SSRG International Journal of Communication and Media Science
ISSN: 2349 – 641X / https://doi:10.14445/2349641X/IJCMS-V12I2P103

Volume 12 Issue 2, 24-33, May-Aug 2025

Original Article

Use of Social Media as a Source of Pestalotiopsis Information by Rubber Farmers in Cotabato Province

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Received: 03 May 2025 Revised: 04 June 2025 Accepted: 23 June 2025 Published: 11 July 2025

Abstract - *This study investigated the utilization of social media platforms by rubber farmers in Cotabato Province as a source of information regarding Pestalotiopsis Leaf Fall Disease. Employing a qualitative research design, the study focused on understanding farmers' motivations, platform preferences, information-seeking behaviors, and perceived benefits and challenges. Ten rubber farmers, actively involved in the rubber industry and social media use for disease information, participated through focus group discussions, key informant interviews, and in-depth interviews. Thematic analysis using Colaizzi's phenomenological approach revealed that Facebook is the predominant platform, with farmers primarily using social media for urgent information gathering and accessing educational videos, driven by the disease's immediate impact. While social media offers rapid access and visual aids, challenges such as limited internet access, data costs, digital literacy gaps, and credibility issues were significant barriers. The study highlights the crucial role of official sources like the Municipal Agriculture Office (OMAG) and the Department of Agriculture (DA) in verifying information. Findings underscore social media's potential as a vital tool for agricultural knowledge dissemination during crises, offering insights for targeted information campaigns and policy development in rural agricultural communities.*

Keywords *- Social Media, Pestalotiopsis, Rubber Farmers, Information Seeking, Technology Acceptance Model, Uses and Gratifications Theory, Cotabato Province.*

1. Introduction

The Philippine rubber industry is a significant contributor to the national economy, providing livelihoods to a substantial population. However, it faces various challenges, including fluctuating global prices, climate change impacts, and disease proliferation (Oktavia et al., 2017). Diseases, in particular, pose a substantial threat by reducing latex quality and causing economic losses (Oktavia et al., 2017).

In September 2022, *Neopestalotiopsis clavispora* caused a novel leaf spot disease in rubber plantations in Zamboanga Sibugay, Philippines (Solpot et al., 2023). Subsequently, in July 2023, Cotabato Province, a key rubber-producing region, experienced a significant outbreak of Pestalotiopsis Leaf Fall Disease, affecting approximately 28 hectares with infection rates ranging from 20% to 80%. During agricultural disease outbreaks, timely and relevant information is paramount for effective management and mitigation (Adejo & Opeyemi, 2015). Farmers often rely on informal knowledge networks due to limitations in accessing in-depth scientific information (Sherren & Darnhofer, 2011; Beltran et al., 2016). In this context, social media platforms have emerged as powerful tools for disseminating agricultural knowledge, particularly in rural areas of developing countries (Beltran et al., 2016, 2017). Social media's rapid information-sharing capabilities empower farmers, facilitating digital communication and data gathering for acquiring essential techniques and strategies (Beltran et al., 2017). Platforms like Facebook, Twitter, Instagram, and YouTube serve as virtual hubs for information sharing, awareness, and collaboration within the agricultural community (Jabeen & Gul, 2020). The increasing adoption of social media among agricultural stakeholders in the Philippines, with 86.75 million active users reported in January 2024 (Kemp, 2024), underscores its potential as a vital information source.

While the Department of Agriculture - Philippine Rubber Research Institute (DA-PRRI) traditionally used print, radio, and television, social media's interactive and widespread reach offers a significant opportunity for strategic communication, especially during crises (Zamora & Losada, 2019; Viel & Palenchar, 2016). However, challenges like misinformation necessitate addressing the need for reliable sources (Kapoor et al., 2018). This study aimed to determine the use of social media by rubber farmers in Cotabato Province during the Pestalotiopsis Leaf Fall Disease outbreak, recognizing social media's growing influence and potential to facilitate communication and solutions within the agricultural sector (Burbi & Rose, 2018).

2. Theoretical Framework

This study employed the Technology Acceptance Model (TAM) and the Uses and Gratifications Theory (UGT) to investigate the use of social media as a source of Pestalotiopsis information by rubber farmers.

Developed by Fred Davis (1989), TAM posits that a user's behavioral intention to use technology is determined by perceived usefulness (belief that using the system enhances job performance) and perceived ease of use (belief that using the system is free of effort). In this context, perceived usefulness refers to farmers' belief that social media helps them access Pestalotiopsis information for better disease management, while perceived ease of use relates to their perception of the simplicity of navigating social media for this purpose.

Additionally, this study drew upon the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) for a comprehensive understanding of factors influencing social media acceptance and usage among farmers.

Furthermore, UGT, pioneered by Elihu Katz, Jay Blumler, and colleagues (Katz et al., 1973), was used to analyze the specific motivations and benefits rubber farmers derive from using social media for agricultural information. UGT assumes active media users intentionally seek specific content to satisfy needs. In this research, UGT helps understand why farmers turn to social media for Pestalotiopsis information, exploring gratifications such as acquiring timely advice, connecting with fellow farmers, or accessing visual aids for disease identification (Bright et al., 20XX, pp. 148-155).

By integrating TAM and UGT, the study provides a comprehensive understanding of how rubber farmers utilize social media for Pestalotiopsis information, exploring their motivations, behaviors, and the resulting outcomes in accessing agricultural knowledge through digital platforms.

3. Research Objectives and Contribution

This research seeks to uncover valuable insights applicable to information sharing, disease management, and broader social media use in agriculture. Specifically, the study aims to:

1. Identify the prevalent social media platforms among rubber farmers in Cotabato Province.
2. Analyze the roles of these platforms in information exchange, particularly concerning Pestalotiopsis Leaf Fall Disease.
3. Investigate how these platforms facilitate knowledge dissemination about the disease.
4. Explore how farmers incorporate this information into their practices.

Globally, this study contributes to understanding social media's role in agricultural knowledge dissemination, offering insights for other farming communities. Socially, it enables targeted information outreach on Pestalotiopsis, improving knowledge flow and potentially connecting farmers with experts like the Philippine Rubber Research Institute for collaborative disease management, safeguarding livelihoods. This research benefits rubber farmers through tailored information campaigns and potential online support networks. Policymakers and agricultural organizations can utilize findings to develop digital literacy programs and effective online information strategies. Mass communication programs allow students to gain real-world case studies to develop relevant communication skills. Future researchers receive a framework for investigating social media in diverse agricultural contexts.

4. Method

This section outlines the research design, the researcher's role, participants, data collection techniques, data analysis, trustworthiness, and ethical considerations.

4.1. Study Participants

The participants were ten rubber farmers (male and female) in Cotabato Province, actively involved in the rubber industry for at least three years, with experience using social media platforms for Pestalotiopsis Leaf Fall Disease information. Participants were recruited in collaboration with the Department of Agriculture (DA), the Philippine Rubber Research Institute (PRRI), and local government units. Inclusion criteria required active engagement in rubber farming, social media use for Pestalotiopsis information, and farms affected by the disease. Exclusion criteria included non-active rubber farmers, those not using social media for Pestalotiopsis information, or those whose farms were unaffected.

Ethical considerations ensured participants' right to withdraw and data exclusion, upholding data privacy and voluntary participation.

4.2. Materials and Instruments

The primary instrument was a semi-structured interview guide, developed to explore farmers' experiences with social media for Pestalotiopsis information. It contained open-ended questions on motivations, platform preferences, information-seeking behaviors, and perceived benefits and challenges. The guide was validated by four University of Mindanao professors (outline defense panelists) and an external research validator for relevance, clarity, and comprehensiveness. Approved by the University of Mindanao Ethics Review Committee (UMERC), Certification Number UMERC-2023-136, data collection commenced. Face-to-face interviews utilized digital recording devices and field notes for accuracy and contextual information.

4.3. Design and Procedure

Data collection involved qualitative methods: one focus group discussion (FGD) with five farmers, three key informant interviews (KII), and two in-depth interviews (IDI). All discussions and interviews were audio-recorded and transcribed verbatim. Responses in the local vernacular were professionally translated into English. Thematic analysis identified recurring themes and patterns.

4.4. Ethical Considerations

Strict ethical considerations protected participants' rights. Informed consent was obtained, explaining purpose, procedures, risks, and benefits. Voluntary participation and the right to withdraw were assured. Confidentiality and anonymity were maintained, with data handled sensitively and stored securely (Alahmad et al., 2021; Emanuel et al., 2000). The research is committed to avoiding harm or exploitation, prioritizing participants' well-being and the broader community (Farrell, 2019). Adherence to the University of Mindanao ethical guidelines and the Declaration of Helsinki guided the research (Alahmad et al., 2021). Ethical approval was secured from UMERC (UMERC-2023-136) prior to data collection.

4.5. Data Analysis

The collected data was analyzed using a descriptive method for organization, analysis, and interpretation. Following transcription, thematic analysis was conducted using Colaizzi's phenomenological approach (Colaizzi, 1978). This systematic seven-step method involved: 1) transcribing interviews; 2) reading for general sense; 3) extracting significant statements; 4) formulating meanings; 5) organizing meanings into themes; 6) developing an exhaustive description; and 7) participant validation. This approach aimed to identify essential themes and meanings embedded in farmers' experiences with social media for Pestalotiopsis information, providing rigorous insights into their perspectives, behaviors, and challenges.

5. Results and Discussion

The thematic analysis revealed several key themes related to social media use for Pestalotiopsis information among rubber farmers in Cotabato Province, discussed below in relation to relevant literature and theories.

5.1. Social Media Platforms used by the Farmers from the Pestalotiopsis-Affected Rubber-Producing Town in Cotabato Province

5.1.1. Social Media Usage Patterns

The study found that Facebook is the predominant social media platform used by rubber farmers in Makilala, Cotabato. Farmers consistently dedicate 2-3 hours daily, primarily during evening hours (6 PM – 8 PM), to social media engagement. This aligns with the Technology Acceptance Model (TAM) (Davis, 1989), where Facebook's perceived ease of use likely contributes to its widespread adoption. Farmers' accessibility and familiarity with Facebook further reinforce its adoption. As RF-02 stated, "I checked Facebook every night after dinner. It's when I have to see what's happening with the rubber industry and the OMAG's posts", while RF-05 added, "I use Facebook mostly. I don't know how to use other social media sites. I have a lot of friends there."

However, limitations in internet access (signal strength) were identified as significant barriers, echoing concerns about infrastructure and access influencing technology adoption in rural areas (e.g., Beltran et al., 2017). RF8 commented on this, stating, "Sometimes, the signal is so bad, I can't even open Facebook. It's frustrating when you need to know something quickly."

5.1.2. Purpose of Social Media Use

Farmers primarily utilize social media for information gathering, particularly concerning agricultural technologies and disease management, with YouTube and Facebook being key platforms for accessing educational videos. This aligns with the "information seeking" gratification within the Uses and Gratifications Theory (Katz et al., 1973), suggesting that farmers actively seek out specific content to fulfill their informational needs related to their occupation. The preference for visual learning through videos also indicates a desire for easily understandable and practical information (Sherren & Darnhofer, 2011).

RF1 highlighted this, stating, "I watched YouTube videos about rubber tapping and disease control. It's easier to understand when you see it done." Similarly, RF3 mentioned, "If I want to learn about the Pestalotiopsis or how to spray chemicals to prevent the disease, I search on Facebook or YouTube. There are always people sharing good tips." RF7 added, "I use social media to see the new technology that the DA is promoting."

5.1.3. Social Media Communities and Networks

The establishment of a dedicated Facebook group by the Municipal Agriculture Office (OMAG) has fostered a sense of community and facilitated information sharing among rubber farmers. This highlights the "social interaction" and "community affiliation" gratifications described in the Uses and Gratifications Theory (Katz et al., 1973), where users seek media to connect with others who share similar interests and challenges. The perceived reliability of the OMAG's online platform also underscores the importance of source credibility in information adoption (Metzger et al., 2003).

Farmers highly value online platforms, specifically the OMAG's Facebook Group and group chats, as reliable and helpful resources for information, problem-solving, and community support related to rubber farming. RF4 emphasized this, saying, "The OMAG Facebook group is very helpful. I can ask questions and get answers from other

farmers and the agricultural technicians." RF6 reinforced the communal aspect: "We all share the same problems, and we help each other." RF9 confirmed the group's trustworthiness: "The OMAG group is the most trusted source of information about rubber farming."

5.1.4. Perceived Effectiveness of Social Media for Agricultural Information

Farmers appreciate the timeliness and wide scope of information available on social media, which can be linked to the "instrumental utility" aspect of perceived usefulness in TAM (Davis, 1989). However, they also recognize the need for critical evaluation and rely on official sources like OMAG and DA for verified information. This highlights a tension between the perceived benefits of speed and accessibility and the need for information quality and reliability, a challenge often associated with user-generated content on social media (Kapoor et al., 2018).

RF10 highlighted the speed, stating, "Social media is fast. I can get information about a disease outbreak within minutes." RF2 acknowledged the need for caution: "At first, I believed everything I saw on social media. But, then, the OMAG told us to be careful and only trust official sources." RF1 emphasized selective trust: "Social Media is effective because it is fast, but I only believe the posts that came from the OMAG and DA."

5.1.5. Barriers to Social Media Use for Agriculture

Limited internet access, data costs, digital literacy challenges, and language barriers significantly hinder farmers' optimal utilization of social media. These factors directly impact the "perceived ease of use" construct in TAM (Davis, 1989). If farmers perceive social media as difficult to access or use due to these barriers, their adoption and utilization will be limited (Venkatesh et al., 2003). The recognition of social media's speed despite these barriers suggests a strong perceived usefulness when access is available.

RF8 articulated the connectivity issue: "The signal is very weak in my area. I have to go to a higher place to get internet." RF5 noted the financial burden: "Data is expensive. I can't afford to subscribe for a long time on Facebook." Language was a concern for RF7: "Sometimes, the posts are in English, and I don't understand. I wish they would use our local language." Despite these, RF3 still acknowledged the speed: "Social Media is faster than waiting for the OMAG to visit our area."

5.1.6. Pestalotiopsis Leaf Fall Disease Information Access

Farmers are actively using social media to obtain information about Pestalotiopsis, driven by the urgency and impact of the disease. This reinforces the "information seeking" gratification in the Uses and Gratifications Theory (Katz et al., 1973), where a specific need (disease management) motivates media use. The role of family members in assisting with platform navigation highlights the importance of social influence and support networks in technology adoption, a key component of the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

All rubber farmers reported learning about the disease, its effects, and potential solutions through online platforms, often with the help of family members. RF4 shared, "My son showed me how to join the OMAG group, and how to watch videos. I don't know how to use the search bar, but he taught me." RF1 highlighted a direct impact: "I learned about how to spray for Pestalotiopsis from a video on Facebook. It saved my rubber plantation." RF6 described using social media to understand the disease's impact: "I used social media to see what the effects of Pestalotia are on my rubber trees." RF4 also mentioned, "We are using social media to know how to lessen the infestation of Pestalotiopsis." Moreover, the urgency of the disease outbreak has accelerated the adoption of social media as a vital information resource, as stated by RF-2: "Because of the disease, we are forced to learn how to use social media."

5.2. Influence of Social Media Platforms on Understanding Pestalotiopsis Leaf Fall Disease

5.2.1. Social Media: Rapid Access

The rapid dissemination offered by platforms like Facebook allows rubber farmers to receive timely information about Pestalotiopsis outbreaks and management practices, which is crucial for effective intervention. This aligns with the perceived usefulness of social media in TAM (Davis, 1989) as it provides immediate access to needed information. RF3 and RF4 recognized social media as a powerful and rapid tool for disseminating urgent information. RF3 stated, "Facebook is fast. When the disease is spreading, someone posts, and we all know right away."

5.2.2. Visuals and Understanding

Social media's visual and interactive capabilities, such as photos, videos, and comments sections, enhance farmers' understanding of Pestalotiopsis symptoms and management practices, aligning with the "information seeking" and "social interaction" gratifications in the Uses and Gratifications Theory (Katz et al., 1973). Visual aids can effectively convey complex information in an accessible manner (Sherren & Darnhofer, 2011). Farmers utilize visual content for disease identification and learning techniques and appreciate interactive aspects.

RF-3 shared, "The pictures on Facebook helped me recognized the disease in my own trees." RF-2 noted, "I saw a video about how to spray the trees, and it was very helpful. But I still asked my neighbor, who is an experienced farmer, to confirm." RF-4 highlighted the interactive benefits: "The comments section is helpful. We can ask questions and share our experience."

5.2.3. Social Media Influences Decisions

Social media increasingly influences farmers' decision-making regarding Pestalotiopsis management, demonstrating its perceived usefulness (TAM). As stated by RF3, "I saw on Facebook that spraying with a certain fungicide is effective, so I tried it."

5.2.4. Credibility Issues

The open nature of social media platforms also poses a significant challenge regarding information credibility and reliability. This concern resonates with studies on misinformation spread through social media (Vosoughi et al., 2018), highlighting the need for users to exercise caution and critical discernment. RF4 acknowledged this, stating, "It's a mix. Good information, bad information. You have to be careful."

5.2.5. Digital Literacy Gaps Impact Information Use

The study revealed that varying levels of digital literacy among farmers significantly impact their ability to utilize social media for Pestalotiopsis information effectively. This disparity underscores the importance of "computer self-efficacy," a component influencing perceived ease of use in TAM (Davis, 1989), and highlights the digital divide prevalent in many rural agricultural communities (van Dijk, 2020). The reliance on external help from younger generations also points to the role of social influence within family units in technology adoption (UTAUT). RF5 shared, "My son helps me with Facebook. Without him, I wouldn't know what to do." RF-1 observed, "Some farmers are tech-savvy, others are not. This causes unequal knowledge."

5.2.6. Source Credibility Drives Information Trust

The credibility of the information source is a critical factor influencing farmers' trust in Pestalotiopsis information found on social media. Farmers prioritize information from verified sources such as the OMAG, PRRI, and DA. This aligns with research on information credibility (Metzger et al., 2003). RF-5 stated, "If the information comes from the agriculture office's Facebook page, I believe it. If it's from someone, I don't know, I'm not so sure." RF-2 added, "I trust the posts from the OMAG, PRRI and DA because they have experts." RF-1 emphasized, "We need to know who is giving the advice. That is very important."

5.2.7. Social Media Influences Decisions, But Practical Gaps Exist

A gap exists in effectively translating online information into practical field applications. This suggests that while social media can provide valuable knowledge, hands-on training and local expertise remain crucial for successful implementation, indicating a need to bridge the gap between digital information and embodied knowledge in agricultural practices (Ere, 2005). RF1 highlighted this: "The information is good, but applying it in the field is different. We need more hands-on training." RF4 echoed this sentiment: "Knowing what to do online is different from doing it in the field."

5.2.8. Information Overload Requires Better Filtering and Education

The abundance of information on social media presents a challenge for farmers in discerning relevant and accurate Pestalotiopsis guidance, underscoring the need for improved filtering skills and educational support. RF2 said, "We need someone to teach us how to check if the information is correct." RF3 added, "It is hard to know what is good. We need training."

5.3. Effective Utilization of Social Media for Pestalotiopsis Leaf Fall Disease Information Dissemination to Rubber Farmers in Cotabato Province

5.3.1. Technology Adoption Factors

The willingness of rubber farmers to adopt social media is significantly influenced by their perception of its perceived usefulness and ease of use, key constructs of the Technology Acceptance Model (TAM) (Davis, 1989). Access to resources such as smartphones and reliable internet connectivity also plays a crucial role as facilitating conditions in UTAUT (Venkatesh et al., 2003). Furthermore, social influence, particularly the opinions and experiences of peers and community leaders, significantly impacts adoption decisions. RF8 stated, "If I see that social media can really help me know when to spray or what fertilizer to use, I will use it." RF7 was concerned about complexity: "If it's too complicated, I won't bother. I'm not good with these new gadgets." RF6 highlighted social influence: "If my neighbors are using it, and they say it's helpful, then I will try it too."

5.3.2. Social Media Design and Customization

Effective social media platforms for rubber farmers should prioritize visual content (photos and videos), the use of local languages and dialects, and interactive features like Q&A sessions and online forums. This aligns with principles of effective communication and user-centered design, enhancing perceived ease of use (TAM) and relevance (Uses and Gratifications). RF7 affirmed the importance of visuals: "I understand better when I see pictures and videos, not just words." RF8 emphasized local language: "It's better if they speak our local language, so we can understand everything." RF6 desired direct interaction: "It would be good if we can ask questions directly to the experts online."

5.3.3. Barriers to Social Media Use

Limited internet access, affordability of data, varying levels of digital literacy, and a lack of trust in online information pose significant barriers to effective agricultural communication, consistent with findings in other rural contexts (Beltran et al., 2017). These barriers directly impact the "facilitating conditions" and "effort expectancy" (ease of use) constructs in UTAUT (Venkatesh et al., 2003). RF6 described the signal issue: "The internet signal here is very weak. Sometimes, we have no signal at all." RF8 mentioned digital literacy: "I don't know how to use many of the features on my phone." RF7 expressed caution about misinformation: "Many fake news is spreading online, so I am very cautious."

5.3.4. Integration with Extension Services

Integrating social media with existing agricultural extension services can enhance information dissemination, bridging the gap between traditional and digital communication channels. This integrated approach can increase the perceived usefulness of both traditional and digital resources (TAM). Farmers suggested that extension officers can leverage social media to share timely updates, answer questions, and facilitate discussions. RF8 proposed, "They can use social media to remind us about trainings and meetings." RF6 added, "If the extension workers can help us verify online information, that would be very useful." RF7 suggested, "They can post videos of proper farming techniques online."

5.3.5. Benefits and Risks of Social Media

Social media offers significant benefits such as rapid information dissemination and increased connectivity among rubber farmers, aligning with the "information seeking" and "social interaction" gratifications (Uses and Gratifications). However, the spread of misinformation and concerns about privacy are significant risks (Kapoor et al., 2018). RF6 stated, "We can get information quickly through social media." RF7 appreciated the connectivity: "We can connect with other farmers and share our experiences." RF8 acknowledged the challenge: "It's hard to know what information to believe online."

5.3.6. Pestalotiopsis Information Dissemination

Social media platforms are recognized as vital tools for disseminating timely and accurate information about Pestalotiopsis Leaf Fall Disease. Images of infected leaves, videos demonstrating proper spraying techniques, and live Q&A sessions with agricultural experts can effectively educate farmers. This aligns with the perceived usefulness of social media in providing specific and relevant information (TAM and Uses and Gratifications). All rubber farmers agreed on the utility of visual and interactive content. RF8 emphasized early identification: "I need to know how to identify the disease early." RF7 highlighted the usefulness of videos: "Videos showing how to properly spray the trees would be very helpful." RF6 focused on chemical efficacy: "We need to know what chemicals are effective against Pestalotiopsis."

5.4. Impact of Social Media on Personal Experience and Understanding of Pestalotiopsis Leaf Fall Disease

5.4.1. Social Media's Role in Disease Response

Farmer leaders indicated that social media was crucial for providing timely alerts, sharing practical solutions, and coordinating community responses during Pestalotiopsis outbreaks. This aligns with research on networked communication in crisis management (Sutton et al., 2014) and principles of social contagion (Rogers, 2003). RF9 shared, "When we saw the first signs of Pestalotiopsis, I immediately posted photos on our community Facebook Group. This allowed us to alert everyone quickly." RF10 described coordinated action: "Through messenger, we organized meetings and shared videos of how to properly spray the trees. Social media was essential for our rapid response."

5.4.2. Influence on Farmer and Expert Interactions

Social media facilitated rapid communication and knowledge sharing between farmers and agricultural experts, leading to quicker problem-solving and improved disease management strategies. This is consistent with the concept of knowledge brokerage and the Technology Acceptance Model (TAM) (Davis, 1989). RF10 noted, "We are able to directly message experts through Facebook. They responded quickly, which helped us understand the best course of action." RF9 added, "I've joined online forums where experts share their research and answer our questions. This has significantly improved our knowledge."

5.4.3. Perceptions of Social Media as an Information Source

Farmer leaders perceived social media as a valuable source of real-time information and peer-to-peer learning, but acknowledged limitations related to information accuracy and reliability. This aligns with research on information credibility and media literacy (Metzger & Flanagin, 2015). RF9 stated, "Social Media is very fast.

We get updates immediately. But we must be careful because not everything online is true." RF10 appreciated peer sharing but emphasized verification: "I appreciate the farmer-to-farmer sharing on social media. It's good to learn from each other's experiences, but we need to cross-reference with official sources."

5.4.4. Information Source Integration

Farmer leaders strategically integrated information from social media with data from government agencies and agricultural extension services to obtain a comprehensive and reliable understanding of Pestalotiopsis management. This practice supports the concept of information triangulation and sensemaking (Weick, 1995). RF10 said, "I always compare the information I find online with what the extension workers tell us. This helps me make informed decisions." RF9 emphasized reliance on official sources: "We use social media to get quick updates, but we rely on the Department of Agriculture and Philippine Rubber Research Institute for official recommendations."

5.4.5. Desired Social Media Platform Improvements

Farmers' suggestions for verified expert profiles, localized language options, and interactive mapping tools resonate with research on trust and credibility (Fogg, 2003) and digital inclusion. RF9 suggested, "It would be great if social media platforms had verified profiles for agricultural experts. This would help us trust the information we receive." RF10 requested, "We need more localize language options. And an interactive map showing Disease outbreaks would be very useful."

5.4.6. Personal Impact of Social Media on Disease Understanding

Farmers' increased knowledge and confidence due to information accessed via social media aligns with the concept of self-efficacy (Bandura, 1977). Their subsequent role in sharing this knowledge within their communities supports principles of social learning theory. RF9 shared, "I've learned so much about Pestalotiopsis through social media. I'm now more confident in helping other farmers manage the disease." RF10 added, "Social Media has made information about Pestalotiopsis easily accessible. I've been able to share this knowledge with my community, which has helped us all."

5.5. Influence of Pestalotiopsis Leaf Fall Disease Information on Rubber Farming Practices

5.5.1. Limited Information Sources and Dependency on Formal Institutions

The rubber farmers' reliance on formal institutions (DA, PRRI, OMAG-Makilala) for Pestalotiopsis-related information underscores a restricted information environment. This dependency suggests a high performance expectancy from these institutions, as per UTAUT (Venkatesh et al., 2003). However, the lack of alternative sources may hinder their ability to validate information or seek more suitable solutions. RF2 stated, "We only know what they tell us. We have no other place to go for information. If they don't tell us, we don't know."

5.5.2. Information-Driven Adjustments in Farm-Management Practices

Farmers' reports of modifying pruning techniques, fertilizer application, and fungicide use based on information from formal institutions demonstrate a direct influence of external knowledge on their farm management. This aligns with the perceived usefulness construct of the Technology Acceptance Model (TAM) (Davis, 1989). RF4 shared, "We learned to prune differently, to use this fertilizer, and to spray this chemical. We do what they say, hoping it will help."

5.5.3. Challenges and Barriers in Accessing and Utilizing Information

Obstacles such as technical language, financial limitations, and untimely information delivery impede farmers' ability to effectively utilize provided knowledge. These barriers relate to the effort expectancy dimension of the UTAUT model (Venkatesh et al., 2003). RF3 highlighted these challenges: "The words they use are too hard for us to understand. And even if we understand, we don't have the money to buy the chemicals. Sometimes, they tell us too late when the disease is already very bad."

5.5.4. Perceived Information Gaps and the Need for Localized Solutions

Farmers' desire for more tailored information specific to their farm conditions points to a gap between generalized information and actual needs. This can be related to the Uses and Gratifications Theory (Katz et al., 1974), as current sources may not fully gratify their specific information needs. RF4 expressed this: "They tell us what to do, but our farms are different. We need information for our place, for our situation."

5.5.5. Concerns about Information Effectiveness

Farmers' concerns about the persistent presence of Pestalotiopsis despite following instructions raise questions about the perceived effectiveness of the information. This directly contradicts the perceived usefulness construct of TAM (Davis, 1989), potentially decreasing their intention to continue adhering to recommendations. RF1 stated, "Even when we follow the instructions, sometimes the disease still persists, so we wonder if we are missing something, or if there is more information needed."

5.6. Strategies for Improved Dissemination and Utilization of Pestalotiopsis Leaf Fall Disease Information Among Rubber Farmers in Cotabato Province

5.6.1. Limited Information Access and Reliance on Official Sources

The rubber farmers' primary reliance on official government agencies (DA, PRRI, OMAG Makilala) for Pestalotiopsis information suggests a limited information environment. This can be analyzed through the Uses and Gratifications Theory (Katz et al., 1974), as farmers prioritize authoritative and credible sources. However, a lack of diverse sources might limit their exposure to alternative perspectives. RF7 commented, "We only get information from the DA, PRRI, and the local OMAG. If they don't tell us, we don't know."

5.6.2. Digital Information Channels: Facebook and YouTube as Supplementary Tools

Farmers' supplementary use of digital platforms like Facebook and YouTube reflects a growing adoption of technology for information seeking, aligning with TAM (Davis, 1989). The perceived usefulness of these platfoms drives their use. However, limited effectiveness due to internet access and digital literacy highlights the influence of effort expectancy in the UTAUT model (Venkatesh et al., 2003). RF6 stated, "We watch videos on YouTube about rubber diseases, and we see posts on Facebook. But, sometimes, the internet is slow, and not everyone knows how to use it well."

5.6.3. Desired Improvements in Information Dissemination

Farmers expressed a need for more accessible, practical, and localized information dissemination methods, underscoring the importance of tailoring information to specific user needs, a key consideration in the Uses and Gratifications Theory (Katz et al., 1974). RF8 articulated this need: "We need more field demonstrations, face-to-face trainings, and simple leaflets in our local language. It's hard to understand technical terms."

5.6.4. Factors Influencing Adoption of New Practices

The influence of economic viability, perceived effectiveness, and social influence on farmers' adoption of new practices can be explained by the UTAUT model (Venkatesh et al., 2003). RF7 explained, "If the new method is too expensive, we can't afford it. Also, if we see our neighbors doing it, we are more likely to try it."

5.6.5. Barriers to Effective Information Use

Limited resources, lack of technical support, and language difficulties significantly impede the effective utilization of Pestalotiopsis information. These challenges directly relate to the effort expectancy dimension of the UTAUT model (Venkatesh et al., 2003). RF8 shared, "Sometimes, we don't have the money to buy the recommended chemicals. And when the technicians come, they speak too fast and we don't understand."

5.6.6. Information Sharing and Community Empowerment

The potential of peer-to-peer learning and community-based initiatives to foster information sharing and empower rubber farmers aligns with the social influence construct of the UTAUT model (Venkatesh et al., 2003). RF6 expressed this: "When we share our experiences with each other, we learn a lot. We need more farmer meetings and group discussions."

5.7. Impact of Pestalotiopsis Leaf Fall Disease Information on Personal Experiences of Rubber Farmers

5.7.1. Information-Driven Decision-Making

Access to information about PLFD has directly influenced farmers' decision-making processes, particularly regarding disease management strategies. This aligns with the perceived usefulness construct of the Technology Acceptance Model (TAM) (Davis, 1989). RF10 shared how YouTube influenced his spraying schedule: "When I saw on YouTube that spraying fungicide at the right time is important, I changed my spraying schedule. Before, I just sprayed whenever I had time, but now I follow a more regular schedule based on what I learned."

5.7.2. Transformation of Farming Practices

The availability of information has led to significant changes in farming practices, including the adoption of new disease control methods and improved monitoring techniques. This can be explained through the social influence aspect of the UTAUT model (Venkatesh et al., 2003). RF9's adoption of improved pruning techniques from a Facebook group highlights how online communities can influence farming practices: "We learned about proper pruning techniques to improve air circulation from a Facebook group. Now, we are more careful about how we prune our trees, and we see a difference."

5.7.3. Perceptions of Information Sources: Benefits and Limitations

Rubber farmers perceive social media as a valuable information source, while acknowledging its limitations, such as misinformation and a lack of localized expert advice. This reflects a nuanced understanding of its utility, aligning with the Uses and Gratifications Theory (Katz et al., 1974). RF10 expressed this dichotomy: "Sometimes, you see different things on Facebook, and you don't know which one is correct. We need someone who can give us advice that is specific to our area."

5.7.4. Information Gaps and Needs

Farmers needed more localized, expert-driven information, including specific recommendations for the province and access to real-time disease monitoring data. This relates to the performance expectancy dimension of the UTAUT model (Venkatesh et al., 2003). RF9 stated, "We need someone from the government or a specialist to come here and show us exactly what to do. We also need to know when the disease is spreading so we can act quickly."

5.7.5. Improving Information Sharing

Farmers' suggestions for improving information sharing through regular meetings/workshops, on-site demonstrations, and the establishment of local information centers emphasize the importance of accessible and practical knowledge transfer methods. This aligns with the effort expectancy construct of the UTAUT model (Venkatesh et al., 2003). RF10 highlighted this need: "If we could have regular meetings with experts and see demonstrations in our own farms, it would be much easier to understand and apply the information."

6. Conclusion

This study explored the social media usage patterns of rubber farmers in Cotabato Province amidst the Pestalotiopsis Leaf Fall Disease outbreak. The findings reveal that Facebook and YouTube are the dominant platforms, primarily utilized for information gathering, particularly concerning disease management and agricultural technologies. The establishment of dedicated online communities, such as the Office of the Municipal Agriculturist (OMAG)'s Facebook group, plays a crucial role in fostering information exchange and community support. While farmers appreciate the timeliness and broad scope of information available on social media, they also recognize the inherent challenges related to information credibility and the need to rely on verified sources like the OMAG and the Department of Agriculture - Philippine Rubber Research Institute (DA-PRRI). Barriers such as limited internet access, data costs, varying levels of digital literacy, and language differences impede the optimal use of social media for agricultural purposes. Nevertheless, the urgency and impact of the Pestalotiopsis outbreak have driven farmers to actively seek and utilize social media for information on disease identification, prevention, and management, often with the assistance of family members. Ultimately, social media presents a dual nature: a rapid and accessible source of agricultural information, yet one that demands critical evaluation and targeted support to maximize its benefits for rubber farmers in the region.

7. Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance the effective use of social media for agricultural information dissemination and disease management among rubber farmers in Cotabato Province:

- Strengthen Verified Online Information Channels: The DA-PRRI and local agricultural offices like OMAG should enhance their social media presence by regularly posting timely, accurate, and easily understandable information about rubber diseases, including Pestalotiopsis. This includes visual aids like photos and videos; the content should be available in the local language to improve accessibility.
- Promote Digital Literacy and Critical Evaluation Skills: Conduct training programs for rubber farmers focusing on basic digital literacy skills, including navigating social media platforms, identifying reliable sources of information, and discerning misinformation. These programs should also emphasize the importance of cross-referencing information and consulting official sources.
- Improve Internet Accessibility and Affordability: Advocate for improved internet infrastructure in rural areas of Cotabato Province to ensure consistent and affordable access for farmers. Explore partnerships with telecommunication companies and local government units to address connectivity issues and data costs.
- Facilitate Localized Content Creation and Sharing: Support the creation and sharing of agricultural information in local dialects on social media platforms. Encourage agricultural extension workers and knowledgeable farmers to contribute verified and practical content relevant to the specific needs and contexts of rubber farmers in Cotabato Province.
- Leverage Visual and Interactive Content: Recognize the effectiveness of visual learning and prioritize the creation and dissemination of videos, infographics, and live sessions on social media to explain complex agricultural concepts and disease management practices in an engaging and easily digestible manner.
- Foster Online and Offline Information Integration: While leveraging the reach of social media, continue to utilize traditional communication channels (e.g., radio, print materials, community meetings) to reinforce online information and reach farmers with limited digital access. Integrate online resources with offline extension services to provide comprehensive support.
- Establish Feedback Mechanisms: Create channels on social media platforms for farmers to ask questions, share their experiences, and provide feedback on the information they receive. This interactive approach can help tailor information dissemination to the community's needs and effectively address emerging concerns.
- Conduct Further Research: Future studies could explore the impact of social media use on farmers' adoption of specific disease management practices and the economic outcomes. Investigating the role of social networks and trust in online agricultural information sharing could also provide valuable insights.

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