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Impact of E-Governance on China's Agricultural Modernization: A Case Study of One Village One Product

Lingtong Liu [1], Grichawat Lowatcharin [1*]

[1] College of Local Administration, Khon Kaen University, Thailand

* Corresponding Author: Email: grichawat@kku.ac.th

First Author ORCID ID: https://orcid.org/0009-0000-5591-406X, Email: liulingtong@kkumail.com

Second Author ORCID ID: https://orcid.org/0000-0002-2623-1769 , Email: grichawat@kku.ac.th , © Authors

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Abstract

This study investigates the impacts of electronic governance (e-governance) on the modernization of agricultural practices within China's One Village One Product (OVOP) initiative. The research is grounded in a qualitative analysis, drawing on in-depth interviews with diverse stakeholders including government officials, program operators, farmers, and agricultural experts. The paper explores how e-governance has been integrated into China's Rural Vitalization Strategy, focusing on its role in enhancing agricultural productivity, farmer incomes, and sustainable rural development. The findings reveal that e-governance facilitates improved administrative efficiency, access to market information, and collective action among small-scale farmers. It also underscores the pivotal role of e-governance in streamlining operations, providing real-time data, and opening larger markets for local agricultural products, thus fostering community resilience and market influence. However, the article also addresses the challenges posed by e-governance, such as the digital divide and the potential overreliance on technology, which could exacerbate disparities and introduce vulnerabilities. The study concludes that while e-governance has significantly influenced agricultural modernization and empowered rural communities, it necessitates a balanced approach to technology integration, ensuring equitable access and data security to maintain the trust and sustainability of the agricultural sector.

Introduction:

The "Three Rural Issues" - focusing on agriculture, rural communities, and farmers - have long been pivotal in shaping China's development policies. These issues are so integral that they have consistently featured in the country's primary policy documents for several years. Addressing these concerns involves enhancing agricultural productivity, improving farmers' incomes, and fostering sustainable development in rural areas. To achieve these goals, China has initiated the "Rural Vitalization Strategy." A key component of this strategy is the One Village One Product (OVOP) approach, mirroring the successful model from Japan. In the Chinese context, OVOP is envisioned as a pathway to blend agricultural industrialization with the traditionally small-scale nature of rural farming.

Concurrently, the rapid progression in communication technologies has catalyzed the adoption of electronic governance (e-governance) across China, significantly impacting agricultural modernization efforts. E-governance is increasingly influential in rural vitalization projects, prominently within the OVOP initiative. It brings a fusion of modern technology into rural agricultural practices, offering novel avenues for efficiency, information dissemination, and administrative management.

This study delves into the confluence of e-governance and agricultural modernization under the OVOP program in China. Utilizing a qualitative research approach, it explores the perceptions and experiences of various stakeholders involved in OVOP. The research employs in-depth interviews with a diverse group, including local government officials, program operators, farmers, and an expert in agricultural modernization. This methodological choice aims to capture a comprehensive view of the social dynamics and personal perspectives influenced by e-governance in the context of OVOP.

Literature Review:

The agricultural landscape in China is predominantly characterized by small-scale family operations, deeply entrenched in its rural economy. The General Office of the Communist Party of China Central Committee and the General Office of the State Council (2019) acknowledge the persistence of this model into the foreseeable future. Despite its fundamental role in China's agriculture, it presents distinct challenges and opportunities amid modernization and development efforts. To address these, the Chinese government has initiated the Rural Vitalization Strategy (Long et al., 2019), which Liu et al. (2022) note, is designed to incorporate small-scale farmers within the ambit of agricultural modernization while maintaining traditional farming practices' essence (Jiao et al., 2019). A key principle of this strategy is 'moderate development,' aimed at managing the complexities of rural vitalization. Schneider (2015) contends that technological and economic advancements should be tempered by the socio-cultural fabric of rural life. The Rural Vitalization Strategy acknowledges the constraints and potential of small-scale farming, advocating for a sustainable and inclusive approach (Huang et al., 2017). The One Village One Product (OVOP) policy is a manifestation of this moderate development principle, utilized as a primary instrument within the strategy to leverage rural communities' distinct capabilities and resources (Shen & Chou, 2022). Smith (2019) observes that this policy fosters specialization in local agricultural commodities, generating new market opportunities and promoting community-driven economic growth. The OVOP initiative not only aims to rejuvenate rural economies but also to ensure small-scale farmers' active engagement in modernization processes (Han et al., 2023). Such integration efforts have been increasingly supported by the adoption of electronic governance (e-governance) mechanisms (General Office of the CPC Central Committee & General Office of the State Council of China, 2019).

E-governance extends beyond mere digitization of government services, involving a multifaceted dynamic of 'push and pull' factors (Madon, 2004). It spans from structural and normative aspects of public service delivery to fostering inclusive citizen participation and stakeholder engagement in a digital context (Bannister & Connolly, 2012). As a component of e-governance, e-government focuses on improving service delivery through information and communication technologies (ICT), evolving from basic information dissemination to participatory decision-making (Olatokun & Adebayo, 2012; Palvia & Sharma, 2014). E-governance has been transformative in public administration, reshaping service delivery and citizen-government interactions (Vinod Kumar, 2015), with benefits in transparency, efficiency, and participatory governance being well-documented (Halachmi & Greiling, 2013). Furthermore, e-governance is pivotal for streamlining government operations and improving public service accessibility (Saxena, 2005). In rural governance, the Chinese government's approach to e-governance signifies a decentralization of power and simplification of administrative processes (Ma et al., 2005), crucial for service efficacy and rural accessibility, particularly for

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small-scale farmers (Ren, 2023). E-governance tools have significantly improved communication and information flow between governmental entities and rural communities (Wang et al., 2023), providing farmers with immediate access to agricultural data, market insights, and innovative farming techniques that support informed decision-making and enhanced practices (Xia, 2010). These tools have also enabled farmers' integration into larger markets, financial services, and government programs (Wang & Chen, 2012), thereby bolstering their productivity and incomes.

In addition, e-governance in China's agricultural sector has effectively coordinated stakeholders-farmers, agribusinesses, and governmental agencies-into an integrated network (Huang, 2009), promoting collaboration and collective action (Gajendra et al., 2012), which is vital for modernizing agriculture within a small-scale farming context. E-governance allows for a more inclusive approach to agricultural governance (Ntaliani et al., 2010), potentially aligning stakeholder efforts with national agricultural development and rural vitalization goals. Nevertheless, the effective deployment of e-governance in rural areas faces challenges such as digital literacy among farmers, infrastructural deficits, and the digitization of governance processes (Qian & Zhang, 2022). Addressing these issues is essential to fully leverage e-governance in modernizing agriculture and integrating small-scale farmers into this evolving framework. Hence, this study focuses on the application of e-governance in OVOP initiatives, aiming to evaluate its impact on agricultural modernization through in-depth interviews with various stakeholders.

Methodology:

This study is situated within the interpretivist research paradigm, with the aim of unpacking the subjective experiences and perceptions of stakeholders engaged in China's One Village One Product (OVOP) program, particularly in the context of e-governance influence. An in-depth, qualitative case study design has been adopted. Primary data is gathered through in-depth interviews, which serve to probe the complex social dynamics and individual perspectives that e-governance introduces to agricultural modernization. This methodological choice allows for an exhaustive exploration of the nuances of e-governance within the OVOP framework.

The participant selection for this study was conducted using a purposive sampling approach, focusing on individuals who are significantly engaged in the OVOP initiative and the incorporation of e-governance within the agricultural sector. The research encompasses interviews with three grassroots-level civil servants (refer to Table 1, codes G1 to G3, for further details), who play essential roles in the implementation of relevant policies. Additionally, the study includes three OVOP operators, who are not only integral to the execution of the project but also serve as farmers, thereby acting as direct beneficiaries and agents of these initiatives (see Table 1, codes O1 to O3, for more information). Furthermore, the research involves insights from an expert in agricultural modernization (refer to Table 1, code E1), who contributes a comprehensive analysis of the topic at hand.

Table 1
Respondent Information Form

Code	Position	Responsibilities	Information
G1	Grassroots civil servants in industry and information technology	Grassroots industry and information technology service work	Grassroots practice of helping small-scale farmers connect to agricultural modernization under the OVOP policy
G2	Grassroots civil servants in agricultural and rural departments	Grassroots "agriculture, rural areas and farmers" service work	Grassroots practice of helping small-scale farmers connect to agricultural modernization under the OVOP policy
G3	Grassroots civil servants in agricultural and rural departments	Grassroots poverty alleviation work services	Grassroots practice of helping small-scale farmers connect to agricultural modernization under the OVOP policy

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Code	Position	Responsibilities	Information
O1	OVOP industry operator (Flower growing farmer)	Operation of OVOP agricultural projects	The practice of e-governance initiatives in OVOP operations under the background of agricultural modernization development
O2	OVOP industry operator (Vegetable growing farmer)	Operation of OVOP agricultural projects	The practice of e-governance initiatives in OVOP operations under the background of agricultural modernization development
O3	OVOP industry operator (Fruit growing farmer)	Operation of OVOP agricultural projects	The practice of e-governance initiatives in OVOP operations under the background of agricultural modernization development
E1	Expert	Research on agricultural modernization	The role and influence of e-governance in many paths of rural vitalization strategy, especially OVOP projects

Data is collected via semi-structured interviews, utilizing an interview guide comprised of open-ended questions tailored to elicit detailed accounts of the participants' experiences, perceptions, and opinions on the impact of e-governance on agricultural practices. The interviews are conducted in a conversational manner, affording the necessary flexibility to explore emergent themes and to facilitate the open exchange of insights.

To bolster the study's methodological soundness, triangulation is employed. This is achieved by augmenting and corroborating the interview data with relevant secondary materials, such as policy documents and extant scholarly works. Further credibility is ensured through participant validation, a process in which participants are invited to review and comment on the findings, thus enhancing the veracity and credibility of the data reported.

Findings:

With the enactment of "Several Opinions of The State Council of the People's Republic of China on Vigorously Promoting the Development of Informatization and Effectively Guaranteeing Information Security," China has embarked on an initiative to advance agricultural and rural informatization. This initiative aims to enhance the level of informatization in agricultural production and operations, as well as to improve the agricultural and rural information service system (State Council, PRC, 2012). The construction of this system spans various domains, including e-government, distance education, e-commerce, online marketing, and the Internet of Things. Its objective is to fully leverage the supportive role of information technology in the development of agricultural sectors, encompassing production, management, and services (Ministry of Agriculture and Rural Affairs, PRC, 2011). China's path towards agricultural modernization and rural vitalization is characterized by two pivotal strategies: the integration of electronic governance (e-governance) and the adoption of the OVOP initiative. These strategies, emanating from the "Three Rural Issues" – agriculture, rural communities, and farmers – are at the heart of China's developmental policies. This study conducts a detailed examination of the influence of e-governance on agricultural methodologies and its contribution to the enhancement of the OVOP initiative. This analysis employs a qualitative approach, utilizing in-depth interviews with a diverse array of stakeholders.

1.1 China empowers OVOP small-scale farmers through e-government

In China, small-scale farmers are essential to the rural economy, but they often encounter significant challenges in accessing information and market opportunities. E-governance has emerged as a transformative solution, offering these farmers a direct connection to the broader agricultural ecosystem. This digital integration enhances the decision-making abilities of small-scale farmers, empowering them to utilize technology for optimized crop management, accessing real-time market prices, and establishing connections with larger supply chains. Such advancements in connectivity do not just elevate their productivity; they also contribute to improved living standards and increased income levels (G3, personal communication, September 15th, 2023).

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A notable example of the impact of e-governance is its synergy with the Chinese government's strategy for streamlining administration and delegating powers. The implementation of the OVOP program highlights this synergy. E-governance has substantially increased the efficiency of processing project approvals, monitoring, and issuing financial support within the OVOP framework. This efficiency boost not only reduces the administrative burden at the grassroots level but also provides OVOP participants with more transparent and efficient service channels. In the context of the OVOP program, the creation and application of OVOP demonstration villages and towns have exemplified the comprehensive integration of e-governance. Here, all administrative processes, from project application to final approval, are managed more effectively and efficiently through digital platforms (G1, personal communication, September 15th, 2023). This approach has streamlined administrative procedures, enabling a smoother, faster, and more accountable process that aligns well with the needs and expectations of small-scale farmers.

Furthermore, the OVOP initiative has facilitated the industrialization and integration of local products into regional public brand plans (G2, personal communication, September 16th, 2023). Products under the OVOP program that have achieved industrialized operation benefit greatly from e-governance channels. These digital platforms provide broader marketing and sales opportunities, extending the reach of these products beyond local markets to regional and potentially global markets. This expansion is not just a win for the farmers and their communities but also contributes to the diversification and resilience of China's rural economy.

The role of e-governance in empowering China's small-scale farmers is multifaceted. It addresses the traditional challenges of information and market access, streamlines administrative processes, expands market reach. This holistic approach not only improves the livelihoods of small-scale farmers but also contributes significantly to the modernization and sustainability of China's vast rural landscape.

1.2 Enhancing OVOP agricultural practices through E-governance in China

The implementation of e-governance in China marks a significant shift in the agricultural sector, effectively bridging the divide between traditional practices and modern techniques. This shift, primarily driven by technology, plays a crucial role in modernizing the agricultural framework, especially for small-scale farmers. E-governance, through the incorporation of advanced communication technologies, provides these farmers with access to a broad spectrum of information. This encompasses innovative farming methods, current market trends, and industry best practices. Such integration enables farmers to transition more seamlessly from traditional methods to more efficient, technologically driven approaches (E1, personal communication, August 25th, 2023).

A prime example of this is China's e-government platform extends its utility by providing an online portal for agricultural science and technology training. This feature enables small-scale farmers to partake in agricultural technology training remotely, and facilitates interaction with researchers from leading academic and scientific institutions. An illustrative case emerged during an interview where a farmer, facing pest and disease infestation in crops, uploaded videos and images of the affected plants online. This initiative drew the attention of agricultural experts, who subsequently visited to diagnose and address the specific issues (O2, personal communication, August 23th, 2023).

E-governance in China has revolutionized the agricultural sector, especially benefiting small-scale farmers by providing access to advanced farming knowledge and market insights. It bridges the gap between traditional methods and modern technology, facilitating a smoother transition to efficient, technology -based agriculture. This approach is exemplified in the implementation of the OVOP program, where e-governance has significantly streamlined administrative processes, improved efficiency, and offered more transparent services. Additionally, China's e-government platform extends its benefits by offering online agricultural training and expert consultation, exemplified by cases

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where farmers receive direct assistance from agricultural experts through the "BEE DATA" platform (O1, personal communication, August 23th, 2023).

1.3 Community and Market Strength through E-Governance

In the realm of OVOP agriculture practice, the introduction of e-governance services has the potential to significantly bolster the sense of community and collaboration among farmers, particularly in overcoming adversities and enhancing market influence. This integration of technology into agricultural practices is pivotal, especially in times of hardship such as natural disasters or market fluctuations. The sense of belonging and mutual support fostered through e-governance is indispensable. It facilitates farmers in working collectively to navigate challenges, share resources, and extend mutual assistance, thereby strengthening the community fabric. This is also a major reason why scattered small-scale farmers can accept integrated management and enter the OVOP industrial operation model. Collaborative problem-solving is markedly enhanced through digital platforms. By leveraging collective intelligence and shared experiences, farmers can innovate and adopt more sustainable and efficient farming methods.

Another significant advantage of e-governance in OVOP agriculture practice is the amplification of market negotiation power for farmers, particularly those operating on a small scale (O3, personal communication, August 24th, 2023). When these farmers collaborate, they enhance their ability to negotiate better terms in the marketplace. This empowerment is crucial for securing more favorable prices for their produce, gaining access to high-value markets, and negotiating more effectively with suppliers and buyers. E-governance platforms can facilitate this process by enabling farmers to form cooperatives or alliances, thereby solidifying their presence and influence in the market.

Furthermore, access to collective resources is greatly streamlined through e-governance services. These platforms can offer farmers easier access to shared assets such as machinery, storage facilities, or marketing channels. This accessibility is especially beneficial for small-scale farmers who might otherwise struggle to afford such resources independently. By pooling resources, farmers can reduce costs and increase operational efficiency, thus enhancing their overall productivity and sustainability (E1, personal communication, August 25th, 2023).

OVOP policy practice reflects how China's agricultural sector is transforming through information strategies. By adopting e-governance, small-scale farmers can gain direct access to the wider agro-ecosystem, thereby enhancing their decision-making and market positioning. Integration of e-Governance with the OVOP projects showcases streamlined administrative processes to the benefit of OVOP participants. This digital transformation not only improves the productivity and living standards of small-scale farmers, it also strengthens rural economies by integrating local products into wider markets.

The implementation of e-governance has facilitated a shift from traditional to modern agricultural practices, offering farmers access to information on innovative methods, market trends, and industry best practices. The e-government platform further aids farmers by providing online training in agricultural science and technology and enabling them to connect with experts for advice on specific agricultural challenges. This has enhanced community cohesion and market influence, allowing farmers to collaborate in overcoming challenges and negotiate better market terms. Collectively, these developments signify a crucial step towards modernizing China's rural landscape and ensuring the sustainability of its agricultural sector.

Discussion and Conclusion:

Through detailed interviews with stakeholders engaged in the One Village One Product (OVOP) agricultural practices, this study examines the influence of electronic governance on the process of agricultural modernization. The impacts span several dimensions including the application of e-governance to agricultural practices, the empowerment of small-scale farmers, and community collaboration.

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Undoubtedly, China's array of e-governance initiatives has positively influenced the agricultural modernization process. Firstly, it enhances the efficiency of administrative operations. E-governance restructures conventional administrative processes, facilitating more fluid operations. This improvement is especially apparent in the expedited processing of applications and distribution of resources within the OVOP initiative, particularly concerning various administrative approvals. Secondly, e-governance platforms supply real-time data, equipping small-scale farmers with the knowledge to make well-informed decisions regarding crop management, market timing, and pricing strategies, thus elevating agricultural outcomes. Thirdly, digital platforms grant local agricultural products entry into larger markets, augmenting the visibility and brand reputation of regional products. The implications of this extend beyond individual farmers to affect the broader rural economy. Fourthly, e-governance fosters community resilience and support: it cultivates a sense of unity among farmers and nurtures a cooperative atmosphere that proves invaluable in addressing collective challenges like market volatility or natural calamities.

However, the risks and challenges associated with electronic governance must also be acknowledged. Primarily, the technological divide persists, potentially aggravating existing disparities between regions and demographic groups. In the context of OVOP agricultural practices, the disparity in local conditions-particularly natural resource endowments-in rural areas is pronounced. This disparity can hinder farmers in less affluent areas from effectively accessing or leveraging e-governance services. Secondly, the danger of becoming excessively dependent on technology is ever-present. Such reliance can introduce vulnerabilities, particularly when faced with technical malfunctions or cybersecurity threats. Consequently, the agricultural sector's dependence on reliable digital infrastructure embodies a tangible risk. Thirdly, there are concerns regarding the privacy and data security of farmers. Security of data aggregation and management through e-government platforms must be ensured to maintain the trust of the farming community.

In conclusion, e-governance has had a positive and transformative impact on China's agricultural modernization, particularly within the OVOP initiative. The digitization of administrative processes through e-governance has streamlined operations, reducing the bureaucratic burden and enhancing transparency and efficiency. This has had the effect of simplifying the procedures for farmers and operators within the OVOP program, allowing for quicker and more effective decision-making and resource allocation.

Moreover, e-governance has facilitated the integration of small-scale farmers into the wider agricultural economy. It has provided them with access to essential information and services, such as real-time market data, agricultural best practices, and direct contact with experts for assistance with specific agricultural issues. The collaborative aspect of e-governance has also strengthened community ties and collective action within the OVOP framework. By fostering a cooperative environment, e-governance has enhanced farmers' abilities to tackle common challenges, thereby improving their market positioning and livelihoods.

However, this research also highlights the challenges and risks associated with the implementation of e-governance. The digital divide remains a concern, as it may exacerbate existing inequalities between different regions and demographic groups. Moreover, an overreliance on technology could introduce vulnerabilities, such as cybersecurity threats and technical malfunctions, which could disrupt the agricultural processes that are increasingly dependent on e-governance platforms. E-governance has significantly contributed to the modernization of agriculture under China's OVOP initiative, creating opportunities for increased efficiency, market access, and community empowerment, it also presents challenges that require careful management. To sustain the benefits and mitigate the risks, a balanced and inclusive approach to the deployment of e-governance is essential.

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