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## Knowledge management in the agriculture sector: a systematic literature review

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### Synopsis

Knowledge Management (KM) is a well-established field with a substantial body of research. However, the existing KM literature predominantly centres on business enterprises, with limited attention devoted to agricultural contexts. Given the critical role of agriculture in ensuring global food and nutritional security and advancing sustainability objectives, KM in increasingly being recognized as a pivotal enabler for this sector.

This paper investigates how KM processes have been applied in agriculture-related research. While the agricultural context offers a unique landscape for KM research, a more nuanced understanding of KM's applicability is essential to establish a robust and cumulative future research agenda.

### Introduction and Background

Knowledge is a crucial factor of agriculture production (Tijjani et al. 2017). As land, water and nutrients face resource constraints, knowledge is increasingly viewed as a vital resource for food growth and sustainability (Thorn et al. 2020). Agriculture knowledge not only concerns farmers, but all actors in agricultural value chains from agribusiness players, researchers, technical agriculture experts, to governments. These stakeholders are key knowledge actors who possess, utilize and develop knowledge through their day-to-day work in the sector. Through these actors' practices, agriculture knowledge continues to emerge, and through interaction with other factors like the environment, is subjected to various KM processes, i.e.

knowledge creation, knowledge sharing, knowledge transfer, knowledge codification and knowledge application.

### Issues and Questions Considered

Using a systematic literature review (SLR), this research investigated how KM processes have been employed within the agricultural context in order to establish a research agenda.

Specifically, the research addressed the following questions:

1. What is the current focus of KM research in terms of knowledge processes in the agriculture sector?
2. What aspects of each knowledge process are underrepresented when it comes to agriculture?
3. Where should future research efforts focus?

### Methodology

This paper followed a similar process to previous SLRs on KM topics. An initial search examined the top 20 journals (tiers A & B) from Serenko & Bontis' (2021) list of KM and Intellectual Capital journals. Searches were conducted in each of the journals using the keywords "knowledge\* AND (agri\* OR farm\* OR food\*)" present in the text with the asterisk (\*) to facilitate unlimited truncation. An initial screening of the resulting publications yielded 72 peer-reviewed articles, which were subsequently reduced to 58 after eliminating duplicates.

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To ensure the quality of evidence and align with established SLR practices, the focus was then narrowed to empirical, peer-reviewed research. These criteria resulted in 12 eligible articles, highlighting a limited scholarly attention to KM in the agriculture context.

Given the small number of papers identified from KM journals and the need for literature reviews to be comprehensive (Aromataris & Riitano, 2014), the search terms and inclusion criteria were retained but the scope of the search was expanded to encompass papers from non-KM journals. A subsequent search was conducted on 'Academic Search Complete,' a multidisciplinary database encompassing over 7,300 peer-reviewed journals across various fields. This search yielded 311 potentially relevant papers, which subsequently reduced to 206 after the removal of duplicates. By again focusing on empirical, peer-reviewed articles, 32 papers from non-KM journals were identified. This resulted in a total of 44 relevant papers for the systematic literature review. A coding matrix was then developed to analyse the selected papers. Thematic analysis was conducted to identify and cluster key themes.

### Outcomes and Findings

The following discussion examines how different knowledge processes have been addressed by KM and non-KM researchers.

**Knowledge creation:** Both KM and non-KM papers focused predominantly on explicit knowledge creation. Researchers viewed knowledge creation in three ways: creating and developing new technologies; using these technologies to create new knowledge; and producing knowledge through education systems. The focus was on technologies to support knowledge creation rather than knowledge creation practices. Some KM researchers went beyond knowledge creation by individual stakeholder groups and consider using technology to co-create knowledge, by enabling socialisation and individual knowledge processes to occur within a social context for the benefit of diverse agriculture knowledge actors. However, they observed that knowledge co-creation is susceptible to power differentials between and across stakeholder relationships, which arise when inherent inequalities exist between groups.

**Knowledge codification:** KM studies examined knowledge codification using technology. Knowledge codification focused on decision support in agriculture organisations. Non-KM studies, however, examined codification of farmers' indigenous knowledge for future retrieval and use through various technologies and physical libraries.

**Knowledge transfer:** KM research primarily focuses on knowledge transfer within agriculture organizations, emphasizing the roles of experts and managers in facilitating this process. In contrast, non-KM studies

primarily focus on knowledge transfer from governments to farmers through agriculture extension programs. These studies mostly portray farmers as passive recipients of knowledge, with governments as the sole knowledge producers and extension agents as gatekeepers. While traditional extension relied heavily on human agents, recent research highlights the increasing importance of ICT-based extension approaches and mass media in facilitating knowledge transfer to farming communities.

**Knowledge sharing:** Non-KM research primarily focuses on knowledge sharing within homogeneous farming communities. These communities act as learning spaces where farmers exchange knowledge through social interactions, primarily relying on local networks and Indigenous knowledge. This reliance on internal knowledge sources can limit exposure to new knowledge and potentially lead to the retention of outdated practices among farming communities. In contrast, KM scholars focused more on knowledge sharing among non-farmer stakeholder groups in structured organisational settings such as staff in agri-food enterprises and agriculture-related NGOs. Both literature streams recognize the importance of social interaction in knowledge sharing but fall short of exploring the broad range of agriculture stakeholder groups.

**Knowledge application:** Knowledge application in agriculture has been largely overlooked in the mainstream KM literature. Research on this process has primarily been conducted by non-KM researchers and predominantly considered the farmers application of indigenous knowledge in their communities and their use of technologies to support knowledge application. The problem with such studies is that while individually useful, they do not draw on established KM research, making it difficult to build a cumulative theoretical framework.

### Future research direction:

KM scholars should play a leading role in agriculture knowledge management (AKM) research. Their focus should extend beyond organizational boundaries to encompass rural communities, investigating how power dynamics and inequalities influence agriculture knowledge processes. Researchers should critically evaluate the role of technology in enhancing knowledge processes in developing countries, considering barriers like limited education and funding. Furthermore, scholars should develop frameworks for integrating indigenous knowledge with other forms of knowledge, acknowledging the diverse knowledge held by all stakeholders, including farmers, researchers, and policymakers. This holistic approach should aim to ensure equitable access to and utilization of knowledge among all actors and ultimately contribute to more effective agricultural practices.

The underlying paper was published in the Knowledge Management Research & Practice Journal, and a full copy can be obtained at: <https://doi.org/10.1080/14778238.2024.2359419>

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### Forthcoming Research Bulletin

Title: Manhattan Transfer:

Heterogeneous productivity effects of agglomeration in American authorship

Author:

Kuld, L., Mitchell, S., Hellmanzik, C.

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