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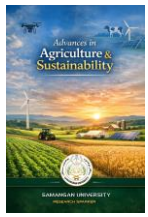

An Investigation of the Challenges Farmers Face in Accessing Local Markets for Agricultural Products: A Case Study of Hissa-e-Duwum Behsud

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agricultural marketing, farmers, local markets, Hissa-e-Duwum Behsud, transportation costs.

Research/Review Article

Abstract

This study was conducted to investigate the challenges farmers face in accessing local markets for agricultural products in the Hissa-e-Duwum Behsud district. The research employed a descriptive-exploratory methodology. Data were collected via a questionnaire administered to 384 farmers. The validity of the questionnaire was confirmed by the advising professor and subject matter experts, and its reliability was measured with a Cronbach's alpha coefficient of 0.72, indicating appropriate instrument reliability. The results revealed that the most significant barriers include high transportation costs, long distances to markets, insufficient information about prices and market demand, a lack of capital, and product storage difficulties. Exploratory factor analysis identified five principal factors: 1) Transportation Challenges to Market, 2) Marketing and Government Support Challenges, 3) Legal and Security Challenges, 4) Climatic and Market Volatility Challenges, and 5) Competition and Raw Material Supply Problems. Together, these factors explain 61.20% of the total variance. Based on the findings, the most critical solutions to mitigate these problems are developing roads and transportation means, providing marketing training, enhancing government support, and constructing adequate storage facilities.

1. Introduction

Access to local markets is one of the most critical factors affecting the economic success of farmers in many rural areas. In this context, challenges in accessing local markets for Afghan farmers, particularly in underserved regions like Hissa-e-Duwum Behsud, can directly impact their income and livelihoods (Hashemi, 2022). Inadequate transportation infrastructure, difficulties in marketing products, and a lack of sufficient price information are among the factors that prevent farmers from accessing profitable markets. Therefore, examining these problems and challenges in the Hissa-e-Duwum Behsud district can help identify strategies to improve farmers' conditions.

Despite producing quality agricultural products, farmers in rural Afghanistan generally suffer from numerous challenges in accessing local markets. In Hissa-e-Duwum Behsud, these problems are primarily due to a lack of adequate transportation facilities, the dispersion of markets, and insufficient market information for farmers. Compounding socio-economic issues, such as price fluctuations and the presence of intermediaries, place farmers in an even more difficult position (Rahimi, 2020).

This research aims to analyze these challenges and propose solutions to improve the economic conditions of farmers in this locality. A precise identification and analysis of these problems can inform the development of policies to facilitate access to local markets and enhance farmers' living standards.

A major challenge for farmers is the shortage of suitable transportation infrastructure, specifically the absence of proper roads for transporting products to local markets. This problem can lead to significant product spoilage and reduced farmer income (Rahimi, 2019). Furthermore, the lack of proper storage systems means farmers in this area face a shortage of standard warehouses for preserving their products. This results in product deterioration and reduced quality by the time they are sold in the market (Hashemi, 2024).

Farmers in Hissa-e-Duwum Behsud encounter several problems in accessing local markets to sell their agricultural products. These include inadequate infrastructure, poor roads, and lack of access to suitable transportation, which make transferring goods to markets difficult. Insufficient storage facilities, including a lack of cold storage and proper warehouses, cause agricultural products to spoil quickly, preventing farmers from delivering their products to market in a timely manner. A shortage of

transportation means leaves many farmers without access to appropriate vehicles, hindering their ability to bring products to market on time and at a reasonable cost. The absence of organized and structured markets in the region complicates the sales process for farmers, often forcing them to sell their products to intermediaries at lower prices (Hosseini, 2022). Numerous studies have been conducted in this area. A review of some of them follows.

Nozari and colleagues (2016), in their study, analyzed the spatial-spatial structure of rural weekly markets based on the rural hierarchy system in Aq Qala County. Their results indicated that, according to various models (minimum distance, population, and service weighting), rural weekly markets established in village centers have greater alignment with rural centers and clusters. Due to government attention and population size, these markets have a larger functional radius. Conversely, markets formed in ordinary villages and aligned with rural domain centers have weaker performance due to smaller populations.

Sultanabadi and Momeni (2017), in their research, raised the question of what impact the establishment of weekly markets has on the income and employment of villagers. Consequently, the issues of establishing and developing local markets, in order of priority identified in their analysis, are: 1) resolving capital issues; 2) managing human resources, especially youth in the rural area; 3) ensuring a sense of security regarding the purchase of products for the consumer market; 4) issues related to transportation and the development of communication and transit infrastructure, and ensuring fair and appropriate distribution of raw materials and products in the Sultanabad rural area.

Anand and Sahu (2017) argued that rural development is an absolute and urgent necessity in India, as approximately 70% of India's population lives in rural areas. It is noteworthy that development is limited by the extent of the market. According to their findings, in recent years, rural weekly markets have assumed significant importance because overall economic growth has led to a marked increase in the purchasing power of rural communities. In this context, the buyer purchases the goods, and the seller sells them according to the laws of supply and demand.

2. Research Methodology

This study employs a descriptive and analytical research design. Data collection combines two methods: a library (documentary) review and a survey (field-based questionnaire). The research was conducted in 2024, with the fieldwork taking place in villages of Hissa-e-Duwum Behsud District, Maidan Wardak Province, Afghanistan, which constitutes the main study area of this research.

2.1 Statistical Population

The statistical population for this study comprises all agricultural farmers (*dehaqin*) in Hissa-e-Duwum Behsud, Maidan Wardak province.

2.2 Sample Size and Sampling Method

The sample size was calculated using the Cochran formula. The number of selected samples is 384.

$$= \frac{(Z\alpha/2)^2 pq}{e2} = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2} = 384$$

Where:

- **p** = Estimated proportion of the population possessing the attribute (0.5)
- **q** = Estimated proportion of the population not possessing the attribute (0.5)
- **Zα/2** = Confidence coefficient (1.96 for 95% confidence level)
- **n** = Sample size
- **e** = Margin of error (0.05 or 5%)

The sampling method used in this research is random sampling. This method was chosen because the statistical population is undefined, and samples were selected randomly for investigation and analysis.

2.3 Data Analysis Method

After data collection, inferential analysis using Exploratory Factor Analysis (EFA) was conducted via the SPSS software. The descriptive statistics section, including frequency, standard deviation, and mean, was also analyzed using SPSS.

2.4 Reliability of the Research Instrument

The reliability of the research instrument is one of the most common methods for measuring the trustworthiness and consistency of questionnaires. The decision-making criterion is as follows: if Cronbach's alpha coefficient is less than 0.5, it is unacceptable, and the questionnaire lacks acceptable reliability, requiring the researcher to address the issue. A coefficient between 0.5 and 0.6 is considered weak; between 0.6 and 0.7 is acceptable; and anything above 0.7 up to 1 indicates excellent reliability, and the researcher can confidently use the questionnaire in their study. As shown in Table 1, the Cronbach's alpha coefficient for the research questionnaire is 0.715. According to the aforementioned explanation, the prepared questionnaire is acceptable for this research and can be used by the researcher.

Table 1. Cronbach's Alpha Coefficient of the Questionnaire

Questionnaire	Variables	Cronbach's Alpha
Farmers	19	0.72

Source: Research Findings

3. Results

3.1 Descriptive Findings

Table 2 shows the respondents' ages.

Table 2. Age of Respondents

Age Group	Frequency	Percentage	Cumulative Percentage
Less than 20	36	9.4	9.4
20 to 30	122	31.8	41.2
31 to 40	114	29.7	70.9
41 to 50	77	20.1	91
Over 50	35	9.1	100
Total	384	100	100
Mean: 2.87	SD: 1.11	Min: 18	Max: 90

Source: Research Findings

Table 2 shows that the highest frequency belongs to the "20 to 30 years" age group with 122 individuals (31.8%). Following this, the "31 to 40 years" group with 114 individuals (29.7%) ranks second. In total, 61.50% of individuals are in age groups below 40 years. Age groups above 40 comprise a smaller percentage of the population, with the "Over 50 years" group having the lowest frequency of 35 individuals (9.1%). This distribution indicates a greater concentration of the population in younger age brackets.

Table 3. Frequency Distribution of Farmers by Education Level

Education Level	Frequency	Percentage

Illiterate	84	21.9
Basic Literacy (Reading/Writing)	145	37.8
12th Grade Graduate	98	25.5
14th Grade Graduate	31	8.1
Bachelor's Degree	26	6.8
Total	384	100

Source: Research Findings

As observed in Table 3, the largest number of respondents (37.8%) have a basic literacy level (reading and writing), while 21.9% are illiterate, 25.5% are 12th-grade graduates, 8.1% are 14th-grade graduates, and only 6.8% hold a Bachelor's degree. This distribution indicates that the general literacy level of the farmers is relatively low, highlighting a perceived need for further agricultural training.

3.2 Inferential Findings

To determine the factor loadings of components related to variables influencing the identification of strategies to address market access challenges, Exploratory Factor Analysis (EFA) was employed. This method summarized a large number of indicators into meaningful factors. To test the suitability of the data for factor analysis, specifically for proposing solutions, Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy were used. The significance of Bartlett's Test at the 99% confidence level and an adequate KMO value indicate sufficient correlation and appropriateness of the variables for conducting factor analysis, as shown in Table 4.

Table 4. KMO and Bartlett's Test

Data Set Analyzed	KMO Value	Bartlett's Test Value	Degrees of Freedom	Significance Level
Factors Affecting Access to Local Markets	0.776	9175.9	171	0.001

Source: Research Findings

The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.776, indicating that the data are suitable for factor analysis. Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 9175.90$, df = 171, $p < 0.001$), confirming that sufficient correlations exist among the variables to proceed with Exploratory Factor Analysis. The first key finding from this model is presented in the Total Variance Explained table (Table 5). This table first reveals the number of latent factors extracted based on the Eigenvalue ≥1 criterion and then specifies their individual and cumulative explanatory power relative to the observed variables.

Table 5. Factors Affecting the Distribution of Observed Variables

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance	Cum. %	Total	Variance	Cum %	Total	Variance	Cum %
1	4.584	24.129	24.129	4.584	24.129	24.129	3.192	16.798	16.798
2	1.867	9.828	33.956	1.867	9.828	33.956	2.552	13.433	30.231
3	1.437	7.564	41.521	1.437	7.564	41.521	1.86	9.788	40.019
4	1.357	7.144	48.665	1.357	7.144	48.665	1.598	8.409	48.428
5	1.269	6.68	55.345	1.269	6.68	55.345	1.314	6.916	55.345
6	0.983	5.173	60.518						
7	0.936	4.927	65.444						
8	0.859	4.522	69.967						
9	0.772	4.066	74.032						
10	0.722	3.802	77.834						
11	0.681	3.584	81.418						
12	0.64	3.369	84.787						
13	0.571	3.004	87.79						
14	0.512	2.692	90.482						
15	0.449	2.365	92.848						
16	0.437	2.301	95.149						
17	0.379	1.994	97.144						
18	0.313	1.645	98.789						
19	0.23	1.211	100						

Source: Research Findings

Table 5 shows that the factor analysis of challenges to farmers' access to local markets in Hissa-e-Duwum Behsud identified 19 components. Five principal factors were extracted (Eigenvalue ≥1), which together explain **61.20%** of the total variance. These five factors are detailed in Tables 6 and 7, which present the rotated factor loadings and their explained variance. The initial six components listed in the unrotated solution (e.g., "High transportation costs") were consolidated into five thematic factors after rotation.

Table 6. Rotated Factor Loadings for Challenges in Farmers' Access to Local Markets

Factor	Variables Classified within each Factor	Factor Loading
Transportation and Market Access Challenges	Long distance to local markets	0.689
	High transportation costs	0.666
	Lack of sufficient information about market demand	0.659
	Unawareness of market prices and current rates	0.645
	Lack of capital to cover market entry costs	0.634
	Absence of proper infrastructure (e.g., poor roads)	0.593
	Problems related to product storage and preservation	0.525
Marketing and Government Support Challenges	Lack of proper packaging facilities for agricultural products	0.764
	Shortage of training programs to improve farmers' sales and marketing skills	0.759

	Absence of governmental or organizational support for market entry	0.686
	Price fluctuations and market instability	0.646
Legal and Security Challenges	Complex legal restrictions	0.792
	Security issues on trade routes	0.67
	High tariffs and taxes on products	-0.662
Climatic and Market Volatility Challenges	Impact of climate change and adverse weather conditions on market access	0.646
	Lack of consistent customers and uncertainty of continuous sales	0.574
Competition and Input Supply Problems	Intense competition with large producers and wholesale traders	0.869
	Problems in supplying necessary raw materials/inputs	-0.571

Source: Research Findings

Table 7. Eigenvalues and Explained Variance for Factors after Rotation

No.	Factor Name	Eigenvalue	% of Variance Explained	Cumulative %
1	Transportation and Market Access Challenges	3.30	18.36	18.36
2	Marketing and Government Support Challenges	2.72	15.20	33.56
3	Legal and Security Challenges	1.93	10.71	44.27
4	Climatic and Market Volatility Challenges	1.53	8.72	52.98
5	Competition and Input Supply Problems	1.12	6.21	61.20

Source: Research Findings

The factor analysis reveals that five principal factors effectively categorize the 19 identified challenges. The factor with the highest explanatory power is Transportation and Market Access Challenges (18.36% of variance), which encompasses core logistical barriers such as distance, transport costs, infrastructure, capital, and storage. The second most significant factor is Marketing and Government Support Challenges (15.20% of variance), highlighting deficiencies in packaging, training, institutional support, and price stability. Other critical factors include Legal and Security Challenges (10.71%), Climatic and Market Volatility Challenges (8.72%), and Competition and Input Supply Problems (6.21%).

These analyses provide a clearer understanding of the problem structure and identify the most influential factors. They demonstrate how each factor and its constituent variables can impact farmers' economic decisions and their ability to access local markets. A detailed examination of these factors enables the formulation of targeted solutions to improve market access.

4. Discussion

This study identified five principal structural challenges hindering farmer access to local markets in Hissa-e-Duwum Behsud: Transportation and Market Access, Marketing and Government Support, Legal and Security, Climatic and Market Volatility, and Competition and Input Supply. These findings can be meaningfully contextualized within the broader academic discourse on rural agricultural marketing in developing economies.

First, the primacy of Transportation and Market Access Challenges as the most explanatory factor (18.36% of the total variance explained) strongly aligns with established geographical and infrastructural theories of rural development. This result corroborates the findings of Nozari et al. (2016), who emphasized that the functional radius and effectiveness of rural markets are fundamentally constrained by physical distance and connectivity. Our study extends this understanding by quantitatively linking distance not only to a simple geographic barrier but to a compounded logistical challenge encompassing high costs, poor infrastructure, and capital shortages. This synthesis suggests that in regions like Behsud, the "tyranny of distance" is not merely a spatial issue but a critical economic bottleneck that depresses farmgate prices and limits market participation.

Second, the significant role of Marketing and Government Support Challenges underscores a critical institutional and capacity gap. This aligns with the work of Zheng et al. (2018), who identified weak entrepreneurial training and a lack of effective trading methods as key constraints. Our findings confirm that farmers' difficulties extend beyond production to the post-harvest and commercial spheres, specifically in packaging, market intelligence, and navigating price volatility. The high factor loadings on the absence of training and institutional support highlight a systemic failure in the agricultural support ecosystem. This suggests that interventions focused solely on improving yields or infrastructure,

without parallel investments in human capital (marketing skills) and institutional frameworks (support systems), are likely to yield suboptimal results for improving market integration and farmer incomes.

Furthermore, the emergence of Legal and Security Challenges and Climatic and Market Volatility Challenges as distinct factors adds necessary nuance to the conventional understanding of market access. While much literature focuses on economics and infrastructure, our analysis reveals that the transactional environment is equally critical. Security concerns on trade routes and complex regulations impose a hidden "risk tax" on farmers, discouraging market engagement. Similarly, climate vulnerability directly translates into market vulnerability, creating a cycle of uncertainty that discourages investment and planning. These factors are often exacerbated in post-conflict and climate-stressed regions like Afghanistan, indicating that market access models from more stable environments may not be directly applicable without significant adaptation.

Finally, the Competition and Input Supply Problems factor highlights the interconnectedness of input and output markets. The intense competition with larger actors suggests a market structure where smallholders are price-takers with limited bargaining power, a common theme in agricultural economics. Concurrent problems in sourcing quality inputs (e.g., seeds, fertilizer) further trap farmers in a cycle of low productivity and weak market positioning. This aligns with broader critiques of integrated value chains, where smallholders often occupy the most vulnerable nodes.

In conclusion, this study moves beyond a simple list of barriers to reveal the *interconnected structure* of market access challenges in rural Afghanistan. The factor analysis demonstrates that these challenges are not isolated but form cohesive clusters around logistics, knowledge/institutions, security, environment, and market structure. Therefore, effective policy must be equally integrated. For instance, building a road (addressing Transportation) must be coupled with establishing collection centers with storage (addressing Market Volatility) and providing training on quality standards and negotiation (addressing Marketing and Competition). Our findings provide a clear, evidence-based framework for prioritizing such multi-pronged interventions to holistically improve farmer livelihoods and market integration.

5. Conclusion

This study aimed to construct a diagnostic framework for understanding the constraints on local market access for farmers in Hissa-e-Duwum Behsud, Afghanistan. The findings illuminate that the barriers to market integration are not a collection of isolated issues but rather a tightly interconnected system of challenges spanning logistics, knowledge, institutions, security, and the market environment itself. This structural complexity reveals why fragmented, single-focus interventions have historically yielded limited success.

The primary implication of this research is the necessity for a paradigm shift in policy and development strategy. The interconnected nature of the identified challenges demands an equally integrated and systemic response. Interventions must be designed and implemented as synergistic packages rather than standalone projects. For instance, infrastructure development must be consciously coupled with capacity-building initiatives and institutional reforms to be effective. A new road achieves its full economic potential only when farmers have the knowledge to leverage it for better market timing, the storage facilities to preserve their goods, and a secure, predictable regulatory environment in which to operate.

Therefore, the path forward requires moving beyond traditional sectoral approaches toward holistic, multi-stakeholder programs. Development agencies, government bodies, and community leaders must coordinate to create interventions that simultaneously address the physical, human, and institutional capital gaps. This means embedding training and market information systems within infrastructure projects, aligning agricultural extension services with security and legal advocacy, and fostering cooperative models that empower farmers against market volatility and intense competition.

Ultimately, this study provides a clear, evidence-based rationale for adopting a systems-thinking approach to rural agricultural development. By recognizing and addressing the syndemic of barriers faced by farmers, stakeholders can design more resilient and effective strategies. Such an approach is essential for breaking the cycle of constraint, enhancing livelihoods, and fostering sustainable and equitable economic growth in rural Afghanistan and similar contexts worldwide.

6. Statements and Declarations

6.1 Competing interests

The author(s) declare no competing interests.

6.2 Data availability

Data will be available upon request.

6.3 Ethics Approval

Not Applicable

6.4 Consent to participate/Consent to publish

Not Applicable

6.5 Funding

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