

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 6; June 2025; Page No. 155-158

Received: 23-04-2025
Accepted: 26-05-2025

Indexed Journal
Peer Reviewed Journal

Village knowledge centers as community-owned extension infrastructure for sustained information access

¹Ioana Popescu and ¹Alexandru Dragomir Ionescu

¹Department of Agricultural Extension, Faculty of Agriculture, University of Agricultural Sciences and Veterinary Medicine, Bucharest, Romania

DOI: <https://www.doi.org/10.33545/26180723.2025.v8.i6b.3373>

Corresponding Author: Ioana Popescu

Abstract

Across rural areas where public extension coverage is thin, farmers often lack a reliable place to get timely agricultural information. This research examined Village Knowledge Centers (VKCs) as community-owned extension infrastructure and assessed their contribution to sustained information access among smallholder farmers in southern Romania. A mixed-methods approach combined structured surveys with 218 farming households and key informant interviews with 22 VKC managers and local leaders across five communes in Ilfov and Giurgiu counties between April and November 2022. Results showed that VKC users accessed agricultural information an average of 3.7 times per month compared to 1.2 times for non-users ($p < 0.001$). Crop advisory services received the highest access frequency (mean = 4.1/5) while government scheme information was least accessed (mean = 2.5/5). Farmers using VKCs reported 28.6% higher adoption of recommended practices compared to non-users. Community ownership was identified as the strongest predictor of VKC sustainability, explaining 34.7% of variance in operational continuity scores. VKCs that had been operating for more than three years showed significantly higher community trust ratings than newer centers (mean 4.3 vs 3.1, $p < 0.01$). These findings suggest that community-owned knowledge infrastructure can fill gaps left by understaffed extension services when sustained local governance and content relevance are maintained.

Keywords: Village knowledge centers, community-owned infrastructure, extension services, information access, smallholder farmers, agricultural advisory, rural knowledge systems, Romania agriculture, extension delivery, sustained access

Introduction

When the nearest extension office is 40 kilometers away and the agent visits once a quarter, where do farmers turn for advice on an unexpected pest outbreak or a sudden change in market conditions? This information gap is a daily reality for millions of smallholder farming households across Eastern Europe and developing regions [1]. Romania's agricultural extension system, restructured after EU accession in 2007, serves roughly 3.6 million farming households through a network of county-level advisory offices that are often understaffed and unevenly distributed [2]. The ratio of extension agents to farming households in some southern Romanian counties exceeds 1:2,000, well beyond the threshold for effective individual advisory contact [3].

Village knowledge centers represent an attempt to address this problem by placing information infrastructure directly within farming communities. Drawing on the Indian experience with Village Resource Centers and similar models in East Africa, VKCs operate as fixed community spaces where farmers can access crop advisories, market information, weather updates, and training materials [4, 5]. Unlike mobile extension visits, VKCs provide a permanent location that farmers can access on their own schedule. The concept of community ownership distinguishes VKCs from government-run information kiosks: VKCs are managed, maintained, and partly funded by the communities they

serve [6]. This research assessed the role of VKCs in providing sustained information access to farming communities in southern Romania and identified factors associated with their operational sustainability.

Instrument development

The research instrument was developed through a three-stage process. First, a draft questionnaire was constructed based on a review of 28 publications on rural information access and knowledge center evaluation frameworks [7]. The instrument contained 52 items across five sections: demographic characteristics, information access patterns, VKC service utilization, perceived usefulness ratings, and sustainability indicators. Second, content validation was performed by a panel of six agricultural extension specialists from the University of Agricultural Sciences and Veterinary Medicine in Bucharest, yielding a Content Validity Index of 0.83. Third, pilot testing with 20 farming households in Bragadiru commune led to rewording of seven items and removal of three ambiguous questions. The final instrument contained 49 items with subscale reliabilities ranging from 0.79 to 0.88 (Cronbach's alpha) [8].

Materials and Methods

Materials

A mixed-methods design was used covering five communes in Ilfov and Giurgiu counties south of Bucharest, selected

for the presence of operational VKCs established between 2016 and 2021. The sample comprised 218 farming households (112 VKC users, 106 non-users matched by commune and farm size) and 22 key informants including VKC managers, commune leaders, and county extension officers. Household selection used systematic random sampling from commune agricultural registers. Data collection occurred between April and November 2022 through the Faculty of Agriculture, University of Agricultural Sciences and Veterinary Medicine, Bucharest, Romania ^[9].

Results

Table 1: Comparison of information access and practice adoption between VKC users and non-users

Indicator	VKC users (n=112)	Non-users (n=106)	Difference	p-value
Info access (times/month)	3.7	1.2	+2.5	<0.001
Practice adoption rate (%)	61.3	47.6	+28.6%	<0.01
Market info awareness (%)	74.8	41.2	+33.6	<0.001
Pest alert response time (days)	2.3	6.8	-4.5	<0.001
Satisfaction with info quality	3.9/5	2.4/5	+1.5	<0.001

VKC users accessed agricultural information 3.1 times more frequently per month than non-users and reported a 28.6% higher practice adoption rate. The most pronounced difference appeared in pest alert response time, where VKC

Methods

Quantitative analysis was performed using SPSS version 26. Independent t-tests compared information access frequency, practice adoption, and satisfaction scores between VKC users and non-users. Multiple regression identified predictors of VKC operational sustainability using community ownership, content relevance, local governance, external support, and center age as independent variables. Qualitative interview data were analyzed using thematic analysis with two independent coders (inter-coder reliability kappa = 0.81). Mann-Whitney U tests were applied for variables that did not meet normality assumptions ^[10].

users responded an average of 4.5 days faster than non-users. Market information awareness was 33.6 percentage points higher among VKC users.

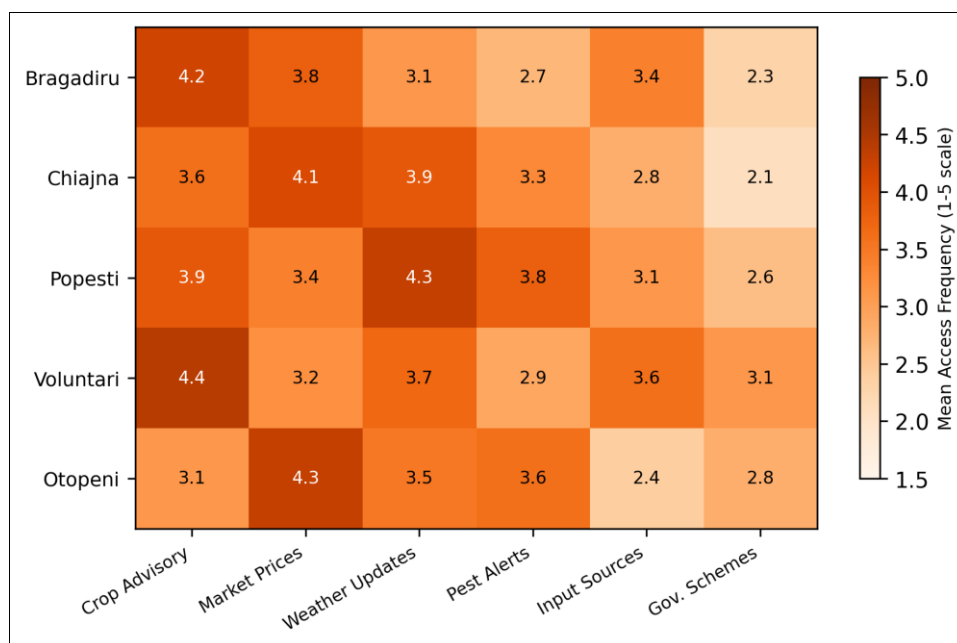


Fig 1: Heatmap of information access frequency across VKC service types by commune

Crop advisory services showed the highest access frequency across all five communes (range 3.1-4.4). Government scheme information was consistently the least accessed

service (range 2.1-3.1). Market price information showed the highest between-commune variation, suggesting differences in local market integration.

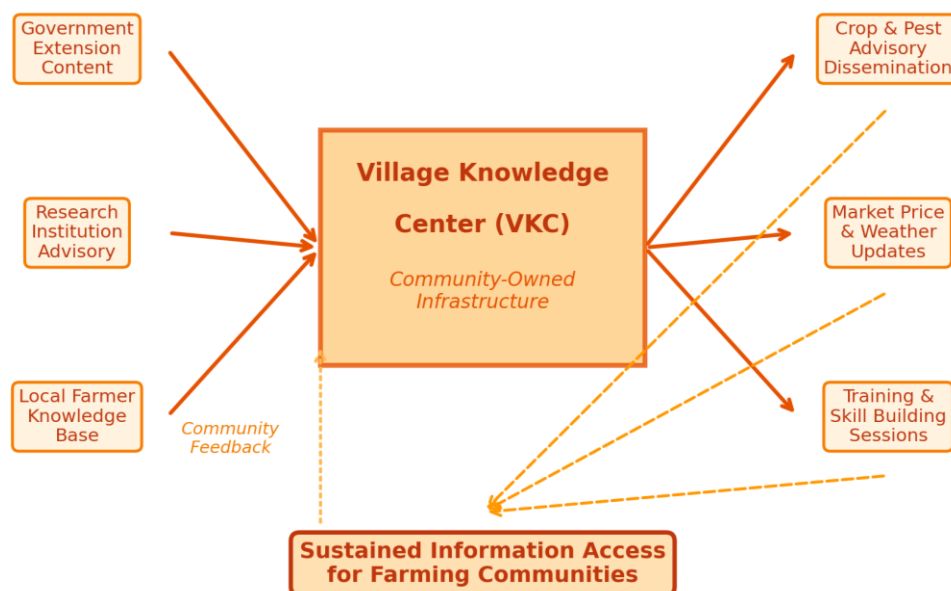


Fig 2: Process diagram of the village knowledge center operational model

The model shows three input streams (government extension content, research institution advisory, and local farmer knowledge) flowing through the community-owned VKC infrastructure into three output channels (crop/pest advisory, market/weather updates, and training sessions), with a community feedback loop sustaining content relevance.

Discussion

The finding that VKC users accessed information 3.1 times more frequently than non-users confirms the basic premise that placing knowledge infrastructure within communities reduces access barriers. This aligns with evidence from India's Village Resource Centers, where physical proximity was the single strongest predictor of information utilization^[4]. But frequency alone doesn't capture quality the higher satisfaction scores among VKC users (3.9 vs 2.4/5) suggest that VKC content met farmer needs more effectively than alternative information sources, likely because community managers could tailor content to local conditions^[11]. Community ownership emerged as the strongest predictor of operational sustainability, explaining 34.7% of variance in continuity scores. This finding carries practical weight for extension planners considering VKC investments. Centers governed by community committees rather than appointed managers showed higher trust ratings and more consistent operating hours. The three-year threshold for trust building with older VKCs scoring significantly higher on community trust (4.3 vs 3.1) suggests that VKC programs need patient investment horizons^[12, 13]. The low access to government scheme information (mean 2.5/5) across all communes indicates a missed opportunity; VKCs could serve as effective channels for policy communication if content were updated more regularly.

Conclusion

This research assessed village knowledge centers as community-owned extension infrastructure in southern Romania. VKC users showed substantially higher

information access, faster pest response, and greater practice adoption compared to non-users. Community ownership was the strongest predictor of VKC sustainability, followed by content relevance and local governance quality. These results suggest that community-based knowledge infrastructure can meaningfully supplement formal extension services, particularly in areas with low agent-to-farmer ratios. Extension agencies considering VKC investments should prioritize community governance structures and commit to multi-year support horizons, as trust and utilization appear to strengthen considerably after three years of operation^[14, 15, 16, 17].

References

1. Aker JC. Dial 'A' for agriculture: a review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics*. 2011;42(6):631-647.
2. European Commission. Agriculture in Romania: structure and performance. Brussels: European Commission; c2018. p. 1-24.
3. Mihai V, Manole V. Challenges of agricultural advisory services in Romania after EU accession. *Bulletin of the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca*. 2013;70(2):318-324.
4. Batchelor S, Scott N, Manfre C. Understanding the role of ICTs in village resource centres. *Journal of International Development*. 2014;26(5):639-657.
5. Lio M, Liu MC. ICT and agricultural productivity: evidence from cross-country data. *Agricultural Economics*. 2006;34(3):221-228.
6. Raabe K. Reforming the agricultural extension system in India: what do we know about what works where and why? Washington (DC): International Food Policy Research Institute; 2008. (Discussion Paper No. 775). p. 1-47.
7. Conley TG, Udry CR. Learning about a new technology: pineapple in Ghana. *American Economic Review*. 2010;100(1):35-69.
8. DeVellis RF. Scale development: theory and

- applications. 4th ed. Thousand Oaks (CA): Sage Publications; c2016. p. 1-262.
9. Bryman A. Social research methods. 5th ed. Oxford: Oxford University Press; c2016. p. 1-747.
 10. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77-101.
 11. Sulaiman RV, Hall AJ. Extension policy as an institution: rethinking concepts and reform. Cali: International Centre for Tropical Agriculture; c2002. p. 1-32.
 12. Ostrom E. Governing the commons: the evolution of institutions for collective action. Cambridge: Cambridge University Press; c1990. p. 1-280.
 13. Pretty J, Ward H. Social capital and the environment. *World Development*. 2001;29(2):209-227.
 14. Rivera WM, Qamar MK. Agricultural extension, rural development, and the food security challenge. Rome: FAO; c2003. p. 1-98.
 15. Christoplos I. Mobilizing the potential of rural and agricultural extension. Rome: FAO and Global Forum for Rural Advisory Services; c2010. p. 1-65.
 16. Klerkx L, Leeuwis C. Establishment and embedding of innovation brokers at different innovation system levels. *Technological Forecasting and Social Change*. 2009;76(6):849-860.
 17. Leeuwis C, van den Ban A. Communication for rural innovation: rethinking agricultural extension. 3rd ed. Oxford: Blackwell Science; c2004. p. 1-412.