



Mobile Phones & SMS Services: Weather Forecasts, Market Prices, Pest/Disease Alert

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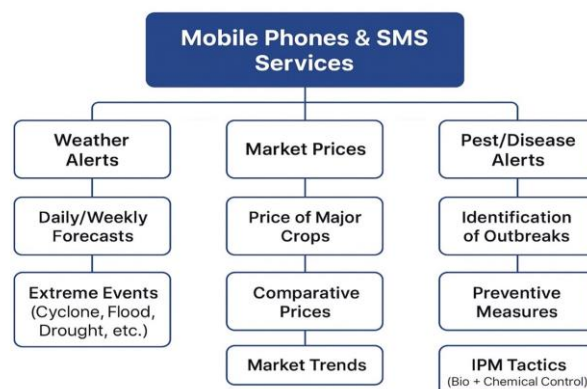
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INTRODUCTION

Emergence of mobile phones has transformed agricultural extension and information delivery systems. In rural settings, where access to the internet is possibly still limited, Short Message Services (SMS) on mobile phones are an essential means to provide timely, sure, and farmer-friendly information. Ranging from weather reports to pest alerts, SMS-based services enable farmers to make decision-making choices that impact productivity, income, and sustainability directly.



Role of Cellular Phones in Agriculture

Cellular phones are not merely devices of communication; they have evolved as multipurpose instruments of gaining access to agricultural information. With their extensive penetration even in remote villages, they allow small and marginal farmers to remain informed about climatic conditions, availability of inputs, and market conditions. The low cost and ease of use of SMS-based services render them particularly well-suited for low-literacy farmers and those with minimal exposure to sophisticated technologies. They have played a pivotal role in minimizing information asymmetry, thus fortifying the research-extension-farmer nexus in the field.

SMS Services for Weather Alerts

Weather is a vital determinant of farm success, and mobile-based SMS notifications ensure farmers remain informed in a timely manner.

Farmers are given daily and weekly forecasts that include vital parameters like rainfall, temperature, humidity, and wind speed that play a significant role in operational decision-making in agriculture.

Farmers are also informed through early warnings of extreme events such as cyclones, floods, droughts, hailstorms, or heatwaves that enable them to take measures to prevent damage to crops, livestock, and farm infrastructure.

Besides, SMS services provide timely advisories pertaining to farm management, for instance, the appropriate irrigation schedule, the best time for applying fertilizer, or the best time to sow and harvest, based on climatic conditions. Farmers are able to minimize production risks, schedule agricultural activities effectively, and minimize prospective losses arising from climate uncertainty by obtaining proper and location-oriented weather forecasts via SMS.

Market Price Information

One of the biggest challenges for farmers is the absence of transparency in farm markets. Farmers can get good, timely market information through SMS services by using their cell phones. Farmers get daily prices of major crops from nearby markets, enabling them to estimate the going rate before shipping produce. SMS services also offer comparative prices from different mandis, allowing farmers to determine where they can get the best returns on their produce. In addition to prices, farmers receive market trend advisories that inform them when and where they should sell their harvest in order to maximize returns.

Indian Initiatives & Case Studies: ICT-Based Farmer Advisory Systems

mKisan SMS Portal

Overview & Scale

The mKisan SMS Portal, which was rolled out on 16 July 2013 under the National e-Governance Plan for Agriculture (NeGP-A), facilitates central and state government agencies, research centers, and extension organizations in providing localized advisories on agriculture to farmers themselves. The messages are tailor-made by crop type, location, and farming system, and are communicated in local languages. The platform accommodates push SMS, pull SMS,

USSD, and IVRS, thus facilitating two-way interaction: farmers not just receive advisories but also can raise specific questions. In 2019, over 5 crore farmers were registered on the mKisan platform, and over 24.6 billion SMSs had been sent.

Kisan Call Centres (KCC)

Operational since 2004, Kisan Call Centres (KCC) offer expert agricultural advice on-demand through a toll-free number (1800-180-1551). KCCs are linked with platforms like the Kisan Knowledge Management System (KKMS) for handling queries in real-time.

Pest and Disease Advisory

Pest and disease losses are among the greatest agricultural productivity and food security threats. Pest and disease advisory systems based on SMS are crucial in offering location-based, real-time advice to farmers. Identification alerts are sent to farmers that inform them of potential outbreaks of pests and diseases in their respective areas so that they can act before the scenario worsens. These messages also offer preventive strategies, including suggested cultural practices, resistant crop types, and regular spraying timetables, which lessen the probability of extensive crop damage. Furthermore, farmers are led through Integrated Pest Management (IPM) tactics, which focus on biological control, mechanical methods, and selective usage of pesticides instead of indiscriminate chemical application. These advisories enable farmers to adopt green practices, protect their crops, minimize inputs, and achieve improved yields in a sustainable way.

Advantages of Mobile & SMS Services

Mobile phones and SMS services in agriculture have various advantages. Their best advantage is accessibility since they can reach even the remotest farmer who lacks internet connectivity. They are cost-effective, hence a cheap media for passing valuable agricultural information directly into farmers' hands. They are also in a timely manner, with farmers getting critical information like weather forecasts or pest warnings at the appropriate time, when it can have the greatest impact. Through knowledge and advice, SMS services improve farmers' decision-making

ability so that they can practice farming more scientifically and intelligently. In addition, these services enhance sustainability through the promotion of resource-saving and environmentally friendly practices that save soil, water, and biodiversity.

Challenges

Still, SMS-based agricultural services are not without some challenges. Most rural farmers are not very digitally literate, and so they are challenged in reading, understanding, or implementing SMS advisories properly. Language barriers are also an issue since messages sent via non-local languages may not be adequately understood by farmers. Furthermore, inadequate network coverage in rural areas frequently holds back or interrupts the receipt of vital advisories. Another significant issue is the requirement of constant updates and accuracy of information since incorrect or

outdated information would mislead farmers and cause losses. Mitigation of these issues is necessary to make SMS services more inclusive, precise, and effective for rural communities.

CONCLUSION

The experience of India with mKisan, Kisan Call Centres, and SMS schemes at the state level reflects the huge potential of mobile and SMS technology for agricultural extension. The services have touched millions of farmers with timely, localized advice on weather, markets, and pest/disease management.

Although issues of awareness, connectivity, and specificity still exist, the future is to be found in smarter, AI-driven systems, greater localization, multimodal communication, and alignment with value chains. Through mobile-based extension, Indian agriculture can be more resilient, productive, and farmer-oriented.