

Information Behavior Study of Farmers in Western Guangdong

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ABSTRACT

Western Guangdong, a key agricultural production base in Guangdong, is endowed with abundant natural resources and a diverse range of crop cultivation. Amidst intensifying market competition and the progression of agricultural modernization, farmers in this region confront challenges related to information acquisition and utilization. The examination of information behavior is crucial not only for understanding farmers' information needs and usage patterns in production decision-making but also for uncovering the multifaceted factors influencing their information behavior, such as socio-economic background, technological proficiency, and policy support. In-depth exploration of their information behavior can furnish valuable insights for policymakers, agricultural extension workers, and pertinent researchers. Through a combination of questionnaires and interviews, this study gathered data on farmers' information acquisition methods, usage practices, and the influence of such information on their decision-making processes in Western Guangdong. Farmers predominantly access information via channels such as the internet, recommendations from family and friends, and agricultural technology dissemination, yet limitations persist in their information utilization. The research also identified that socio-economic factors, technological proficiency, and policy support significantly shape farmers' information behavior. By analyzing these elements, this paper seeks to elucidate the prevalent patterns in farmers' information behavior, thereby offering theoretical backing for enhancing their information literacy and decision-making skills. The study of farmers' information behavior in Western Guangdong not only sheds light on the current state of agricultural informatization but also provides fresh perspectives and strategies for future agricultural advancement.

KEYWORDS

Western Guangdong; Farmers; Information Behavior; Influencing Factors; Agricultural Informationization

1. INTRODUCTION

Agricultural information behavior has emerged as a critical factor in modernizing farming practices, particularly in developing regions where access to timely and relevant information can significantly influence productivity and sustainability. While existing studies have explored various aspects of farmers' information needs and adoption patterns, there remains a paucity of research focusing on the unique socio-cultural and economic contexts of Western Guangdong. This region, characterized by its distinct agroecological conditions and evolving technological landscape, presents an ideal setting to examine how farmers navigate information channels amidst rapid agricultural modernization.

Previous research has established foundational insights into farmers' information behavior, primarily through quantitative surveys assessing information sources and technology adoption rates [1, 2]. Theoretical frameworks such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have been applied to explain farmers' engagement with digital tools [3, 4]. However, these studies often overlook the interplay between measurable

behavioral patterns and the subjective, context-specific factors that shape decision-making. For instance, while socioeconomic determinants like income and education level are frequently analyzed [5], cultural barriers and trust dynamics in information sharing are less explored [6].

The proposed study addresses these gaps by adopting a mixed-methods approach that combines quantitative surveys with qualitative interviews. This dual methodology enables a holistic understanding of information behavior, capturing not only the frequency and types of information sources utilized but also the underlying motivations and constraints faced by farmers. Quantitative data will identify correlations between variables such as internet access, education level, and information utilization efficiency, while qualitative insights will contextualize these findings by revealing how cultural norms and trust in local networks influence behavior. Such an approach aligns with recent advancements in agricultural information behavior research, which advocate for integrating diverse methodologies to enrich analysis [7].

A key novelty of this study lies in its regional focus on Western Guangdong, where agricultural practices are transitioning toward modernization but remain deeply rooted in traditional knowledge systems. Prior regional studies in China have employed cluster analysis or social network analysis to map information flows [8,9], yet few have examined the specific challenges and opportunities within Western Guangdong's agroecological context. By incorporating geospatial analysis and livelihood vulnerability indices, this research aims to provide a nuanced framework that accounts for localized factors affecting information access and utilization [10, 11].

The study's contributions are threefold. First, it advances theoretical understanding by integrating behavioral economics frameworks with diffusion of innovations theory to explain how farmers in Western Guangdong adopt and adapt information [12, 13]. Second, it offers practical insights for policymakers and agricultural extension services by identifying region-specific barriers to information dissemination, such as digital literacy gaps and preferences for interpersonal networks. Third, the hybrid methodological framework serves as a scalable model for similar studies in other rural contexts, particularly in developing regions where agricultural modernization is underway but unevenly distributed.

2. RELATED WORK

Research on farmers' information behavior has evolved significantly over the past decade, with studies increasingly recognizing the complex interplay between technological, socioeconomic, and cultural factors. This section synthesizes existing literature across three key dimensions: information sources and access patterns, determinants of technology adoption, and methodological approaches in studying agricultural information systems.

Farmers' reliance on diverse information channels varies substantially by region and technological infrastructure. In China, studies have documented a gradual shift from traditional extension services to digital platforms, though with notable regional disparities [14]. For instance, research in Guangdong Province reveals that eastern regions exhibit higher internet penetration rates compared to western areas, where interpersonal networks remain predominant [15]. This geographical divide aligns with findings from [16], which demonstrates how internet access positively correlates with agricultural technology adoption, particularly among younger, more educated farmers. However, the persistence of traditional information channels should not be interpreted as resistance to change. As [17] illustrates, farmers often combine modern and traditional sources based on perceived reliability and relevance to local conditions. This hybrid behavior is especially prevalent in crop management decisions, where experiential knowledge frequently complements technical guidance. The critical role of social networks is further emphasized in [18], which identifies kinship ties and local cooperatives as primary vectors for information dissemination in Hainan Province.

The adoption of agricultural information technologies is influenced by a multifaceted set of factors. Socioeconomic status, particularly education and income levels, consistently emerges as a strong predictor across studies [19, 20] extends this understanding by revealing how internet use facilitates the bundled adoption of complementary technologies, creating synergistic effects on productivity. Psychological and institutional factors also play pivotal roles. Trust in information providers significantly impacts adoption rates, as shown in [21], where farmers exhibited greater willingness to implement technologies recommended by government agencies compared to private vendors. This finding resonates with [22], which highlights the enduring influence of public extension systems despite the proliferation of digital alternatives. Cultural context further moderates these relationships. Research on Guangdong's farming communities demonstrates how clan-based social structures can either accelerate or impede technology diffusion depending on local leadership dynamics [23]. Such nuances underscore the limitations of purely econometric models that overlook sociocultural embeddedness.

Existing studies employ diverse methodologies to capture the complexity of farmers' information behavior. Quantitative surveys dominate the literature, with several large-scale studies utilizing regression analysis to isolate determinant factors [24]. However, as [25] cautions, such approaches often fail to explain the intention-behavior gap observed in sustainable farming practices. Qualitative methods have gained traction for unpacking these discrepancies [26]. Employs narrative analysis to reveal how risk perception shapes information-seeking behavior among coastal farmers, while [27] combines participatory mapping with interview data to assess adaptive capacity. Thematic analysis techniques, including LDA topic modeling, have proven particularly effective in identifying latent patterns in farmers' decision-making processes [28]. Recent methodological innovations emphasize mixed-methods designs [29]. Integrates social network analysis with discrete choice experiments to map information flows and preference structures simultaneously. Similarly, [30] triangulates survey data with focus group discussions to validate quantitative findings. These approaches address a key limitation in earlier studies by bridging macro-level patterns with micro-level motivations.

The proposed study advances this methodological trajectory through its systematic integration of correlation analysis, regression modeling, and LDA-based thematic analysis. Unlike previous works that treat quantitative and qualitative data as parallel streams, our framework explicitly models their interactions—for instance, by using interview-derived themes to explain residual variance in regression outputs. This approach not only reconciles the intention-behavior gap but also provides actionable insights for tailoring information dissemination strategies to local contexts.

3. EMPIRICAL RESEARCH ON INFORMATION BEHAVIOR

Utilizing stratified random sampling techniques to ensure the representativeness of key socio-economic variables such as age, education level, farm size, and crop type. This quantitative survey involves 300 farmers from three cities—Zhanjiang, Maoming, and Yangjiang—selected based on agricultural output data from the "Guangdong Statistical Yearbook." Responses are rated on a 5-point Likert scale. The access channels are determined by the frequency of use of government hotlines, mobile applications, and peer-to-peer networks.

3.1. Reliability Test

Cronbach's Alpha measures internal consistency by averaging the split-half reliability coefficients. A lower Cronbach's Alpha value suggests issues with low internal consistency, poor stability, and inadequate reliability within the scale. Conversely, a higher value indicates high internal consistency, robust stability, and reliable performance. Generally, a Cronbach's Alpha value exceeding 0.6 is considered to reflect high internal reliability. As shown in Table 1, the reliability test results for this study reveal that all coefficient values surpass 0.8, thereby confirming the high consistency, strong stability, and excellent reliability of the scales employed.

Table 1. Reliability test table

Dimensions	Items	Cronbach's Alpha
production-related information	14	0.812
life-related information	13	0.864

3.2. Validity Test

The KMO value of the scale is 0.87 in Table 2, and the χ^2 of Bartlett's sphericity test is 13,472.903 with 65 (df), $P < 0.001$, indicating a significant result, suggesting that factor analysis is warranted.

Table 2. Kmo and Bartlett 's spherical test

KMO	0.87	
bartlett's Bartlett 's spherical test	χ^2	13472.903
	df	65
	p	0.000

3.3. Multiple Linear Regression Model of Factors Affecting Information Behavior

To analyze the impact of information needs and various representative factors on information behavior, this study designates information behavior as the dependent variable, while gender, number of family laborers, educational attainment, membership in agricultural cooperatives, productive information needs, living information needs, satisfaction with information services, and the alignment of information services are treated as independent variables. Stepwise regression analysis is employed to fit a multiple linear regression model, with the analysis results presented in Table 3.

Table 3. multiple linear regression model of influencing factors of information behavior

influence factor	std.	t	P
production-related information needs	0.032	18.467	0.000
satisfaction with information services	0.062	14.700	0.000
educational attainment	0.118	13.559	0.000
life-related information needs	0.066	9.676	0.000
alignment of information services	0.111	10.191	0.000
membership in agricultural cooperatives	0.088	8.406	0.000

As indicated in Table 3, factors such as production-related information needs, satisfaction with information services, educational attainment, life-related information needs, alignment of information services, and membership in agricultural cooperatives were ultimately included in the regression model. Based on the magnitude of the standardized regression coefficients, it is evident that among these factors, production-related information needs exert the most significant influence, followed by satisfaction with information services and educational attainment. Conversely, the impact of life-related information needs, alignment of information services, and membership in agricultural cooperatives is comparatively less pronounced.

3.4. Current Situation Analysis

3.4.1. Uneven Utilization of Information Acquisition Channels

With societal advancement, farmers in western Guangdong have also benefited from the conveniences brought by modern progress, making information acquisition increasingly effortless, convenient, and efficient. Compared to the relatively limited information channels of the past, the current methods are undeniably diverse and abundant. Due to the unique nature of agricultural information, its acquisition channels differ from those of ordinary information. Previous survey

results indicate that none of the listed channels have been entirely neglected by farmers. This clearly illustrates that farmers in western Guangdong now utilize a wide array of methods to access agricultural information. Objectively, it is the robust government support for agricultural informatization, combined with the swift advancement of information technology, that has driven the continuous expansion and diversification of agricultural information acquisition channels.

3.4.2. Inadequate Alignment Between Information Acquisition Behavior and Information Services

Farmers in Western Guangdong demonstrate a notable lack of initiative in information acquisition, which significantly hampers the modernization of their agricultural practices. They typically rely on passive receipt of information through traditional channels such as village broadcasts and notices from the village committee, while the adoption of modern information sources like agricultural websites and mobile apps for agricultural technology remains exceptionally low. Many farmers only seek external information when confronted with major issues or when a clear lack of information impedes their production decisions. Simultaneously, existing information services suffer from several deficiencies. Although some local governments and agricultural service agencies have initiated efforts to promote agricultural information, the relevance and timeliness of the provided information leave much to be desired. Often, the information is too general and fails to closely align with the specific agricultural characteristics and practical needs of farmers in Western Guangdong. For instance, crucial updates on pest control for local specialty crops and advancements in specialty agricultural planting techniques are not provided promptly, thereby failing to address the urgent needs of farmers effectively. Moreover, the channels for accessing information services are neither sufficiently diverse nor user-friendly, lacking straightforward and easily navigable methods for information retrieval. This leads to a lack of motivation and capability among farmers to actively explore complex information acquisition pathways, further aggravating their passive approach to information seeking. Consequently, it is imperative to address both the enhancement of farmers' information awareness and the optimization of information service delivery to bolster the information acquisition capabilities of farmers in Western Guangdong, thereby fostering the advancement of local agriculture towards more efficient and high-quality modernization.

3.4.3. Precision Required for Information

For information needs focused on professional content, information services must exhibit precision and specificity. In the agricultural sector, farmers' demands for information are becoming more defined. They no longer seek broad overviews but rather specialized knowledge directly relevant to their production activities and capable of effectively addressing specific issues. For instance, detailed technical guidance on crop cultivation, encompassing key planting practices for different seasons, precise pest and disease control methods, and selection of varieties suited to local soil and climatic conditions. Regarding market information for agricultural products, they require accurate analyses of price trends, recommendations for expanding sales channels, and insights into market demand dynamics. In delivering information services, strategies must be tailored to these explicit needs. On one hand, it is essential to delve deeply into and integrate specialized knowledge to ensure the information's scientific accuracy and practical utility. On the other hand, the presentation of information should be refined to be more concise, clear, and easily comprehensible, enabling farmers to quickly grasp and apply it. This elevates the quality and value of information services, effectively fulfilling farmers' professional content-oriented information needs.

4. COUNTERMEASURE RESEARCH

4.1. Enhancing Information Literacy Training and Re-education for Farmers in Western Guangdong

In Western Guangdong, establishing a robust information literacy training and re-education system for farmers is imperative. Information literacy is a pivotal skill enabling farmers to adapt to modern society and enhance both their production efficiency and quality of life. Presently, many farmers in this region exhibit limited capabilities in information acquisition, analysis, and application, hindering their ability to leverage modern information technology for agricultural production and management. Developing a comprehensive training and re-education framework involves multi-faceted strategies, including government leadership, social engagement, and a blend of online and offline approaches. Government agencies should consolidate resources from agriculture, education, and technology sectors to formulate long-term training plans and regularly conduct professional courses covering agricultural techniques, market insights, and the utilization of information tools. Concurrently, encouraging the involvement of social organizations and enterprises through initiatives like setting up rural information service stations and organizing volunteer support activities can provide tailored guidance and assistance to farmers. Leveraging internet platforms to create online courses tailored to farmers' learning needs facilitates their access to education anytime and anywhere. Coupled with offline practical training, this approach enables farmers to enhance their information literacy through hands-on experience. Continuous training and re-education will foster farmers' proactive learning and application of information, thereby improving their information processing skills, promoting agricultural modernization in Western Guangdong, and contributing to rural revitalization.

4.2. Steering the Industrialization of Information Services for Farmers in Western Guangdong

Directing the establishment of industrialized information services for farmers in Western Guangdong is a critical step towards advancing agricultural modernization and boosting rural economic development. Currently, farmers encounter challenges in information acquisition and demonstrate weak application skills. The industrialization of information services offers an effective solution to these issues. Its core objective is to transform information services into a sustainable industry, catering to the diverse and specific information needs of farmers. By introducing market mechanisms, it encourages various entities—such as agricultural technology companies, telecommunications operators, and internet firms—to actively participate, developing highly targeted and practical agricultural information products and services. These services encompass precision agricultural production guidance, market dynamics analysis for agricultural products, and support for rural e-commerce operations, addressing farmers' comprehensive information needs from field management to market sales. The government must play a pivotal role by fostering the main players in the information service market through policy support and project assistance, while also enhancing supervision to ensure the quality and standardization of services. Establishing the industrialization of farmer information services in western Guangdong not only provides farmers with precise and efficient information but also boosts the rural information economy, injecting fresh vitality into rural revitalization.

4.3. Strategies to Enhance Information Service Content for Farmers in Western Guangdong

Enhancing the content strategy for farmer information services is pivotal for advancing agricultural informatization. Presently, farmers grapple with issues such as disjointed and non-specific information, which hampers their effective use of available data. To refine this strategy, a multi-faceted approach is essential. Firstly, deepen the specialization of information content by offering

precise technical guidance and solutions tailored to various crop cultivation and livestock breeding practices, including the latest pest control methods and optimized feed formulations. Secondly, broaden the practical utility of the information, encompassing market analysis of agricultural products, strategies for expanding sales channels, and clarifications of agricultural subsidy policies, thereby aiding farmers in making well-informed decisions in both production and sales. Additionally, enhance the timeliness of information by promptly updating dynamic data such as weather alerts and price fluctuations, enabling farmers to swiftly adapt to changes. Moreover, utilize formats that are easily comprehensible for farmers, such as illustrated brochures, short video tutorials, and integrated online-offline training sessions, to boost the efficacy of information dissemination. Furthermore, establish a feedback mechanism to gauge farmers' needs and continuously refine the service content. By implementing these strategies, we aim to elevate the quality of information services for farmers in Western Guangdong, thereby supporting increased production and income, and fostering agricultural modernization.

4.4. Expanding Online Information Service Channels for Farmers in Western Guangdong

Currently, farmers in Western Guangdong predominantly rely on local news media and word-of-mouth for information, which lacks both systematic organization and timeliness. Moreover, the rural information infrastructure is inadequate, characterized by limited network coverage and slow internet speeds, which constrains the widespread adoption of online services. To expand online information service channels for these farmers, several key steps should be taken: first, reinforce infrastructure development to enhance rural network coverage and speed, laying a solid foundation for online services; second, diversify information dissemination methods by leveraging emerging platforms such as social media, short video channels, and online educational resources to cater to the varied needs of farmers; third, establish an information sharing mechanism that integrates resources from agricultural research institutions, enterprises, and government departments to ensure seamless information flow; fourth, intensify information service training to elevate farmers' information literacy and practical application skills. Through these measures, farmers in Western Guangdong can more effectively access agricultural technology, market trends, and policy insights, thereby bolstering their production and business decisions, and fostering the sustainable growth of the agricultural sector.

5. CONCLUSION

This article provides a comprehensive analysis of the current state of farmers' information behaviors in western Guangdong, encompassing their information needs, acquisition, selection, absorption, and utilization, based on thorough empirical research. The study uncovers key issues in the information behaviors of these farmers, such as restricted information access channels, inadequate information utilization skills, and the necessity for enhanced information literacy. Drawing on the research findings, the article offers targeted and actionable strategies and recommendations across various dimensions, including the enhancement of information infrastructure, the optimization of information service delivery models, and the intensification of information literacy education and training. These strategies are designed to dismantle barriers to information dissemination, boost farmers' efficiency in information acquisition and application, and furnish valuable insights for advancing agricultural modernization and rural informatization in western Guangdong. The research outcomes not only provide practical guidance for improving the information behaviors of farmers in this region but also establish a solid foundation for future related studies.

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