

Djanibekov, Nodir; Kurbanov, Zafar; Tadjiev, Abdusame; Govind, Ajit;
Akramkhanov, Akmal

Research Report

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Nodir Djanibekov
Zafar Kurbanov
Abdusame Tadjiev
Ajit Govind
Akmal Akramkhanov

Farmers' social media groups for better extension and advisory services

The spread of information and communications technology (ICT) in Central Asia has reached a point where most farmers use smartphones with mobile internet access providing an opportunity for a low-cost and timely access to agricultural information and advisory services. When extension service is poor and does not cater to the farmers' needs, farmers seek other sources of information, such as exchanging knowledge with their peers and engaging in social media groups using instant messaging applications (apps) such as Telegram and WhatsApp. Analysis of a farm-level survey conducted in 2022 in Kazakhstan and Uzbekistan, suggests that farmers' participation in online groups for information exchange is influenced by the enabling environment rather than by the type of cultivated crops or farm size. The findings are relevant for developing private sector strategies and public policies to spread digital technologies among Central Asia's farmers with a holistic plan for a digital transformation. When introducing smartphone- or web-based digital technologies, policymakers are recommended to start scaling up with younger and more technologically-savvy farmers who on the one hand rely on their own knowledge but on the other hand are more open to embracing new ways of farming and interaction. Decision-making autonomy is an important factor to facilitate digital transformation in agriculture in the Central Asian context.

Challenges in agricultural extension services in Central Asia

The Central Asian system of knowledge production and sharing relies on a complex network of agricultural ministry departments, public agricultural universities, and research institutes. This traditional way of service provision to farmers by public organizations happens in a top-down manner without catering to the farmers' actual needs. The top-down communication of knowledge is among the major factors hindering the establishment and expansion of autonomous extension services. Farmers cannot signal their knowledge needs to policymakers either due to a lack of representation of their interests through a strong organization or simply because the public organizations have their targets set by a central ministry (de Danieli and Shtaltovna 2016). Due to a lack of access to modern knowledge, poor communication, and conflicting agendas, public

agricultural service organizations are unequipped in addressing farmers' needs. Farmers in remote areas and smallholders often do not access adequate extension and advisory services. The knowledge dissemination projects run by international development agencies through participatory approaches serve a relatively small number of farmers and often short-lived without a wider adoption and long-term impact. Consequent of such institutional gaps, farmers seek other sources of information such as engaging with their peers, interacting with neighbors and local experts (Kurbanov et al. 2022).

ICT use for agricultural extension and advisory services

ICT tools can become exceptional when extension service sector does not respond to farmers' needs and knowledge access is difficult or costly. ICT tools

Country	Unique mobile subscriber penetration in 2020	Mobile internet adoption in 2020	Internet users in 2020	Social media users in 2021 ^b
Kazakhstan	70	50	86	72
Kyrgyzstan	65	50	72	54
Tajikistan	62	35	22 ^a	15
Turkmenistan	64	33	21 ^a	6
Uzbekistan	62	44	71	18

Table 1: Share of subscribers and internet adoption in Central Asia, % of population / Sources: GSMA (2021), World Bank (2023), DataReportal (2023).

Note: ^a data for 2017; ^b social media users are counted for Facebook and its messenger, Instagram, LinkedIn, and Twitter. It is important to note that social media users may not represent unique individuals as people make use of more than one social media sources.

can address the challenges of traditional knowledge flow by improving daily communications among farmers and with knowledge experts. ICT-based tools have become prominent for creating knowledge-sharing channels among individuals and also play a prominent role in complementing conventional communication methods given physical distances and mobility constraints (Ahmed et al. 2019).

Smartphone-based messaging apps have emerged as agricultural information-sharing platforms for farmers in developing countries. Using instant messaging apps, farmers and other actors of agricultural value chains can exchange information at lower or practically free of cost (Fabregas et al. 2019). Agricultural media groups in smartphone-based messaging apps proved vital in technology and knowledge diffusion, providing low-cost extension and advisory services, as well as building farmers' social capital and connecting them to markets (Norton and Alwang 2020). For instance, chat applications such as Telegram and WhatsApp messengers now allow users to exchange bilaterally or within groups information not only via text and voice messages but also more sophisticated media such as documents and photo- and video files (Fabregas et al. 2019).

Social media groups can complement offline face-to-face and group-oriented communication and improve farmers' decision-making processes by offering real-life interaction and knowledge flow between researchers, extension agents and farmers. Smartphone-based messaging apps offer platforms for a pluralistic extension by bringing together different stakeholders, such as farmers, extension agents, and experts, into one social group. The messaging apps allow interaction not only with a single expert but also with a number of experienced individuals in crop health, output and input prices, soil conditions, water availability, important training events, and other daily issues. Voluntary participation in virtual groups can empower participating farmers by strengthening the linkages with extension workers and researchers, where farmers can provide rapid feedback on their actual needs, provide assessment to services and experimentations and thus direct research agenda and participatory technology development

(Norton and Alwang 2020). Farmers will likely become increasingly dependent on messaging apps (Spielman et al. 2021). The COVID-19 pandemic enhanced the role of social media groups in knowledge and information exchange in general and among agricultural producers.

Mobile internet and smartphone use in Central Asia

While there are important data gaps and cross-country differences, several broad findings emerge on the trends, and opportunities for expanding agricultural advisory services through instant messaging apps.

Smartphones and the internet have penetrated Central Asia to a large extent. The mobile subscriptions rate is above 60% across all five countries, where Kazakhstan with 70% scores the highest share of unique mobile subscribers in the region (GSMA 2021). According to the NEWZOO Smartphone Figures dataset (2023), in 2018, Kazakhstan had the second-highest smartphone use rate in Asia at 65% which reached 73% in 2020 (Table 1). In 2020, Uzbekistan's smartphone use rate was 60%. Approximately 86% of people in Kazakhstan and 71% of people in Uzbekistan have access to the Internet, which is expected to increase further as the costs of internet data and internet-based technologies will be decreasing (World Bank 2023). About half of the population in Kazakhstan and 44% of the population in Uzbekistan use mobile internet.

The use of social media has been growing in the region. As of January 2022, there were 6.25 million social media users in Uzbekistan, equivalent to 18% of the total population, and 13.8 million social media users in Kazakhstan, equivalent to 72% of the total population (DataReportal 2023). Among instant messaging apps, WhatsApp is the most popular messaging app in Kazakhstan, Kyrgyzstan and Tajikistan, while in Uzbekistan, it is Telegram. The countries recognize the power of digitalization in transforming their societies and economies, and the COVID-19 pandemic made that transformation essential and speeded up the process.

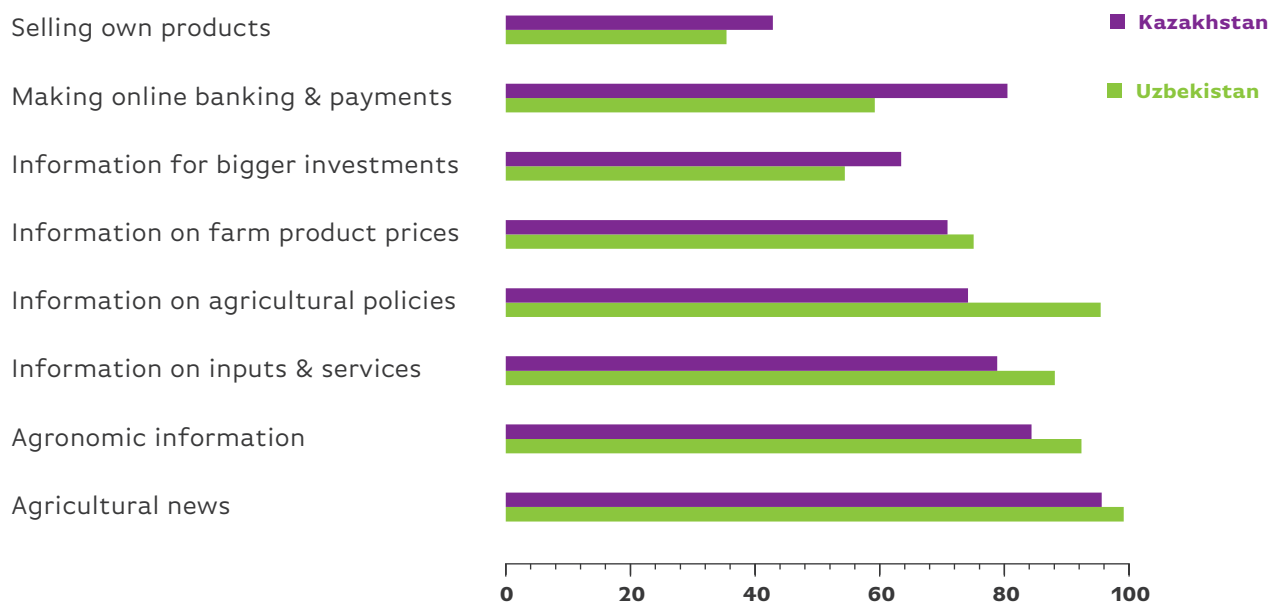


Figure 1: Information search and farm activities mobile internet is used for among interviewed farmers, % of smartphone users / Note: In Kazakhstan N=364, in Uzbekistan N=353.

Social media group participation of farmers in irrigated areas of Kazakhstan and Uzbekistan

To understand the use of smartphones and mobile internet, and the participation in social media groups by farmers, we used the dataset which comes from a survey of farm managers conducted within the framework of the SUSADICA project¹ in Turkistan (Kazakhstan) and Samarkand (Uzbekistan) provinces in April-May 2022. The SUSADICA dataset consists of 901 individual farms (451 in Kazakhstan and 450 in Uzbekistan) registered as owner-operators or fixed tenants specializing in crop cultivation. From this sample, about 71% of respondents engage in cotton-wheat cultivation.

Most respondents use mobile internet to access a variety of farm information. From the surveyed datasets it was found that, in Kazakhstan, the farmers use internet for three main activities. These include [1] obtaining daily agricultural news, [2] agronomic information related to various crops, and [3] online banking and payments (Figure 1). On the other hand, in Uzbekistan, a substantial majority of the farmers use smartphone-based internet to obtain [1] agricultural news, [2] agricultural policy info, and [3] information on agronomy and inputs and services. It was noted that in both the countries information on investment opportunities and selling own products were least sought by the users.

The use of instant messaging apps for farm business is widespread among interviewed farmers. The surveyed data shows that about 80% of interviewed farmers in Kazakhstan, and about three-fourths in Uzbekistan used smartphones, while the remaining respondents used cellular (mobile) phones. Almost all the smartphone-using farmers reported the use of at least one instant messaging app. The survey revealed that a larger share of interviewed farmers

in Kazakhstan indeed participated in various online groups consisting of less than 100 members. On the contrary, among farmers in Uzbekistan, it is common to have social media groups with as many as 1000 members.

The underlying reasons for farmers' participation in social media groups differ between Kazakhstan and Uzbekistan. In Kazakhstan, decisions to participate in social media groups are made by those who have better access to a mobile internet connection, who are younger and have agriculture-related education. Furthermore, the participants in social media groups have wider communication circle on telephone with more than four individuals, cultivate fewer crops, have poor soil fertility, limited irrigation water access, and located in remote areas. In Uzbekistan participation decisions are made by those who have own agronomic knowledge, free to allocate crops, and have lower accessibility of irrigation water source. The participants in social media groups also see the relevance of mobile internet for their farm business, are open to new things, and care less about the opinion of other farmers. These findings suggest that socioeconomic, institutional, and regulatory environments are important in farmers' decisions to participate in virtual groups.

Farmers' participation in social media groups positively affects farm performance but depends on farmers' freedom in taking decisions. Participation in social media groups for exchanging on farm-related information can improve farmers' performance measured in higher cotton yields and net revenues. However, in Uzbekistan's institutional context, where farmers' decisions in crop choice

¹ SUSADICA – Structured doctoral programme on Sustainable Agricultural Development in Central Asia: <https://www.iamo.de/en/research/projects/details/susadica>

and land allocation are regulated, the benefits of higher cotton yields are not translated into higher net revenues.

Recommendations

To stimulate smartphone-based information flow to the farmers, extension and advisory services need account for already existing farmers' virtual groups and be more actively present in offering complementary knowledge that farmers already exchange among each other. The virtual groups that are based on participatory principles can offer clarity on farmers' felt needs to design and disseminate extension services in a simple and affordable way. Accounting information on the nature of potential adopters, adoption patterns and impacts will better inform the policymakers with evidence-based scaling of innovations and knowledge.

The currently existing virtual groups in the messaging apps will become more popular for targeted and consolidated delivery of currently dispersed information to farmers and thus complement other dissemination sources. It will be important to address more complex issues of the farming sector and reach farmers' needs by engaging other value chain players such as input and service suppliers, processors, retailers, and crediting institutions. Yet, these efforts should be based on economic reasons and voluntary participation. Particularly, top-down

enforcement or a governmental decree will contribute only marginally to the usefulness of such agricultural information-sharing groups.

Where farmers produce under more liberal and secure tenure conditions, the focus should be given to improving the use of the internet-assisted tools among farmers by promoting mobile internet connection. Scaling up of smartphone-based technologies should be started with actively engaging younger and more educated farmers.

Where farmers' decisions are constrained through top-down production and land allocation orders, the focus of scaling up ICT products should be first targeted to provide more autonomy to the farmers. Higher decision-making autonomy will be crucial for converting digitalization processes in agricultural sector into economic benefits for farmers. Making farmers self-reliant entrepreneurs will reduce their tendencies to follow top-down recommendations and deploy context-specific recommendations and decisions that relate to their needs and capacities. Explaining how farm business can benefit from ICT will be a vital second step to encourage further digitalization of farmers' decision-making process. In such context, it should be considered to scale up the digital extension and advisory services first among educated farmers with entrepreneurial skills who rely on own knowledge and are more open to embracing new technologies and ways of farming. Digital transformation of agriculture should be incorporated into national goals and visions.

Further Information

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Contact

Nodir Djanibekov
djanibekov@iamo.de
Tel.: +49 345 2928-128

Leibniz Institute of
Agricultural Development
in Transition Economies
(IAMO)
Theodor-Lieser-Str. 2
06120 Halle (Saale)
Germany
www.iamo.de/en

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