

PART 2:

Analysis of the farmer survey:

A regional survey was conducted to gather information from smallholder farmers and producers in several Asia Pacific countries, including Bhutan, Bangladesh, Iran, Sri Lanka, Samoa, and Vietnam. The survey aimed to assess the challenges these farmers face in adopting local digital tools and solutions, as well as to understand their current use of these tools and their expectations and needs.

The survey was conducted as part of the framework for Collective Action on Inclusive Digital Transformation of Agriculture, which was facilitated by the Global Forum on Agricultural Research and Innovation (GFAR). It was implemented by the Asia-Pacific Association of Agricultural Research Institutions (APAARI) in collaboration with its country core members, and supported by Asian Farmers Association (AFA) as a regional partner. The survey was distributed to APAARI's country core members in the form of an online Google survey.

Farmers' Profile:

The survey received 277 responses, of which 85 came from women and 192 from men. Further analysis of the survey data indicates that 199 of the responses were from individuals in Bangladesh, 29 were from Sri Lanka, 17 were from Samoa, 12 were from Iran, 12 were from Bhutan, and 7 were from Vietnam. The majority of the responses came from National Agricultural Research Systems (NARS), which are primarily country core members of APAARI. These organizations supported the survey effort by mobilizing additional responses from their networks.

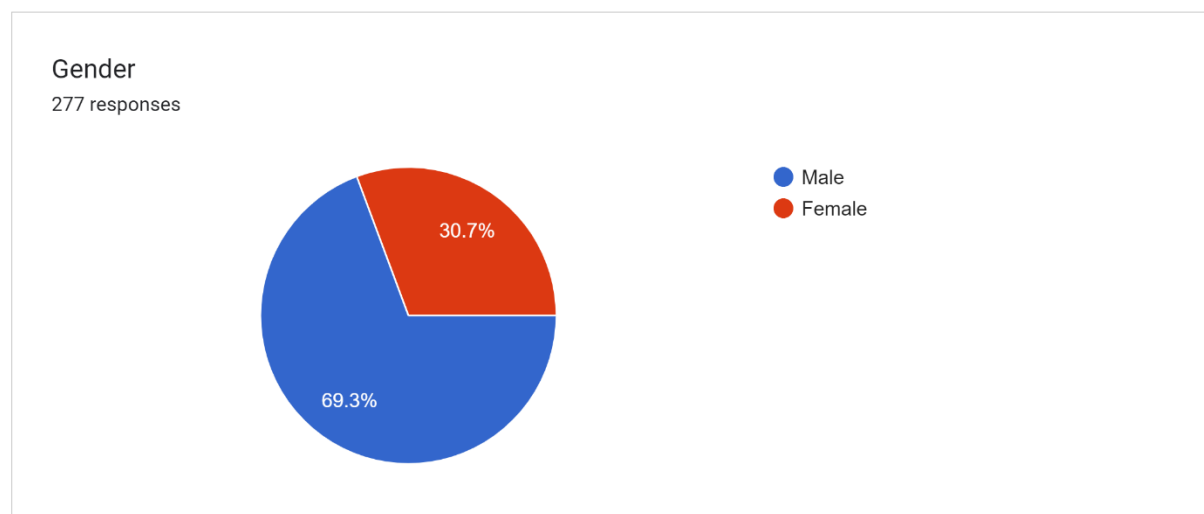


Figure 1 Gender distribution

Age and farm size: Factors impacting digital strategies

Two key factors to consider are the age of the farmers and the size of their farms. According to the survey results, approximately 51.6% of the responses came from farmers between the ages of 41 and 60, while 39% came from farmers between the ages of 24 and 40 (as shown in figure 2). and 26% of the women responded that they are ready to use any digital tools.

Figure 3 indicates that a majority of the respondents - approximately 83.4% - identified themselves as smallholder farmers. This highlights the importance of developing digital strategies that are tailored to the needs and capabilities of smallholder farmers, who often have limited access to resources and technology.

Age group in years
277 responses

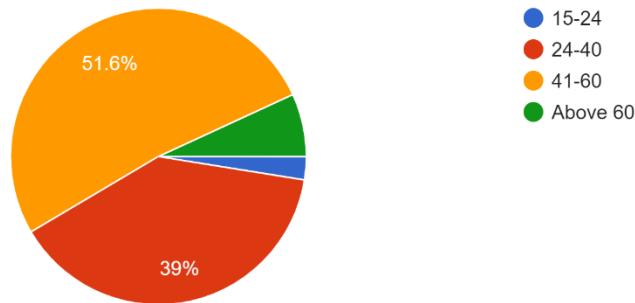


Figure 2: Age group distribution (in years) of the sample population

Farm size
277 responses

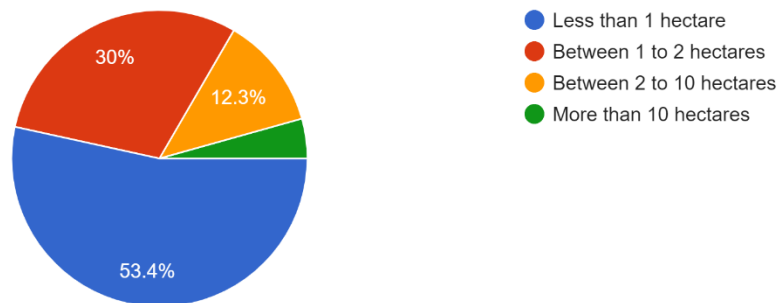


Figure 3: Farm size depiction of the sample population

Insights: Farmer's readiness to adopt Digital tools for agriculture

A. Connectivity: The survey found that farmers are generally well-equipped to adopt digital tools for agriculture, with high levels of mobile phone ownership and access to stable internet connections. Specifically, almost all of the farmers surveyed - approximately 98.6% - own a mobile phone, with a majority of them (62.6%) using smartphones, and the remaining 37.4% using basic phones. This indicates that digital tools designed for mobile devices could be an effective means of reaching and engaging with farmers.

Furthermore, the survey results suggest that a significant proportion of farmer families have access to computers, with 32.5% reporting ownership. In addition, more than 58% of the respondents reported having access to a stable internet connection. This provides further evidence of the potential for digital tools to support agricultural productivity and improve livelihoods.

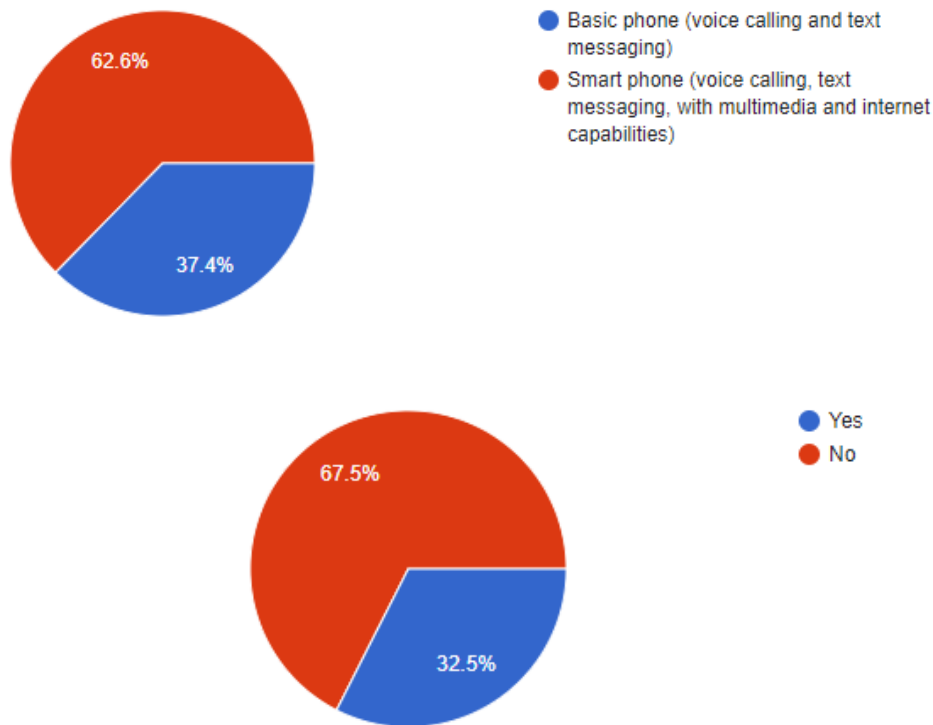


Figure 4A & 4B : Accessibility of mobile and internet connection

Approximately 40% of farmers polled use the national telecom provider internet services, 28% use international telecom services, 12% use cooperative/local entity data services, and 17% use community network internet services.

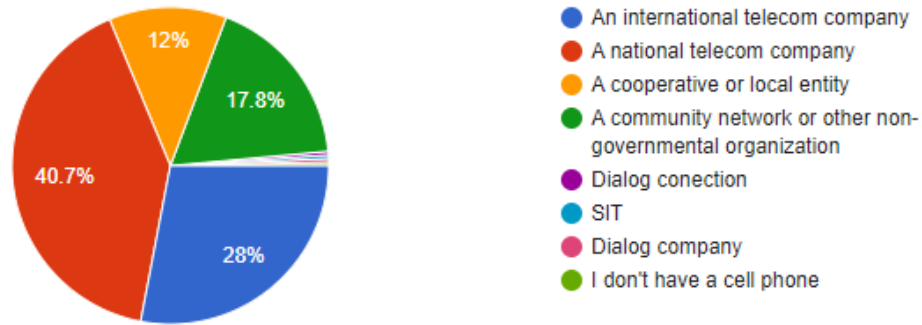
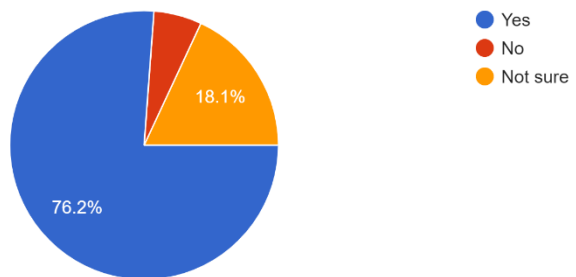
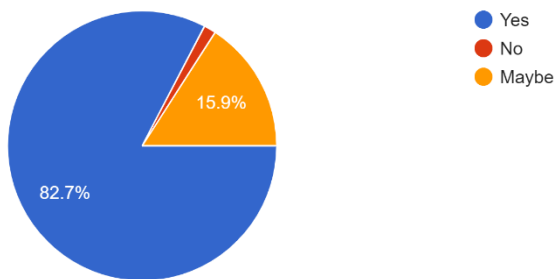


Figure 5: connectivity/internet service provider

B. Farmer readiness for digital engagement for better farm productivity



The data suggests that there is a growing recognition among farmers that digital tools and technologies can have a positive impact on their farm productivity and profitability. Approximately 82.7% of the sampled farmers agree that digital tools are needed to increase productivity, reduce labour costs, and increase income indicates a strong awareness among farmers of the potential benefits of digital tools. (Figure 6).



The fact that 76.2% of the surveyed farmers are willing to use any digital technology, including mobile applications, indicates a high level of openness and receptiveness among farmers to new technologies.. The finding that 54.2% of surveyed farmers are willing to pay service fees for the use of digital tools suggests that farmers recognize the value of these tools and are willing to invest in them if they can provide tangible benefits., Finally, the high percentage of farmers, at 74.4%, who are willing to recommend digital tool adoption to other farmers in their region suggests a growing sense of community and collaboration among farmers.

Figure 6 & 7: The first chart indicates whether or not farmers believe that farms and produce need digital tools/ technologies to increase productivity, save labour cost and raise income; while the second

chart depicts whether or not the farmers are ready to use any digital technologies like mobile based applications.

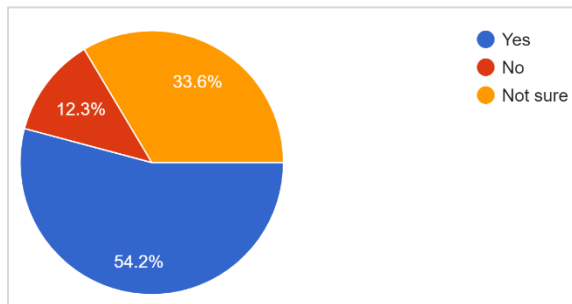


Figure 8: Willingness to pay service fees to use digital tools

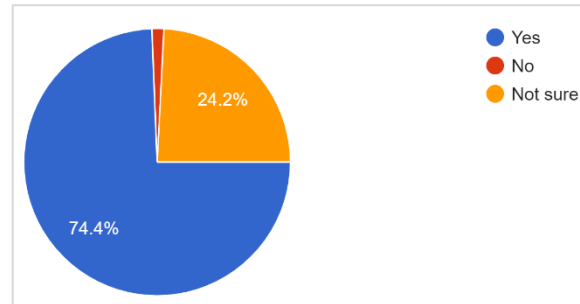


Figure 9: Willingness to pay recommend the adoption of digital tools for other farmers in your region

Farmers are aware of a variety of technologies, including smart farming (e.g., digital extension services, drone-based pesticide application, fertiliser rapid soil analysis and e-Soil Health Card, pest prediction and control, and smart micro irrigation), agricultural drones and robotics, precision agriculture (e.g., IOT, sensors), intelligent crop planning (e.g., pre-season guidance to input suppliers for seeds, fertilisers, machinery, credit, and insurance), and smart micro irrigation (e.g., farmer to online retail market, traceability, and quality assessment). These technologies have the potential to increase productivity, reduce labour costs, and optimize resource use, and farmers are becoming increasingly aware of their benefits.

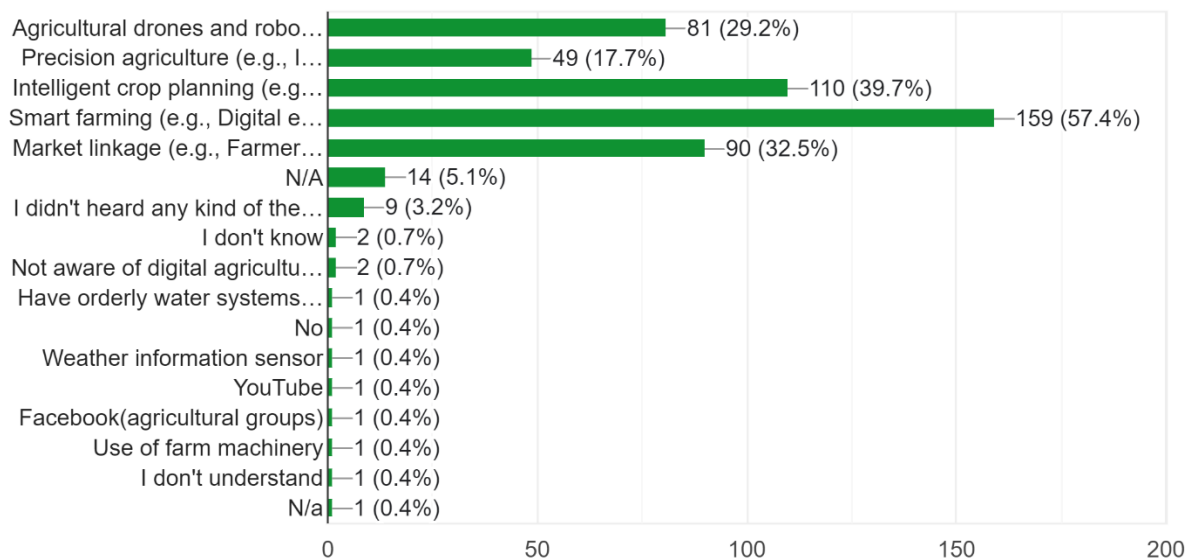


Figure 10: Awareness about the digital agriculture technologies

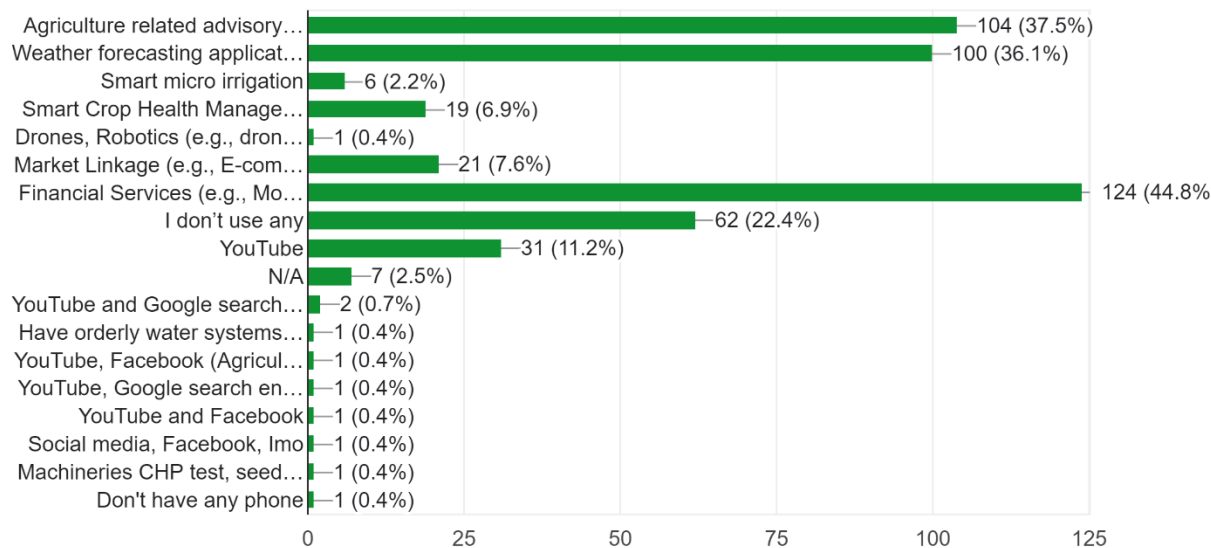


Figure 11: Digital services/technologies used by farmers

According to the survey results, the majority of farmers use agriculture-related advisory and information services on a weekly basis. These services provide information on product and input quality, environmental conditions, and market conditions that can lead to higher crop yields. On the other hand, information about digital market linkage solutions and marketplace, as well as digital financial services, is accessed on a monthly basis. These services include information on procurement of seeds, fertilizers, pesticides, and agricultural implements through mobile-commerce platforms, digital payments, savings, smallholder credit, and agricultural insurance.

However, the survey also indicates that farmers are hesitant to adopt digital supply chain management solutions. These solutions include digital quality assurance for farm inputs and produce, enterprise resource planning (ERP) platforms for smallholder farmer cooperatives, nucleus farms, outgrower schemes, and logistics management solutions for post-harvest cold chains, storage, and transport. The sample size response reveals the annual frequency of accessing such information.

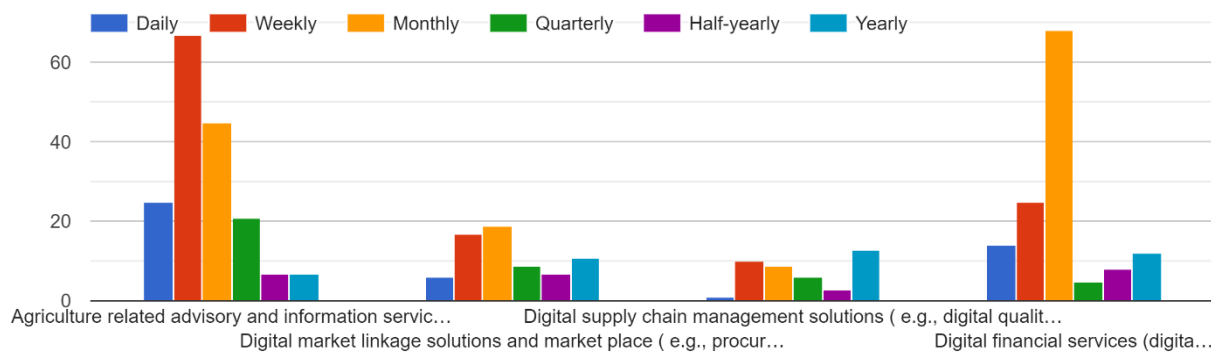


Figure 12: Frequency of use of digital services in last cropping seasons

Out of the 277 responses received, 70% of the farmers learned about improved agricultural practices from their family or through traditional means, while 53% of the farmers learned about good practices from their peers.

The majority of farmers (66%) gain access to improved agricultural practices and digital technologies are learned through training and group activities. Additionally, 46.6% of the of the polled farmers found online videos and courses to be effective, while for 45% of them relied on radio and TV programmes. About 35% were able to access information via printed education materials.

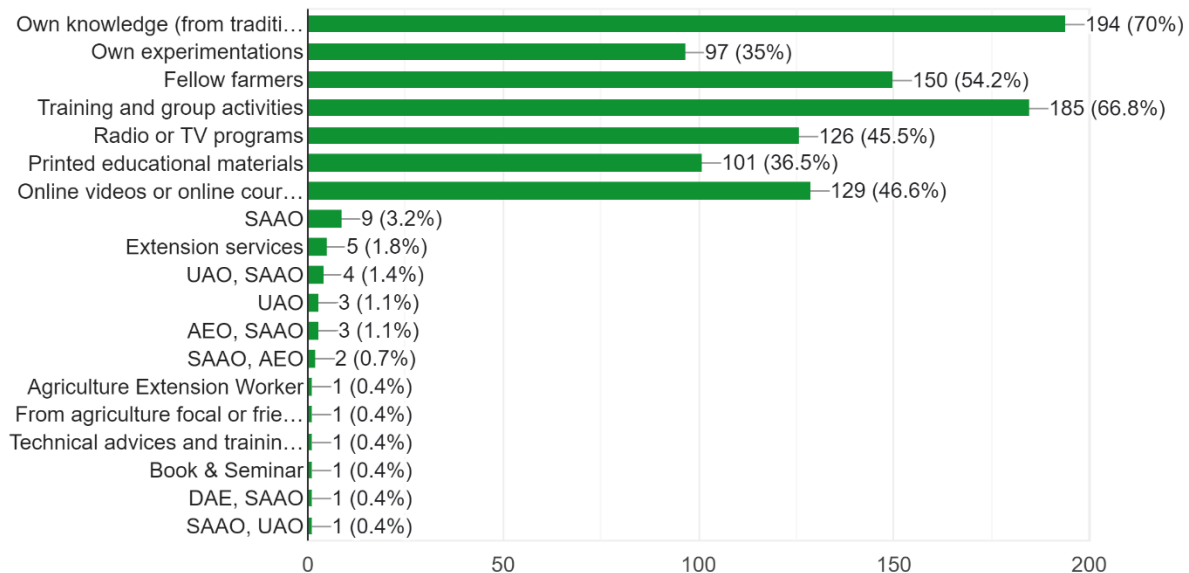


Figure 13: Sources of information related to improved agricultural practices and digital technologies

Challenges for the use of digital technologies

The survey found that there are various reasons why farmers are not using digital technologies. One of the main reasons is that farmers have not received adequate training on how to use digital services, or they may not be aware of the services available in their community (Refer fig 14). Another factor is that younger family members who have access to digital technology are less likely to help older farmers learn to use these technologies because they may not be interested or lack the necessary skills to assist.

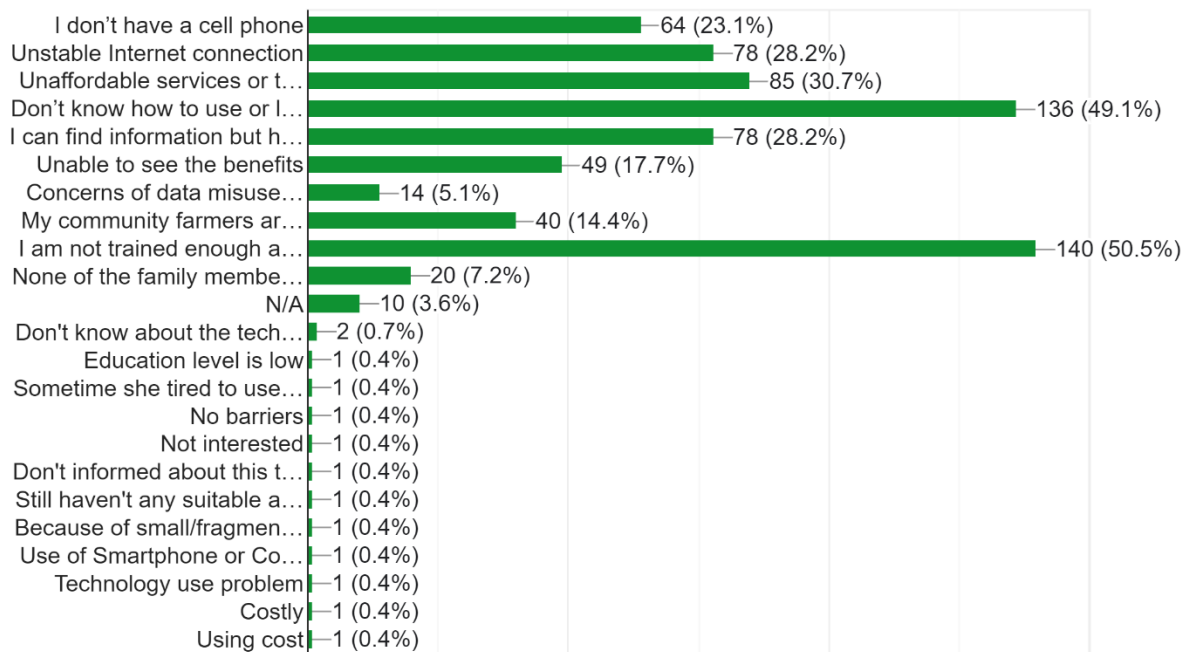


Figure 14: Barriers/ obstacles identified that farmers face in using digital technologies

Based on the graph it appears that about 73% of farmers think digital technologies can improve education and public knowledge of best practises 67% of farmers think that initiatives like disease detection can provide early warnings about climate change that will allow farmers to react and take measures on time.

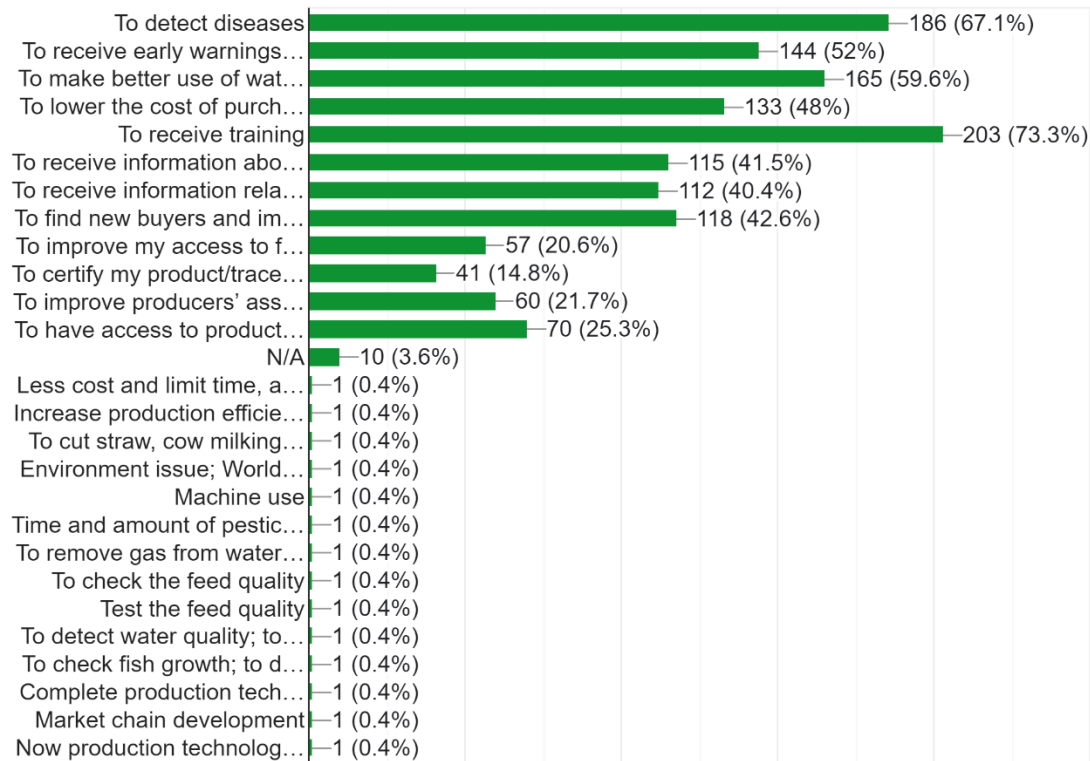


Figure 15: Activities that can be enhanced by digital agriculture technologies or digital tools

Approximately 60% of farmers believe that digital technologies can be used to benefit processes including better use of water, fertilisers, and agricultural inputs, as well as access to markets. In order to improve the use of digital agriculture instruments, farmers seek education and awareness programmes.

Adoption of digitally delivered services in Farmer Producer Organizations (FPO):

Out of 74 responses, 77% of farmers mentioned that agriculture-related advisory information services are being delivered in their farmer producer organizations.

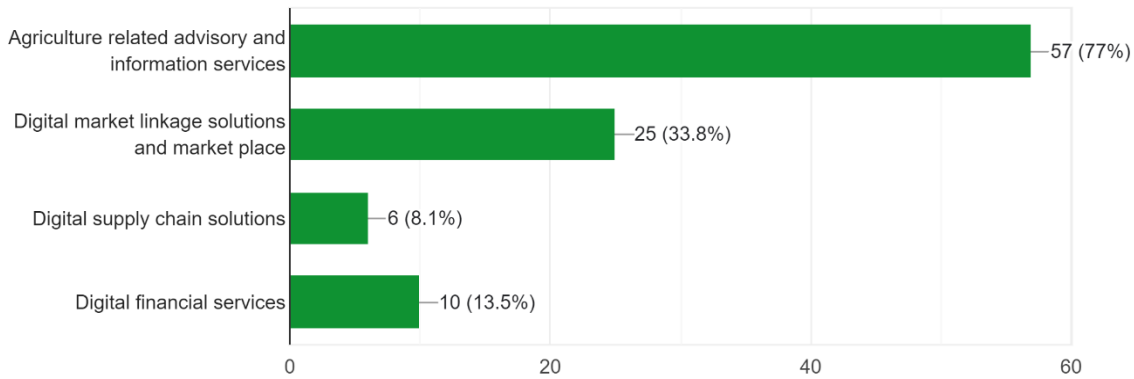


Figure 16: Digitally delivered services that the Farmer Producer Organizations are providing to the farmer members

According to the poll, 70.7% of the surveyed farmers mentioned that their farmer producer organisations do not have an e-commerce platform. Additionally, approximately 15% of them expressed uncertainty about the specific services provided by their farmer producer organizations.

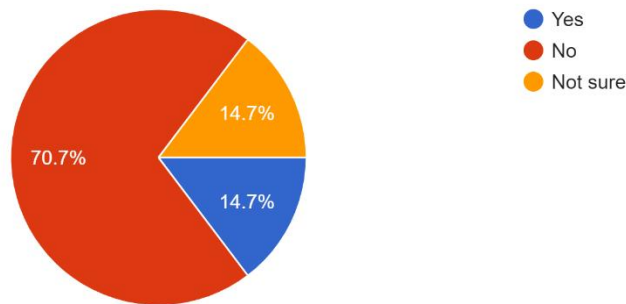


Figure 17: Farmers' opinion if the Farmer Producer Organizations having e-commerce platforms

The survey also showed that about 19% of the farmer producer organizations have digital access to certain financial services, while approximately 25% farmers are unsure about any such services being offered at their farmer producer organization.

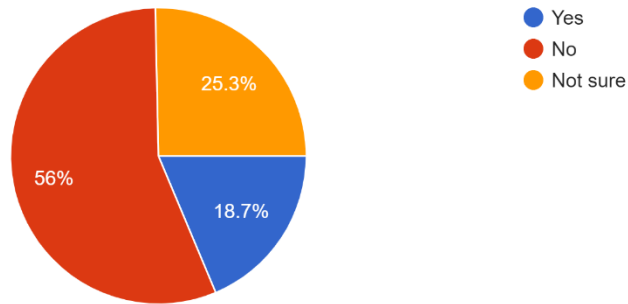


Figure 14: Farmers' opinion if the FPOs with digital access to certain financial services

Approximately 21% farmer producer organizations introduced digital farming technologies to their members, while 46.7% still have no such services delivered at their farmer organizations.

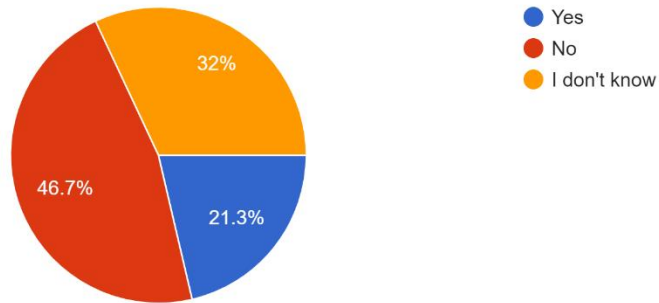


Figure 15: Farmers' opinion if the FPOs that introduced digital farming technologies to its members

About 42.3% of farmer producer organizations are planning to engage in promoting digital agriculture tools.

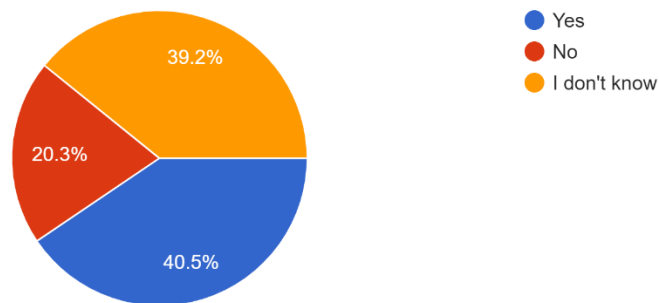


Figure 16: Farmers' opinion if the FPO is planning to engage in promoting digital agriculture tools

Observation and Findings from Farmer Survey:

According to a survey conducted by APAARI Members, the findings revealed that digital transformation in family farming can have various positive impacts. The respondents emphasized that implementing digital technologies in agriculture can lead to improved quality of agricultural products, increased productivity, enhanced profitability, and better income levels for farmers and agricultural workers.

Current uses of digital technologies are mainly concentrated in:

- Agriculture-related advisory and information services
- Consulting weather forecasts and market information
- Financial services including online payments, collections and access to public services.

However, women's participation in access to digital tools for agriculture is less than men as observed from the insights captured in the study.

Expected uses to increase in future:

- Risk management based on early warnings.
- Reduction of input costs and improvement in production efficiency.
- Expansion and improvement of marketing efficiency
- Smart crop health management

The main barriers/ obstacles that farmers face in using digital technologies are:

- Insufficient training to use digital services
- Lack of knowledge on how to utilize these services effectively

Gender lens in farmer survey: Understanding the roles and needs of women farmers, as well as their interactions with digital agriculture services, is crucial. The survey made a conscious effort to capture women's voices and collect data more systematically, recognizing that such data can reveal the unique opportunities and challenges faced by women farmers in accessing and utilizing digital tools in agriculture.