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KNOWLEDGE TRANSFER APPROACHES AND PERFORMANCE OF AGRICULTURAL SMES IN KIAMBU COUNTY KENYA

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ABSTRACT

This study sought to examine the effect of knowledge transfer approaches on performance of agricultural SMEs in Kenya. This study was guided by the following specific objectives; to examine the effect of communities of practice on performance of agricultural SMEs in Kenya and to find out the effect of knowledge management systems on performance of agricultural SMEs in Kenya. This study was guided by social network theory and knowledge-based theory. The study used descriptive research design. The target population consisted of 347 Disadvantaged Group SMEs operating in the agricultural sector in Kenya. A sample size of 186 respondents was determined using the Yamane formula, and a simple random sampling technique was used to select the participants. Primary data was collected using a structured questionnaire with closed-ended questions. Data analysis involved both quantitative and qualitative techniques. Qualitative data from open ended questions were analyzed using content analysis and presented in prose form. Quantitative data on the other hand was analyzed using SPSS where descriptive statistics such as mean, standard deviation, frequencies and percentages were used. Correlation analysis was also done to test the strength and direction of linear relationship between variables. Multiple regression analysis was conducted to determine the relationships between the independent variables (knowledge transfer approaches) and the dependent variable (performance of agricultural SMEs). The findings were presented in tables and figures. The regression analysis revealed significant positive coefficients for each of the key variables studied: communities of practice (CoPs), and knowledge management systems (KMS). Specifically, the coefficient for CoPs was $\beta = 0.292$ ($p < 0.05$), indicating a positive impact on SME performance. Similarly, knowledge management systems exhibited a significant coefficient of $\beta = 0.264$ ($p < 0.05$), highlighting their positive contribution to SME performance. Based on the findings, recommendations for improving the performance of agricultural SMEs in Kenya include fostering collaboration through communities of practice and implementing effective knowledge management systems. These initiatives can promote knowledge transfer, skill development, and operational efficiency, driving sustainable growth and competitiveness in the sector.

Key Words: Knowledge Transfer Approaches, Communities of Practice, Knowledge Management Systems, Performance, Agricultural SMEs

Introduction

Agriculture has long been recognized as a vital contributor to economic development and food security worldwide. It is a sector that provides essential goods and services, including food, fiber, and raw materials for industrial processes, and is critical to the livelihoods of millions of people around the globe. In developing countries, agriculture is often the main source of employment and income for rural communities, particularly for smallholder farmers. According to the World Bank, agriculture is the primary source of livelihood for 78% of the world's poor (World Bank, 2021). The sector also contributes significantly to the economies of many countries. For instance, in sub-Saharan Africa, agriculture accounts for 23% of the region's GDP and employs 60% of the labor force (FAO, 2021). Furthermore, the agricultural sector has the potential to play a crucial role in achieving several of the United Nations Sustainable Development Goals (SDGs), such as eradicating poverty and hunger, promoting economic growth, and reducing inequalities (FAO, 2021)

In Kenya, agriculture accounts for 26% of the country's gross domestic product (GDP) and provides employment to about 40% of the total population (World Bank, 2022). Small and medium-sized enterprises (SMEs) play a crucial role in the development of the agricultural sector, as they contribute significantly to employment creation, income generation, and food security (Barasa et al., 2020). However, agricultural SMEs in Kenya face numerous challenges that hinder their growth and competitiveness. For instance, these SMEs have limited access to capital, inadequate infrastructure, and a lack of skilled labor (KPMG, 2017). These challenges often result in low productivity and low profitability, which in turn affects the overall performance of the agricultural sector in Kenya.

One potential solution to address these challenges is the use of knowledge transfer approaches. Knowledge transfer is the process of sharing knowledge, skills, and experience from one individual or organization to another (Kaur & Singh, 2020). Several knowledge transfer approaches can be used, including communities of practice

knowledge management systems

These approaches have been found to be effective in improving the performance of SMEs in various industries. Owing to the importance of knowledge transfer approaches, this study sought to examine the effect of knowledge transfer approaches on performance of agricultural SMEs in Kenya.

Statement of the Problem

The problem at hand revolves around the critical role that Small and Medium Enterprises (SMEs) play in the context of agricultural productivity, rural development, and employment creation in Kenya, a nation where agriculture significantly influences the economy. According to the World Bank (2022), agriculture constitutes approximately 26% of Kenya's GDP, employs over 40% of the population, and contributes to 65% of the country's total exports. Despite this substantial contribution, agricultural SMEs in Kenya face a myriad of formidable challenges, including limited access to vital information and knowledge resources, insufficient funding, and inadequate infrastructure.

Statistics from the World Bank (2019) indicate that merely 20% of SMEs in low-income countries like Kenya have access to formal financial services, and even fewer have access to training and knowledge transfer services. The deficiency in knowledge transfer services is particularly concerning, as it represents a substantial impediment to enhancing the productivity and competitiveness of SMEs within the agricultural sector. Research by Kariuki et al. (2020) reinforces this issue, revealing that inadequate access to information and knowledge poses a

significant challenge for agricultural SMEs in Kenya, especially in areas such as financial management, marketing, and value chain management.

Conversely, studies like the one conducted by Nyangweso et al. (2021) suggest that knowledge transfer interventions, such as training and mentoring, have the potential to significantly enhance the performance of agricultural SMEs in Kenya. Several empirical studies beyond Kenya's borders support this assertion. Adekunle et al. (2020) demonstrated that training and mentoring positively impact SMEs in Nigeria's agriculture sector, boosting productivity and competitiveness. Similarly, Ofori et al. (2018) uncovered the positive influence of coaching on SMEs in Ghana's agriculture sector, enhancing their knowledge and skills, and subsequently, their performance. In Kenya, Ondieki and Nyikal (2019) discovered that knowledge transfer through training and extension services led to increased yields and income for smallholder farmers, while Chepkorir and Bett (2020) revealed that farmer field schools led to improved yields and income for smallholder farmers as well.

However, despite growing interest and research in improving the knowledge and skills of agricultural SMEs, there remains a notable gap in the literature. Specifically, the effectiveness of various knowledge transfer approaches, such as

communities of practice, and knowledge management systems, on the performance of agricultural SMEs has not been comprehensively explored. Therefore, this study aimed to address this gap by investigating the impact of these diverse knowledge transfer approaches on the performance of agricultural SMEs in Kenya.

Objectives of the Study

This study was guided by the following specific objectives;

i. To examine the effect of communities of practice on performance of agricultural SMEs in Kenya
ii. To find out the effect of knowledge management systems on performance of agricultural SMEs in Kenya

LITERATURE REVIEW

Theoretical Review

Social Network Theory

Social Network Theory (SNT) is a theoretical framework that examines the relationships and social structures between individuals, groups, or organizations. It provides insights into how social interactions, connections, and communication patterns affect various aspects of society, including knowledge sharing, information diffusion, innovation, and performance. Émile Durkheim a renowned sociologist and psychologist, contributed to the understanding of social structure and its influence on individual behavior and collective consciousness. Contemporary development of SNT is attributed to scholars such as Mark Granovetter (1973), Ronald Burt (2004), and Barry Wellman (1999).

Mark Granovetter's influential work on "The Strength of Weak Ties" highlights the importance of weak ties in social networks for accessing new information and opportunities (Granovetter, 1973). Ronald Burt's research focuses on the concept of "structural holes," which refers to gaps between individuals or groups within a network that can be strategically filled to access diverse information and resources (Burt, 2004). Barry Wellman's studies emphasize the role of technology and digital networks in shaping modern social connections and interactions (Wellman, 1999).

Social Network Theory can be effectively linked to the study variable of communities of practice (CoPs), which are groups of individuals who share a common interest, engage in collective learning, and develop a shared understanding within a specific domain. Wenger, McDermott, and Snyder (2002), in their book "Cultivating Communities of Practice," argue that social networks play a crucial role in facilitating the creation and sharing of knowledge within CoPs. They highlight the importance of relationships and interactions between members, as well as the external connections of the community.

Research by Adhikari and Sabherwal (2010) examined the impact of social networks and communities of practice on innovation outcomes in small and medium-sized enterprises. They found that strong ties within communities of practice positively influenced knowledge sharing and innovation performance. Additionally, Schiller, Voegtlin, and Patzer (2013) investigated the role of communities of practice in fostering sustainable management practices. They found that participation in communities of practice enhanced the adoption and implementation of sustainable practices among organizations.

However, it is important to note that Social Network Theory has faced critiques. Some scholars argue that SNT oversimplifies human behavior by reducing social interactions to measurable ties and neglecting the complex social and cultural contexts that shape interactions. Additionally, critics suggest that SNT tends to focus more on individual-level outcomes and less on the collective dynamics within communities.

In the present study on the performance of agricultural SMEs in Kenya, Social Network Theory was utilized to examine the role of social relationships within CoPs in facilitating access to information, resources, and market opportunities. By analyzing the network structure and centrality of actors within agricultural CoPs, researchers can assess how the pattern of interactions influences the performance outcomes of SMEs. Additionally, the identification of structural holes and the bridging of diverse communities can shed light on potential strategies to enhance the performance of agricultural SMEs through targeted network interventions.

Knowledge-Based Theory

Knowledge-Based Theory (KBT), developed by Nonaka and Takeuchi in 1995, is a theoretical framework that emphasizes the role of knowledge in organizations and its contribution to competitive advantage and performance (Nonaka & Takeuchi, 1995). Within the context of KBT, knowledge management systems play a crucial role in facilitating knowledge creation, acquisition, sharing, and application.

Knowledge management systems refer to the organizational structures, processes, and technologies that support the effective management of knowledge. These systems enable the capture, storage, retrieval, and dissemination of explicit and tacit knowledge within an organization (Alavi & Leidner, 2001). In the context of KBT, knowledge management systems act as enablers, providing a platform for effective knowledge sharing, collaboration, and learning.

Knowledge management systems can be linked to the mentoring approach within KBT. Mentoring relationships, which involve the transfer of tacit knowledge and expertise, can benefit from knowledge management systems. These systems provide a centralized repository for capturing and organizing tacit knowledge shared within mentoring relationships. Mentees can access this knowledge base, learn from past experiences, and leverage the insights gained from mentors (Eby et al., 2013). By integrating knowledge management systems with the mentoring approach, organizations can enhance the effectiveness and scalability of mentoring programs, ensuring that valuable knowledge is captured, preserved, and made accessible to a broader audience.

Similarly, knowledge management systems are relevant to the formal training approach within KBT. Formal training programs generate explicit knowledge and specific competencies. Knowledge management systems can facilitate the storage and retrieval of training materials, resources, and documentation. This enables employees to access training content when needed, review key concepts, and reinforce their learning (Choi & Lee, 2003). Additionally, knowledge management systems can support collaboration and knowledge sharing among trainees, allowing them to exchange insights, experiences, and best practices (Alavi & Leidner, 2001). Through the integration of knowledge management systems, organizations can enhance the effectiveness of formal training programs, enabling continuous learning and knowledge transfer.

It is important to note that the successful implementation of knowledge management systems requires attention to organizational culture, leadership support, and employee engagement (Alavi & Leidner, 2001). Organizations must foster a culture of knowledge sharing, establish incentives for participation, and provide training and support for system usage. Leadership plays a crucial role in promoting knowledge management practices and setting the tone for knowledge sharing behaviors.

Knowledge-Based Theory therefore highlights the significance of knowledge management systems in facilitating knowledge creation, acquisition, sharing, and application. These systems support both the mentoring approach and the formal training approach within KBT by providing platforms for effective knowledge sharing, collaboration, and learning. By integrating knowledge management systems into mentoring and formal training programs, organizations can enhance knowledge transfer, improve performance, and gain a competitive edge.

Conceptual Framework

Conceptual framework in research is based on the reviewed literature both conceptual and empirical. This is presented graphically to show the connection between different variables affecting and determining the objective of the study relationships.

Independent Variables

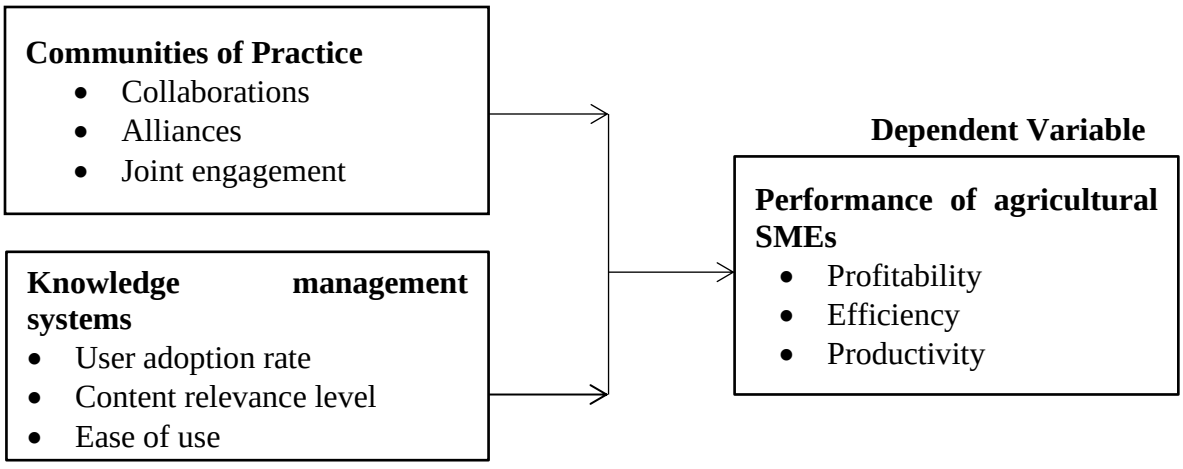

Figure 1: Conceptual Framework

Communities of Practice

A community of practice is a group of people who "share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger-Trayner & Wenger-

Trayner, 2015). Communities of practice are formed by individuals who engage in a process of collective learning within a shared domain of interest or expertise.

The formation of a community of practice can occur naturally, driven by the members' common interest in a specific field, or it can be intentionally created with the objective of gaining knowledge and expertise in a particular area. Through the process of sharing information, experiences, and engaging in collaborative activities, community members learn from one another and have opportunities for personal and professional development.

Communities of practice can exist in physical settings, such as a lunchroom at work or a factory floor, as well as in virtual environments. In virtual communities of practice, members collaborate online using platforms such as discussion boards, newsgroups, or social media chats (Zboralski & Gemuenden, 2015). These virtual communities provide a space for knowledge sharing and collaboration, allowing individuals from diverse locations to connect, interact, and learn from each other.

The concept of communities of practice has gained significant attention in various fields, including education, healthcare, business, and innovation. Scholars and practitioners recognize the value of communities of practice in fostering knowledge exchange, promoting innovation, and enhancing individual and organizational performance (Lave & Wenger, 1991; Wenger-Trayner & Wenger-Trayner, 2015).

It is worth noting that the success and effectiveness of communities of practice depend on various factors, including the level of participation, facilitation, and support from organizational leaders. Additionally, challenges such as sustaining engagement, ensuring inclusivity, and managing conflicts may arise within communities of practice (Wenger-Trayner & Wenger-Trayner, 2015).

Knowledge Management Systems

Knowledge Management Systems (KMS) are information systems designed to support the creation, organization, storage, retrieval, and dissemination of knowledge within organizations (Alavi & Leidner, 2017). These systems play a crucial role in facilitating knowledge sharing, collaboration, and learning, ultimately enhancing organizational performance.

KMS encompass a range of technologies and tools that enable the capture, storage, and retrieval of explicit and tacit knowledge. These systems include databases, document management systems, content management systems, expertise locators, wikis, and collaboration platforms (Dalkir, 2019). KMS provide a structured framework for managing knowledge assets, ensuring that valuable knowledge is accessible and available to relevant stakeholders.

Organizations recognize the importance of KMS in leveraging their intellectual capital and promoting knowledge exchange. Research has shown that effective utilization of KMS leads to improved decision-making, innovation, problem-solving, and overall organizational performance (Chalmeta & Grangel, 2020; Gold et al., 2017). By capturing and disseminating knowledge, KMS enable employees to access relevant information, leverage past experiences, and collaborate more effectively.

KMS also facilitate knowledge creation and innovation through the establishment of knowledge repositories and platforms for collaboration and idea sharing. By providing a centralized location for storing and retrieving knowledge, KMS enable employees to access and build upon existing knowledge, leading to the generation of new ideas and solutions (Davenport & Prusak, 2018).

Moreover, KMS support knowledge transfer and learning within organizations. They enable the codification and sharing of best practices, lessons learned, and expertise, fostering a culture of continuous learning and improvement (Hislop, 2019). Through features such as discussion forums,

communities of practice, and social networking capabilities, KMS encourage collaboration and knowledge exchange among employees, facilitating the transfer of tacit knowledge and promoting innovation (Wang & Noe, 2020).

However, successful implementation and utilization of KMS are not without challenges. Factors such as organizational culture, knowledge sharing norms, user acceptance, and system usability can influence the effectiveness of KMS (Chua et al., 2018; Nguyen et al., 2020). Resistance to sharing knowledge, lack of trust, and inadequate incentives can hinder the adoption and usage of KMS within organizations (Alavi & Leidner, 2017). Therefore, organizations need to address these barriers through appropriate strategies, including fostering a supportive knowledge-sharing culture, providing training and incentives, and ensuring user-friendly interfaces and system designs.

Therefore, Knowledge Management Systems are information systems that support the creation, organization, storage, retrieval, and dissemination of knowledge within organizations. These systems play a vital role in promoting knowledge sharing, collaboration, and learning, ultimately contributing to organizational performance and innovation. Effective utilization of KMS can enhance decision-making, problem-solving, and knowledge transfer. However, organizations must address challenges such as organizational culture and user acceptance to maximize the benefits of KMS.

Performance of Agricultural SMEs

Performance refers to the evaluation of an organization's effectiveness in achieving its objectives and desired outcomes (Nanni et al., 2018). It encompasses various dimensions, including financial performance, operational efficiency, productivity, customer satisfaction, and market competitiveness (Kaplan & Atkinson, 2015). Evaluating performance is essential for assessing the success, growth, and sustainability of organizations across different sectors.

In this study, the performance of agricultural SMEs will be evaluated in terms of profitability, efficiency, and productivity. These key indicators provide insights into the financial success, operational effectiveness, and output levels of these SMEs. Profitability is a fundamental aspect of assessing the financial performance of agricultural SMEs. It measures the ability of the business to generate profits and ensure long-term viability. Profitability can be evaluated through various indicators such as return on investment (ROI), gross margin, net profit margin, and return on assets (ROA) (Ogbeibu et al., 2020). A higher profitability indicates that the business is generating sufficient revenue and effectively managing costs, contributing to its financial health and sustainability.

Efficiency is another important dimension of performance for agricultural SMEs. It measures the ability of the business to utilize resources effectively to achieve desired outputs. Efficiency indicators can include measures such as input-output ratios, labor productivity, and resource utilization efficiency (Girma et al., 2020). Higher efficiency suggests that the SME is optimizing its resources, minimizing waste, and achieving maximum output with minimal inputs.

Productivity is a critical aspect of performance that evaluates the output levels achieved by agricultural SMEs in relation to their inputs. It measures the efficiency of the production process and the capacity of the business to generate goods or services. Productivity can be assessed through measures such as yield per unit of land, crop or livestock productivity, or output per labor hour (Abdulai & Owusu, 2019). Higher productivity indicates that the SME is effectively utilizing its resources to produce more output, leading to increased competitiveness and profitability.

Performance evaluation in agriculture can be influenced by various factors, including market conditions, technological advancements, access to finance, and government policies (Nzaku et al.,

2020). Additionally, external factors such as climate change, disease outbreaks, and market volatility can significantly impact the performance of agricultural SMEs. Considering these factors in the analysis and interpretation of performance indicators is essential for a comprehensive understanding.

Therefore, profitability, efficiency, and productivity are key dimensions for evaluating the performance of agricultural SMEs. Profitability indicators measure the financial success of the business, efficiency assesses resource utilization and effectiveness, and productivity evaluates the output levels achieved. Understanding the performance of agricultural SMEs in these dimensions is crucial for informed decision-making and sustainable growth.

Empirical Literature Review

Communities of Practice and Performance

Lesser and Storck (2017) studied communities of practice and organizational performance. The CP characteristics examined in the study include community's leadership quality, CP members' affective commitment to the community and its goals, members' perceived connectedness with others in the community, trust among CP members, and perceived impact of CP involvement on members' own jobs. The data for this study were collected at State Farm Insurance Companies. State Farm is the largest property and casualty insurance company in the United States. Recognizing the need for better Knowledge Management and greater connectivity among its decentralized structure of 13 zone offices, more than 300 claim offices and contact centers, and 17,000 agents, the company launched a Knowledge Management initiative. The centerpiece of this initiative has been a network of CPs with a focus on encouraging information sharing, collaborative problem solving, and sharing best practices. To collect the data for this study, anonymous surveys were sent to the entire population of 579 employees who were participating in the company's CP network. Of these surveys, 204 were completed and returned, representing a 37% response rate. The study results for the most part supported the hypothesized relationships regarding determinants of CP effectiveness.

Venkatraman and Ramanathan (2018) conducted a study on communities of Practice Approach for Knowledge Management Systems. The trend is to foster collaboration and knowledge sharing to cope with these problems. With the advancement of technologies and social engineering that can connect people in the virtual world across time and distance, several organisations are embarking on knowledge management (KM) systems, implementing a community of practice (CoP) approach. However, virtual communities are relatively new paradigms, and there are several challenges to their successful implementation from an organization’s point of interest. There is lack of CoP implementation framework that can cater to today’s dynamic business and sustainability requirements. To fill the gap in literature, this paper develops a practical framework for a CoP implementation with a view to align KM strategy with business strategy of an organization. It explores the different steps of building, sharing, and using tacit and explicit knowledge in CoPs by applying the Wiig KM cycle. It proposes a practical CoP implementation framework that adopts the Benefits, Tools, Organisation, People and Process (BTOPP) model in addressing the key questions surrounding each of the BTOPP elements with a structured approach.

Zboralski and Gemuenden (2015) conducted a study on the impact of communities of practice on knowledge retention. The concept of communities of practice (CoPs) has gained considerable attention as one of the central means of implementing knowledge management. For more than a decade, the term community of practice (CoP) has been the subject of various discussions in theory and practice alike. The origin of CoPs lay in Lave and Wenger’s (1991) seminal research toward a social theory of learning. By investigating learning in groups, the researchers called a community of practice an active system about which members share their understanding of what they do and

which are united in action and in the meaning this action has. The increasing popularity of the concept in the scientific discourse and managerial practice brought about various interpretations of the term. Therefore, no universal definition of the term exists. The same applies for the name of this organizational phenomena. Nevertheless, while different organizations use different names, they share the underlying idea. Existing CoP definitions commonly stress the activities of these learning communities: to work together; exchange information, knowledge, and experiences, and thereby, learn and generate new knowledge and common practices.

According to Mugalavai and Muleke, (2016) study on CoP in selected public universities in Kenya, findings indicated that although a high volume of knowledge is generated within the institutions, there were insufficient sharing mechanisms in place to enable the knowledge creators contribute to existing body of knowledge. This was attributed to lack of recognition and incentives to do so and recommended the development of a knowledge sharing model to suit the needs of the institutions. The benefits of CoP on employee performance have been demonstrated as significant particularly in relation to sharing of knowledge. CoP enrich personal skills; facilitates buildup of networks and collaborations; group members develop a standard language; and develop a professional code of ethics that members must follow (Dobrai, 2017). As organizations that are primarily engaged in the knowledge business, public universities in Kenya need to focus on enhancing employee performance by improving the management of its knowledge in order to respond effectively to the rapid changes that occur in their environments and remain relevant by investing in the development of CoP as a KM practice.

Knowledge Management Systems and Performance

Chong, Tan and Ooi (2018) empirical study focused on the impact of Knowledge Management Systems (KMS) on organizational performance. The study proposed a comprehensive conceptual framework that integrates different dimensions of KMS with various measures of organizational performance. The dimensions of KMS include knowledge acquisition, knowledge storage, knowledge dissemination, and knowledge utilization, while organizational performance measures encompass innovation, operational efficiency, and financial performance. The study suggested several research propositions that can be empirically tested to validate the relationships between KMS and organizational performance. For example, one proposition states that effective knowledge acquisition and storage through KMS positively influence innovation performance, as it facilitates the creation and access to valuable knowledge resources within the organization. Another proposition suggests that knowledge dissemination and utilization through KMS positively impact operational efficiency by enhancing collaboration and decision-making processes.

Santos-Vijande, López-Sánchez, and Trespalacios, (2018) conducted an empirical study that investigated the relationship between organizational learning, including knowledge management practices, and firm performance. The study considered how a firm's ability to learn from internal and external sources, including the use of information systems such as KMS, influences its flexibility, competitive strategy, and overall performance. The study collected data through surveys administered to a sample of firms and employs statistical analyses, including structural equation modeling, to examine the relationships between the variables. The findings revealed that organizational learning positively impacts a firm's flexibility, competitive strategy, and performance. The study suggested that knowledge management practices, such as the use of KMS, play a crucial role in facilitating organizational learning and ultimately enhancing firm performance.

Vos, et, al., (2019) examined the impact of knowledge management systems on organizational performance: A literature review. This literature review identified various dimensions of

knowledge management systems, including knowledge creation, knowledge storage, knowledge dissemination, and knowledge application. It also explores different aspects of organizational performance, such as innovation, operational efficiency, and financial performance. The review revealed that knowledge management systems positively influence organizational performance, particularly in terms of innovation and operational efficiency. Effective knowledge creation and storage, supported by knowledge management systems, facilitate the development of innovative solutions and improved operational processes. Additionally, knowledge dissemination and application through knowledge management systems enhance collaboration, decision-making, and overall performance outcomes.

Tippins and Sohi, (2017) examined IT competency and firm performance: Is organizational learning a missing link?. This empirical study examines the relationship between IT competency, organizational learning, and firm performance. While the study does not specifically focus on Knowledge Management Systems (KMS), it provides insights into the broader context of information technology and its impact on performance. The study collects data from a sample of organizations and employs statistical analyses to assess the relationships between IT competency, organizational learning, and firm performance. The findings highlight the importance of IT competency in enabling organizational learning, which, in turn, positively influences firm performance. The study suggests that organizations with higher IT competency are better equipped to utilize information technology effectively for knowledge acquisition, dissemination, and application, leading to improved learning processes and enhanced performance outcomes.

RESEARCH METHODOLOGY

The study used descriptive research design. This study targeted all listed 347 Disadvantaged Group SMEs operating in agriculture sector in Kenya as listed by Public Procurement Oversight Authority (PPOA, 2023). The study targeted top management employees in the organization. Management employees were targeted because they are aware of knowledge transfer approaches and are therefore in a better position to provide the needed information on effect of knowledge transfer approaches on performance of agricultural SMEs in Kenya. The study adopted Yamane (1957) to determine the appropriate sample size which was 186 respondents. Simple random sampling was adopted to select study sample. Primary data was collected using a semi-structured questionnaire. The study collected quantitative data was analyzed using descriptive statistics techniques such as percentages, frequencies, means, and standard deviation using Statistical Package for Social Sciences (Version 25.0). Pearson R correlation was used to measure the strength and direction of linear relationship between variables. Multiple regression model was fitted to the data in order to determine how the independent variables influence the dependent variable

RESEARCH FINDINGS AND DISCUSSION

Out of the 186 questionnaires distributed, 153 were completed and returned, representing a response rate of 82.3%. As indicated by Metsamuuronen (2017), a response rate that is above fifty percent is considered adequate for data analysis and reporting while a response rate that is above 70% is classified as excellent. Hence, the response rate of this study was within the acceptable limits for drawing conclusions and making recommendations.

Descriptive Statistics Analysis

In this section, we provide descriptive statistics analysis of the study variables. Descriptive statistics offer a summary of the main characteristics of the dataset, providing insights into central tendency, variability, and distribution of the variables under investigation. The analysis includes measures such as mean, and standard deviation to describe the data comprehensively.

The study requested respondents to rate their responses in a scale of 1-5 where 1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree. The means and standard deviations were used to interpret the findings where a mean value of 1-1.4 was strongly disagree, 1.5-2.4 disagree, 2.5-3.4 neutral, 3.5-4.4 agree and 4.5-5 strongly agree. Standard deviation greater than 2 was considered large meaning responses were widely spread out and not tightly clustered around the mean.

Communities of Practice

The first objective of the study was to examine the effect of communities of practice on performance of agricultural SMEs in Kenya. This subsection is concerned with examining the effect of communities of practice on performance of agricultural SMEs in Kenya. Respondents described their agreement or disagreement with the statements on the role of supplier selection. Table 1 presents summary of the findings obtained.

Table 1: Descriptive Statistics on Communities of Practice

Statements	Mean	Std. Dev.
Collaboration among members enhances knowledge sharing and learning.	3.763	1.260
Participation in alliances with other SMEs helps in exploring new opportunities and expanding my business network.	3.929	1.143
Active involvement in communities of practice has helped the enterprise stay updated with industry trends and advancements.	3.942	0.769
Joint engagement activities with other agricultural SMEs facilitate the exchange of best practices and innovative ideas.	3.787	0.740
The formation of communities of practice has facilitated the development of a professional code of ethics and standards.	3.703	0.810
The knowledge sharing within communities of practice has positively impacted my SME's productivity and efficiency.	3.652	0.578
Aggregate Score	**3.796**	**0.883**

The findings show that the respondents agreed on average with the statements since the mean values were above 3.5. The findings show that the respondents specifically agreed that collaboration among members enhances knowledge sharing and learning (M= 3.763, SD= 1.26); that participation in alliances with other SMEs helps in exploring new opportunities and expanding their business network (M= 3.929 , SD= 1.143); and that active involvement in communities of practice has helped the enterprise stay updated with industry trends and advancements (M= 3.942, SD= 0.769). They were also in agreement that joint engagement activities with other agricultural SMEs facilitate the exchange of best practices and innovative ideas (M= 3.787, SD= 0.740); that the formation of communities of practice has facilitated the development of a professional code of ethics and standards (M= 3.703, SD= 0.81); and that the knowledge sharing within communities of practice has positively impacted their SME's productivity and efficiency (M= 3.652, SD= 0.578).

The findings above and an aggregate mean of 3.796 (SD= 0.883) show that the respondents agreed on average that communities of practice affect performance of agricultural SMEs in Kenya. The findings of the study conducted by Mugalavai and Muleke (2016) support the notion that communities of practice (CoP) affect the performance of agricultural SMEs in Kenya. Their research focused on selected public universities in Kenya and found that while a significant volume of knowledge was generated within these institutions, insufficient mechanisms were in place to enable knowledge sharing among members. The study highlighted the lack of recognition and

incentives as barriers to effective knowledge sharing within the institutions. Additionally, it recommended the development of a knowledge sharing model tailored to the needs of the institutions to improve performance. Similarly, the study by Zboralski and Gemuenden (2015) further reinforces this understanding by investigating the impact of CoP on knowledge retention. While the study did not directly examine agricultural SMEs in Kenya, its findings regarding the positive influence of CoP on knowledge sharing and retention align with the broader literature on CoP and organizational performance. Therefore, both studies support the consensus that CoP plays a significant role in enhancing the performance of organizations, including agricultural SMEs, through facilitating knowledge exchange and collaboration among members.

Knowledge Management Systems

The second objective of the study was to find out the effect of knowledge management systems on performance of agricultural SMEs in Kenya. This subsection is concerned with finding out the effect of knowledge management systems on performance of agricultural SMEs in Kenya. The respondents gave their level of agreement or disagreement with the statements on the role of supplier payment. Table 2 presents summary of the finings provided.

Table 2: Descriptive Statistics on Knowledge Management Systems

Statements	Mean	Std. Dev.
The knowledge management systems have enhanced collaboration and knowledge exchange among employees.	3.861	0.79
The knowledge management systems are easy to use and navigate, facilitating seamless access to information	3.859	1.305
The knowledge management systems have significantly improved the sharing and dissemination of knowledge within the enterprise.	3.792	1.197
The knowledge management systems have positively impacted the decision-making processes and strategic initiatives of the enterprise	3.739	0.687
The content provided by the knowledge management systems is relevant and applicable to the needs of the SME.	3.646	0.936
The knowledge management systems implemented have a high user adoption rate.	3.533	1.164
Knowledge management are valuable tools that contribute to effectiveness and productivity in the SME.	3.512	1.139
Aggregate Score	**3.706**	**1.031**

From the findings, it is evident that the respondents agreed on the statements as shown by mean values above 3.5. They specifically agreed that the knowledge management systems have enhanced collaboration and knowledge exchange among employees (M= 3.861, SD= 0.79); that the knowledge management systems are easy to use and navigate, facilitating seamless access to information (M= 3.859, SD= 1.305); that the knowledge management systems have significantly improved the sharing and dissemination of knowledge within the enterprise (M= 3.792, SD= 1.197); and that the knowledge management systems have positively impacted the decision-making processes and strategic initiatives of the enterprise (M= 3.739, SD= 0.687). They also agreed that the content provided by the knowledge management systems is relevant and applicable to the needs of the SME (M= 3.646, SD= 0.936); that the knowledge management systems implemented have a high user adoption rate (M= 3.533, SD= 1.164); and that the knowledge management are valuable tools that contribute to effectiveness and productivity in the SME (M= 3.512, SD= 1.139).

The findings above supported by an aggregate mean of 3.706 (SD= 1.031) show that the respondents agreed on average that knowledge management systems affect performance of agricultural SMEs in Kenya. The findings are in line with Chong, Tan, and Ooi (2018) who conducted an empirical study focusing on the impact of KMS on organizational performance. Their research proposed a comprehensive conceptual framework linking different dimensions of KMS with various measures of organizational performance, highlighting the positive influence of effective knowledge acquisition, storage, dissemination, and utilization on performance outcomes. Additionally, Santos-Vijande, López-Sánchez, and Trespalacios (2018) investigated the relationship between organizational learning, including knowledge management practices such as KMS, and firm performance. Their study found that organizational learning positively impacts firm flexibility, competitive strategy, and overall performance, emphasizing the crucial role of KMS in facilitating organizational learning processes. Therefore, both studies support the finding that knowledge management systems affect the performance of agricultural SMEs in Kenya, underscoring the importance of effective knowledge management practices in driving organizational success.

Performance of Agricultural SMEs

The main focus of this study was to examine the effect of knowledge transfer approaches on performance of agricultural SMEs in Kiambu County, Kenya. This subsection is concerned with determining performance of agricultural SMEs in Kenya in relation to knowledge transfer approaches. Respondents gave their level of agreement or disagreement with the statements on performance. Table 3 presents summary of the findings obtained.

Table 3: Descriptive Statistics on Performance of Agricultural SMEs

Statements	Mean	Std. Dev.
Profitability has improved as a result of implementing knowledge transfer approaches.	3.735	1.386
The implementation of knowledge transfer approaches has led to streamlined processes and reduced operational costs	3.549	0.731
The efficiency of operations has increased due to the implementation of knowledge transfer approaches.	3.863	0.86
The productivity has significantly improved as a result of utilizing knowledge transfer approaches.	3.705	0.587
The adoption of knowledge transfer approaches has positively impacted the financial performance of the SME	3.717	1.313
Knowledge transfer approaches have enhanced the utilization of resources and improved resource efficiency.	3.784	1.330
The application of knowledge transfer approaches has resulted in increased output and production levels.	3.816	0.923
Aggregate Score	**3.738**	**1.019**

The findings show that respondents were in agreement that profitability has improved as a result of implementing knowledge transfer approaches (M= 3.735, SD= 1.386); that the implementation of knowledge transfer approaches has led to streamlined processes and reduced operational costs (M= 3.549, SD= 0.731); that the efficiency of operations has increased due to the implementation of knowledge transfer approaches (M= 3.863, SD= 0.86); and that the productivity has significantly improved as a result of utilizing knowledge transfer approaches (M= 3.705, SD= 0.587). Respondents further agreed that the adoption of knowledge transfer approaches has positively impacted the financial performance of the SME (M= 3.717, SD= 1.313); that knowledge

transfer approaches have enhanced the utilization of resources and improved resource efficiency (M= 3.784, SD= 1.330); that the application of knowledge transfer approaches has resulted in increased output and production levels (M= 3.816, SD= 0.923).

The findings suggest a consensus among respondents regarding the positive impact of knowledge transfer approaches on organizational performance aligns with Scholars such as Venkatraman and Ramanathan (2018) who highlighted the role of knowledge transfer approaches, particularly within the context of communities of practice, in fostering collaboration and knowledge sharing to improve organizational efficiency and innovation. Additionally, studies by Fleig-Palmer (2019) and Omale et al. (2018) have demonstrated the significance of mentoring programs in facilitating knowledge transfer and enhancing staff retention, ultimately contributing to improved organizational performance. Moreover, research by Nassazi (2017) emphasizes the role of training in enhancing employee skills and innovation, which consequently leads to improved organizational productivity and financial performance. Therefore, the findings affirm the crucial role of knowledge management practices in driving performance outcomes within agricultural SMEs.

Correlation Analysis

The study computed correlation analysis to test the strength and the direction of the relationship that exists between the dependent and the independent variables. The correlation values range from 0 to 1; if the correlation values are r = ±0.1 to ±0.29 then the relationship between the two variables is small, if it is r = ±0.3 to ±0.49 the relationship is medium, and when r= ±0.5 and above there is a strong relationship between the two variables under consideration. Table 4.9 presents correlation analysis findings for this study.

Table 4: Correlations

		Performance of agricultural SMEs	Communities of practice	Knowledge management systems
Performance of agricultural SMEs	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	153		
Communities of practice	Pearson Correlation	.587**	1	
	Sig. (2-tailed)	.000		
	N	153	153	
Knowledge management systems	Pearson Correlation	.760**	.244	1
	Sig. (2-tailed)	.000	.123	
	N	153	153	153

The correlation analysis indicates a significant positive correlation between communities of practice and the performance of agricultural SMEs ($r = 0.587$, $p < 0.05$). This finding suggests that as the engagement and effectiveness of communities of practice within agricultural SMEs increase, so does their overall performance. This finding aligns with the conceptual framework outlined by Wenger-Trayner and Wenger-Trayner (2015), which emphasizes the role of communities of practice in fostering knowledge sharing, collaboration, and learning within organizations. Additionally, empirical studies such as those by Mugalavai and Muleke (2016) and Zboralski and Gemuenden (2015) have demonstrated the positive impact of communities of practice on organizational performance, providing further support for this correlation finding.

The correlation analysis reveals a significant positive correlation between knowledge management systems and the performance of agricultural SMEs ($r = 0.760$, $p < 0.05$). This indicates that as the

adoption and effectiveness of knowledge management systems increase within agricultural SMEs, so does their performance. This finding is supported by existing literature emphasizing the role of knowledge management systems in facilitating knowledge sharing, collaboration, and organizational learning. Studies by Chong, Tan, and Ooi (2018) and Santos-Vijande, López-Sánchez, and Trespalacios (2018) have highlighted the positive impact of knowledge management systems on organizational performance, including within the agricultural sector, providing empirical evidence that supports this correlation finding.

Regression Analysis

The model summary was used to establish the amount of variation in dependent variable (performance of agricultural SMEs in Kenya) as a result of changes in independent variables (knowledge management systems, communities of practice). Table 4 presents the findings.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.829[a]	.687	.679	.36317

a. Predictors: (Constant), Knowledge management systems, Communities of practice,

The model summary reveals a robust relationship between the predictors (Knowledge management systems, Communities of practice) and the dependent variable, the performance of agricultural SMEs. The correlation coefficient (R) of 0.829 indicates a strong positive linear relationship between the predictors and SME performance. This suggests that as the levels of these predictors increase, there tends to be a corresponding increase in SME performance. The coefficient of determination (R squared) of 0.687 implies that approximately 68.7% of the variability in SME performance can be attributed to variations in the predictors included in the model. Moreover, the adjusted R squared value of 0.679 suggests that this relationship remains robust even after considering the number of predictors in the model, indicating a reliable fit. These findings collectively underscore the significance of knowledge management systems, communities of practice, in shaping and explaining the performance outcomes of agricultural SMEs, emphasizing their pivotal role in organizational success.

Analysis of Variance

The ANOVA table provides information about the overall fit of the regression model and whether the predictors included in the model significantly contribute to explaining the variance in the dependent variable, which in this case is performance of agricultural SMEs in Kenya. In this study, the significance of the model was tested at 5% confidence interval.

Table 5: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.897	4	10.724	81.311	.000[b]
	Residual	19.520	148	.132		
	Total	62.417	152			

a. Dependent Variable: Performance of agricultural SMEs

b. Predictors: (Constant), Knowledge management systems, Communities of practice,

The ANOVA results indicate a significant relationship between the predictors (Knowledge management systems, Communities of practice, Formal training, and Mentoring appoach) and the dependent variable, the performance of agricultural SMEs. The regression model accounted for a

substantial portion of the variance in SME performance, as evidenced by the significant F-value of 81.311 ($p < 0.05$. This indicates that the variation in SME performance can be explained by the variation in the predictors included in the model. Overall, the ANOVA findings show that knowledge management systems, communities of practice, collectively contribute to the performance outcomes of agricultural SMEs, highlighting their importance in driving organizational success and effectiveness.

Beta Coefficients

Table 7: Beta Coefficients of Study Variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.023	.167		18.086	.000
	Communities of practice	.292	.070	.198	4.171	.009
	Knowledge management systems	.264	.086	.270	3.067	.003

a. Dependent Variable: Performance of agricultural SMEs

The fitted regression model was as follows:

$$Y = 3.023 + 0.292\ X_1 + 0.264\ X_2 + \varepsilon$$

Communities of practice (CoPs) have been recognized as significant drivers of organizational performance, fostering knowledge sharing, collaboration, and learning within a community. The coefficient of 0.292 for communities of practice with a significance level of 0.009 indicates a positive but relatively weak relationship with SME performance. This finding resonates with Zboralski and Gemuenden (2015), who emphasized the positive impact of CoPs on organizational performance. However, the relatively weak relationship suggests that other factors might also play significant roles in SME performance.

Knowledge management systems (KMS) are instrumental in facilitating knowledge sharing, collaboration, and organizational learning, ultimately enhancing performance outcomes. The coefficient of 0.264 for knowledge management systems with a significance level of 0.003 suggests a significant positive relationship with SME performance. This finding aligns with Chong, Tan, & Ooi (2018) and Santos-Vijande, López-Sánchez, & Trespalacios (2018), who highlighted the role of KMS in driving organizational performance. However, similar to CoPs, the significant coefficient suggests that while KMS contribute positively to SME performance, other factors may also play significant roles.

Conclusions

The study's examination of communities of practice reveals a significant positive correlation with the performance of agricultural SMEs in Kenya. Through collaboration among members, participation in alliances, and active involvement in community activities, SMEs reported improvements in knowledge sharing, industry trends awareness, and the development of professional standards. The regression analysis further confirms this relationship, showing that communities of practice play a crucial role in enhancing SME performance. Thus, the study concludes that fostering robust communities of practice positively influences the performance of agricultural SMEs in Kenya.

Lastly, knowledge management systems show a significant positive correlation with SME performance. By enhancing collaboration, knowledge exchange, and decision-making processes, these systems have facilitated improvements in productivity, resource utilization, and operational

efficiency within agricultural SMEs. The regression analysis reinforces these findings, highlighting the substantial impact of knowledge management systems on SME performance. Thus, the study concludes that effective implementation of knowledge management systems positively influences the performance of agricultural SMEs in Kenya.

Recommendations

Based on the findings related to communities of practice (CoPs), it is recommended that agricultural SMEs in Kenya actively foster and support the development of CoPs within their organizations. Given the positive impact of CoPs on various aspects of SME performance, such as knowledge sharing, collaboration, and innovation, organizations should encourage the formation of CoPs among employees engaged in similar agricultural activities or facing common challenges. To facilitate this, SMEs can establish dedicated platforms or forums for knowledge exchange, organize regular meetings or workshops, and provide incentives or recognition for active participation in CoPs. Additionally, training programs on effective collaboration and knowledge sharing practices can be offered to employees to enhance the effectiveness of CoPs.

Regarding knowledge management systems (KMS), the study highlights the importance of implementing robust KMS within agricultural SMEs to facilitate knowledge sharing, collaboration, and decision-making processes. Organizations should invest in user-friendly KMS platforms that enable easy access to relevant information, knowledge repositories, and communication tools. It is recommended to involve employees in the design and implementation of KMS to ensure alignment with their needs and preferences. Additionally, SMEs should provide training and support to employees on how to effectively use KMS tools and encourage a culture of knowledge sharing and collaboration across the organization. Regular evaluation and monitoring of KMS usage and effectiveness are essential to identify areas for improvement and ensure continuous alignment with organizational goals and objectives.

Recommendations for Further Studies

The study's recommendations for future research include addressing its limitations and expanding its scope. Firstly, researchers should broaden the geographical and sectoral focus to include a more diverse sample of agricultural SMEs in Kenya. This would enhance the generalizability of findings and provide a comprehensive understanding of performance determinants across different contexts. Secondly, while the variables analyzed explained a substantial portion of SME performance variability, future studies should explore additional factors such as market dynamics and government policies. Additionally, incorporating qualitative methods would offer a nuanced understanding of underlying mechanisms. Lastly, future research should investigate the impact of sustainable practices on SME performance, considering the growing importance of sustainability in the agricultural sector. Addressing these recommendations would advance knowledge on SME performance and inform strategies to support their growth and sustainability.

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