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Assessing the Utilization of Indigenous Feed Alternatives by Backyard Poultry Farmers: A Survey in Zamboanga del Sur, Philippines

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Abstract
Backyard poultry farming is a vital livelihood activity among rural households in the Philippines. However, the rising cost of commercial feeds has prompted interest in using alternative and indigenous feed resources. This study aimed to assess the Wextent of utilization, knowledge, and challenges of backyard poultry farmers regarding indigenous feed alternatives in Zamboanga del Sur. Using a descriptive research design, data were gathered from 185 purposively selected respondents through a validated and reliable structured questionnaire. Results showed that most farmers were adults with limited formal education, predominantly female, and engaged in small-scale poultry production, mainly raising native chickens. A majority practiced mixed feeding strategies, combining commercial and alternative feeds, with corn, copra meal, and rice bran being the most utilized alternatives. Although high-potential feed ingredients like Azolla and *Trichanthera gigantica* were less used, factors such as limited awareness and technical knowledge were identified as barriers to broader adoption. Correlation and regression analyses revealed that knowledge significantly influenced the level of adoption, while challenges posed constraints. Thus, there is a need for targeted education, training programs, and extension services to promote further adoption of alternative feeds.

Keywords: Adoption, Backyard Farming, Feeding Strategies, Indigenous Feed Resources, Native Chicken

Introduction

Backyard poultry farming is a traditional production activity in many rural communities, particularly in developing countries like the Philippines. It is characterized by small-scale, low-input production systems that typically involve native or improved native chickens raised in free-range or semi-scavenging environments (Sandilands & Hocking, 2012). These systems are widely practiced among resource-poor households because they require minimal capital investment and provide a steady source of protein through meat and eggs, as well as supplemental income from occasional sales (Pal et al., 2020). However, the rising cost of commercial poultry feeds, which accounts for up to 80% of total production expenses, continues to pose a serious challenge to the industry (Mottet & Tempio, 2017). This has intensified the search for sustainable, affordable, and locally available feed resources that can substitute or supplement conventional feeds such as soybean meal and fishmeal (Mwesigwa et al., 2015; Ashelmani et al., 2021). In response, both researchers and farmers have increasingly explored alternative feed ingredients—including agricultural by-products, forage plants, aquatic ferns, and fermented materials—that are nutritionally viable and more cost-effective (Vlaicu et al., 2024).

Several indigenous feed resources have demonstrated promising results in poultry nutrition. Azolla, a nitrogen-fixing aquatic fern, has high protein and amino acid content and improves weight gain and feed efficiency when incorporated at 5–10% (Swain et al., 2022). *Trichanthera gigantica* (Madre de Agua) is a protein-rich shrub used as forage for layers and growers (Abuan et al., 2022). Copra meal, a by-product of coconut oil extraction, is widely used up to 15% in poultry diets without adverse effects (Punzalan &

Rosentrater, 2024). Corn and rice bran are staple energy and fiber sources in backyard rations (Isah & Okosun, 2023). Leaf meals from Ipil-ipil (*Leucaena leucocephala*) and Moringa oleifera are valued for their high protein content; however, the former requires controlled use due to anti-nutritional compounds (Haetami et al., 2022), while the latter supports growth and immune function (Taufek et al., 2022). Additionally, root crops like sweet potato, leafy vegetables such as water spinach (Ipomoea aquatica), and by-products like banana peels and pseudostems offer carbohydrates, fiber, and micronutrients good for chicken (Maung et al., 2020; Khan, 2017; Kumari et al., 2023).

Despite documented nutritional benefits for poultry, the actual utilization of these indigenous feed ingredients remains limited in practice. Factors such as limited awareness, inadequate technical knowledge on feed preparation, seasonal availability, and ingrained reliance on commercial feeds may hinder adoption (Devi & Diarra, 2019). While prior studies have focused on the nutritive value and biological effects of these ingredients, there is a lack of empirical data on how and to what extent they are being used by backyard poultry farmers, particularly in resource-constrained areas. Thus, this study aims to assess the extent of utilization, knowledge, and perceptions of backyard poultry farmers regarding indigenous feed alternatives in Zamboanga del Sur, Philippines. The findings will help inform appropriate interventions and policies to support feed self-sufficiency and improved backyard poultry productivity.

Materials and Methods

Location of the Study

The research was conducted in Zamboanga del Sur, a province in the Zamboanga Peninsula region of Mindanao, Philippines, where backyard poultry farming is widely practiced as a rural livelihood activity.

Research Design and Instrument

Table 1. Questionnaire Reliability Results

Description	No. of Items	Cronbach's Alpha	Interpretation
Farmers Level of Knowledge	10	0.827	Reliable
Farmers Level of Adoption	10	0.861	Reliable
Farmers Level of Challenges	10	0.825	Reliable

Note: Reliability at 0.7 Cronbach's alpha

The study employed a descriptive research design using a structured survey questionnaire to assess the socio-demographic profile, farm production and characteristics, feeding management practices, farmers' level of knowledge, level of adoption, and level of challenges regarding the alternative feed ingredients used by backyard poultry raisers in Zamboanga del Sur, Philippines. The questionnaire was developed based on a review of relevant literature, expert consultation, and the study's specific objectives. The instrument was subjected to content validation by three (3) experts, and a pre-test was conducted to determine the reliability of the questionnaire (see Table 1).

Population and Sampling

The target population included backyard poultry farmers who were actively raising chickens at the time of the study. A total of 185 respondents were purposively selected based on their engagement in backyard poultry farming. Purposive sampling was employed to ensure that participants had direct and relevant experiences in poultry production and feeding practices.

Data Collection

The survey was administered through face-to-face interviews conducted by trained enumerators under the close supervision of the principal investigator. Prior to data collection, informed consent was obtained from all participants.

Data Analysis

The data collected were encoded, tabulated, and analyzed using descriptive statistics, including frequency, percentages, means, and standard deviations. Correlation and Regression analysis were also used to determine the significant relationship between the farmers' level of adoption and their level of knowledge and challenges.

Results and Discussion

The socio-demographic profile of backyard poultry farmers in Zamboanga del Sur, Philippines, is presented in Table 2. The findings reveal that individuals primarily undertake poultry farming in their productive years. Specifically, 42.2% of the respondents were aged 26–45, and 31.4% were between 46 and 65. Only 8.6% were aged 25 and below, while 17.8% were 66 and above. Additionally, most poultry farmers were women (51.9%), showing the importance of women in backyard poultry systems, often as part of household livelihood strategies. Regarding education, a considerable portion of respondents had limited formal schooling. The majority (43.8%) completed only elementary education, 23.8% attained secondary education, and 20.0% had no formal education. Only a tiny proportion reached tertiary (10.8%) and postgraduate (1.6%) levels. Furthermore, marital status data show that 75.7% of the respondents were married, with the remaining distributed between single (11.9%), widowed (11.9%), and separated (0.5%). Similar findings were reported that poultry farmers in the Philippines are primarily adults, either men or women, mostly married with limited formal education (Falculan, 2023).

Table 2. Socio-Demographic Profile of the Backyard Poultry Farmers

Criteria	Items	f	%
Age	25 and below	16	8.6
	26-45 years old	78	42.2
	46-65 years old	58	31.4
	66 and above	33	17.8
	Total	185	100.0
Gender	Male	89	48.1
	Female	96	51.9
	Total	185	100
Education Background	No formal education	37	20.0
	Elementary Level	81	43.8
	Secondary Level	44	23.8
	Tertiary Level	20	10.8
	Post-Graduate	3	1.6
	Total	185	100.0
Marital Status	Single	22	11.9
	Married	140	75.7
	Widowed	22	11.9
	Separated	1	.5
	Total	185	100.0

Table 3. Farm Production and Characteristics of the Backyard Poultry Farmers

Criteria	Items	f	%
Land Area	1 ha below	101	54.6
	1 - 5 ha	71	38.4
	6 - 10 ha	6	3.2
	11 ha above	7	3.8
	Total	185	100.0
Experience in Poultry Farming	Below 1 year	25	13.5
	1-5 years	78	42.1
	6-10 years	26	14.1
	11 years above	56	30.3
	Total	185	100.0
Number of Chickens Raised	Less than 10	85	45.9
	11-50	91	49.2

	51-100	4	2.2
	100 above	5	2.7
	Total	185	100.0
Breeds of Chicken	Native chicken	169	91.4
	Heritage chicken	11	5.9
	Others	5	2.7
	Total	185	100.0

Table 3 presents the farm characteristics of backyard poultry farmers. Results revealed that more than half (54.6%) of the respondents operated on one-hectare plots or less, and 38.4% managed between one and five hectares. Only 7.0% had landholdings more extensive than five hectares. This land distribution aligns with the typical profile of backyard poultry farmers, where poultry is raised as a low-input, complementary activity integrated within diversified smallholder farming systems (Singh et al., 2020). Regarding farming experience, 42.1% of respondents had 1–5 years of experience in poultry production, 30.3% had over 11 years, 14.1% had 6–10 years, and 13.5% had less than one year. This range of experience levels suggests ongoing entry into and long-term engagement in poultry farming. The presence of seasoned farmers alongside newcomers presents an opportunity for peer-to-peer learning and community-based knowledge transfer. Ho et al. (2010) noted that farming experience is often positively associated with better production outcomes and management efficiency. Flock size revealed that 49.2% of the respondents raised 11–50 chickens, while 45.9% managed fewer than 10 birds. Only 4.9% of respondents raised more than 50 chickens. This indicates that most poultry production is still at a small or semi-subsistence scale, with most respondents (91.4%) raising native chicken breeds, while only 5.9% raised heritage breeds and 2.7% kept other types. This suggests that backyard poultry farming involves rearing small flocks of native chickens (Pal et al., 2020). The preference for native chickens is likely due to their adaptability to local environmental conditions, disease resistance, low feed requirements, and cultural value in local markets (Jaturasitha et al., 2016; Gebrenariam et al., 2017).

Table 4. Feeding Management Practices Among Backyard Poultry Farmers (n = 185)

Criteria	Items	f	%
Types of Feed Used	Commercial	17	9.2
	Alternative	48	25.9
	Mixed	120	64.9
Source of Alternative Feeds (n=168)[a]	Farm produced	82	48.81
	Locally produced	47	27.98
	Purchased from markets	41	24.40
	Others	3	1.79
Feeding Frequency	Once	10	5.4
	Twice	117	63.2
	Three times	47	25.4
	More than three times	11	5.9
Feeding Method	Scatter feeding	153	82.7
	Trough Feeding	30	16.2
	Automatic feeding	2	1.1
Daily Feed Intake per Bird	Less than 50 grams	30	16.2
	50-100 grams	97	52.4
	100-150 grams	27	14.6
	More than 150 grams	31	16.8

Note: [a]Only 168 out of 185 respondents reported using alternative feeds; thus, n = 168 was used for this section.

Table 4 presents the feeding management practices of backyard poultry farmers in Zamboanga del Sur, Philippines. Most respondents (64.9%) reported combining commercial and alternative feeds using mixed feed types. Only 9.2% relied exclusively on commercial feeds, while 25.9% used alternative feeds alone. This suggests that most backyard farmers prefer a cost-effective feeding strategy, likely driven by limited financial resources and accessibility to commercial products by combining commercial and alternative feeds (Rahima et al., 2023; Wongnaa et al., 2023). Among those using alternative feeds, 44.3% sourced them from their own farms, such as forages or farm by-products. Another 25.4% acquired them from local producers, and 22.2% bought them from markets. This means that alternative feeds are readily and locally available for utilization, which shows the importance of promoting sustainable and indigenous feed systems (Kpomasse et al., 2023).

In terms of feeding frequency, the majority (63.2%) fed their birds twice daily, 25.4% of farmers reported feeding three times daily, while only a small number fed once (5.4%) or more than three times (5.9%). Regarding feeding methods, scatter feeding was predominant (82.7%), followed by trough feeding (16.2%), with only 1.1% using automatic feeding systems. Scatter feeding twice daily is a traditional practice common in backyard systems due to its simplicity and low cost (Abdel-Megeed et al., 2009). As for the daily amount of feed per bird, most respondents (52.4%) provided between 50 to 100 grams, which is typical for native chickens raised in semi-intensive systems (Rahima et al., 2023). About 16.8% fed more than 150 grams, while 16.2% provided less than 50 grams, and 14.6% gave 100 to 150 grams.

Table 5. Most Used Alternative Feeds of Backyard Poultry Farmers (n=168)

Criteria	Items	f	%	Rank
Alternative Feeds Used	Azolla	6	3.24	10th
	Madre de Agua	13	7.03	9th
	Copra Meal	146	78.92	2nd
	Corn	166	89.73	1st
	Rice bran	140	75.68	3rd
	Ipil-Ipil leaves	52	28.11	8th
	Sweet Potato	92	49.73	6th
	Water-spinach	102	55.14	4th
	Banana	93	50.27	5th
	Malunggay Leaves	65	35.14	7th

Note: Only 168 out of 185 respondents reported using alternative feeds (see Table 2); thus, n = 168 was used for this section.

Table 5 presents backyard poultry farmers' most commonly used alternative feed ingredients. The top three ingredients were corn (98.81%), copra meal (86.90%), and rice bran (83.33%), showing a strong preference for energy- and protein-rich components that are locally available and cost-effective. These ingredients are widely used in poultry diets due to their nutritional value and accessibility. Corn is a major energy source in poultry diets, providing high metabolizable energy (Garcia, 2023). Rice bran is a by-product of rice milling and serves as an energy and protein source with high fiber content (Garcia, 2023). Copra meal is a by-product of coconut oil extraction, with moderate crude protein content (15-25%) and high fiber content (11.63-16%), which includes limiting amino acids like lysine and methionine (Ayasan, 2016).

Water spinach (60.71%), banana (55.36%), and sweet potato (54.76%) ranked next from 4th to 6th, respectively, revealing farmers' reliance on easily accessible leafy greens and root crops. These feeds provide energy and contain vitamins and antioxidants, which may support bird health (Sugiharto et al., 2018). Malunggay leaves (38.69%) and Ipil-Ipil leaves (30.95%), which followed the ranking from 7th to 8th, are leguminous plants high in protein, vitamins, minerals, and antioxidants (Abde El-Hack et al., 2022). Madre de Agua (7.74%) and Azolla (3.57%) were the least utilized in the study. However, studies suggest that Azolla and Madre de Agua are potential sustainable protein sources in poultry diets (Alagawany et al., 2023; Libatique, 2021), but their low usage may due to limited awareness or knowledge of cultivation and feeding methods which indicates an area for promotion and farmer training to improve adoption (see Table 5 and 7).

Table 6 presents the knowledge levels of backyard poultry farmers in Zamboanga del Sur regarding locally available alternative feed ingredients. The results indicate a neutral level of knowledge (M=3.37) among respondents. Farmers show very high awareness of corn (M = 4.91, SD = 0.52), rice bran (M = 4.76, SD =

0.83), and copra meal (M = 4.52, SD = 1.20). These are widely common alternative feeds in the Philippines due to their availability, energy and protein content, and affordability, which aligns with previous findings that highlight these ingredients as staples in smallholder poultry systems in the Philippines (Stein et al., 2015; Devi & Diara, 2019). High knowledge was reported for kangkong (M = 3.70), banana (M = 3.58), and sweet potato vines (M = 3.51). These feedstuffs are often sourced from backyard gardens, making them accessible and cost-effective. Their moderate popularity is supported by Besana et al. (2020), Maung et al. (2020), and Vlaicu & Untea (2024), who found that integrating such feedstuff into poultry diets can enhance performance and provide supplementary nutrients. Neutral knowledge was observed for ipil-ipil (M = 2.69) and malunggay leaves (M = 2.83) as feed for backyard chickens. Likewise, very low knowledge was noted for Azolla (M = 1.70) and Madre de Agua (M = 1.50), despite their well-documented nutritional potential. Their limited information as an alternative feed for backyard chickens may be attributed to insufficient information dissemination or a lack of promotion. Similar findings were reported that most backyard farmers do not know enough about alternative feeds such as azolla and made de agua (Vidya et al., 2022; Thakur et al., 2024).

Table 6. Farmers' Knowledge Levels on Common Locally Available Alternative Feed Ingredients

Items	M ± SD	QD
I am aware that Azolla can be used as an alternative feed for backyard chickens.	1.70 ± 1.43	VL
I have sufficient knowledge about the nutritional benefits of madre de agua as a chicken feed.	1.50 ± 1.29	VL
I have heard about using copra meal as an alternative feed option for poultry.	4.52 ± 1.20	VH
I am informed about the availability of corn as a supplemental feed for backyard chickens.	4.91 ± 0.52	VH
I know that alternative feeds, such as rice bran, can be included in chicken feeding programs.	4.76 ± 0.83	VH
I am aware that ipil-ipil leaves are a viable feed ingredient for chickens.	2.69 ± 1.71	N
I have read or heard about the use of sweet potato vines as a chicken feed.	3.51 ± 1.73	H
I am aware that kangkong (water spinach) can be incorporated into the diet of poultry.	3.70 ± 1.67	H
I know about the potential use of banana as an alternative feed for chickens.	3.58 ± 1.73	H
I am informed about the potential benefits of malunggay (moringa) leaves as a feed supplement for backyard chickens.	2.83 ± 1.82	N
	3.37 ± 1.39	N

Note: M = mean, ±SD = Standard deviation, QD = Qualitative description, Scale: 1.00 – 1.79 = Very low(VL), 1.80 – 2.59 = Low (L), 2.60 – 3.39 = Neutral (N), 3.40 – 4.19 = High (H), 4.20 – 5.00 = Very High (VH)

Table 7 reveals that among backyard poultry farmers, the adoption of locally available alternative feed ingredients is generally very low (M = 2.5 ± 1.27). Only corn (M = 4.36, VH), copra meal (M = 3.65, H), and rice bran (M = 3.61, H) showed high to very high usage, likely due to their availability, familiarity, and proven effectiveness as energy and protein sources (Devi & Diarra, 2019). This is supported by Stein et al. (2015), who show that these ingredients are commonly utilized as alternative feed ingredients for pigs, with specific inclusion recommendations. In contrast, Azolla (M = 1.11), Ipil-ipil (M = 1.25), Ipil-ipil (M = 1.82), sweet potato vines (M = 2.34), kangkong (M = 2.50), banana peelings (M = 2.34), and malunggay (M = 1.97) were poorly adopted. The poor adoption of these alternative feeds can be attributed to several interrelated factors. Despite their proven nutritional benefits and potential to reduce feed costs, many farmers lack sufficient knowledge, processing techniques, and infrastructure, limiting utilization (Muleta, 2024; Vidya et al., 2022; Thakur et al., 2024). Moreover, inconsistent supply and availability hinder the reliable inclusion of these feeds, exacerbated by inadequate extension services and support systems (Ravindran, 2010; Muleta, 2024; Sebatta et al., 2018).

Table 7. Farmer's Level of Adoption of the Different Locally Available Alternative Feed Ingredients

Items	Mean ± SD	QD
I regularly incorporate Azolla into the feeding program for my backyard chickens.	1.11 ± 0.59	VL
Madre de agua is a staple feed in my poultry feeding practices.	1.25 ± 0.92	VL
Copra meal is a regular component of the feed mix I provide to my chickens.	3.65 ± 1.51	H
Corn is consistently used as a supplemental feed for my backyard chickens.	4.36 ± 1.24	VH
Rice bran has been fully integrated into my feeding strategy for poultry.	3.61 ± 1.61	H
Ipil-ipil leaves are regularly included in the diet of my chickens.	1.82 ± 1.31	L
Sweet potato vines are a common feed ingredient in my chicken feeding regimen.	2.34 ± 1.38	L
Kangkong is a consistent part of the diet I provide to my backyard chickens.	2.50 ± 1.40	L
Banana peelings are now a standard feed supplement in my poultry feeding practices.	2.34 ± 1.37	L
Malunggay leaves are a key component of the diet I provide to my chickens.	1.97 ± 1.38	L
	2.5 ± 1.27	VL

Note: M = mean, SD = Standard deviation, QD = Qualitative description, Scale: 1.00 – 1.79 = Very low(VL), 1.80 – 2.59 = Low (L), 2.60 – 3.39 = Neutral (N), 3.40 – 4.19 = High (H), 4.20 – 5.00 = Very High (VH)

Table 8 presents the challenges the backyard poultry farmers encounter in Zamboanga del Sur regarding the use of locally available alternative feed ingredients. The overall mean score was 2.56 (SD = 1.37), corresponding to low perceived challenges. The most prominent challenge reported was the lack of available training and resources on alternative feeds, with a mean score of 4.62 (SD = 1.04). The result was also supported by Devi & Diarra (2019) and Yirgu et al. (2017), who state the lack of training and resources in alternative feeds for poultry farmers in the South Pacific region and southern Ethiopia. Additionally, the time-consuming nature of feed preparation (M = 3.54, SD = 1.55) was rated high, aligning with findings that alternative feeds is a challenge for poultry farmers due to the time-consuming nature of feed preparation (Devi & Diarra, 2019; Abbas, 2023). Other challenges, including storage issues (M = 2.04), unpredictable nutritional value (M = 2.46), and difficulty in balancing feed types (M = 2.91), fell under neutral levels. Interestingly, availability, cost, and productivity concerns were perceived as minor obstacles with very low to low scores, with similar results seen in the study of Shafa et al. (2024) on BSF as an alternative protein source feedstuff. The results suggest that logistical and economic factors were not the primary barriers in this context (Olugtegbe & Ojuoluwa, 2022)

Table 8. Farmer's Level of Challenges on the Different Locally Available Alternative Feed Ingredients for Poultry

Items	Mean ± SD	QD
The availability of alternative feeds in my area is inconsistent.	1.79 ± 1.42	VL
Preparing alternative feeds for my chickens is time-consuming.	3.54 ± 1.55	H
Storage of alternative feeds poses a challenge due to limited space or spoilage.	2.04 ± 1.34	L
The cost of producing or sourcing alternative feeds is	1.46 ± 1.00	L

higher than expected.		
I lack proper knowledge of effectively integrating alternative feeds into my chickens' diet.	2.80 ± 1.48	L
The nutritional value of alternative feeds is unpredictable, making it hard to rely on them solely.	2.46 ± 1.53	L
There are limited resources or training available to learn about using alternative feeds.	4.62 ± 1.04	VH
When fed alternative feeds, my chickens are less productive (e.g., slower growth and lower egg production).	1.94 ± 1.26	L
Finding alternative feeds in bulk is difficult, making it hard to use them consistently.	1.93 ± 1.38	L
I face challenges in balancing the use of alternative feeds with commercial feeds.	2.91 ± 1.69	N
	2.56 ± 1.37	L

Note: M = mean, SD = Standard deviation, QD = Qualitative description, Scale: 1.00 – 1.79 = Very low(VL), 1.80 – 2.59 = Low (L), 2.60 – 3.39 = Neutral (N), 3.40 – 4.19 = High (H), 4.20 – 5.00 = Very High (VH)

Table 9 presents the Pearson correlation between farmers' adoption, knowledge, and challenges regarding alternative feed ingredients. A strong positive correlation between adoption and knowledge (r = .595, p < .01) suggests that as farmers become more informed about alternative feed options, their level of adoption significantly increases. This aligns with findings from Nurulin (2019), who emphasized knowledge as a crucial factor in the innovation-decision process, and access to agricultural knowledge through effective knowledge management practices increases the adoption of innovations (Mtega et al., 2019; Slijper et al., 2023). Conversely, a moderate negative correlation was between perceived challenges and adoption (r = –.545, p < .001), implying that increased barriers, such as limited knowledge and supply, lack of training, or insufficient labor, discourage adoption. This aligns with previous studies showing that technical and logistical barriers hinder the use of non-conventional feed resources (Muleta, 2024; Andhale, 2024).

Table 9. Correlation of Farmers' Adoption Between Farmers' Knowledge and Challenges on Alternative Feed Ingredients

	FLA	FLK	FLC
FLA	1	.595**	-.545**
		.000	.000
FLK	.595**	1	-.442**
	.000		.000
FLC	-.545**	-.442**	1
	.000	.000	

Note: Cell contains r (above) and p-values (below); ** correlation is significant at the 0.01 level; r is interpreted using Cohen's Scale: -0.3 to +0.3 = weak, -0.5 to -0.3 or +0.3 to +0.5 = moderate relationship, -0.9 to -0.5 or +0.5 to +0.9 = strong relationship, -1.0 to - 0.9 or +0.9 to +1.0 = very Strong relationship.

Table 10 shows that farmers' knowledge and perceived challenges significantly predict the adoption of locally available alternative feed ingredients for backyard poultry. The model explains approximately 45.3% of the variance in adoption behavior (R^2 = .453, Adjusted R^2 = .447), and the regression was statistically significant, F (2, 182) = 75.37, p < .001. This indicates that the predictors reliably account for a substantial portion of the variability in FLA. The regression results revealed that FLK was a significant positive predictor of adoption (β = .44, B = 0.420, p < .001), implying that higher awareness and understanding of alternative feed resources increase the likelihood of their use. This finding supports the work of Peshin et al. (2019), who emphasized knowledge as a critical driver in the diffusion and adoption of sustainable agricultural practices. Likewise, Opokue et al. (2023) observed that increased awareness of insect protein contributed to its adoption as an alternative poultry feed. Conversely, FLC had a significant negative effect on adoption (β = –.35, B = –0.353, p < .001), suggesting that greater challenges such as limited access to supply and information, lack of technical training, insufficient labor, and concerns about feed quality impede the integration of alternative feed ingredients. These barriers echo findings by Ates et al. (2018) and Balehegn et al. (2020), who noted that resource limitations and technical gaps often hinder the uptake of non-conventional feedstuffs in smallholder systems.

Table 10. Multiple Regression Predicting Farmers' Adoption from Knowledge and Challenges

Predictor	B	SE B	β	*t*	*p*
Farmers Adoption	1.98	0.31	—	6.49	.001**
Farmers Knowledge	0.42	0.06	.44	7.19	.001**
Farmers Challenges	-0.35	0.06	-.35	-5.74	.001**
Note. $R = .673$, $R^2 = .453$, Adjusted $R^2 = .447$, $F(2, 182) = 75.37$, significant at $p < .01$ level.					

The resulting regression equation is, $FLA = 1.979 + 0.420\ (FLK) - 0.353\ (FLC)$

This equation further illustrates that every one-unit increase in knowledge results in a 0.420-unit increase in adoption, while each one-unit rise in challenges leads to a 0.353-unit decrease in adoption, holding all else constant.

Conclusion and Recommendation

Backyard poultry farmers in Zamboanga del Sur are primarily adults aged 26-45, with a slight predominance of women, limited formal education, and a majority being married. Most farmers manage small plots of land (one hectare or less) and small flock sizes, the majority raising native chickens. Backyard farmers often rely on a mixture of commercial and locally available alternative feeds, preferring cost-effective strategies. Commonly used alternative feed ingredients include corn, copra meal, and rice bran. However, the use of less familiar but highly nutritious options like Azolla and Madre de Agua remains low, largely due to limited knowledge and challenges. Thus, this points to a need for targeted education and training programs to promote the benefits and cultivation of alternative feed resources such as Azolla and Madre de Agua.

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