Information Research – Vol. 31 No. iConf (2026)

Information seeking behavior of agricultural professionals from developing countries in South Korea

Ana Mae B. Cantel and Eun Youp Rha

DOI: https://doi.org/10.47989/ir31iConf64135

Abstract

Introduction. This study investigates the information seeking behavior (ISB) of agricultural professionals from developing countries in South Korea. Anchored in Leckie, Pettigrew, and Sylvain's (1996) professional ISB model, it examines how roles, tasks, and contextual factors shape information needs, source awareness, and use outcomes.

Method. A qualitative design was employed, using semi-structured interviews with ten professionals from government agricultural agencies on study leave in South Korea. Participants represented extension, research, laboratory services, policy, education, and specialized production.

Analysis. Transcripts were thematically coded following Strauss and Corbin, with categories mapped to the six components of the Leckie et al.'s (1996) model. Comparative analysis highlighted recurring patterns and contextual variations.

Results. Information needs varied by role: extension workers required technical packages; researchers, precise standards, and datasets; educators, pedagogically validated materials; policymakers, authoritative frameworks; and specialists, scientific and local knowledge. Formal sources (bulletins, standards, literature) and informal channels (colleagues, networks, digital tools) were both critical. Exposure to South Korea's infrastructures expanded participants' awareness of alternative systems.

Conclusion. The study extends Leckie et al.'s model by showing how infrastructural constraints and cross-border experiences condition ISB, with implications for designing user-centered, context-sensitive systems.

Introduction

Information seeking behavior (ISB) refers to the purposive effort to identify, acquire, evaluate, and apply information in response to knowledge gaps (Case & Given, 2016). For professionals, it represents systematic processes of gathering, managing, and validating information to perform responsibilities effectively (Belkin, 2010; Kumaran et al., 2016). While ISB scholarship has extended from scientists and academics into fields such as engineering, healthcare, and law, agriculture remains relatively underexplored despite being highly information intensive (Freund, 2015; Leckie et al., 1996). Wilson's perspective further highlights ISB as both systematic and socially embedded, shaped by tasks, contexts, and knowledge environments (Byström & Hansen, 2005; Kassem et al., 2021).

Agriculture as a profession requires formal education, specialized training, and multidimensional skills. Professional bodies, such as the Agricultural Economic Association of South Africa, mandate advanced qualifications, and empirical studies confirm that technical support functions are typically held by highly educated professionals (Ntombela, 2024; Reis et al., 2023). In this context, ISB is indispensable for adopting innovations, enabling evidence-based decision making, and sustaining knowledge exchange. Yet in developing countries, systemic barriers such as limited access to credible resources, uneven infrastructures, and constrained networks continue to restrict alignment between extension services and farmers' needs (Gebeyehu et al., 2024; Kassem et al., 2021; Oyeniyi, 2020).

Studying agricultural ISB is significant because it intersects with global development priorities, including SDG 16.10 on public access to information. Agricultural professionals function as knowledge brokers who strengthen food security and rural livelihoods (Mokhtar et al., 2022), yet persistent gaps in training and professional development limit their effectiveness (Qasemi et al., 2023).

This study examines agricultural professionals from developing countries undertaking advanced education in South Korea, a leader in ICT-driven agricultural reforms (Choi et al., 2023). Exposure to advanced infrastructures gives these professionals a contrastive environment to reflect on home-country practices and identify systemic gaps. To guide this inquiry, the study applies Leckie, Pettigrew, and Sylvain's (1996) professional ISB model. Although widely used in fields such as engineering, law, and healthcare, its application to agriculture has been limited. Situating agricultural professionals' reflections within this model extends LIS theory into an underrepresented domain while offering practical insights for information institutions.

Literature review

Information seeking behavior of professionals across domains

Information seeking behavior (ISB) has been widely studied across professional domains, with research showing how roles, tasks, and institutional contexts shape patterns of information use. In healthcare, for example, nurses seek information under time pressure to address immediate patient needs, physicians prioritize authoritative sources at the point of care, and dentists rely on collegial exchanges to keep pace with evolving tools and techniques. Yet barriers such as limited IT support, uneven digital resources, and time constraints remain pervasive, particularly in developing contexts (Assaye et al., 2023; Dunn et al., 2017; Jones et al., 2011).

Similar dynamics emerge in law and education, where professionals balance traditional and digital sources. Lawyers in many developing countries continue to rely on textbooks and law reports for their perceived authority, while gradually incorporating online databases, networking, and even content creation into their ISB practices (Bronstein et al., 2021; Nwone et al., 2020;). Educators, meanwhile, use information for teaching, research, and career progression, often blending formal

resources with collegial advice, and favouring accessible, user-friendly materials despite the availability of more sophisticated databases (Shipman et al., 2015).

Agriculture presents a particularly complex case, as information needs are highly time-sensitive and context-dependent. Farmers and practitioners often rely on experiential knowledge and informal networks for weather, markets, and pest management, underscoring the importance of integrating user perspectives into dissemination strategies (Acharya et al., 2023; McKenzie et al., 2018). At the same time, inadequate access to reliable resources constrains extension services, especially in developing contexts (Mahindarathne et al., 2018). For students and researchers, libraries and digital platforms remain critical, while agricultural professionals evaluate sources in relation to tasks, contexts, and access constraints (Freund, 2015; Shesha et al., 2023).

The diversity of agricultural roles further complicates ISB patterns. Extension professionals act as educators and change agents (Hamdan Al-Zahrani et al., 2021), technical specialists apply expertise in agronomy and horticulture (Tiraieyari et al., 2019), and researchers advance innovations through scientific inquiry (Brown et al., 2022). Service-oriented roles such as agricultural communicators, economists, and supervisors each bring distinct demands (Ntombela, 2024; Wang, 2024).

Information seeking behavior of professionals from developing countries

Research on information seeking behavior in developing countries demonstrates patterns broadly consistent with those observed in developed contexts but enacted through adaptive practices shaped by resource constraints. Journals remain the most trusted sources, citation following is a common retrieval method, and informal networks, particularly oral exchanges, play a central role. For instance, Ikoja-Odongo et al. (2013) found that 84% of professionals relied primarily on colleagues, peers, and personal experience rather than formal systems, underscoring the prominence of relationship-based channels.

These practices are heavily conditioned by systemic barriers. Poorly resourced libraries, limited internet access, insufficient training, and weak government investment restrict engagement with formal information systems (Saleh et al., 2012). Limited funding further reduces participation in conferences and international collaborations, reinforcing reliance on mediated or two-step information seeking through colleagues, broadcast media, and workshops (Sulaiman, 2020; Yilmaz et al., 2020).

Beyond structural limitations, technical and cognitive barriers complicate ISB. Weak indexing and connectivity undermine the use of digital databases, while information overload discourages uptake when content appears generic or inapplicable (Salem et al., 2022). Reluctance to share knowledge, shaped by organizational constraints and issues of trust, further limits collective learning (Islam & Tsuji, 2016). Nevertheless, professionals increasingly integrate digital tools such as databases, email, WhatsApp, and hybrid paper-based exchanges to circulate knowledge (Salem et al., 2022).

The literature suggests that ISB in developing countries is characterized by both inequities and resilience. Professionals reconfigure traditional and digital practices into hybrid strategies that sustain their work under constrained conditions, illustrating the universality of professional ISB while highlighting the need for context-sensitive approaches to supporting information systems in resource-limited environments.

Theoretical framework

This study applies the professional information seeking model developed by Leckie, Pettigrew, and Sylvain (1996), presented in Figure 1, to analyze the information behavior of agricultural professionals from developing countries. The model conceptualizes information seeking as a dynamic process shaped by professional roles, associated tasks, information needs, awareness of

sources, the use of those sources, and the outcomes of information use. These components are connected by a feedback loop in which the results of previous searches inform subsequent strategies.

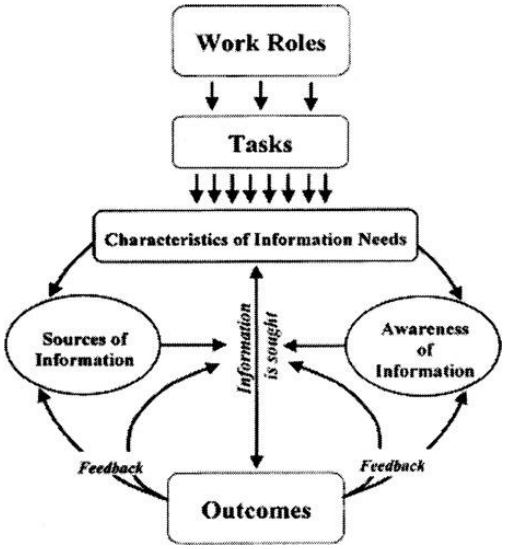

Figure 1. Leckie, Pettigrew, and Sylvain (1996)

The model begins with professional roles, which define responsibilities and generate tasks that produce specific information needs. For agricultural professionals, these roles include extension support, pest and disease management, laboratory analysis, and policy work—each requiring timely, context-specific information ranging from technical datasets to training materials.

Awareness of information sources is a key intermediary. Professionals must identify available sources and assess their credibility, accessibility, and relevance. In agriculture, these sources span formal channels—peer-reviewed journals, government bulletins, international standards—and informal channels such as colleagues, networks, and experiential knowledge. Source selection involves balancing authority, timeliness, cost, and usability, often blending global standards with local practices. The model also highlights outcomes, which can include effective decisions, productivity gains, or continued uncertainty. These outcomes influence institutions and networks and feed back into the cycle by shaping future awareness and source preferences.

Applying Leckie's framework highlights the iterative and adaptive nature of agricultural ISB. It accounts for how professional roles intersect with infrastructural and contextual constraints, offering a useful lens for understanding the hybrid strategies that professionals employ in resource limited environments. Guided by this framework, the study addresses three research questions (RQs):

RQ1. What work roles do agricultural professionals in developing countries perform, and what information needs arise from these roles?
RQ2. What are the information sources that they commonly use to meet their information needs?
RQ3. What are the factors influencing their information seeking behavior?

Methodology

This study employed a qualitative approach to gain an in-depth understanding of agricultural professionals' experiences, perceptions, and practices in seeking information. The design was guided by Leckie et al.'s (1996) model of professional information seeking behavior, which served as the conceptual framework for data collection and analysis.

Participants

The study involved ten agricultural professionals from developing countries who were pursuing graduate studies in South Korea. Eligible participants were government-employed agricultural professionals with at least two years of experience and a bachelor's degree in agriculture or a related field. Recruitment used purposive sampling: an initial invitation was shared through a peer enrolled in a graduate agriculture program, after which interested and eligible individuals were contacted by the researcher for confirmation. Written informed consent was obtained, and participation was voluntary with no monetary incentives.

All participants were on study leave and represented varied national contexts and specializations, including extension, soil management, mechanization, laboratory research, horticulture, plant pathology, integrated production, and agrotourism. Table 1 presents their demographic information, including country, gender, years of service, and work roles.

Participant	Country	Gender	Years of service	Work roles
A	Indonesia	F	4	horticulture
B	Uganda	F	9	agricultural extension
C	Madagascar	F	5	agricultural Extension / Junior researcher
D	DR Congo	M	2	soil management
E	Ghana	M	5	agricultural mechanization
F	Ecuador	F	3	horticulture marketing/ agrotourism development
G	El Salvador	M	8	horticulture
H	Nigeria	M	5	laboratory services and research
I	Nepal	F	8	agriculture production
J	Philippines	F	12	plant pathology / agricultural extension

Table 1. Participant information.

Data collection

Data were collected through semi-structured interviews conducted in English via Zoom on May 24–25, 2025. Each 90-minute session was audio-recorded with consent and securely stored on a password-protected drive. Brief field notes were taken, and all recordings were transcribed verbatim and checked for accuracy. The interview guide was organized according to the six components of Leckie et al.'s (1996) model, as shown in Table 2.

Leckie et al.'s (1996) model component	Sample interview questions
Work roles; associated tasks; awareness of information sources	• What is your current (or previous) professional role? • What tasks in your work require you to seek information? • How do these roles and tasks shape the sources you select and use?
Awareness of information sources; sources used	• How did you become aware of the information sources available to you? • Which sources do you use most frequently? • Do you prefer formal (e.g., journals, databases) or informal (e.g., colleagues, networks) sources, and why?
Characteristics of information needs	• What types of information do you typically need? • How urgent, frequent, or complex are these information needs? • What challenges have you encountered in accessing or using information?
Outcomes; barriers and coping strategies	• How have language, technology, or institutional systems influenced your information seeking? • What strategies do you use to address these challenges, and have these strategies changed over time?

Table 2. Interview questions according to Leckie et al.'s (1996) model

Data analysis

Thematic analysis was applied to interview transcripts, following Strauss and Corbin's (1990) coding procedures. Transcripts were first read in full, then examined line by line to generate initial codes, which were refined through constant comparison into categories aligned with the six components of Leckie et al.'s model. After the first author generated the codes and themes, the second author engaged in an inter-coder validation process based on collaborative review and consensus building, by reviewing the coded data, assessing theme boundaries, and confirming the interpretive accuracy. Discrepancies were resolved through discussion to strengthen analytical rigor and interpretive credibility.

Findings

Information needs of agricultural professionals according to their work roles

To address RQ1, participants' work roles and the information needs arising from these roles were analysed. The findings show that agricultural professionals perform diverse functions, including extension, research, education, policy, and specialized roles, which generate distinct tasks and corresponding information requirements.

Extension and farmer support

Extension and farmer support emerged as the most prominent role involving preparation of technical packages, development plans, and training programs. *Participant B explained, 'Most of my time is spent in the field with farmers, preparing technical guides and showing them how to use improved seed varieties.' Participant C added, 'Even though I am also doing research, much of my daily work is spent visiting farmer groups, giving demonstrations, and answering their questions about inputs and practices'*. These accounts highlight extension professionals as mediators between research and practice, translating scientific knowledge into accessible guidance for farmers.

The breadth of farmers' expectations shaped information demands. Participant C stressed, '*Farmers always wanted complete technical packages per crop, not just partial details. They asked me about everything, from land preparation, planting, fertilizer application, pest, and disease*

management, harvesting, and even postharvest handling'. The immediacy of inquiries also created pressure. Participant J observed, '*Sometimes when I was conducting consultations or training sessions,... immediate online resources are needed... verify information or find supporting materials*'.

Extension roles generate information needs that prioritize clarity, comprehensiveness, and timeliness. The reliance on ready-to-use information packages and rapid verification reflects extension workers' central function in delivering accurate knowledge to farming communities, consistent with patterns observed in prior studies (Hamdan Al-Zahrani et al., 2021; Ghimire et al., 2021; Widiyanti et al., 2021).

Research and laboratory responsibilities

The participants also have research and laboratory responsibilities, requiring highly technical and authoritative information. *Participant H emphasized, 'I am responsible for soil and water analysis in our laboratory. My job is to check contamination levels and issue clearance for farmer groups. Without these tests, they cannot proceed with production or export'. Participant D noted, 'My work focuses on soil remediation and fertility management. I spend a lot of time testing different amendments to see how they perform under local conditions'.* These tasks positioned professionals as scientific regulators and innovators, demanding access to international phytosanitary standards, laboratory protocols, and precise datasets.

The detail-oriented nature of their work underscored these needs. *Participant D explained, 'In my work back home, I often needed very specific technical data, like the pH of soil and the concentration of metallic elements present. This information was essential to support soil remediation projects'*. Similarly, *participant H further noted, 'Phytosanitary guidelines, especially those developed by international bodies, were indispensable in preventing the spread of pests and diseases across regions'*. Such accounts illustrate that research professionals rely on globally recognized standards and rigorous data while contending with limited infrastructure and resources in developing-country contexts. These findings echo prior studies on agricultural researchers as both technical experts and compliance authorities, constrained by systemic barriers (Brown et al., 2022; Goncharov et al., 2020; Mahindarathne et al., 2018).

Education and training roles

Alongside research, education and training roles positioned agricultural professionals as educators tasked with transmitting knowledge to farmers, student interns, and technicians. *Participant E observed, 'I teach agricultural mechanization to farmers and technicians. Preparing the curriculum is demanding because I need both technical manuals and real farm examples to make them understand'*. This account highlights the dual requirement of combining structured, formal manuals with practical, field-based examples to facilitate comprehension and application.

These responsibilities produced information needs focused on validated, pedagogically appropriate materials that are both reliable and accessible. Teaching professionals must balance technical accuracy with instructional clarity, ensuring resources remain scientifically sound yet adaptable to learners' contexts. This aligns with prior research emphasizing accessibility, reliability, and usability in agricultural education, where information serves as both a teaching tool and a channel for knowledge transfer (Shipman et al., 2015).

Policy and planning responsibilities

Policy and planning responsibilities positioned agricultural professionals as institutional advisors engaged in shaping governance, market regulation, and trade. *Participant I explained, 'In my department, we monitor market prices daily and provide policy briefs for the ministry. The goal is to make sure farmers are not exploited, and that trade agreements are balanced'. Participant G added, '...I focus on improving crop quality for both local consumption and export. It requires constant coordination between growers and traders'*. These accounts underscore the strategic dimension of

agricultural professionals' work, where evidence-based insights feed directly into policy recommendations and value chain coordination.

Such tasks required access to national and international sources, including government bulletins, market intelligence, and regulatory frameworks. *Participant* A stated, '*In addition to using internal data from our government, I also accessed international websites, like the UN-FAO contract platform, when working on market-related projects. These sources helped me compare our local situation with global practices and standards*'. *Participant* J added, '*Even though it is not the newest document, the Food Safety Act of 2013 remains authoritative, and combining it with new research allows me to give farmers advice that is legally sound and practically relevant*'. These accounts illustrate the hybrid nature of policy-related information needs, where professionals balance authoritative but outdated documents with recent scientific evidence. This reflects pragmatic strategies identified in other fields (Nwone et al., 2020) and aligns with Ntombela's (2024) analysis of agricultural information behavior shaped by structural and market drivers.

Specialist roles (horticulture, agrotourism, and plant pathology)

Finally, specialist roles in horticulture, agrotourism, and plant pathology expanded information needs, requiring integration of scientific knowledge with local practices and cultural contexts. *Participant* A remarked, '*We combine formal knowledge with local practices. Farmers often show me techniques that are not written in manuals, but they work very well in practice*'. *Participant* F noted, '*Our work requires both agricultural knowledge and hospitality skills. I often look for models from other countries but must adapt them to local culture and farmer capacity*'. *Participant* J added, '*…the diagnostic and advisory demands of plant pathology, we are reliant on both scientific sources and farmer insights*'.

These reflections illustrate how specialists work at the intersection of global standards and local knowledge. Their roles demand flexibility in adapting international models to domestic contexts while maintaining technical rigor. Such hybrid responsibilities position them as boundary actors who integrate scientific expertise with indigenous knowledge and sector-specific needs. This adaptive orientation aligns with research on hybrid knowledge systems (Acharya et al., 2023; Widiyanti et al., 2021) and underscores that information seeking in specialist roles is both technical and integrative. Table 3 summarizes the information needs associated with each work role.

Work Role	Definition	Information needs
Extension and farmer support	Mediate between research and practice through fieldwork, demonstrations, and training.	⓾ Comprehensive technical packages per crop ⓾ Clear, timely, and practical guidance ⓾ Rapid digital verification for unanticipated farmer queries
Research and laboratory	Conduct soil and water analysis, remediation, and phytosanitary enforcement for production and compliance.	⓾ Authoritative datasets ⓾ International phytosanitary standards ⓾ Laboratory protocols ⓾ Precise soil and water indicators.
Education and training	Teach farmers, students, and technicians through curricula and applied demonstrations.	⓾ Validated and reliable manuals ⓾ Pedagogically appropriate materials ⓾ Practical field-based examples.
Policy and planning	Provide institutional advice on governance, trade, and market regulation.	⓾ Government bulletins ⓾ National policies and frameworks ⓾ Market intelligence ⓾ International platforms hybrid use of legal documents and updated research

Table 3. Summary of roles, tasks and information needs

Types of information sources used

The findings show that agricultural professionals used both formal and informal sources, guided by credibility, accessibility, and task relevance. In South Korea, access to university libraries, subscription journals, and institutional partnerships expanded their awareness of formal and digital resources, in contrast to their home countries, where they relied more on government documents, colleagues, and ad hoc online searches.

Formal sources

Formal information sources are structured and regulated channels that ensure accuracy and credibility, typically disseminated through official institutions and codified documents such as scientific literature and databases (Chang et al., 2025; Ryan et al., 2025).

According to the findings, government publications and internal reports were consistently regarded as authoritative. As *Participant* A explained, '*In my professional work as horticulturist, I usually used internal information, such as reports and data from our own government. These sources were considered authoritative and directly relevant to the local context, so they became my first reference point*'. While such reliance reflected the systemic limitations of home-country information infrastructures, Shesha et al. (2023) observed that exposure to South Korean university libraries and academic databases broadened professionals' perspectives by demonstrating how scientific literature could complement government data.

International agencies played a central role in participants' practice. Participant H emphasized reliance on global regulations: '*We already have laid out standards, International Standards for Phytosanitary Measures* (ISPM). *All our inspections and certifications are guided by these standards. They are available on the internet and updated regularly, so we always rely on them for our work*'. While applied in their home countries, exposure in South Korea showed how such guidelines were systematically embedded in training modules and institutional repositories, enhancing both accessibility and application.

Similarly, Participant F explained, '*I follow FAO updates regularly because they give me ideas on how to apply international standards in my work... I found [they] helped me in developing agrotourism plans back in my country, making them more aligned with global trends while still fitting our local context*'. These accounts underscore the authority of international bodies as formal information providers, whose influence was amplified through institutional integration in South Korea.

Manuals and structured documents were another key category of formal sources, particularly for education and training. *Participant E* noted,

> We have a manual that we use, and the manual is prepared by the head office of the Ministry of Food and Agriculture. That is what we rely on when we train extension officers. The manual provides the framework and direction, so it becomes our curriculum.

In South Korea, the participant observed that manuals were regularly updated through digital platforms, reflecting a dynamic system of curricular development absent in his home country.

Applied research outputs and field-based knowledge extended formal sources. *Participant B* explained, '*We get information from agricultural research organizations in every region. They conduct research on crop varieties and share the results with us. We use that information to implement programs with farmers and guide them in adopting new practices*'. He added, '*We disseminate information about new farming technologies and research findings through workshops, field days, and demonstrations*'. In South Korea, the participant observed experimental stations directly linked to universities and extension services, illustrating what Freund (2015) describes as a seamless integration of research and practice that broadened his awareness of institutional possibilities.

Informal sources

Informal sources are primarily personal and interpersonal, facilitating the exchange of explicit and tacit knowledge through conversations, meetings, and informal reports (Jenkin, 2013). Recent forms include search engines, social media, blogs, podcasts, and everyday interactions with peers, family, or friends, which offer flexibility but limited verifiability (Moen et al., 2020; Ryan et al., 2025).

Findings indicate that colleagues and interpersonal networks remained indispensable. *Participant A* explained, '*most of the information I used came from internal government channels…budgeting and activity programs. I also depend on data from colleagues and specialists in my division. For market information services, I sometimes use websites….*' Likewise, Participant C described, '*We just contact them by email or WhatsApp and ask them to send us their innovations or reports. Sometimes we even go to their office for a meeting when we need more information. It is often the fastest way to get what we need*'. These behaviors echo Ikoja-Odongo et al.'s (2013) finding that oral and peer-based exchanges dominate in resource-limited contexts. In South Korea, however, participants observed that interpersonal interactions were often institutionalized through seminars, laboratory groups, and professional associations, expanding their understanding of how informal networks can operate within structured systems.

General digital resources, while lacking quality control, were heavily relied on for urgent queries. *Participant J* noted, '*….Farmers frequently raised unanticipated concerns, ….need to quickly access online….*' Similarly, *Participant B* reflected, '*Sometimes we even Google. But the challenge is that in remote areas the internet is poor and unreliable…*' Such reliance illustrates the role of informal digital tools as '*first-response*' resources when formal channels are inaccessible.

Collaboration across agencies also served as an informal yet vital source of information. *Participant C* explained, '*…there are many projects being implemented by other agencies… must contact them regularly to ask for updates and follow up, otherwise we cannot keep track of what is*

happening'. *Participant J* emphasized, '*We monitor and coordinate with agencies like the Department of Agriculture and the Department of Science and Technology, especially when we need data for agricultural development plans. Inter-agency information is one of the most important sources we rely on in our work*'. These accounts underscore the value of inter-agency collaboration but also reveal systemic gaps, as reliance on ad hoc follow-ups reflects fragmented communication structures. Strengthening reporting mechanisms and shared digital platforms could reduce dependence on informal exchanges and improve the reliability of agricultural information flows.

Factors influencing information seeking behavior

Information seeking among agricultural professionals is shaped by personal attributes, information-related factors, and broader infrastructural contexts. Their roles and tasks interact with these factors to influence how they select, validate, and use information.

Personal factors

The participants' information seeking behavior seems to be influenced by the professionals' personal characteristics, such as professional experience, specific roles, and language ability. Professional experience emerged as a key factor: senior participants anchored their practices in established institutional channels, while early-career staff relied more on digital search to address knowledge gaps. Participant D noted, '*Because of my years in the field, I already know where to go for the information I need…ministry bulletins and internal reports…more trusted…always applicable to my work*'. In contrast, Participant I explained, '*Since I am still new in my tasks, I use Google and online forums more often. It helps me find answers quickly, …I confirm them with my senior colleagues*'. These patterns reinforce evidence that career stage shapes both resource preferences and search confidence (Kern et al., 2018).

Role expectations in teaching and extension encouraged reliance on structured, pedagogically usable materials. *Participant E* noted, '*We rely on manuals prepared by the Ministry of Food and Agriculture because we are training extension officers*'. Similarly, *Participant B* emphasized, '*As extension officers, we disseminate research findings through workshops, field days, and demonstrations*'. These accounts align with evidence that extension staff act as mediators who repackage technical content for end-users (Ghimire et al., 2021; Hamdan Al-Zahrani et al., 2021) and that educators prefer accessible, fit-for-instruction resources (Shipman et al., 2015).

Linguistic adaptation was essential for making information usable. *Participant J* explained, '*Most of the information from higher agencies is written in English, but many of our farmers cannot understand it. I really need to translate technical content into our local language*'. This reflects research on user-centered dissemination and the need to tailor information to local contexts. Time constraints also shaped practices, as *Participant G* remarked, '*I hardly have time to go through detailed reports*'. Such patterns align with findings on funding limitations (Jonathan & Nwokocha, 2015) and pragmatic source selection under workload pressure (Tenopir et al., 2019).

Information-related factors

Participants' information seeking behavior was influenced by the characteristics of information, information needs, and the design of information systems. Specifically, three critical factors merged: authority of information, urgency of information needs, and usability of information systems.

Authority was consistently weighed against practicality, with participants emphasizing the need to validate innovations before dissemination. Participant C explained, '*We need very detailed information from researchers or NGOs, but sometimes it is too technical. We have to validate and adapt it before we can disseminate it to farmers*'. In regulatory and surveillance tasks, Participant H stressed, '*When new diseases appear, we need pest risk analysis. We depend on surveys and inter-agency collaboration to get accurate information*'. Such practices mirror cross-domain findings that

professional's privilege trustworthy, task-fit sources and employ collegial and organizational checks when stakes are high (Brown et al., 2022; Goncharov et al., 2020; Jones et al., 2011).

Urgency also shaped preferences, particularly in field contexts. Participant J reflected, '*…..I depended on fast internet access….*' This illustrates how temporal pressures drive reliance on rapid-access tools, consistent with research on time constraints and point-of-need searching in applied professions (Widiyanti et al., 2021).

Finally, usability of information systems emerged as a decisive factor. Participants described barriers such as information overload, inconsistent repositories, and complex technical prose. Participant C remarked, '*When I search online, I get hundreds of results*'. Similarly, Participant H observed, '*Even official websites are not well organized*'. Participant E noted fatigue with overly technical texts, and Participant J admitted reduced motivation when materials were too complex. These experiences align with documented challenges of overload and usability in digital environments (Salem et al., 2022).

Contextual factors

Participants' information seeking behavior was shaped by contextual conditions, particularly infrastructural, institutional, and economic constraints. Digital infrastructures strongly conditioned search activities. *Participant B* observed, '*In many of the rural communities I serve, there is no stable internet and sometimes not even reliable electricity*'. Seasonal hazards compounded these barriers, as *Participant J* noted, '*During typhoon season, I really cannot use internet*'. Distance to rural sites further limited access, with *Participant D* reporting, '*You need to travel long distances, sometimes by bike or car, just to access the information or collect samples*'. These constraints align with evidence on infrastructural deficits in developing contexts (Saleh et al., 2012; Salem et al., 2022).

Poor connectivity at home reinforced reliance on easily accessible sources such as Google and colleagues (Salem et al., 2022). By contrast, exposure to South Korea's high-speed internet and subscription-based databases expanded participants' awareness of credible academic repositories. As *Participant J* explained, '*I usually turn first to trusted and easily accessible sources, like academe-published research. For example, I know that one university already has studies on certain crop diseases, so I refer to their work when farmers ask me about it*'.

Fragmented information environments also shaped their behaviors, as information from external agencies was inconsistently shared and often required follow-ups or personal networks. Participant C explained, '*In study of crops like coffee… being implemented by other agencies.. they do not always report to us…no regular updates*'. By contrast, in South Korea participants encountered more centralized systems of inter-agency coordination, supported by digital platforms and government–university linkages, which broadened their sense of what coordinated information systems could look like. As Participant C noted, '*Here in South Korea, updates from different agencies are usually shared through a single platform or in regular joint meetings, so we do not need to chase after information*'.

Besides, economic context, such as journal subscription costs, impose a disproportionate burden on developing countries, where limited budgets and unfavourable exchange rates make access prohibitively expensive (Bribena, 2019). Paywalls, subscription gaps, and restricted ICT budgets further constrain access, pushing professionals toward open web sources and summaries. '*Accessing international journals is very expensive,*' noted Participant D. Rising prices have reduced the number of journals institutions can afford, widening the accessibility gap (Poynder, 2014)

Discussion

The application of Leckie et al.'s (1996) model highlights the iterative and reflexive nature of agricultural professionals' information behavior, with roles and tasks generating needs shaped by context (Freund, 2015; Ghimire et al., 2021; Hamdan Al-Zahrani et al., 2021; Tiraieyari et al., 2019). Extension workers required complete and timely packages, researchers' technical data and international standards, educators validated pedagogical materials, policymakers authoritative yet adaptable sources, and specialists a balance between global models and local adaptations. Experience further refined these needs, as early-career professionals relied on institutional reports while later-career participants incorporated broader international frameworks (Kern et al., 2018). This study extends Leckie et al. by demonstrating how infrastructural constraints in developing contexts reshape the feedback loop and motivate hybrid strategies combining global standards, official documents, and local knowledge.

Participants drew on both formal and informal sources, balancing credibility, accessibility, and contextual relevance. Government manuals, international standards, and scientific literature offered authority and precision, while colleagues, professional networks, and digital searches provided immediacy and adaptability (Ikoja-Odongo et al., 2013; Sulaiman, 2020). Similar hybrid patterns appear across professions: healthcare workers blend journals and peer consultation (Dunn et al., 2017; Jones et al., 2011), engineers combine databases and online forums (Savolainen, 2024), and educators integrate structured resources with collegial advice (Shipman et al., 2015).

Awareness further shaped information behavior. In home-country contexts, awareness of formal sources was largely confined to government bulletins and institutional reports, while informal channels and open web resources compensated for infrastructural gaps (Saleh et al., 2012; Yilmaz et al., 2020). In South Korea, access to subscription databases, coordinated research–extension systems, and advanced digital infrastructures expanded formal awareness. This contrast reflects broader evidence that professionals in resource-rich environments rely on expansive systems, whereas those in developing contexts adapt through relational channels and pragmatic workarounds (Ikoja-Odongo et al., 2013; Kern et al., 2018).

The findings reinforce Leckie's feedback loop, wherein outcomes reshape future source use. Positive experiences sustained reliance, while barriers such as poor connectivity, subscription costs, and language inaccessibility prompted adaptive strategies, including translation, interpersonal validation, and blended sourcing (Salem et al., 2022).

The feedback mechanism was shaped by the nature of information needs. Urgent extension tasks favoured immediate, easily communicated sources, reinforcing reliance on quick-access channels such as Google and interpersonal exchanges, consistent with two-step seeking patterns (Ikoja-Odongo et al., 2013). In contrast, technical and policy tasks demanded precision and authority, strengthening dependence on international standards, peer-reviewed literature, and government legislation, as observed in legal and agricultural contexts (Brown et al., 2022; Nwone et al., 2020). Information outcomes—successful, partial, or inconclusive—guided professionals' judgments of source adequacy and refined subsequent awareness and strategies.

This feedback loop fostered hybrid repertoires that combined formal and informal sources. Exposure to South Korea's infrastructures expanded awareness through positive encounters with subscription databases and research–extension platforms, while persistent constraints in home-country contexts sustained adaptive and interpersonal practices, reflecting resilient knowledge strategies in developing settings (Jonathan & Nwokocha, 2015).

Conclusion

This study examined the information seeking behavior of agricultural professionals from developing countries using Leckie, Pettigrew, and Sylvain's (1996) model. The findings reveal that

professional roles and tasks generate differentiated information needs, while extending the model by showing how infrastructural constraints shape the feedback loop of awareness, source selection, and outcomes. Information needs varied by role and experience, with early-career professionals relying on institutional manuals and later-career participants integrating international frameworks.

Agricultural professionals used both formal and informal sources, balancing authority, accessibility, and relevance. Government reports, international standards, and scientific literature provided credibility, while colleagues and quick digital searches offered immediacy. In home-country contexts, limited connectivity constrained awareness to institutional and interpersonal sources, whereas exposure to South Korea expanded awareness through subscription databases, coordinated research–extension platforms, and advanced digital systems.

The findings underscore Leckie's feedback loop, where information outcomes reshape awareness and preferences. Positive experiences reinforced reliance, while barriers such as paywalls, technical complexity, and weak infrastructure prompted adaptive strategies. Over time, professionals developed hybrid repertoires that integrated global standards with local knowledge, highlighting agriculture's value for refining professional ISB models.

Building on these findings, the study offers theoretical implications for strengthening information seeking in resource-constrained agricultural contexts and for refining existing ISB models, particularly by:

- Refining Leckie et al.'s model by showing how infrastructural constraints shape awareness, accessibility, and strategy formation.
- Advancing ISB scholarship by demonstrating the centrality of hybrid formal–informal strategies in developing contexts.
- Expanding understandings of professional ISB by revealing how agricultural uncertainty heightens reliance on informal and relational information pathways.

The findings also suggest practical implications for improving information and extension services:

- Developing updated technical packages with localized guidelines and translation support for extension and research services.
- Integrating formal databases with informal, community-based information channels.
- Improving ICT and digital infrastructure to reduce access barriers and enhance timely access to authoritative information.
- Investing in coordinated research–extension platforms to standardize and streamline information delivery.

This study is limited by its small, cross-country sample and varied participant information competencies. Future research should involve larger, more homogeneous samples and adopt comparative and longitudinal designs to better examine cross-country similarities and differences. Farmers were excluded to focus on agricultural professionals whose roles generate more dynamic information needs aligned with ISB models; thus, future studies should examine farmers as a distinct group. Such work can further advance LIS scholarship on information behavior, infrastructure, and development.

Acknowledgements

The author gratefully acknowledges the participants of this study for their time, insights, and willingness to share their experiences, which made this research possible.

About the authors

Ana Mae Cantel is a faculty member of the Library and Information Science program at Central Philippine University, Philippines. She is currently pursuing her PhD in Library and Information Science at Kyungpook National University, South Korea. She can be contacted at ambcantel@cpu.edu.ph.

Eun Youp Rha is an Assistant Professor in the Department of Library and Information Science at Kyungpook National University in South Korea. She received her Ph.D. from Rutgers University, and her research interests include human information behaviour of sociocultural communities. She can be contacted at eyrha@knu.ac.kr

References

Acharya, S., Acharya, S. K., Mandal, T. K., Mohanty, B. K., & Haque, M. (2023). Information Receiving Behavior of Farmers: The Structural and Functional Analysis. Indian Journal of Extension Education.
https://doi.org/10.48165/IJEE.2023.59311

Assaye, B. T., Kassa, M., Belachew, M., Birhanu, S., & Worku, A. (2023). Association of digital health literacy and information-seeking behaviors among physicians during COVID-19 in Ethiopia: A cross-sectional study. DIGITAL HEALTH, 9, 20552076231180436.
https://doi.org/10.1177/20552076231180436

Belkin, N. J. (2010). On the evaluation of interactive information retrieval systems.
https://doi.org/10.7282/T3SF2TJK

Bribena, K. (2019). Globalization and Knowledge Production in the World: A Critical Analysis of the Place of Africa. Journal of Reviews on Global Economics, 8, 12–20.
https://doi.org/10.6000/1929-7092.2019.08.02

Bronstein, J., & Solomon, Y. (2021). Exploring the information practices of lawyers. Journal of Documentation, 77(4), 1003–1021.
https://doi.org/10.1108/JD-10-2020-0165

Brown, M. E., Mugo, S., Petersen, S., & Klauser, D. (2022). Designing a Pest and Disease Outbreak Warning System for Farmers, Agronomists and Agricultural Input Distributors in East Africa. Insects, 13(3), 232.
https://doi.org/10.3390/insects13030232

Byström, K., & Hansen, P. (2005). Conceptual framework for tasks in information studies. Journal of the American Society for Information Science and Technology, 56(10), 1050–1061.
https://doi.org/10.1002/asi.20197

Case, D. O., & Given, L. M. (2016). Looking for Information: A Survey of Research on Information Seeking, Needs, and Behavior. Emerald Group Publishing. ISBN 0-12-150381-X.

Chang, Y.-H., Hsu, C.-H., Tseng, Y.-C., Yang, W.-C., & Chiou, H.-Y. (2025). Information sources as determinants of use of formal long-term care: a cross-sectional study in Taiwan. BMC Health Services Research, 25(1), 910.
https://doi.org/10.1186/s12913-025-12814-6

Hamdan Al-Zahrani, K., Barjees Baig, M., Russell, M., Hasan Herab, A., Thabet Mohammed Dabiah, A., & Abdullah Al-Zahrani, K. (2021). Biological yields through agricultural extension activities and services: A case study from Al-Baha region – Kingdom of Saudi Arabia. Saudi

Journal of Biological Sciences, 28(5), 2789–2794. https://doi.org/10.1016/j.sjbs.2021.02.009

Jonathan, N. C., & Nwokocha, U. (2015). Information needs and behaviours in developing countries: A perspective of Ranganathans Pmest categorization. International Journal of Library and Information Science, 7(2), 27–32. https://doi.org/10.5897/IJLIS2014.0455

Choi, S.-W., & Shin, Y. J. (2023). Role of Smart Farm as a Tool for Sustainable Economic Growth of Korean Agriculture: Using Input–Output Analysis. Sustainability, 15(4), 3450. https://doi.org/10.3390/su15043450

Dunn, K., Marshall, J. G., Wells, A. L., & Backus, J. E. B. (2017). Examining the role of MEDLINE as a patient care information resource: an analysis of data from the Value of Libraries study. Journal of the Medical Library Association, 105(4). https://doi.org/10.5195/jmla.2017.87

Freund, L. (2015). Contextualizing the information-seeking behavior of software engineers. Journal of the Association for Information Science and Technology, 66(8), 1594–1605. https://doi.org/10.1002/asi.23278

Gebeyehu, H. Z., & Jira, Y. S. (2024). An assessment of information seeking behavior of agricultural agents to retrieve need-based information in Sidama regional state of Ethiopia. Heliyon, 10(7), e28540. https://doi.org/10.1016/j.heliyon.2024.e28540

Ghimire, R., Suvedi, M., Kaplowitz, M., & Richardson, R. B. (2021). Perceived Importance of Core Competencies among Extension Professionals in Nepal. Global Journal of Agricultural and Allied Sciences, 3(1), 8–15. https://doi.org/10.35251/gjaas.2021.002

Goncharov, V. N., Erokhin, A. M., Kolosova, O. U., Ivashova, V. A., Chvalun, R. V., & Berkovsky, V. A. (2020). Agrarian establishment social position under conditions of the rural qualitative transformation. IOP Conference Series: Earth and Environmental Science, 422(1), 012127. https://doi.org/10.1088/1755-1315/422/1/012127

IKoja-Odongo, R., & Mostert, R. (2013). Information seeking behaviour: a conceptual framework. South African Journal of Libraries and Information Science, 72(3). https://doi.org/10.7553/72-3-1112

Islam, A., & Tsuji, K. (2016). Information Professionals' Knowledge Sharing Practices in social media: A Study of Professionals in Developing Countries. International Journal of Knowledge Content Development & Technology, 6(2), 43–66. https://doi.org/10.5865/IJKCT.2016.6.2.043

Jenkin, T. (2013). Extending the 4I Organizational Learning Model: Information Sources, Foraging Processes and Tools. Administrative Sciences, 3(3), 96–109. https://doi.org/10.3390/admsci3030096

Jones, J., Schilling, K., & Pesut, D. (2011). Barriers and Benefits Associated with Nurses Information Seeking Related to Patient Education Needs on Clinical Nursing Units. The Open Nursing Journal, 5, 24–30. https://doi.org/10.2174/1874434601105010024

Kassem, H. S., Alotaibi, B. A., Aldosri, F. O., & Muddassir, M. (2021). Exploring the Relationship between Information-Seeking Behavior and Adoption of Biofertilizers among Onion Farmers. Agronomy, 11(6), 1258. https://doi.org/10.3390/agronomy11061258

Kern, D., & Hienert, D. (2018). Understanding the information needs of social scientists in Germany. Proceedings of the Association for Information Science and Technology, 55(1), 234–243. https://doi.org/10.1002/pra2.2018.14505501026

Kumaran, D., Hassabis, D., & McClelland, J. L. (2016). What Learning Systems do Intelligent Agents Need? Complementary Learning Systems Theory Updated. Trends in Cognitive Sciences, 20(7), 512–534. https://doi.org/10.1016/j.tics.2016.05.004

Leckie, G. J., Pettigrew, K. E., & Sylvain, C. (1996). Modeling the Information Seeking of Professionals: A General Model Derived from Research on Engineers, Health Care Professionals, and Lawyers. The Library Quarterly, 66, 161–193. https://doi.org/10.1086/602864

Mahindarathne, M. G. P. P., & Min, Q. (2018). Developing a model to explore the information seeking behaviour of farmers. J. Documentation, 74, 781–803. https://doi.org/10.1108/JD-04-2017-0065

McKenzie, S., Parkinson, H., Mangold, J., Burrows, M., Ahmed, S., & Menalled, F. (2018). Perceptions, Experiences, and Priorities Supporting Agroecosystem Management Decisions Differ among Agricultural Producers, Consultants, and Researchers. Sustainability, 10(11), 4096. https://doi.org/10.3390/su10114096

Moen, F., Olsen, M., & Bjørkøy, J. A. (2020). Investigating Possible Effects from a One-Year Coach-Education Program. Sports, 9(1), 3. https://doi.org/10.3390/sports9010003

Mokhtar, W. N. H. W., Izhar, T. A. T., Zaini, M. K., & Hussin, N. (2022). The Importance of Digital Literacy Skills among Farmers for Sustainable Food Security. International Journal of Academic Research in Business and Social Sciences, 12(1), 235–246. http://dx.doi.org/10.6007/IJARPED/v11-i1/12104

Ntombela, S. M. (2024). Obligations of agricultural economists in South Africa's policy formulation. Agrekon, 63(4), 205–212. https://doi.org/10.1080/03031853.2024.2426311

Nwone, S. A., & Mutula, S. M. (2020). Active and passive information behaviour of the professoriate: A descriptive comparative pattern analysis. SA Journal of Information Management, 22(1). https://doi.org/10.4102/sajim.v22i1.1161

Oyeniyi, J. O. (2020). Analytical Study of Information Need and Seeking Behaviour of Agricultural Researchers in Nigeria. International Journal of Sciences. DOI: 10.18483/ijSci.2301

Park, S.-H., & Moon, K.-M. (2019). The Economic Effects of Research-led Agricultural Development Assistance: The Case of Korean Programs on International Agriculture. Sustainability, 11(19), 5224. https://doi.org/10.3390/su11195224

Poynder, R. (2014). Open access: What price affordability? Ecancermedicalscience, 8, ed41. https://doi.org/10.3332/ecancer.2014.ed41

Qasemi, M., Allahyari, M. S., Ben Hassen, T., Askari, M. I., & El Bilali, H. (2023). Cultivating Change: Perceptions and Attitudes of Agricultural Experts towards the Sustainable Development Goals. Land, 12(8), 1604. https://doi.org/10.3390/land12081604

Reis, J. A. V. D., Hoshide, A. K., Vreyens, J. R., Oliveira, A. S. D., Barros, V. A. M. D., Silva, W. M. D., Molossi, L., Viana, J. L., Abreu, D. C. D., & Oliveira, R. A. D. (2023). Training Sources and Preferences for Agricultural Producers and Professionals in Middle-North Mato Grosso, Brazil. Sustainability, 15(6), 4712. https://doi.org/10.3390/su15064712

Ryan, N. R., & Ryan, N. C. (2025). Searching for the unexpected – understanding information-seeking behaviours of people new to prison visits. Psychiatry, Psychology and Law, 32(1), 1–22. https://doi.org/10.1080/13218719.2023.2272910

Salem, R. M., Sara, A. B., Kombo, S. S., Hopwood, S., & Sullivan, T. M. (2022). What Drives Knowledge Seeking, Sharing, and Use Among Family Planning Professionals? Behavioral Evidence from Africa, Asia, and the United States. Global Health: Science and Practice, 10(4), e2200036. https://doi.org/10.9745/GHSP-D-22-00036

Saleh, A. G., & Abu Bakar, A. B. (2012). Information Seeking Behavior of the Ulama in Relation to Preaching and Counseling Roles in Nigeria. Theological Librarianship, 6(1), 29–46. https://doi.org/10.31046/tl.v6i1.177

Savolainen, R. (2024). Approaching information-seeking habits and their contextual features. Information Research, 29(2), 126-148. https://doi.org/10.47989/ir292706

Shesha, A., & Singh, D. R. (2023). Information Seeking Behavior of Postgraduate Students of Agriculture of Bundelkhand University Jhansi. Praxis International Journal of Social Science and Literature. DOI:10.51879/PIJSSL/060822

Shipman, T., Bannon, S. H., & Nunes-Bufford, K. (2015). The Information-Seeking Habits of In-Service Educators. College & Research Libraries, 76(2), 120–135. https://doi.org/10.5860/crl.76.2.120

Strauss, A. & Corbin, J. M., (1990). Grounded theory research: Procedures, canons, and evaluative criteria. Qualitative Sociology, 13(1), 3–21. https://doi.org/10.1007/BF00988593

Sulaiman, K. A. (2020). Socio-Psychological Factors as Determinants to Information-Seeking Behavior of LIS Undergraduates in Kwara State. Insaniyat: Journal of Islam and Humanities, 5(1), 49–62. https://doi.org/10.15408/insaniyat.v5i1.15979

Tenopir, C., Christian, L., & Kaufman, J. (2019). Seeking, Reading, and Use of Scholarly Articles: An International Study of Perceptions and Behavior of Researchers. Publications, 7(1), 18. https://doi.org/10.3390/publications7010018

Tiraieyari, N., Karami, R., Ricard, R. M., & Badsar, M. (2019). Influences on the Implementation of Community Urban Agriculture: Insights from Agricultural Professionals. Sustainability, 11(5), 1422.
https://doi.org/10.3390/su11051422

Wang, Haiping (2024). Practical Approaches to Building a Modern Agriculture Professional Group in the Context of Rural Revitalization. Agricultural & Forestry Economics and Management. Vol. 7: 28-35.
http://dx.doi.org/10.23977/agrfem.2024.070105

Widiyanti, E., Karsidi, R., Wijaya, M., & Utari, P. (2021). Information Needs and Behaviour for Sustainable Farming Among Millennial and Progressive farmers. IOP Conference Series: Earth and Environmental Science, 828(1), 012052.
https://doi.org/10.1088/1755-1315/828/1/012052

Yilmaz, B., & OztiMurlenk, S. (2020). The Relationship between Emotional Intelligence and Information Behavior of Academics in Hacettepe University. Bilgi Yönetimi, 3(2), 157–169.
https://doi.org/10.33721/by.798985