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Determinant Factors Affecting Access to Alternative Market Outlet Choices of Poultry Farm-holders in Hadiya Zone, Central Ethiopia

Abraham Ababiya[1*], Kacha Assefa[2], Yisak Erigicho[3]

[1]*Department of Agricultural Economics, College of Agricultural Science, Wachemo University, Ethiopia*

[2&3]*Department of Economics, College of Business and Economics, Wachemo University, Ethiopia*

* *Corresponding Author:* abrahamababiya2@gmail.com

ARTICLE INFO	ABSTRACT
	Introduction: The poultry sector in Ethiopia, particularly in the Hadiya Zone, is constrained by multiple challenges across its value chain from input supply and production to marketing and institutional support. Understanding how poultry farm-holders choose among different market outlets is essential for strengthening domestic poultry development through improved market participation and efficiency. **Objectives**: This study aimed to identify the major types of market outlets used by poultry farm-holders and to analyze factors affecting access to alternative market outlet choices of poultry Farm-holders in Hadiya Zone, Central Ethiopia **Methods**: Primary data were collected from 297 poultry farmers, 25 traders, 8 processors, and 54 consumers using structured questionnaires. Descriptive statistics and a multinomial logistic regression model were employed to assess the poultry value chain and determine the significant factors influencing the choice of market outlets. **Results**: Descriptive analysis revealed that the Ethiopian poultry value chain suffers from poor input supply, traditional production methods, rudimentary processing practices, fragmented markets, and weak institutional support. The multinomial logistic regression results showed that the age of the household head, access to extension services, post-harvest value addition, poultry product pricing, and mode of payment significantly influenced the probability of choosing processor and trader market outlets over individual consumer outlets. **Conclusions**: To enhance the poultry value chain's development and efficiency, policies should prioritize access to modern feed, veterinary services, credit facilities, and infrastructure improvement. Strengthening extension systems and aligning breeding strategies to harness the benefits of both local and exotic poultry breeds are also recommended. These strategies should consider critical determinants such as household demographics, access to services, and market-related factors affecting market outlet decisions **Keywords:** Value chain, Market Outlet, Multinomial, Poultry

1. INTRODUCTION

Rising per capita incomes, urbanization, and population growth in developing countries have driven increased demand for animal products, particularly poultry. Globally, poultry production has grown faster than that of ruminants and pigs, now contributing over 39% of the total meat supply and 34% of animal protein consumed worldwide (Patway & Ramchandra, 2024; FAO, 2022). In developing countries, poultry meat consumption rose from about 14 kg per capita in 2000 to around 30 kg in 2020 (OECD-FAO, 2021). Poultry meat and eggs offer affordable, high-quality protein, playing critical roles in human nutrition and economic development (ILRI, 2022). In Ethiopia, the poultry population exceeded 57 million by 2021 (CSA, 2021). Despite the expansion of modern poultry farms near urban centres like Addis Ababa, smallholder systems still dominate and contribute the bulk of national production.

Research Article

Poultry is vital for rural livelihoods, providing disposable income, nutritional security, and socio-cultural value through gift exchange and ceremonial uses (Aklilu et al., 2020).

Nevertheless, Ethiopia's poultry sector remains underdeveloped. Insufficient research, limited technological adoption, weak market linkages, and poor institutional support constrain the sector's potential (MoA, 2022). Most interventions have focused narrowly on technical production aspects, neglecting broader value chain and market development efforts necessary to boost incomes and rural resilience (Gebremedhin et al., 2021). Value chain development is crucial, encompassing production, processing, marketing, and distribution (Porter, 1985). Poultry value chain analysis identifies bottlenecks and opportunities across actors and activities, from producers to end consumers. A well-functioning value chain enhances market competitiveness, producer incomes, and consumer access to quality products (Hellin et al., 2021).

Market access continues to be a critical constraint for smallholder farmers, particularly in sub-Saharan Africa. It encompasses not only physical proximity to markets but also structural and institutional dimensions, including the organization of markets, availability of infrastructure, and farmers' ability to engage competitively (Ali et al., 2023). Recent studies underscore that beyond distance, smallholders are often constrained by asymmetric information, limited bargaining power, and lack of market integration, which collectively hinder their ability to secure profitable and stable market outlets (Abate et al., 2022; FAO, 2023). Without reliable and accessible markets, producers face uncertainty about returns, reducing their incentives to invest in productivity-enhancing technologies or improve product quality (Barrett et al., 2021). Enhancing market access requires addressing both supply- and demand-side barriers, including infrastructure development, information systems, and inclusive value chain linkages.

Poultry production is increasingly critical for food security and income generation in Ethiopia. However, the sector's vast potential remains untapped due to challenges including traditional production practices, limited input supply (feeds, improved breeds, housing), inadequate extension services, poor marketing infrastructure, lack of producer organizations, and restricted access to credit and market information (Berhanu et al., 2020; MoA, 2022). Poor market access, shaped by weak rural infrastructure, fragmented markets, and limited farmer capacity, remains a major constraint, limiting both the profitability and competitiveness of poultry farmers (Zeberga, 2021).

Inefficient marketing channels, high transaction costs, and lack of cooperation among value chain actors exacerbate these challenges, pushing smallholders out of emerging modern markets that demand higher quality, traceability, and reliability of supply (Vermeulen et al., 2020). The shift towards modern retail systems, such as supermarkets and integrated supply chains, increasingly marginalizes smallholders who cannot meet quality standards or consistent supply requirements (Ayele et al., 2021). As a result, without strategic support for market integration and value chain strengthening, poultry farmers risk being excluded from growing market opportunities.

Previous studies have primarily addressed the technical aspects of poultry production, neglecting integrated analysis of market access and value chain constraints. Moreover, in Hadiya Zone, despite its poultry production potential, systematic studies on poultry market access and value chain analysis are scarce. Critical factors like education level, family size, access to extension and credit, landholding, experience, distance to markets, and cooperation among actors significantly influence poultry market participation but have not been comprehensively analysed together. Given these gaps, determining factors affecting access to alternative market outlet choices of poultry farm-holders in Hadiya Zone, Central Ethiopia. The findings aim to inform strategies that can enhance rural incomes, promote market-oriented poultry production, and ensure the resilience of poultry farmers to rapidly changing market environments. So, this study mainly analyses poultry value chain constraints and the determinant factors that affect access to alternative poultry market outlet choices.

2. OBJECTIVES

2.1. General Objective

The general objective of this study is to determinant factors affecting access to alternative market outlet choices of poultry farm-holders in Hadiya Zone, Central Ethiopia

2.2. Specific Objectives

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i.   To identify the major types of market outlets used by poultry farm-holders in the study area.
ii. To analyze factors affecting access to alternative market outlet choices of poultry farm-holders in in the study area

3. METHODS

3.1. Description of the Study Area

The research was conducted in the Hadiya Zone, located in the Central Ethiopia Region. The zone lies approximately 232 kilometers south of Addis Ababa, the capital city of Ethiopia. Covering an estimated area of 346,958.5 hectares, Hadiya Zone is situated at an average elevation of 1,900 meters above sea level. It experiences a temperate climate, with daily temperature levels ranging between 18°C and 27°C. Rainfall is seasonal, with a wet period extending from February to August most of the time and drier months from September to January. As of the 2017 population projection of Ethiopia, Zone had a total population of approximately 1,710,812, composed of males 846,852 (49.5%) and females 863,960 (50.5%). The population is known for its cultural diversity and peaceful coexistence across various ethnic and religious groups.

The local economy is largely based on mixed farming systems that include both crop cultivation and livestock rearing. Farmers produce a range of cereals (such as wheat, teff, maize, barley, and beans), vegetables, fruits, and cash crops like coffee and khat. The zone is particularly known for its high wheat productivity, with yields reaching approximately 65 quintals per hectare, earning it the nickname "the wheat basket" of Ethiopia. Livestock, especially dairy production, is also a significant component of household income and food security in the region. This study employed a comprehensive research methodology to analyse value chain dynamics within the poultry industry of Hadiya Zone. The methodology encompasses the study area description, sampling procedures, data sources and collection methods, and analytical techniques employed to meet the research objectives.

3.2. Study Population and Sampling Techniques

To examine the poultry value chain constraints and the determinant factors that affecting access of alternative poultry market outlet choices, a multi-stage sampling method integrating simple, stratified, and judgmental techniques was used. The first stage involved randomly selecting two districts and one town to represent the ten districts and three registered towns in Hadiya Zone. In the second stage, seven rural and one urban *kebeles* were randomly selected based on proportional representation. Respondents were stratified by their roles in the poultry value chain farmers, wholesalers, collectors, retailers, and processors. A simplified formula by Cochran (1977) was used to determine the sample size, assuming 95% confidence level and 5% margin of error. From a population of 3977 actors (excluding consumers), a representative sample of 330 was proportionally drawn. An additional 54 consumers were selected judgmentally due to the infinite nature of the consumer population, culminating in 384 respondents. To show in detail.

$$n = \frac{z^2 pq}{e^2} \tag{1}$$

After deduction of 54 consumers since it is judgmental, the remaining 330 will be proportionally allocated for poultry value chain actors other than consumers by using the formula

$$\boldsymbol{n_i} = \frac{nN_i}{N} \text{ as following:} \tag{2}$$

Where n represents sample size, N_i represents population size of the each poultry value chain actors and N represents the population size other than consumers. In this study, $N = 3977$; $n= 330$.

3.3. Data Sources and Collection Methods

This study employed both primary and secondary data collection methods to ensure comprehensive and reliable findings. The primary data was gathered directly from value chain actors including poultry farmers, traders, processors, and consumers using a combination of structured questionnaires, direct observations, and interviews. Additional qualitative insights were captured through focus group discussions and key informant interviews guided by pre-tested checklists. These tools were designed to obtain detailed information on household and farm characteristics, income sources, marketing and market access constraints, extension consumption patterns, and gender-disaggregated roles along the poultry value chain.

Research Article

In line with Bryman et al. (2011), the study recognizes the complementary nature of quantitative and qualitative methods. While structured questionnaires provided quantifiable data, qualitative approaches offered rich, contextual understanding of behaviours, perceptions, and attitudes that cannot be captured through numbers alone. Observation was also used to collect information on business size, location, and type. Secondary data was sourced from published books, journal articles, government reports, and records from relevant institutions. These sources helped triangulate the findings and provide a broader context. The entire data collection process was conducted under the close supervision of the researcher to ensure data accuracy and integrity.

3.4. Methods of Data Analysis

The data collected from poultry farmers, traders, processors, consumers, and other stakeholders were analysed using a combination of descriptive statistics, value chain analysis, and econometric modelling. Descriptive statistics, including means, percentages, standard deviations, and t-tests, were employed. Poultry value chain constraints and the determinant factors that affect access to alternative poultry market outlet choices were examined to assess the flow of poultry products and information among actors.

A multinomial logit (MNL) model was applied to explain inter-household variation in the choice of a specific marketing outlet. This study assumes that a farmer's decision is generated based on its utility maximization. This implies that each alternative marketing outlet choice entails different private costs and benefits, and hence different utility, to a household decision maker. The analytical model is constructed as follows. Suppose that the utility to a household of alternative j is U_{ij}, where j = 0, 1, 2..... From the decision maker's perspective, the best alternative is simply the one that maximizes net private benefit at the margin. Based on McFadden (1978), a household's utility function from using alternative j can then be expressed as follows:

$$U \text{ (Choice of j for household i)} = U_{ij} = V_{ij} + \varepsilon_{ij} \tag{3}$$

Where,

U_{ij} is the overall utility, V_{ij} is an indirect utility function and ε_{ij} is a random error term.

The probability that household i select alternative j can be specified as:

$$P_{ij} = P_r (V_{ij} + \varepsilon_{ij} > V_{ik} + \varepsilon_{ik})$$

$$P_{ij} = P_r (\varepsilon_{ik} < \varepsilon_{ij} + V_{ij} - V_{ik} , \forall K \neq j) \tag{4}$$

Assuming that the error terms are identically and independently distributed with type i extreme value distribution, the probability that a household chooses alternative j can be explained by a multinomial logit model (Greene, 2000) as follows:

$$P_{ij} = \frac{\exp(\beta_j x_{ij})}{\sum_{j=0}^{J} \exp(\beta_j x_{ij})} \tag{5}$$

Where,

X_{ij} is a vector of household of the ith respondent facing alternative j

β_j is a vector of regression parameter estimates associated with alternative j.

Following equation (5) above, we can adapt the MNL model fitting to this study as follow:

$$P (Choice_{ij} = j) = \frac{\exp(\beta_j x_i)}{\sum_{j=1}^{J} \exp(\beta_j x_i)} \tag{6}$$

Where,

i represents i^{th} farm household, and i=1,2,3,...,122.

j represents different marketing outlets, j=1 for sale to individual consumer market outlets, j=2 for processors market outlets and j=3 for trader market outlets.

Research Article

P represents the probability of poultry product marketing outlet j to be chosen by farm household i; and Choice ij = j means that poultry product marketing outlet j is chosen by farm household i; Xi is independent variables

It is a common practice in econometric specification of the MNL model to normalize equation (5) by one of the response categories such that $\beta_j = 0$. In this regard, the MNL model can alternatively be specified as follow:

$$P_{ij} = \frac{\exp(\beta_j X_{ij})}{\sum_{j-1}^{J-1} \exp(\beta_j X_{ij})} \tag{7}$$

The coefficients of explanatory variables on the omitted or base category are assumed to be zero. The probability that a base category will be chosen can be calculated as follows:

$$P_{ij} = \frac{1}{1 - \sum_{j-1}^{J-1} \exp(\beta_j X_{ij})} \tag{8}$$

The marginal effects of the attributes on the probability of choice are determined by differentiating equation:

$$\delta_j = \frac{\delta P_j}{\delta X_j} = P_j = P_j [\beta_j - \sum_{j=0}^{J} (P_j)(\beta_j)] , \text{for } j = 1, 2 \ldots J \tag{9}$$

It is important to check multi-collinearity and heteroskedasticity (by using Breusch-Pagan test) problems before running the model. According to Gujarati (2003) VIF (Xj) can be defined as:

$$\text{VIF} = \frac{1}{1 - R_j^2} \quad \text{and of contingency coefficient (CC)} = \sqrt{\frac{X^2}{x^2 n}}$$

4. RESULTS

4.1. Descriptive Statistics

General characteristics of poultry farmers and traders: Sampled farmers ranged from 18−65 years old, with an average age of 41 years. Most (71.3%) were male-headed households, aligning with findings by Gebregziabher (2010). About 85.2% resided in rural areas, and 53.3% were illiterate, highlighting a low human capital base that affects the adoption of modern poultry practices. The average household size was six. Farmers owned 0.77 hectares of land on average, with a quarter allocated for cereals. Around 59% had corrugated iron sheet-roofed houses, but 69.2% kept poultry in shared living spaces, indicating inadequate poultry housing infrastructure. The primary income sources included livestock sales (29.9%) and crop sales (25.6%). Average revenue from poultry per production session was 368.5 Birr. Most income was directed toward immediate household needs like health care (49%) and basic items (38.6%), with limited reinvestment in poultry activities (only 12.3% found poultry income significant for business expansion).

Farmers preferred exotic breeds (54.3%) for higher productivity, despite challenges like disease susceptibility (31.5%) and high costs (20.3%). Local breeds were favoured for their resilience. Key constraints included high feed costs, lack of credit, and poor adaptability of exotic breeds. Most farmers followed unsystematic feeding without flock differentiation, leading to low productivity. Access to poultry-specific extension services was low (only 32.3% coverage). Extension efforts such as demonstrations and trainings had limited reach. Credit access was also restricted; only 13.5% of farmers accessed formal credit, primarily through Omo Microfinance. While 78% of farmers knew product prices beforehand, their sources were predominantly traders (53.7%) and markets (23.4%).

In traders case total of 29 traders were i, i.e. 10 collectors, 17 retailers and 2 wholesalers were interviewed. The demographic characteristics of traders summarized in terms of age, sex, marital status and education level of traders (Table 1). The age of traders ranged from 20 to 49 with an average age of 32.6. The survey result indicated that, 27 (93.1%) and 2 (6.9%) of the sampled poultry traders were males and females, respectively. This result indicated that more proportion of males participated in poultry and egg trading than females. About 86.2% and 13.8% of them were married and single respectively. This result indicated that married persons gave more emphasis for poultry trading than single persons. The reason could be due to matured mind of married persons to improve their livelihood and

Research Article

thinking to ensure the feed security of their family whereas single persons gave less emphasis for trading due to the absence of family size and feeling less responsibility. In case of educational status of the traders, about 87.5% of the sample traders were educated in formal institutions.

Table .1: Demographic characteristics of poultry farmers and Traders

Farmers				Traders			
Dummy Variables		Number of farmers	%	**Dummy Variables**		Number of traders	%
Sex of farmers	Male	210	70.7	Sex of traders	Male	27	93.1
	Female	87	29.3		Female	2	6.9
Marital status	Married	232	78.1	Marital status	Married	25	86.2
	Single	65	21.9		Single	4	13.8
Education of farmers	Literate	139	46.7	Education of traders	Literate	23	79.3
	Illiterate	158	53.3		Illiterate	6	20.7
Continuous Variables		Mean	Std	Continuous Variables		Mean	Std
Age of farmers		37	9	Age of traders		32.6	5.67
Experience of farmers		12	5.4	Experience of traders		4	2.42
Land holding size(hectare) of farmers		0.77	0.53	Distance to market			
Distance to market		1 2.4	9.68			6	2.76

Source: Author's field survey (2024)

Demographic characteristics Poultry Processors and Consumers: As shown in below table 2 processors such as cafeterias and restaurant owners were interviewed. They cooked and sold poultry products specially chickens and eggs for their customer. Their demographic characteristics were summarized in terms of age, sex, family size, marital status and education level of processors. The age of processors ranged from 22 to 50 with an average age of 35. The survey result indicated that, 37.3% and 62.5% of the sampled processors were males and females respectively. This result indicated that females were more participated in processing poultry products than males. About 75% and 25% of them were married and single respectively. In the case of educational status of the processors, about only 25% were illiterate. As indicated in table 2 similarly, the age of consumers ranged from 25 to 65 with an average age of 37.4. Out of 54 consumers, 30 and 24 were males and females respectively. In case of the educational level of consumers 79.6%, were educated in formal schools.

Table .2 Demographic characteristics of poultry processors and consumers

Type of Variables		Processors		Consumers	
		Mean	Std	Mean	Std
Dummy variables		Number of processors	%	Number traders	%
Sex	Male	3	37.5	30	55.6
	Female	5	62.5	24	44.4
Marital status	Married	6	75	39	72.2
	Single	2	25	15	27.8
Education	Literate	6	75	43	79.6
	Illiterate	2	25	11	20.4
Continuous variable					
Age		35	8.53	38.4	11.23

Source: Author's field survey (2024)

Research Article

Constraints in the Poultry Value Chain: Input Supply Challenges: There is a shortage of quality feed, and farmers struggle with access to exotic breeds and veterinary services. Input suppliers like breeding centres are under-resourced, leading to limited production capacity. Production Constraints: The predominant use of traditional production methods (e.g., free-range and backyard systems) results in lower yields and limited market-oriented production. Moreover, poor access to credit hampers the growth of larger, more efficient poultry enterprises. Processing Limitations: Processing methods are rudimentary, lacking modern technologies that ensure product safety and quality. There are no dedicated actors for improved processing and packaging, which limits the marketability of poultry products.

Market Inefficiencies: Despite the presence of multiple marketing channels, the market remains fragmented. Farmers and traders often face challenges with fluctuating prices, inadequate infrastructure, and socio-cultural factors that influence pricing and sales, particularly for local chicken breeds. Policy and Institutional Gaps: There is a lack of effective policy and regulatory support for the poultry sector. The absence of standards for product quality assurance and limited collaboration among value chain actors further hinders growth. The need for public and private sector engagement to improve poultry value chain integration is evident.

Table 3: Poultry value chain actors' perspectives on constraints in poultry value chains

Problems/Constraints	% reporting problem	Importance of the problem (%)		
		Very important	Important	Less important
Shortage of capital	13	20	44	36
Shortage of skill experts	23	38	52	10
Shortage of feeds	92	76	20	4
Lack of clean water	27	11	36	53
Inadequate extension services	56	68	20	12
Inadequate institutional support	43	60	28	12
Low poultry productive and genetic performance	67	72	22	6
Limited veterinary services	39	57	30	13
High costs of exotic chicken and feed	37	45	30	25
No private investment in poultry production	19	17	30	53
Unreliable seasonal supply	25	23	40	37
Lack of technology	29	31	19	5

Source: Author's field survey (2024)

Poultry products marketing channels: Poultry products market channels connect producers, traders (collectors, wholesalers, and retailers), and processors (hotels/restaurants) to consumers as shown in Figure.1. The starting point in the poultry products market channels is the producers. The final users of the products are the consumers (within the zone and outside of the zonal boundary). Poultry products are then channeled either to processors (hotels/restaurants), traders, and then to consumers.

Summary of Poultry (Chicken and egg) marketing channels in the study area:

Channel 1- Producers □ consumers

Channel 2- Producers □ Trader □ consumers

Channel 3- Producers □ processors (hotel/restaurant) □consumers

Channel 4- Producers □ Trader □ processors (hotel/restaurant) □ consumers
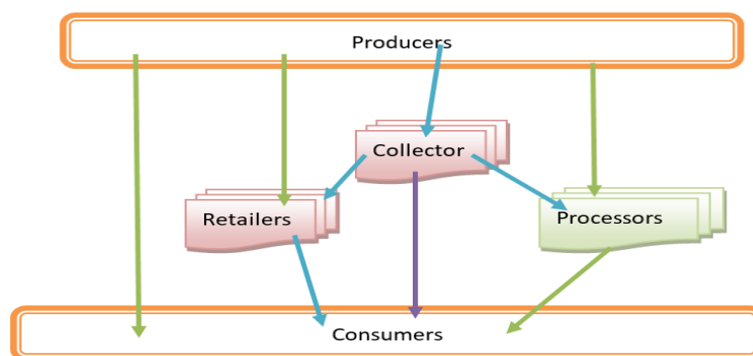
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Figure 1. Poultry product market channel

Source: Author's field survey (2024)

4.2.   Econometric Model Analysis

4.2.1.   Sales to and purchases by hotels/restaurants

About 48.3% of farmers supplying to hotels/restaurants travelled less than 1.5 hours, 27.3% travelled 1.5 hours, 14.6% travelled 1.75 hours, and 11.8% travelled two hours, indicating that market accessibility influences farmers' orientation. Farmers chose hotels/restaurants due to no credit issues (50.7%), cash payment (39.4%), and capacity-building opportunities (9.9%). Payment was immediate for 60.6% and monthly for 39.4% of farmers. In cases of rejection, farmers either consumed at home (26.1%), re-marketed the next day (31%), or sold at lower prices (38.1%).

Hotels/restaurants purchased chickens at an average price of 136.1 birr, attracting farmers through fair quality measurement (49.1%), better prices (37.7%), and farm visits (13.2%). Payments were made mostly in cash (71.7%), and quality testing at delivery was consistent (94.4%). Price setting was through negotiation (69.8%), market rates (17%), or individual decision (13.2%). Most sales decisions were made individually (52.8%) or through consultation (45.3%).

Hotels/restaurants sold processed poultry to urban and rural consumers, with prices determined either individually (43.4%) or by market forces (56.6%). Most establishments provided menus (87.5%) and paid sales taxes (84%). Information on supply and demand was mainly obtained from other hotels/restaurants (51%), observations (30.2%), and personal contacts (18.8%). Although information sources were limited, active exchange was common, and about 52.8% expressed willingness to pay for market information in the future.

4.2.2.   Sales to and purchases by traders

Nearly all farmers sold poultry at local markets and received immediate cash payments. When products were rejected, farmers opted to consume at home (31.2%), re-market the next day (25.67%), or sell at lower prices (43.13%). Challenges included the absence of standardization and grading systems, suggesting a need for government intervention. Eggs were purchased at kebele (8.9%), districts (67.3%), and town (14.9%) markets. Traders attracted suppliers through better pricing (52.6%) and cash payments (46.3%), favouring suppliers offering large quantities (50.7%) and good quality (31.6%).

Most traders (87.4%) operated year-round, while others focused on holidays or market fluctuations. Eggs were resold locally and in major cities like Addis Ababa, Hawassa, and Adama, at an average price of 2.90 birr per egg. Traders attracted buyers by offering quality products (77.2%), and a minority provided credit (13.9%). About 46.8% reported restrictions on unlicensed trading, and 70.9% paid sales taxes, reflecting more formality among sellers compared to purchasers.

4.2.3.   Sales to and purchases by consumers

Direct sales to consumers accounted for 40.3% of chicken and 36.4% of egg sales. The average price was 152.10 birr per chicken and 2.90 birr per egg. Farmers preferred selling to consumers primarily for immediate cash payment (56%), followed by credit payment (24.7%) and lack of quality testing (19.3%). Consumers' primary sources of price and market information were market visits, neighbours, and friends, with minimal use of radio or television.

Research Article

4.2.4. Factors affecting access to alternative poultry market outlet choices

A Multinomial Logit (MNL) model was employed to examine poultry farmers' market outlet choices among three alternatives: individual consumers (reference category), traders, and hotels/restaurants. The model satisfied the independence of irrelevant alternatives (IIA) assumption, as confirmed by the Hausman test. Additionally, the Wald test rejected the null hypothesis that all explanatory variables, except constants, are equal to zero at the 1% significance level. The model explained 48.4% of the variation in outlet choice decisions (pseudo R² = 0.49), with adjustments made for heteroscedasticity using robust standard errors and no evidence of multicollinearity (VIF < 10 for continuous variables; contingency coefficients < 0.75 for discrete variables).

Sixteen household and market-related variables were included in the model: age, education, household size, landholding, farming experience, credit access, breed type, market information, distance to market, poultry price, extension services, mode of payment, non-poultry income, and value addition capability. The model was estimated using maximum likelihood estimation, with individual consumers as the base outcome.

Findings revealed that farmers were less likely to sell to traders or hotels/restaurants compared to individual consumers, despite the higher transaction costs often associated with consumer sales. This preference appeared to be influenced by established social ties and immediate, cash-based transactions. Age significantly increased the likelihood of choosing trader and processor outlets, suggesting that older farmers are more experienced in market engagement and post-harvest handling.

Access to extension services also significantly influenced the selection of formal market outlets, likely due to improved access to market information and linkages. Conversely, distance to market had a negative and significant effect on the choice of processor outlets, indicating logistical constraints faced by farmers in remote areas. Furthermore, farmers engaged in post-harvest value addition tended to prefer individual consumers, likely to capture higher prices for quality-enhanced products.

Price and mode of payment were also key determinants. Farmers perceived lower prices and less favorable payment terms (e.g., credit sales) from processors and traders, discouraging engagement with these outlets.

Table 4: Results of multinomial logistic regression on poultry market outlet choices (comparing processor market outlet with consumer outlet)

Poultry Market Outlet Choice		B	Std. Error	Wald	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Processor market Outlet	Intercept	4.785	2.303	4.318	.038			
	AGE	3.572	.739	23.34	.000***	35.574	8.354	151.485
	LAND	-.769	.497	2.391	.122	.463	.175	1.228
	SEX	-.583	.624	.873	.350	.558	.164	1.896
	EDU	.350	.648	.292	.589	1.419	.399	5.049
	DIST	-1.563	.639	5.985	.014**	.209	.060	.733
	HSIZE	-.281	.639	.193	.660	.755	.216	2.641
	EXP	.907	.527	2.962	.085*	2.477	.882	6.962
	CHICKEN	-.028	.608	.002	.964	.973	.296	3.200
	CREDIT	1.207	.960	1.581	.209	3.344	.509	21.948
	BREED	.698	.599	1.360	.243	2.010	.622	6.497
	INFO	.628	.594	1.117	.291	1.873	.585	5.998
	PAY	-6.429	1.077	35.63	.000***	.002	.000	.013
	EXT	4.394	.836	27.64	.000***	80.991	15.741	416.705

Research Article

	B	Std. Error	Wald	Sig.	Exp(B)	Lower	Upper
INCOME	-.417	.908	.210	.646	.659	.111	3.909
CPRICE	-2.776	.690	16.17	.000***	.062	.016	.241
VADD	-4.213	1.200	12.32	.000***	.015	.001	.155

The reference category is: Consumer outlet.

Source: Author's field survey (2024)

Table 5: Results of multinomial logistic regression on poultry market outlet choices (comparing trader market outlet with consumer outlet)

Poultry Market Outlet Choice		B	Std. Error	Wald	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Trader market outlet	Intercept	3.544	1.941	3.332	.068			
	AGE	2.191	.620	12.479	.000***	8.947	2.653	30.180
	LAND	.129	.422	.093	.760	1.138	.498	2.601
	SEX	-.239	.494	.234	.628	.787	.299	2.073
	EDU	.581	.532	1.190	.275	1.788	.630	5.077
	DIST	-.806	.528	2.326	.127	.447	.159	1.258
	HSIZE	-.784	.501	2.451	.117	.456	.171	1.219
	EXP	.750	.447	2.810	.094*	2.117	.881	5.089
	CHICKEN	.462	.490	.888	.346	1.587	.607	4.145
	CREDIT	1.275	.731	3.045	.081*	3.578	.855	14.982
	BREED	.292	.473	.382	.537	1.340	.530	3.386
	INFO	.340	.490	.480	.488	1.404	.538	3.668
	PAY	-2.474	.616	16.152	.000***	.084	.025	.281
	EXT	2.980	.713	17.483	.000***	19.696	4.871	79.638
	INCOME	-.589	.670	.774	.379	.555	.149	2.061
	PRICE	-1.218	.590	4.265	.039**	.296	.093	.940
	VADD	-4.761	1.139	17.463	.000***	.009	.001	.080

a. The reference category is: Consumer outlet.

Source: Author's field survey (2024)

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

This study aimed to analyze poultry value chain constraints and identify the factors influencing market outlet choices among poultry-producing households in Hadiya Zone, Ethiopia. The findings reveal that while poultry farming plays an essential role in rural livelihoods contributing to household income, food security, and socio-cultural functions, the sector is constrained by structural and systemic challenges.

Most poultry farmers operate under traditional production systems with minimal use of improved technologies or management practices. A significant proportion of households lacked access to poultry-specific extension services and credit, while poultry housing remained inadequate. Farmers predominantly relied on exotic breeds for productivity, though they faced challenges such as disease prevalence, high feed costs, and limited veterinary services. The majority accessed market information informally, mainly from traders, with limited formal market participation.

The marketing structure was characterized by multiple actors' producers, traders, processors, and consumers yet remained highly fragmented and inefficient. Farmers predominantly sold their poultry to individual consumers, largely due to direct cash payments, ease of transaction, and existing social ties. However, they faced challenges such as price volatility, lack of grading systems, and poor rural infrastructure.

Using a Multinomial Logit (MNL) model, the study identified several key factors influencing market outlet choices. These included age of the household head, access to extension services, distance to market, post-harvest handling practices, and the pricing mechanism. Older farmers and those receiving extension services were more likely to

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supply to structured markets like traders or restaurants. In contrast, long distances to market and the opportunity for better prices encouraged sales to local consumers. These insights underscore the need for strategic interventions to improve market access and integration.

4.2. Recommendations

Based on the identified constraints and influencing factors, the following recommendations are proposed to improve poultry value chain efficiency and enhance market participation:

- ✓ **Enhance Extension and Advisory Services**: Strengthen poultry-focused extension programs that offer technical, business, and marketing support. Regular training on flock management, market orientation, and negotiation skills can improve farmers' competitiveness.
- ✓ **Improve Rural Infrastructure and Market Access**: Invest in transportation networks and establish aggregation centers closer to farming communities to reduce logistical challenges and connect farmers to formal buyers.
- ✓ **Promote Value Addition**: Support affordable post-harvest practices such as proper cleaning, grading, packaging, and storage to enable farmers to meet quality standards required by structured markets.
- ✓ **Ensure Fair Pricing and Payment Mechanisms**: Introduce transparent pricing systems and enforce cash-based transactions to enhance trust and encourage participation in formal market outlets.
- ✓ **Strengthen Market Linkages and Contract Farming**: Facilitate partnerships between farmers and processors or traders through clear contract agreements that guarantee fair prices and consistent demand.
- ✓ **Support Youth Engagement**: Target younger farmers with entrepreneurial training and market literacy programs to ensure the long-term sustainability of the poultry value chain.
- ✓ **Develop Market Information Systems**: Establish accessible and timely information platforms via mobile phones or local boards to improve farmers' decision-making and bargaining power.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

The authors hereby declares that generative AI technologies such as Large Language Models have been used during the editing of the manuscript. The details of the AI usage are provided below:

1. Name and Source of Generative AI Technology: ChatGPT, developed by OpenAI
2. Version and Model: GPT-4-turbo, May 2025 release
3. Input Prompts Provided to the AI:
    - ✓ Language editing of this manuscript.
    - ✓ Please improve grammar, coherence, and flow in the attached academic paper
    - ✓ Polish the language while preserving the original structure and meaning.

    The AI was used solely for language enhancement, including grammar correction, clarity improvement, and academic tone refinement.

DECLARATION OF CONFLICTS OF INTEREST

The author(s) declare that there is no conflict of interest regarding the publication of this paper.

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