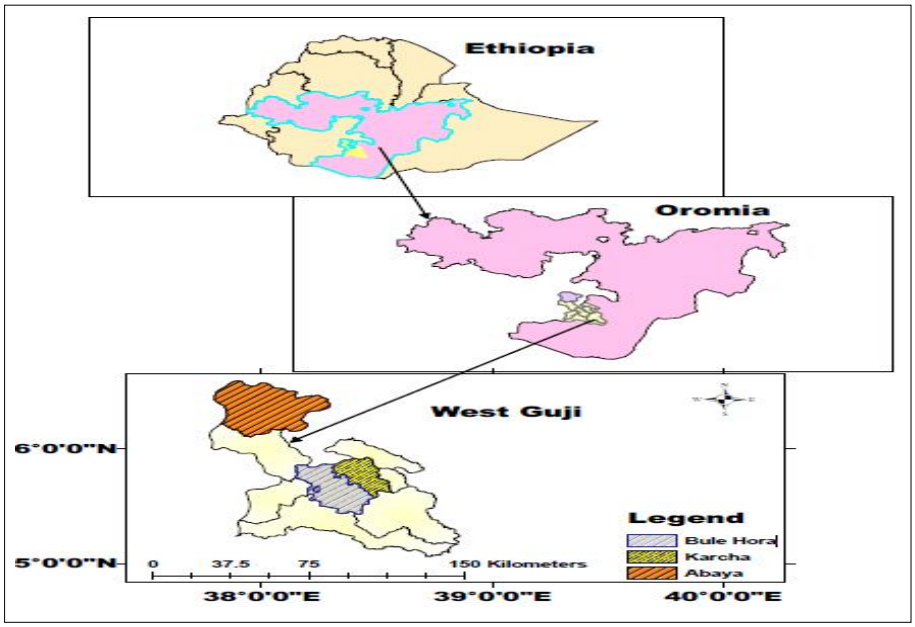

Fig 1: Map of the study area.

C = Concentration ratio.
Si = Market share of the i^{th} firm.
r = Number of largest firms for which the ratio calculated.

Market conduct

Dimensions of market conduct according to Raid (1987) price setting, advertising and marketing strategy, research, availability of price information and its impact on prevailing prices, feasibility of utilizing alternative market outlets pricing, buying and selling practices were assessed.

Market performance

Marketing margin

When there are several participants in the marketing chain, margin is calculated by finding price variations at different segments and by comparing them with final price to consumer. Consumer price the common denominator for all marketing margins. Comparing total gross marketing margin is always related to final price and expressed in percentage (Mendoza, 1995). Export FOB price was used as a proxy of consumer price.

$$TGMM = \frac{\text{End buyer price - First cell price}}{\text{End buyer price}} \times 100$$

Equation 4

TGMM = Total gross marketing margin.

$$GMM = \frac{\text{End buyer price - Marketing gross margin}}{\text{End buyer price}} \times 100$$

Equation 5

GMM = Producer's share in consumer price.

The producer's share is the ratio of producer price to consumer price.

Table 1: General Characteristics of sampled coffee farm households and traders.

Variables	Mean	Std. Dev.
Producers		
Family size (Number)	7.62	2.97
Education(years)	1.98	2.84
Experience(years)	20.2	7.41
Distance to market(km)	11.67	6.03
Land under coffee(hectare)	1.97	1.52
Amount of coffee produced (kg)	1450.02	1166.20
Amount of coffee supplied in kg	1415.9	1149.78
Amount of coffee consumed in Kg	32.32	23.44
Off/non-farm income (birr)	5900.98	6370.3
Amount of credit received	921.05	1132.26
Extension contact frequency	1.99	2.11
Traders		
Age	44.1	10.13
Family size	5.075	2.71
Experience	9.475	4.79
Market distance	6.85	2.53

$$PS = \frac{Px}{Pr} = 1 - \frac{MM}{Pr}$$

Equation 6

PS = The producer's share.
Px = Producer price of coffee.
Pr = Consumer price of coffee.
MM = Marketing margin.

RESULTS AND DISCUSSION

General characteristics of sample farmers and traders

Socio-Economic Characteristics of Sample Farmers and Traders are presented in (Table 1).

Coffee market channels

I. Producers→Wholesalers→Auction→Exporters→ Importers
II. Producers→Wholesalers→Auction→Domestic wholesalers →Retailers→Consumers
III. Producers→Wholesalers→Retailers→Consumers
IV. Producers→Cooperatives→Union→Auction→Exporters →Importers
V. Producers→Collectors→Wholesalers→Auction→ Exporters →Importers
VI. Producers→Collectors→Cooperatives→Union→Auction →Exporters→Importers
VII. Producers→Collectors→Retailers→Consumers
VIII. Producers→Retailers→Consumers
IX. Producers→Consumers

Coffee market chain actors and their role

Various coffee market chain actors involved from production to marketing in the area. Their roles are discussed in (Table 2).

Structure, conduct and performance of coffee markets

Market structure

It was calculated by: market concentration, the degree of transparency and barrier to entry.

Degree of market concentration

A CR_4 of over 50% is generally considered as strong oligopoly; CR4 between 33% and 50% is generally considered as weak oligopoly and a CR_4 of less than 33% is un-concentrated market (Kohls and Uhl, 1985). Coffee markets at three districts were strongly oligopolistic which means coffee is traded in the hands of few coffee traders. The CR_4 measures of market concentration ratio showed that top four traders controlled 62.62% of the coffee market in Bule Hora; top four traders controlled 64.78% of the coffee market in Abaya and top four traders controlled 67.93% of the coffee market in Kercha. The average buyers' concentration ratio of three district market 65.11%.

Degree of market transparency

Even though accurate and timely market information is important in coffee marketing, producers are suffered from problem of accessing terminal market price. The majority of coffee producer farmers obtain market price information from

market place, other farmers, extension agents and coffee collectors. There is no mechanism to prove consistency market price. Coffee market of the area is characterized by limited transparency in timeliness and reliability.

Barriers to entry

Administrative problem

According to the survey result, it is very difficult to get coffee trade license, because of the large requirement initial capital and appropriate equipment. 67.5% of traders face administrative problems at the time of fulfilling different formality procedures. It is in lined with wondmagegn (2014) on coffee.

Capital requirement

About 62.5% of the sample traders identified it as the major entry barriers to coffee trading. In addition, complexity of credit has been critical constraint in the start-up and expand the existing business. It is in lined with Engida (2017) on coffee.

Security problem

It is the state of being protected or safe from harm at the time of marketing operation. Majority of coffee traders 95%, this is critical problem to join into coffee marketing especially in order to bay coffee up to *kebele* levels.

Unlicensed traders

It is one of the bottlenecks to enter and expand trading activities. Weak mechanism of controlling cases poor quality coffee supply. Even if there is coffee quality inspection at each district level, their function is not as expected. According to the survey 80% of trader faces this problem.

Price fluctuation

Besides the huge investment capital requirements, highly volatile price of coffee prevents traders from engaging confidentially in coffee marketing. Survey result showed that all of the traders being highly frustrated about the future coffee price at local and national level.

Unfair taxation

Even though paying tax is mandatory, majority of traders 95% do not consider it fair taxation (according to their revenue).

Lack of reliable information

Though there existed local market information, sometimes which was not accurate and non-accessibility of accurate and timely market information mechanisms seen as a potential reason of entry barriers.

All the above results indicated that coffee market in the study area deviating from competitive market structure norms. This deviation can affect the conduct of the market to deviate from competitive market's market conduct norms.

Coffee market conduct

Coffee market conduct is analyzed in terms of the traders' price setting, availability of price information, buying and selling strategies.

Price setting

The survey result showed that only 3.95% of producers was able to set price, 72.37% traders determined price, 23.6%

Table 2: market chain actors and their role.

Actors	Roles
Producers	✓ First link in the marketing chain ✓ Sell product to different actors ✓ Manage coffee up to harvesting ✓Determine amount and quality
Wholesalers	✓ Buy coffee from producers, collectors and cooperatives ✓ Use hulling, pulping and washing machines by themselves or by renting. ✓ Sell to exporters and domestic wholesalers by keeping ECX regulation
Collectors	✓ Buy coffee from remote area ✓ Sell coffee to wholesalers and cooperatives
Processors	✓ Hulling and pulping, sorting, grading packing and weighing is carried out ✓ Drying to proper moisture and earn rental service
Cooperatives	✓ Purchase coffee from producers and collectors sell to exporters via unions. ✓ Give services to members and non-members for social and economic benefits
Union	✓ Collect coffee from cooperative in bulk, makes value addition practice. ✓ Export to international buyers and ready for domestic market
ECX	✓ Create market integrity ✓ Enforcement of standardized terms and conditions with trading rules.
Exporters	✓ Involved in the international market by buying the coffee from wholesalers and unions
Importers	✓ Actors outside the country who buy coffee from different exporters
Domestic wholesalers	✓ Buy local standard coffee mainly from suppliers and sold to retailers in the country
Retailers	✓ Distribute large-scale shipments of produce and sell it to consumers in small units ✓ Found at regional and district centers
Consumers	✓ Ultimate users of coffee ✓ Bought for consumption only.

replied that price was determined by negotiation between sellers and buyers. This implies majority of the producer were price takers (coffee producer farmers in the area has no influence on market price for their produce).

Availability of price information

It was not transparent between the different categories of traders that created high price variability and difference among traders. Wholesalers have got quick and readily information relative to collectors and other actors. The main sources of information for traders were internet, media, other trader, exporters and commission agents at central auction market by cell phone.

Buying and selling strategies

The main strategies of traders are maximizing profit, developing bargaining power, establishment of regular partner, creating long term relation with clients, searching of market information and analyze its impact on price, adjusting alternative market channel and price setting practices etc. Traders attract producers 55% by paying better price, 62.5% by fair scaling and 17.5% by giving credit and 20% by visiting them at the time of production.

Coffee market performance

Market performance was analyzed by estimating marketing margin by considering market costs for major marketing actors at that production and marketing year.

Production cost

Costs incurred by coffee producers starting from sowing to harvesting. The average production cost for producers is 4.13 birr/kg.

Marketing cost

Costs incurred by each marketing actor from. The average marketing cost for producers, wholesalers, cooperatives, collectors and retailers are 0.90, 26.4, 18.71, 5.45 and 14.99 respectively.

The results (Table 3) showed that coffee producers' gross profit was highest when they direct sell to consumers in channel IX and wholesalers from I to III which is 82.37 birr/kg and 27.93 birr/kg respectively. While take lowest gross profit when they direct sell to collectors from V to VIII which is 19.12 birr/kg. This implies producers are more profitable if they sold to wholesalers and consumers. But majority of producers soled to collectors due to inconvenience and

Table 3: Coffee marketing margin for different channels.

Actors	Profit analysis	Channels								
		I	II	III	IV	V	VI	VII	VIII	IX
Producers	Production cost	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13
	Marketing cost	0.90	0.90	0.90	0.35	0	0	0	0.28	3.5
	Selling price	32.96	32.96	32.96	31.45	23.25	23.25	23.25	29	90
	Gross profit	27.93	27.93	27.93	26.97	19.12	19.12	19.12	24.59	82.4
	GMM_P (%)	18.1	21.7	19.5	18.37	65.5	14.53	72.1	18.13	100
Wholesalers	Purchase price	32.96	32.96	32.96		35.5				
	Marketing cost	26.4	26.4	21.6		25				
	Selling price	182.13	151.4	139.7		182.13				
	Gross profit	122.77	92.04	85.14		121.63				
	GMMw (%)	67.41	60.8	60.95		66.79				
Cooperatives	Purchase price				31.45		33.75			
	Marketing cost				18.71		24.1			
	Selling price				171.2		171.2			
	Gross profit				121.04		113.35			
	GMMcop (%)				70.71		66.21			
Collectors	Purchase price					23.25	23.25	23.25		
	Marketing cost					5.45	5.45	4.30		
	Selling price					35.5	33.75	32.25		
	Gross profit					6.8	5.05	4.7		
	GMMcoll (%)					19.16	14.97	14.57		
Retailers	Purchase price			139.7			32.5		29	
	Marketing cost			0.29			14.35		14.99	
	Selling price			169.5			160		160	
	Gross profit			29.51			113.15		116.01	
	GMMr (%)			17.41			70.72		72.51	
	TGMM (%)	81.9	78.23	80.5	81.63	34.5	85.47	27.9	81.87	0

TGMM= Total gross marketing margin, GMM= Gross marketing margin.

unavailability of value adding technology. Wholesalers have got the highest profit of 122.77 birr/kg. Cooperatives got highest profit of 121.04 birr/kg when they purchase from producers and sell to Union. Collectors made profit of 6.8 birr/kg on channel V and retailers made profit of 116.01 birr/kg in channel VIII when they purchase from producers and sell to consumers. This implies that wholesalers were received the highest remuneration from market in the study area while rural collectors took the smallest profits.

TGMM was highest in channel VI which was 85.47 % and lowest in channel VII which was 27.9%. Producers share was highest in channel IX 100% and lowest in channel VI 14.53%. This implies that as the number of marketing agents increases the producers share decreases and the vice versa is true due to producers price is affected by physical and transaction costs, market power in the hands of few and lack of market supporting institution in the study areas. It is in lined with Dessalegn and Solomon (2014). Wide marketing margins shows existence of imperfect market and high marketing margins arise from high marketing costs and high producer and consumer price difference (Cramer and Jensen, 1982).

CONCLUSION

Market chain actors are producers, cooperatives, Union, collectors, wholesalers, retailers, processers, Ethiopian commodity exchange, exporters and consumers. Nine coffee market channels were identified. Market concentration indicated, coffee markets are strong oligopoly with average buyers' concentration ratio of 65.11%. Shortage of capital, administrative and security problems, high price fluctuation and unlicensed trades, unfair taxation and lack of reliable information were major barriers market entry. Coffee market performance result reveals that, the highest total gross marketing margin was 85.47% and lowest was 27.9%. The highest producers share was 100% and the lowest 14.53%. The highest Gross profit was Birr 122.7/kg by wholesalers while the lowest Birr 4.7/kg by collectors. The following recommendations are drawn based on the findings of this study:

- ✓ Strengthening the extension services in coverage and quality in all coffee growing areas to improve skill and knowledge of producers and traders.
- ✓ Improving coffee quality inspection and certification in production and marketing.
- ✓ It need to distribute improved, drought, disease and pest resistance varieties producers with technologies and management.
- ✓ Enhancing infrastructural and institutional facilities such as market access and information, financial services, post-harvest facilities, logistic and other to boost production and marketing.
- ✓ Disseminate reliable and timely market information required by all stakeholders simultaneously.
- ✓ Coffee market strongly oligopolized, government should attract other traders to enter into coffee trade by reducing barriers of entry and giving incentives to make market more competitive.
- ✓ Finally, further studies on coffee should be conducted in all coffee growing areas for well organized regional and national coffee market implementations.

Conflict of interest: None.

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