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THE IMPORTANCE OF DIGITAL RECORD-KEEPING AMONG URBAN AGRICULTURE COMMUNITIES: A REVIEW

Noryana Ahmad Khusaini[1], Munifah Siti Amira Yusuf[2*]

[1] Faculty of Information Science, Universiti Teknologi MARA, Sungai Petani Campus, Kedah, Malaysia
Email: noryana@uitm.edu.my
[2] Department of Agriculture Technology, Faculty of Agriculture, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia
Email: munifahyusuf@upm.edu.my
[*] Corresponding Author

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Abstract:

Urban agriculture has emerged as a critical component of sustainable city development, contributing to food security, environmental resilience, and community well-being. As urban agricultural practices become more technologically integrated and data-driven, the role of digital record-keeping has gained increasing prominence. This review examines the significance of digital record-keeping in urban agriculture societies, focusing on its impact on improving efficiency and productivity, market access and economic benefits, sustainability, environmental benefits, and economic implications. The paper also discusses challenges such as a lack of digital skills, high implementation costs, inadequate technological infrastructure, limited access to reliable connectivity, data privacy, security, and many more, while offering recommendations for enhancing digital adoption in this sector. By analysing current trends, this review underscores the transformative potential of digital tools in shaping resilient and informed urban agricultural communities.

Keywords:

Agricultural Transformation, Digital Records Keeping, Food Security, Records Management, Urban Agriculture Communities, Urban Agriculture

Introduction

Urban agriculture refers to the practice of cultivating, processing, and distributing food and other agricultural products within and around urban areas. This includes activities such as growing plants, raising animals, and utilizing urban resources like land and water bodies for

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agricultural purposes (Tornaghi, 2014; Gasperi et al., 2015; Feldmann et al., 2023). Urban agriculture can be both commercial and non-commercial, involving various forms such as rooftop gardens, community gardens, and indoor farming (Artmann & Breuste, 2023). It aims to enhance food security, reduce ecological footprints, and provide social, economic, and environmental benefits (WinklerPrins, 2017; Abelman et al., 2022; Rodríguez & Feria, 2022).

Despite its growing relevance, one of the major challenges faced by urban farming communities, particularly in developing contexts, is the lack of systematic record-keeping (Prajapati, Vahoniya & Lad, 2020). Many farmers fail to document essential farming activities and transactions, including expenses for planting materials, fertilizers, irrigation, pest control, harvesting, and transportation, as well as income from sales This oversight makes it difficult to track operational performance, manage cash flow, or make informed decisions. Issues that are especially critical given the often narrow profit margins in urban agriculture.

In light of this, digital record-keeping systems present a timely and valuable solution. These technologies offer farmers the ability to manage data efficiently, improve farm planning, and increase transparency in both production and marketing processes. This article review explores the importance of digital record-keeping within urban agriculture communities, particularly in the Malaysian context. It aims to highlight key benefits, identify implementation challenges, and discuss how digital tools can contribute to more sustainable, efficient, and economically viable urban farming practices.

Background

Urban agriculture (UA) has emerged as a vital strategy in response to the challenges posed by modern urbanization, such as food insecurity, environmental degradation, and socio-economic inequalities. This practice encompasses a broad range of activities, including community gardens, rooftop farms, and larger urban farms, which not only meet the immediate needs of urban populations but also offer a variety of ecosystem services. Numerous studies have highlighted the role of UA in mitigating the negative impacts of urbanization and fostering the development of more resilient urban environments.

The multifunctionality of urban agriculture is widely acknowledged, extending beyond food production to provide essential ecosystem services such as climate regulation, water management, and biodiversity support. Urban agriculture is known to offer additional benefits like pollination and pest control, which contribute to the overall health of urban ecosystems (Simone et al., 2023). Furthermore, research has shown that urban agriculture can supply a substantial portion of a city's food needs, with some estimates suggesting it could account for up to 15-20% globally (Lin et al., 2015). As such, UA serves a dual purpose in addressing food security and promoting sustainable urban development.

In light of rapid urbanization and its impact on food distribution systems, urban agriculture has become a key initiative, particularly in regions facing food access challenges. As noted by Kumar and Hundal, the resurgence of locally grown food in urban areas, especially in developing nations, is driven by the deficiencies in food distribution systems (Kumar & Hundal, 2016). This trend is not limited to the Global South; urban agriculture is gaining momentum in cities across the Global North, where it is increasingly integrated into urban policies (White & Bunn, 2017).

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In addition to its role in food production, urban agriculture contributes to the enhancement of green spaces, which play a crucial role in fostering social cohesion and improving the quality of life in urban settings. As White and Bunn observed, communities in post-industrial cities have embraced UA to revitalize neglected areas and address health issues, such as obesity (White & Bunn, 2017). Beyond food production, urban agriculture strengthens community bonds and supports local economies, contributing to sustainable development goals (DeMarsh & Morales, 2024).

Despite its benefits, urban agriculture faces several challenges, including space constraints, soil contamination, and regulatory hurdles that hinder its full potential (Oberholtzer et al., 2014; Saputra et al., 2024). Policymakers must therefore work to overcome these obstacles to maximize the impact of urban agriculture. Effective governance is critical in improving food security and urban sustainability, as noted by Ghimire (2024). Additionally, innovative practices such as vertical farming and aquaponics are being increasingly adopted to address space limitations and further enhance the viability of urban agriculture (Ho et al., 2023; Huan et al., 2024).

Therefore, urban agriculture presents a dynamic solution to the complex issues of urban living. By supporting local food production, providing valuable ecosystem services, and fostering community engagement, UA plays a crucial role in the development of sustainable and resilient urban spaces. Its integration into urban planning and policy is essential for maximizing its benefits and ensuring the long-term success of cities in an increasingly urbanized world.

Urban Agriculture (UA) Development in Malaysia

The development of urban agriculture in Malaysia has evolved significantly over the years, particularly in response to urbanization and the need for sustainable food sources. Historically, Malaysia's agricultural sector has been crucial to its economic development, dating back to the migration of investors and foreign laborers in the 1960s who capitalized on the fertile land (Marina et al., 2016).

Table 1: Phase of Urban Agriculture Development

Phases of Development	
1. Pre-Independence:	Initial greening efforts focused on beautification rather than food production (Streetheran, 2006).
2. 1970s-1990s:	Extensive greening programs were implemented, but urban agriculture remained relatively unexplored (Streetheran, 2006).
3. 2000s-Present:	The concept of urban agriculture gained traction, especially with the establishment of the Urban Agriculture Program (UAP) by the Department of Agriculture (DOA) Malaysia in 2014. This program aimed to facilitate urban farming practices and improve food security (Amira et al, 2021; Nazuri et al, 2022).

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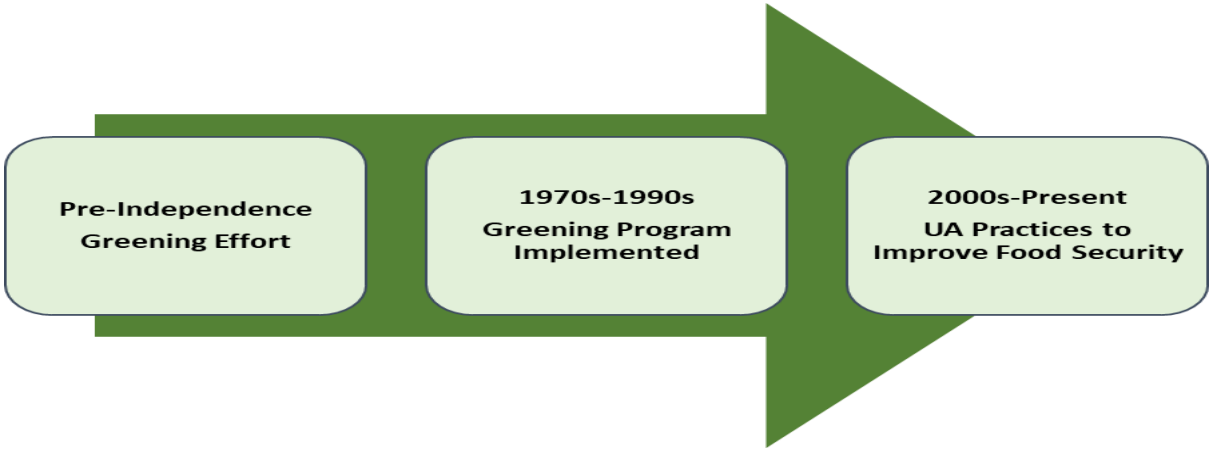

Figure 1: Urban Agriculture (UA) Revolution

Source: (Sreetheran,2006; Amira et al, 2021 & Nazuri et al, 2022)

Recent Developments

Government Initiatives: The DOA Malaysia has set targets to produce 8,800 metric tonnes of urban agriculture products by 2025, emphasizing the role of urban agriculture in achieving food security (Chong et al., 2024). Community Engagement: Urban agriculture programs have been implemented to empower communities, particularly in the Klang Valley area, through participation in planning and execution (Nazuri et al, 2022). Pandemic Influence: The COVID-19 pandemic has further popularized urban agriculture as a means to address economic downturns and food insecurity (Ali & Vaiappuri, 2022).

Figure 2: Illustration of Urban Agriculture Activity Among the Urban Garden Community.

Source: (Bing.ai)

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Urban farmers in Malaysia face issues such as fluctuating weather, limited access to land, financial constraints, and pest problems (Ishak et al., 2022). Opportunities: Despite these challenges, urban agriculture holds potential for sustainability and improving the well-being of urban dwellers through social, health, and economic benefits (Othman et al., 2022; Islam & Siwar, 2012)

In summary, urban agriculture in Malaysia has developed from initial greening efforts to a more structured approach aimed at enhancing food security and community well-being. Government initiatives and community participation are key to its success, although challenges remain that need to be addressed for its full potential to be realized.

Purpose of the Review

This paper reviews the role and importance of digital record-keeping in the context of urban agriculture communities. Specifically, it examines how systematic documentation and management of agricultural data can enhance decision-making, improve sustainability, and support the scaling of urban farming initiatives.

Literature Review

There are 3 points discussed in Literature Review includes Definition and Scope, Importance of Digital Records Keeping on Urban Agriculture and Challenges and Barriers.

Digital Record-Keeping: Definition and Scope

Digital records keeping in urban agriculture refers to the use of digital tools and technologies to document, manage, and analyze data related to agricultural activities within urban settings. This practice is part of the broader concept of digital agriculture, which leverages modern engineering, information, and communication technologies to enhance the efficiency, productivity, and sustainability of agricultural operations (Zhang, 2023; Shena et al. 2010). Digital records keeping involves the systematic collection of data on various aspects of urban farming, such as crop rotations, seed treatments, fertilization methods, pest and disease monitoring, and pesticide applications (Tibola et al. 2013). This data is often collected using sensors, geolocation systems, and other digital tools (Marinello et al. 2019). Effective digital records keeping systems ensure that data from different sources and formats can be integrated and used together. This is crucial for achieving complete, accurate, and interoperable data that supports informed decision-making and economic analysis (Basir et al. 2024). Various digital platforms, including farm management software, web apps, and smartphone apps, are used to handle agricultural data. These tools facilitate the recording, storage, and analysis of data, making it accessible and usable for farmers and other stakeholders (Basir et al. 2024; Mohr et al. 2005). Digital records keeping enhances traceability and transparency in urban agriculture by providing detailed records of production and post-harvest activities. This can include tracking the movement of crops through the supply chain and ensuring the authenticity and safety of agricultural products (Tibola et al. 2013; Rao et al. 2024). In summary, digital records keeping in urban agriculture is a critical component of modern farming practices that leverages digital technologies to enhance data management, decision-making, and sustainability. Despite its benefits, challenges related to data quality, interoperability, and adoption need to be addressed to fully realize its potential.

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The Importance of Digital Record-Keeping on Urban Agriculture

There are several important aspects of digital record-keeping in urban agriculture, including improving efficiency and productivity, market access and economic benefits, sustainability, environmental benefits and economic implication.

Improve Efficiency and Productivity

Digital technologies, including digital record-keeping systems, significantly enhance the efficiency and productivity of agricultural practices by facilitating more effective management of both inputs and outputs (Rosnan & Yusof, 2023; Yuan et al., 2023). These tools enable precise monitoring and documentation of critical farming variables—such as seed usage, fertilizer application, water consumption, and crop yields—allowing for data-driven decision-making. As a result, farmers can optimize resource allocation, reduce waste, and improve overall operational efficiency. This technological integration supports the transition toward more sustainable and scalable agricultural systems. The use of digital record-keeping systems in agriculture enables farmers to systematically track and manage various farm activities, including planting schedules, input usage, pest control measures, harvest data, and market transactions. By digitizing this information, farmers gain access to accurate, real-time data that supports more informed decision-making and enhances the efficiency of resource allocation (Izuogu et al., 2022). These systems reduce reliance on manual documentation, minimize errors, and allow for historical data analysis, which can inform future farming strategies.

Moreover, digital records facilitate better monitoring of crop performance and soil health over time, enabling precision agriculture approaches that tailor interventions to specific field conditions. This leads to optimized use of water, fertilizers, and labor, ultimately increasing productivity while reducing environmental impact. Additionally, such systems can improve traceability along the supply chain, supporting food safety standards and enhancing market access for smallholder farmers. Digital record-keeping plays a crucial role in enhancing efficiency and productivity within urban agriculture in Malaysia. Digital tools contribute to building more sustainable and resilient agricultural systems by enabling increased productivity, reducing environmental footprints, and improving farm resilience (Finger, 2023). Agricultural digitization has been found to significantly enhance land productivity, with the effects being particularly notable among larger landholdings, farms with lower levels of human capital, and older farming populations (Zhang & Zhu, 2025) . Furthermore, the digitalization of agriculture supports income growth among farmers by promoting diversification of occupations, accelerating land circulation, increasing access to financing, and facilitating the marketing and sale of agricultural products (Wang, 2024). Together, these impacts underscore the transformative potential of digital record-keeping in advancing productive and sustainable urban farming practices in Malaysia.

Market access and economic benefits

Digital records can facilitate better market access by connecting urban farmers directly with consumers and reducing the role of middlemen. This can potentially increase the profitability of urban farms (Izuogu et al., 2022). Digital record-keeping systems not only enhance farm management but also play a pivotal role in improving market access for urban farmers. By maintaining accurate and organized data on production volumes, harvest schedules, product quality, and pricing, farmers can establish more transparent and reliable connections with consumers and other market actors. These digital tools enable farmers to efficiently communicate availability and negotiate directly with buyers—such as local retailers,

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restaurants, or consumers through online platforms—thereby reducing dependency on intermediaries. The reduction of middlemen in the supply chain allows urban farmers to retain a larger share of the profits, ultimately enhancing their economic viability. Additionally, digital records support traceability and food safety standards by documenting every stage of production, which is increasingly important to health-conscious and sustainability-oriented consumers. Furthermore, such systems can be integrated with e-commerce platforms or mobile applications, allowing farmers to reach broader markets beyond their immediate geographic locations. Improved record-keeping can also help urban farmers in obtaining certifications and accessing financial assistance, which can further enhance their economic resilience (Huck et al, 2024). Improved record-keeping enables urban farmers to maintain accurate and organized documentation of their farming activities, financial transactions, production outputs, and compliance with agricultural standards. This level of documentation is essential for obtaining certifications—such as organic, fair trade, or food safety certifications—that can increase marketability and consumer trust. Additionally, well-maintained records facilitate access to financial services, including loans, grants, and subsidies, as they provide credible evidence of farm performance and creditworthiness. By streamlining compliance and financial reporting processes, effective record-keeping enhances farmers' ability to secure external support and invest in productivity-enhancing resources, thereby strengthening their economic resilience and long-term sustainability.

Sustainability

Digital records keeping supports sustainable farming practices by enabling precise monitoring and management of resources such as water and fertilizers. This can lead to reduced environmental impacts and more sustainable urban agriculture (Huck et al, 2024). Digital record-keeping plays a crucial role in promoting sustainable farming practices within urban agriculture by facilitating precise monitoring and efficient management of critical resources such as water, fertilizers, pesticides, and energy. Through the use of digital tools—such as farm management software, mobile applications, and sensor-based systems—farmers can collect and analyze real-time data on resource usage and crop performance. This enables data-driven decision-making that optimizes input application, minimizes waste, and reduces environmental degradation. For example, digital records allow farmers to track soil moisture levels and weather patterns, supporting more efficient irrigation scheduling and reducing water overuse. Similarly, by documenting fertilizer application rates and timing, farmers can avoid excessive nutrient runoff, which contributes to water pollution and soil degradation. These systems also support integrated pest management strategies by recording pest occurrences and intervention outcomes, enabling targeted and reduced chemical use. Moreover, digital record-keeping facilitates compliance with sustainability standards and certifications, which often require detailed documentation of farming practices. It also enhances traceability across the supply chain, allowing consumers and regulators to verify environmentally responsible production methods. The integration of digital technologies in urban farming can also promote practices like composting, crop rotation, and organic farming, contributing to overall sustainability (Whittinghill & Sarr, 2021) The integration of digital technologies into urban farming not only enhances productivity but also encourages the adoption and optimization of sustainable agricultural practices such as composting, crop rotation, and organic farming. Digital tools—ranging from mobile applications to sensor-based monitoring systems—provide farmers with the data and guidance needed to implement these practices more effectively and consistently.
For instance, digital platforms can offer tailored recommendations for composting by tracking organic waste inputs, monitoring decomposition conditions (such as temperature and

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moisture), and providing alerts or adjustments to optimize nutrient-rich outputs. This not only reduces landfill waste but also improves soil health and fertility without reliance on synthetic fertilizers. Similarly, digital farm management systems can support crop rotation planning by recording planting histories, analyzing soil nutrient levels, and suggesting optimal crop sequences to maintain soil productivity and reduce pest and disease buildup. These insights help urban farmers make informed decisions that enhance long-term land use sustainability. In the context of organic farming, digital technologies aid in maintaining compliance with organic certification standards through detailed record-keeping of seed sources, pest control methods, and input usage. Mobile apps and blockchain-based traceability systems can also verify and communicate organic practices to consumers, building trust and enhancing market access.

Environmental benefits

Digital record-keeping in agriculture offers significant environmental benefits within the context of urban farming in Malaysia by fostering data interoperability, controlled yet flexible data access, completeness, and appropriate accuracy (Basir, et al, 2024) . These digital tools not only support efficient farm management but also enhance farmers' knowledge and access to essential inputs, services, and markets, ultimately boosting productivity and income (Njuguna et al. 2025). Furthermore, the application of digital technologies in agriculture has been shown to significantly enhance land productivity, with findings remaining robust under sensitivity and endogeneity tests (Zhang & Zhu, 2025) . Beyond land productivity, agricultural digitalization contributes to environmental sustainability by improving green productivity, with the consumption stage identified as exerting the greatest positive effect (Yu, et al, 2025). Together, these advantages highlight the role of digital record-keeping in promoting both economic and environmental sustainability in urban agriculture.

Economic implications

The implementation of digital record-keeping in urban agriculture in Malaysia carries significant economic implications. While some studies suggest that the adoption of digital technologies contributes to operational efficiency, they may not necessarily translate into improved well-being or income for small-scale farmers in rural settings (Rosnan & Yusof, 2023). Conversely, broader evidence indicates that agricultural digitalization significantly enhances farmers' incomes, with a 1% increase in the level of digitalization corresponding to an average income rise of 57.4 CNY (Wang et al, 2024). Additionally, digital agricultural solutions contribute to economic resilience by reducing crop disaster rates, which not only lowers production risks but also supports sustainable productivity gains through improved green productivity (Yu et al. 2025). These findings highlight both the potential and the nuanced economic impacts of digital record-keeping across different farming contexts in Malaysia.

Challenges and Barriers

Despite its potential benefits, the adoption of digital record-keeping in urban agriculture faces several significant challenges. These include a lack of digital skills, high implementation costs, inadequate technological infrastructure, and limited access to reliable connectivity (Rosnan & Yusof, 2023; Izuogu et al., 2022; Rodzi et al., 2024). In addition, resistance to change among farmers, concerns over data privacy and security, and the broader issue of the digital divide—particularly in rural areas with low digital literacy and poor infrastructure—further hinder widespread adoption (Rodzi et al., 2024; Rosnan & Yusof, 2023). Other barriers include a lack of appropriate technology, limited local applicability, regulatory and policy constraints, insufficient education levels, and challenges related to market access (Rodzi et al., 2024).

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Studies also indicate that the positive impact of digitalization tends to be more pronounced in more developed regions, highlighting persistent disparities in digital access and outcomes across different geographical areas (Wang et al. 2024). Addressing these multifaceted challenges is essential to fully realize the benefits of digital record-keeping in urban agriculture.

Theoretical Framework

A variety of theoretical frameworks have been employed by researchers to examine the adoption, implementation, and impact of digital record-keeping systems in agricultural settings. These frameworks provide valuable lenses through which to understand farmers' behavior, technological acceptance, and the broader socio-technical dynamics that influence the integration of digital tools in agriculture. The following table outlines the key theoretical models that have been widely utilized in prior studies related to digital record-keeping in the agricultural context.

Table 2: List of Theoretical Framework

Theoretical Framework	Authors	Year
Information Systems Theory and Diffusion of Innovations Theory	Tembelio & Miroga	2025
Work System Theory (WST)	Loh, Huspi & Nuar	2025
Unified Theory of Acceptance and Use of Technology (UTAUT) model	Larasati, Putri, Soemodinoto, Alyssa & Shoofiyani	2024
Technology Acceptance Model (TAM)	Indriasari, Sensuse & Resti	2024
Information Asymmetry Theory	Aira,Wiketye & Ng'elenge	2023

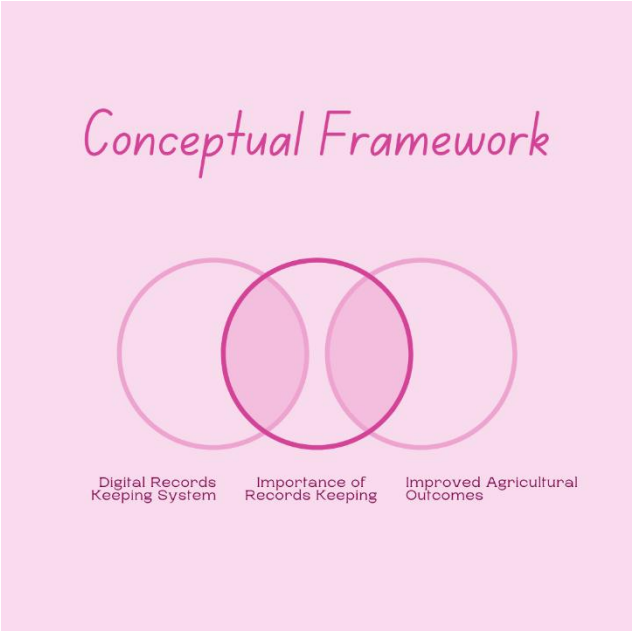

Figure 3: Conceptual Framework

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This conceptual framework is designed to guide the analysis and synthesis of findings from 30 scholarly articles related to the importance of digital record-keeping systems in agriculture.

Methodology

This article review was conducted to synthesize insights from existing literature related to the chosen research topic. A total of 30 peer-reviewed articles were systematically selected and reviewed. These articles were obtained through reputable online academic databases such as Scopus, Web of Science, and Google Scholar, using relevant keywords and search filters to ensure quality and relevance. The review process was carried out over a period of two weeks, during which each article was carefully examined for its objectives, methodology, key findings, and implications. Articles were included based on their relevance to the scope of the study, clarity of research focus, and contribution to the understanding of the topic. Following the review, a qualitative analysis was conducted to identify recurring concepts and issues across the selected studies. Themes were then inductively derived based on the patterns and similarities observed in the findings and discussions of the reviewed articles. This thematic approach enabled the consolidation of diverse perspectives into a coherent synthesis that informs the broader research landscape.

Finding and Discussion

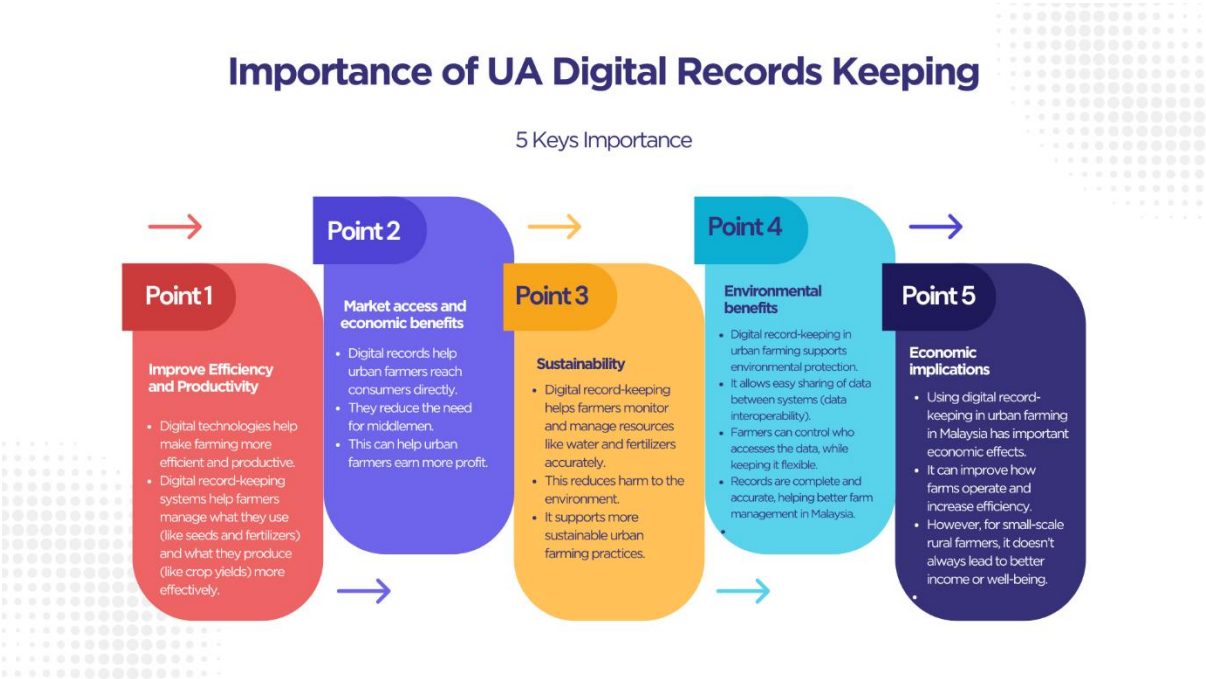

Figure 3: 5 Keys Point or Theme on Importance of Digital Record Keeping Among Urban Agriculture Communities

This review identifies five key points or themes in which digital record-keeping significantly contributes to the development of urban agriculture (UA) practices in Malaysia. The findings illustrate how digital tools are reshaping urban farming not only by enhancing operational efficiency but also by generating broader social, economic, and environmental advantages. One of the foremost contributions of digital technologies and record-keeping systems is the improvement of efficiency and productivity in urban farming. These tools enable farmers to

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systematically track key inputs such as seeds, fertilizers, and water and monitor outputs, including crop yields, in a structured and data-informed manner. Such precision facilitates better planning, reduces resource wastage, and enhances overall farm management. In densely populated urban areas where land and resources are limited, these efficiency gains are particularly vital. Digital record-keeping also plays a pivotal role in expanding market access for urban farmers. By facilitating direct engagement with consumers, digital platforms reduce dependence on intermediaries and offer opportunities for higher profit margins. Enhanced transparency and traceability foster consumer trust, allowing farmers to respond more dynamically to market trends and demands. This direct-to-consumer model is particularly promising in urban settings, where digital infrastructure is generally well-established. In addition, digital systems support the sustainability of urban agriculture. Accurate tracking and management of critical resources such as water and fertilizers contribute to more responsible input usage, thereby minimizing environmental degradation. Given the pressures of rapid urbanization and ecological challenges in Malaysia, such sustainable practices are essential for long-term agricultural viability in urban contexts. Furthermore, the environmental benefits of digital record-keeping are reinforced by its capacity for data interoperability and controlled, flexible access. These features enable seamless data sharing across platforms, enhancing coordination among farmers, communities, and policymakers. At the same time, farmers retain control over their data while maintaining its completeness and accuracy. Such functionalities are instrumental in supporting the implementation and monitoring of environmentally responsible agricultural strategies, especially in cities aiming to promote green development. Despite these promising outcomes, the economic impact of digital record-keeping remains uneven particularly among small-scale or rural farmers. While these tools may enhance operational efficiency, empirical studies suggest that they do not consistently lead to increased income or improved livelihoods for all users. This highlights a persistent digital divide, where disparities in access to technology, digital literacy, and infrastructure continue to pose challenges. To bridge this gap, targeted policy interventions, capacity-building initiatives, and inclusive technology solutions are required to ensure equitable benefits across all farming communities.

Recommendations

To facilitate the successful adoption of digital record-keeping in urban agriculture, a multi-faceted approach involving infrastructure development, training, and policy support is essential. Investment in digital infrastructure is fundamental to ensure reliable connectivity and technological access, particularly in underserved areas (Rodzi et al., 2024; Zhang et al., 2025). Complementing this, targeted training and education programs for urban farmers can help bridge digital skill gaps and reduce resistance to technological change (Izuogu et al., 2022). Equally important is the role of policymakers in establishing supportive regulatory frameworks and financial incentives that encourage the uptake of digital technologies, including digital record-keeping systems (Rosnan & Yusof, 2023; Rodzi et al., 2024) . Together, these interventions can create an enabling environment that promotes the integration of digital tools into urban agricultural practices.

In addition to these practical recommendations, further research is warranted to deepen the understanding of digital record-keeping adoption in urban agriculture. Future studies should consider the following directions: a) Research exploring how urban farmers interact with digital tools can inform the design of more intuitive, accessible, and culturally relevant record-keeping platforms. This includes the use of local languages, mobile-first interfaces, and offline

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functionalities. b) Longitudinal studies are needed to assess how digital record-keeping affects farmers' income, decision-making, and business sustainability over time particularly among different urban farmer profiles (e.g., youth, women, low-income groups). c) Future research should also examine the effectiveness of existing digital agriculture policies and governance structures, identifying best practices and gaps in implementation. e) Investigations into how digital record-keeping systems can be integrated with other technologies such as IoT sensors, AI-based analytics, or blockchain may reveal new pathways for optimizing urban agricultural systems. f) Comparative research across different urban contexts both within Malaysia and globally can help identify context-specific drivers and barriers to digital adoption, offering valuable insights for scaling and replication.

Conclusion

Digital record-keeping holds significant potential to transform urban agriculture in Malaysia by improving efficiency, enhancing market access, and promoting sustainable farming practices. It offers environmental benefits through optimized resource use, contributes to productivity gains and economic resilience, and supports the transition toward greener agricultural systems. However, realizing these benefits requires addressing key challenges, including the digital divide, inadequate infrastructure, lack of technical skills, and insufficient policy support. Overcoming these barriers through targeted investments, capacity building, and enabling policies is essential to fully harness the transformative power of digitalization in Malaysia's urban agriculture sector. This article review has successfully highlighted the importance of digital record-keeping and critically examined the existing literature to uncover the recurring themes, key drivers, and persistent challenges surrounding its adoption. The findings provide a clear understanding issues offering valuable insights for researchers, practitioners, and policymakers to advance digital integration in urban farming.

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