

Agriculture Marketing Intelligence Services (AMIS) for Agriculture, Horticulture, Livestock and Allied Sectors

CONCEPT NOTE

1. Background

The Government of Maharashtra, through Government of India, has received credit from the International Development Association for implementation of Maharashtra Agricultural Competitiveness Project (MACP).

The Project Development Objective of the MACP is to increase the productivity, profitability and market access of the farming community in Maharashtra. This would be achieved by providing farmers with technical knowledge, market intelligence and market network to support diversification and intensification of agricultural production aimed at responding to the market demand. Farmers will also be assisted in establishing farmer's organizations, developing alternative market channels outside the regulated markets and in supporting the modernization of promising traditional wholesale markets. The project has three components viz.(i) Intensification and diversification of market led production; (ii) Improving Farmers access to Market by promoting Alternative Markets and Modernizing existing APMC, and (iii) Project Coordination and Management.

Intensification and diversification of market led production will be undertaken by providing market led agriculture technology transfer to improve productivity and quality of production and market information and market intelligence, agribusiness opportunities through agribusiness promotion facility and livestock improvement through livestock support services. Improving farmer access to markets will be undertaken by promoting alternate marketing channels by involving the farmers in the formation of producers groups, their association, developing Farmer Common Services centres (FCSC) introducing E-Marketing platform with the help of commodity exchange, producing warehouse receipt financing to overcome price risk and to provide moderate improvement in Rural Haats, besides modernization of selected APMCs and Livestock Markets.

Project Management would help to ensure effective oversight of the project at the State and the district levels, support information, logistic, communications, project related consultancies and monitoring and evaluation. MACP project has three line departments viz. Agriculture, Agricultural Marketing, and Animal Husbandry. For coordination of project activities Project Coordination Unit (PCU) and for implementation of various activities of the project, Project Implementation Units (PIUs) are in existence.

2. Overview

Initiatives for market intelligence services with a specific focus on producers/farmers/ or producer organizations are still in nascent stages. There is an urgent need of institutional mechanism to advise the farmer on trade-related aspects, price intelligence etc., and market intelligence is crucial to enable farmers and traders to make informed decisions. In India, existing agricultural market information services frequently fall short in one or more areas. In many cases, shortcomings occur because the service is not relevant to the needs of the users, or because it is targeted primarily at policymakers, with insufficient attention paid to the needs of farmers and traders. Much effort is therefore spent on the collection of the information, but little attention is paid in timely reporting of the information collected, or reporting the information in a manner, which is useful to the farmers and the traders. In the recent past, the World Bank funded National Agricultural Innovation Project (NAIP) has setup Market Intelligence Centres at 10 locations with an objective of providing price forecasts before sowing and during harvesting of selected farm commodities.

Against this background, Maharashtra Agricultural Competitiveness Project has an objective, on providing price forecasts before sowing and during harvesting of selected farm commodities; developing commodity market outlook for selected commodities at the State level; and providing commodity market research reports through the setting up of a Centre of Excellence for “**Agriculture Marketing Intelligence Services (AMIS)**”. AMIS will focus on providing market intelligence services in the field of Agriculture, Horticulture and Allied commodities including livestock and livestock products to the various stakeholders in the State of Maharashtra.

3. Need for AMIS

One of the major risks the farmers all over the world face is the wide fluctuations in prices for agricultural commodities. These fluctuations have some regular patterns – seasonal, cyclical and secular trend -; but every year they depart from these patterns quite erratically. In addition, there are irregular changes, even sudden spikes. Because of these fluctuations, the farmers cannot take decisions – both in terms of what to grow and when to sell.

It is pertinent here to mention an attempt made to assist farmers – and other stakeholders – in this regard by the United State Department of Agriculture (USDA). USDA provides this service through an agency called Economic Research Service (ERS). In addition to USA, FAO has also started an agency, called Agricultural Information System (AMIS) two years back. In India, an attempt was made by a consortium of Agricultural Universities to prepare short-term forecasts of prices for the benefit of farmers. All these attempts are reviewed briefly in the following sections.

4. Economic Research Service (ERS)

ERS was established in 1961; however, its origin goes back to the USDA's Bureau of Agricultural Economics (BAE), which was set up in 1922. While the BAE addressed price and income issues faced by farmers, the functions of ERS are much broader. The ERS mission is to inform and enhance public and private decision making on economic and policy issues related to agriculture, food, the environment, and rural development. With over 300 employees, The Economic Research Service is a primary source of economic information and research in the U.S. Department of Agriculture. The agency pioneered the development of econometric models of national and international agricultural commodity markets in the 1970s, following this with other models that underpin much of ERS's analysis. Most recently, ERS has developed geospatial online mapping tools to integrate and display data and research results geographically - including data on the rural economy, farm program distribution, and indicators of access to affordable and nutritious food.

National Agricultural Statistics Service (NASS) of USDA releases its 'World Agricultural Supply and Demand Estimates (WASDE)' every month. Shortly after publications of WASDE, ERS publishes its individual commodity Outlook Reports, providing additional data and market insights. The Outlook reports also include analysis and forecasts for supply, demand and prices. The Outlook Reports are published for following commodities or groups of commodities.

- *Cotton and Wool*
- *Feed*
- *Fruit and Tree Nuts*
- *Livestock, Dairy, and Poultry*
- *Oil Crops*
- *Rice*
- *Sugar and Sweeteners*
- *Vegetables and Melons*
- *Wheat*
- *And Special Reports*

Both the WASDE and the Outlook Reports are eagerly awaited by the industry.

ERS and WASDE provide a good deal of data through their publications, which are available on internet. This will be useful to AMIS. One of the latest Outlook Reports released by ERS is given in Annexure 1.

In addition to the short term forecasts included in the WASDE and the Outlook Reports, USDA also prepares 10-year supply, demand, and price projections for major commodities (including fruits and vegetables). Some of these projections are also made for other countries,

Additional information on these data products and methodology can be obtained from the following sites:

For ERS:

<http://www.ers.usda.gov/>

For World Agricultural Supply and Demand Estimates:

<http://www.usda.gov/oce/commodity/wasde/>

ERS has also prepared data products for making season-average forecasts of prices received by farmers for corn, soybeans, and wheat. They provide three Excel spreadsheet models that use futures prices to forecast the U.S. season-average prices received by farmers for the above mentioned crops. These models are available at <http://www.ers.usda.gov/data-products/season-average-price-forecasts.aspx>

5. Agricultural Market Information System (AMIS) of FAO

The Agricultural Market Information System (AMIS) is a G20 initiative taken as a response to increased price volatility in agricultural prices since the beginning of the 21st century. It was established in June 2011 to “enhance food market transparency and encourage international policy coordination in response to market uncertainty”. It has selected four crops (termed as AMIS crops) – wheat, maize, rice and soybeans. The main objective of AMIS is to prepare and disseminate short-term Market Outlook Forecasts for these crops every month. It is presently housed in FAO’s Trade and Market Division at Rome, Italy. It is managed by a Steering Committee consisting of one representative from each organization (namely, FAO, IFAD, IFPRI, IGC, OECD, WFP, WTO, UNCTAD, UN-HLTF and the World Bank).

AMIS provides a good deal of data through its publications, which are available on internet. This will be useful to AMIS. The latest issue of its Market Monitor (December 2015) is given in Annexure 2.

The website of AMIS is:

<http://www.amis-outlook.org/>

6. Networking of Market Intelligence Centres in India

This was an initiative of Indian Council of Agricultural Research under the National Agricultural Innovation Project (NAIP).

In order to provide market advisories to farmers, a Consortium of the following eleven Agricultural Universities was formed:

- I. Tamil Nadu Agricultural University, Coimbatore, Tamilnadu (Lead Institute)
- II. Kerala Agricultural University, Trissur, Kerala
- III. University of Agricultural Sciences, Bangalore, Karnataka
- IV. University of Agricultural Sciences, Dharwad, Karnataka
- V. Acharya N G Ranga Agricultural University (ANGRAU), Hyderabad, Andhra Pradesh
- VI. Dr. Panjab Rao Desmukh Krishi Vidyapeeth, Akola, Maharashtra
- VII. Junagadh Agricultural University, Junagadh, Gujarat
- VIII. Punjab Agricultural University, Ludhiana, Punjab
- IX. G B Pant Agricultural University, Pant Nagar, Uttarakhand
- X. CCS Haryana Agricultural University, Hissar, Haryana
- XI. Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan

The project was launched in 2009 and ended in March 2013. The following objectives were set before all the centres:

- i. Providing price forecasts well in advance of sowing of major commodities and during harvesting thus helping the farmers in taking better sowing and selling decisions;
- ii. Providing other market intelligence such as product qualities, high price markets for the different commodities, etc;
- iii. Dissemination of the above market intelligence through different mass media like newspapers in regional languages and English, television, radio, agricultural magazines etc. so as to reach the maximum number of farmers;
- iv. Training the farmers and officials of agricultural department in various states in use of the above intelligence;
- v. Studying the different market intelligence aspects being made available to farmers in different countries and explore possibilities of replicating the same in India; and
- vi. Developing commodity market outlook along with NCAP-NAIP for selected commodities at state level besides providing commodity market research reports.

For achieving these objectives, each University was to set up an Agricultural Market Intelligence Centre, with a staff of two to four Research Fellows. The salaries of these fellows and cost of equipment like computers was provided for in the budget of NAIP. The total budget sanctioned for all the centres for the first three years was Rs. 6.83 crores. Tamilnadu University was appointed as a Lead Centre because of its earlier experience in providing similar services.

During the implementation period, all these Universities generated price forecasts for the important crops in their regions, at least twice during the year: one before the planting of the crops and another at the time of harvests. These forecasts were prepared by using tools like 'Moving Averages, Seasonal Indices, Single Exponential Smoothing, Double Exponential Smoothing, Co-integration analysis and models like ARIMA, ANN, SARIMA, ARFIMA, ARCH, and GARCH'. They were verified 'by interacting with traders, farmers, and other commodity specific websites and also in futures platform'.

The crops included showed wide variety. They consisted of paddy, wheat, maize, sorghum, cumbu, ragi, blackgram, greengram, bengalgram, redgram, soybean, groundnut, sunflower, sesamum, mustard, copra, castor, rapeseed, cotton, potato, tomato, onion, small onion, brinjal, green peas, coriander, ginger, pepper, turmeric, red chillies, cardamom, coconut and arecanut.

The consortium centres generated 866 price forecasts for these crops. The maximum number of price forecast (185) was from Karnataka University (Dharwad), followed by Tamilnadu (144), Andhra Pradesh (102) and Karnataka (Bangalore) (101).

Various dissemination methods including newspaper publications, local magazines, hard copies, e-mails, websites, text SMS and voice SMS were adopted to take the information to beneficiary farmers. Around 224 forecast advisories were disseminated through magazines, while 99,008 E-mails of the forecast advisory were sent by the consortium partners. TNAU sent three lakh text SMS per forecast. The total voice SMS sent by all the consortium centres exceeded 10 million. In Tamil Nadu SMS were provided to 11 lakhs farmers through farmers portal of the Government of India at free of cost. The consortium partners conducted 381 farmers' and 169 officials' trainings covering 27,202 farmers and officials. The impact of the forecast advisory given by the consortium centres in selected crops was assessed. The results showed that the income of the adopters of market advisory was higher compared to the non-adopters. (Source: Final Report, NAIP Component 1 (2006-2014), Indian Council of Agricultural Research, New Delhi 110012, October 2014, pages 79-80; <http://www.naip.icar.org.in/>)

The project was funded by NAIP with the hope that after the termination of the program, the individual agricultural universities would continue the project with their resources. However, in spite of the utility of the project to farmers as indicated by the evaluation, none of the participant universities, excepting the Tamilnadu University, showed willingness to do so. The experiment was closed by March 2014 in all the remaining centres.

The experiment of preparing price forecasts was started by the Tamilnadu University much earlier, in 2004. NAIP tried to spread this concept to other agricultural universities. Even after the experiment of involving other universities has failed, the Tamilnadu Agricultural University is, therefore, continuing with this work with its own resources. In what follows, a brief description of the Cell, known as Agricultural Produce Domestic and Export Intelligence Guidance Cell (DEMIC) is given.

7. Agricultural Produce Domestic and Export Intelligence Guidance Cell (DEMIC) of Tamilnadu

The Domestic and Export Market Intelligence Cell (DEMIC) was established in November 2004 at Centre for Agricultural and Rural Development Studies (CARDS) in Tamil Nadu Agricultural University, Coimbatore with the financial assistance from Tamil Nadu State Agricultural Marketing Board, and Department Agricultural Marketing and Agri-Business.

The main objective of DEMIC is to disseminate timely, comprehensive, current and future price information on agricultural commodities for better decision-making by farming community, traders, firms, researchers and policy makers.

The Specific Objectives are

- i. To forecast the supply and demand of important agricultural commodities in Tamilnadu
- ii. To forecast future prices of major agricultural commodities
- iii. To study the state and national market situation related to important commodities
- iv. To disseminate the market and price information to the farmers for planning, production and holding stocks, and then sell at higher prices and

- v. To suggest policy measures to the Government of Tamil Nadu

The Director of CARDS is the principle administrative authority while the Principal Investigator is in charge of the technical aspects of DEMIC. The organization usually comprises of 5 scientists, 8 research fellows and 2 administrative staffs

(<http://www.agricultureinformation.com/postings/domestic-export-market-intelligence-cell/>)

Currently the organization makes forecast for 24 major agricultural and horticultural crops of Tamil Nadu. Since inception, DEMIC has generated more than 400 price forecasts with “more than 90 per cent validity”.

Price forecasting tools such as moving averages, seasonal indices, single exponential smoothing, double exponential smoothing, co-integration analysis and models like ARIMA, ANN, SARIMA, ARFIMA, ARCH, and GARCH to the real time market data are used in the project. Time series data on the commodity prices for the crops are subjected to statistical and econometric analysis using appropriate software packages. Then, using forecasting tools, the best model is chosen and validated through various rounds of farmers and traders survey.

The required input data includes commodity prices, market arrivals, quality parameters, buffer stock, exports and imports position for a specific commodity with reference to selected markets. The required information is collected from regulated markets, major spot markets, futures markets, global or national commodity outlooks, commodity reports, etc.

The price forecast is available for free for both farmers and commodity value chain participants ranging from production to trade, officials, scientist, policy makers etc. The forecasts generated are distributed through Agro Marketing Intelligence (AMI) and Business Promotion Centre (BPC) functioning at Tiruchirappalli, mass media, e-mail and SMS's and voice mails. Arrangements have been made with private telephone service providers to disseminate price forecasts. They are also displayed on the website of DEMIC. (<http://www.tnau.ac.in/cards/demic.html>).

The process of preparing forecast by DEMIC is shown in Annexure 3.

DEMIC prepares, generally, two forecasts for each commodity in a crop-year. The first is prepared before the planting period advising farmers about the price they could possibly obtain for the crop at the time of harvest. This would enable the farmers to take the decisions concerning production. The second report would be released during the harvest time and contain advisory on the prices the farmers could expect to obtain after around three to four months. This report would enable the farmers to decide whether they should sell the crop now or store the produce for later sale. Each report is prepared both in Tamil and English.

DEMIC released 42 reports covering 20 commodities during the last 11 months (January - November 2015). The list of commodities and the number of reports for each of them are shown below:

SrNo	Commodity	Number of Reports
1	Maize R	5
2	Coconut and Copra	4
3	Onion	4
4	Gingelli	3
5	Tapioca	3
6	Banana	2
7	Bengal Gram	2
8	Chilli	2
9	Coriander	2
10	Cotton	2
11	Groundnut	2
12	Potato	2
13	Sunflower	2
14	Carrot and Beet	1
15	Gram	1
16	Pearl Millet	1
17	Ragi	1
18	Sorghum	1
19	Turmeric	1
20	Vegetables	1
Total		42

Illustrative Reports for Bengal Gram published by DEMIC in February 2015 and October 2015 are enclosed as Annexures 4 and 5. (This crop is a Rabi crop, planted in October – November and harvested in March – April). Both the reports consist of three or four short paragraphs. The first paragraph describes international situation, the second Indian and the third Tamilnadu. At the end, the forecast prices for Tamilnadu are given. The February 2015 report for Bengal Gram predicted the March 2015 prices (per quintal) at Rs. 3,800 – 4,000 against the February 2015 prices of Rs. 4,100. It concluded that the prices would be stable during the peak arrivals season and that farmers should take the marketing decision (whether to sell immediately or store the harvested commodity) accordingly. The latest October 2015 report predicts that prices would

increase to Rs. 4,500 to 4,700 during February – March 2016 and advises farmers to take this crop for sowing for the Rabi season.

8. Present Status of Market Information

- There are 295 Agricultural Produce Market Committees in Maharashtra. All of them keep records of daily Arrivals and Prices (Maximum, Minimum and Most Common). The data is available for the products regulated by them (cereals, pulses, oilseeds, fibers, livestock, etc.). The current and historical data is available with the APMC's. Many APMC's disseminate this data through press, radio, display boards, etc.
- Maharashtra State Agricultural Marketing Board, through its project 'MarkNet', collects data on prices and arrivals from the selected market committees in Maharashtra and publishes them daily on its website: <http://www.msamb.com/>. The information is published daily, commodity-wise as also Market Committee-wise. A wide range of commodities (including vegetables and fruits) are covered (See Annexure 1)
- AgmarkNet, a project of Directorate of Marketing & Inspection (DMI), Ministry of Agriculture, Government of India, publishes, among other things, data on daily prices and arrivals of selected commodities and markets in **India** on its website: <http://agmarknet.nic.in/>. The information is published daily, commodity-wise as also Market Committee-wise. Several commodities (including vegetables and fruits) are covered. They include (a) Market-wise daily reports, Commodity-wise daily reports, Market-wise Daily Report for specific commodity, commodity prices during last week, Market-wise prices during last week, Commodity-wise transactions below MSP, State-wise reports, Daily reports, etc. (See Annexure 2)
- Some agricultural commodities are traded in Commodity exchanges like NCDEX and MCX. The **futures** prices for these commodities are available on line; the daily summaries (bhav-copies) are published by all of them at the end of the day. The historical daily prices are also available on their web-sites. The newly started spot exchanges (National Spot Exchange and NCDEX Spot Exchange) also display details of **spot** prices of the commodities traded in them on line.
- In addition, some market data is also available for specific commodities. The daily prices of eggs are made available by NATIONAL EGG CO-ORDINATION COMMITTEE [centre-wise (production and consumption centres) for the entire country]: <http://www.e2necc.com/EGGDailyAndMontlyPrices.aspx>; Daily Prices of Flowers, Vegetables and Fruits are published by National Horticulture Board: <http://www.nhb.gov.in/>; Prices of livestock –quotations are available at: <http://promarket.in/Poultry-Livestock>; Prices of Poultry are published by Central

Poultry Development Organization: <http://cpdonrchd.gov.in/rate.htm>; Indian Poultry Journal: <http://www.papaak.com/>;

- Weekly (and monthly, yearly) Indices of wholesale prices, commodity-wise are available at: <http://www.eaindustry.nic.in/>

9. Present Status of Data Dissemination

- Price data is disseminated through the sites of Marketing Board, Agmarknet, as mentioned above, through their internet sites. The updating is quite regular. The information technology services are used for automatic data uploads by the Market Committees daily and the data can be easily accessed and downloaded by visiting the sites. The data on spot and futures prices is also available regularly on the internet sites of the commodity exchanges.
- Some of the data is also published in select newspapers, Radio and TV.
- NCDEX and MCX have installed electronic display boards in some Market Committees.
- Some mobile service providers like Airtel provide price data to their clients.
- The ventures like E-Chaupal also provide daily price data to the farmers.

10. Present Status of providing analyzed information

The data mentioned in the preceding sections is mostly unanalyzed. Some information is also available in the analysed forms:

- Exchanges and brokers (like Angel Commodities, Religare, etc.) provide technical and fundamental analysis of Commodity Markets. This analysis and the reports based on the analysis are available on their internet portals.
- Recently, in 2009, under component of NAIP (led by National Council of Agricultural Research, New Delhi), a project entitled “Establishing and Networking of Agricultural Market Intelligence Centres in India” has been initiated. Its consortia leader is Tamilnadu Agricultural University and Dr. PunjabRao Desmukh Krishi Vidyapeeth, Akola is one among other 10 Co-Partner institutions. The activities of the ‘Domestic and Export Market Intelligence Cell of Centre for Agricultural and Rural Development Studies (CARDS) of Tamil Nadu Agricultural University, Coimbatore’, established under NAIP can be seen on its website <http://www.tnagmark.tn.nic.in/>. There are two major links on this site:

'Prices' and 'Price Behaviour'. The link to 'prices' leads to the website of Agrinet (<http://agmarknet.nic.in/arrivals1.htm>) which gives the prices and arrivals data of different commodities all over the country. The link to 'Price Behaviour' leads to the list of reports prepared by the Tamilnadu Agricultural University. They are based on the (statistical and econometric) analysis of prices, arrivals, production and trade. They give forecasts as also provide guidance to farmers regarding sale. These reports are not continuous but periodical and are aimed at Tamilnadu farmers. Similar forecasts are also made by the Kerala Agriculture University, Trichur (Kerala) and Punjabrao Deshmukh Agricultural University, Akola (Maharashtra). A specimen report released by Dr. Panjabrao Agricultural University, Akola in Maharashtra (<http://www.pdkv.ac.in/>) is given in Annexure 4.

- Private Information Providers (Agriwatch: <http://www.agriwatch.com/index.php>; Commodity-on-line: <http://www.commodityonline.com>)
- In addition to these, some consultants also provide analysis of market information to their clients.

11. Remarks on the available information and its analysis

i. The data with the Market Committees

The attempts of MarkNet and AgmarkNet are really a very welcome first step in making available to the users a large volume of information which was so far hidden in the records of the APMCs. Now, thanks to the attempts of Agmarknet and the Marketing Boards of various states, including those of Maharashtra, which have played a pioneering role in this field, this information is published regularly on the internet and can be accessed easily.

The data published by MarkNet and AgmarkNet are sourced from Agricultural Produce Market Committees. In fact, they are the only available sources for day-to-day prices and arrivals in India. The accuracy and coverage of this data are, however, doubtful. In most cases, the market committees do not mention the variety and grade. The maximum price and the minimum price then could refer to different varieties and grades. Again, while quoting the average price, most market committees simply take the average of the maximum and minimum price and report it as "modal" price, which is simply wrong. In other words, while there is a large amount of data available on the sites of MarkNet and AgmarkNet, its utility for any decision making and for analysis is rather doubtful.

These difficulties are not insurmountable. Every transaction in the Market Committee is recorded in a transaction slip. The slip should also mention the variety and grade of the commodity traded in the transaction. If all these transaction-slips are entered into computer along with the price (either on-line or at the end of the day), then it will be very easy to calculate accurately variety and grade-wise arrivals, maximum price, minimum price and modal price. This will also enable the market to prepare, timely and accurately, the daily price reports and upload them automatically to their own sites as well as the sites like MarkNet and AgmarkNet. The Maharashtra State Marketing Board should ensure that all the market committees in the State have both the computers and the necessary software for this purpose and are trained adequately to ensure the accuracy and adequacy of the data that they report.

When these steps are taken, farmers and other stakeholders will get every day, fairly reliable and timely data. They can visit the sites of MarkNet and AgmarkNet and download the data.

ii. Dissemination of Market Data

Market data is currently disseminated through the traditional sources like Bulletin Boards (in Market Committees), press, radio and TV. As explained earlier, the data is also available on the internet on sites like MarkNet and AgmarkNet. To access the data on internet, however, one has to have an internet connection and knowledge to use it for this purpose.

According to the report on “Internet in Rural India (June 2012)”, prepared and published by the Internet and Mobile Association of India, for a rural population (2012) of 833 million, computer literacy is 70 million and active internet users are 31 million. The latter is 3.7% of population and has grown significantly from 2.68% in 2012. But more striking is the growth in mobile users. In 2012, their number for rural India stood at 323 million (39%), representing a growth of 7.2 times since 2010. Moreover, the rural mobile internet users in 2012 were 3.6 million.

Fast developing technology, decreasing mobile prices, the large and rapidly growing mobile user-base and competition among mobile manufacturers and service providers have ushered in, what is called as Mobile Value Added Services (MVAS) for both urban and rural consumers.

According to the report on “Mobile Value Added Services (MVAS) - A vehicle to usher in inclusive growth and bridge the digital divide” by Deloitte and ASSOCHAM (2011), “the industry today stands at the cusp of another revolution called Mobile Value Added Services (MVAS) (that) can be used in areas which help bridge digital divide and foster inclusive growth.”

The report classifies NVAS into three types: Information-based services in which mobile phones are used to disseminate information; Application services, requiring some part of active participation by the user (inter-active application); and Enablement services, helping the subscriber to fulfill some function (like on-line payment).

Naturally, the information-based services are relatively the easiest to provide and receive. They include email, short message service (SMS), multimedia message service (MMS), voice messages and others. According to the above mentioned report, “the voice and/or SMS based applications are likely to dominate especially as the user-base continues to expand into lower income segments of the population.” However, since 90% of mobile phones are now internet- ready, the browser-based applications like emails are also likely to experience significant growth.

The information-based services cover the areas like Education, Health, Entertainment and Governance. A new area, called M-agriculture (M standing for mobile), is also now fast emerging and the players like Nokia(<http://www.nokia.com/in-en/life/>), Iffco Kisan Sanchar Ltd. (<http://www.iksl.in/>), TCS mKrishi (<http://www.tcs.com/offerings/technology-products/mKRISHI/Pages/default.aspx>), Intuit Fasal (<http://fasal.intuit.com/>), *beheter zindagi* from Handygo technologies (<http://handygo.com/handy/NewSite/rural.html>), Reuters Market Light from Thomson Reuters (<http://www.reutersmarketlight.com/index.html>), etc., have already started developing applications and providing information on agriculture, including prices and marketing.

Out of these, two illustrations are instructive in indicating future trends in communication, particularly in mobile applications.

iii. The Iffco Kisan Sanchar Ltd (IKSL) is a joint venture between Bharti Airtel, IFFCO and Star Global. The share of Airtel (a mobile service provider) in this venture is largest (50%), while that of other two partners is 25% each. IFFCO (Indian Farmers Fertilizer Cooperative Limited) is one of the largest producers of chemical fertilizers in India, while Star Global is engaged in the manufacture of telephony products and services. Communication services to rural population are provided by Airtel while IFFCO utilizes its vast network for marketing and distribution of services.

IKSL provides low cost mobile handsets, along with Airtel’s ‘Green SIM Card’. The SIM card entitles the users to avail of the value added services of IKSL (VAS) like 5 free voice messages (each of around one minute duration) every day, Rural help line and concessional call rates. The 5 free voice messages that are sent every day include messages on health, agriculture, education, marketing, etc. Out of these, it is reported that the messages on marketing are most popular in terms of number of listeners and duration of listening.

At present, there are 18 content managers, placed in all states and are post graduates or doctorates in their specialized agricultural scientific fields. The content of the messages is prepared by the subject specialists (drawn from agricultural universities and other places) and the content managers ensure their relevance and accuracy; this is followed by the peer review at the corporate office. The messages are then delivered to different zones according to their needs. All of them are delivered in local languages and are free.

The marketing messages are also prepared in the same way; they take advantage of the market prices and reports published on internet, press, etc. A very small amount of field work is involved in this work undertaken by IKSL. There is also no internal expertise available with IKSL to analyse the information or prepare its reports. (This is left to the experts on panel. Even the agricultural universities involved in NAIP program were sending their reports to IKSL for dissemination through voice messages).

Although any one can purchase the Green SIM card, it is reported that most of the users are farmers.

These messages are sent to the users in 18 states at present. During the year 2011-12, more than 18 thousand messages were sent; the number of active users of VAS exceeded 13 lakhs. All the messages are sent to the users free of charge. Each message is of one minute duration.

According to the IKSL, these messages have been very helpful to farmers and have increased their income and market awareness.

iv. Nokia-Life (Agriculture) provides by SMS localized information on weather conditions, advice about crop cycles, general tips and techniques, as well as market prices for crops. Nokia Series 30 and Series 40 devices and ASHA range offer these services. (It is also now offered by other mobile network operators). It is a subscription-based service, at Rs. 60 per month for 3 commodities of user's selection. In return for this subscription, the user gets 3 crop tips a day, market prices in 3 markets within 50 to 100 km. and other information (See Annexure 6). It also provides custom services and advisories to users. It relies for the information on more than 90 'knowledge partners'. This service of Nokia covers 275 commodities, 2000 markets and 12 local languages in India. Nokia provides this service in India, China, Indonesia and Nigeria, and has provided this service to 950 lakh users (February 2013).

In addition to these two services, services like beheter zindagi from Handygo technologies, Reuters Market Light from Thomson Reuters, are also being used by the mobile service providers.

All these services are recently started. Many more will be initiated in the next decade. This by itself shows the rising demand for information products by farmers and hence by the mobile service providers. The service providers will now increasingly look for better and analysed content since this is what will be required by the farmers for their decision making. AMIS will have a significant role to play in this field. Partnering with such service providers for dissemination of data and data products will ensure that AMIS can earn reasonable revenue as also that the basic service is made available to farmers at affordable price (or even free).

Attempts of institutions like NAIP, who used these services, are, therefore, in the right direction and show how such exercises could be conducted. Unfortunately, these experiments cannot be sustainable since they are all along dependent on financial and organizational support from their host academic institutions, which was not always forthcoming. Moreover, the kind of analysis including forecasts that were attempted were periodical. A continuous analysis and updating of forecasts based on scientific methods will be one of the prime needs of the users (and mobile service providers). A model needs to be devised for making such attempts institutionalized and on-going.

The proposed AMIS should aim at being such a model. First, it should ensure reliability and accuracy of data originating from the Market Committees. This should be possible since the proposed AMIS is located in the Maharashtra Agricultural Marketing Board. Secondly, It should provide both reliable unanalyzed data as also analyzed market information products (including forecasts) on a continuous basis. Thirdly, the information products should be directed both to farmers as well as to other stakeholders, since everyone stands to benefit from the information on the ever- changing market conditions. Fourthly, the proposed AMIS should use the advances in computer and mobile technology to reach out to a wider network. It should take advantage of increasing primary demand of stakeholders as also secondary demand of mobile service providers. Based on the above considerations, AMIS should have the following objectives.

12. Objectives of AMIS

- I. To understand the requirements of various stakeholders concerning the information on marketing and prices of agricultural, horticultural, livestock commodities.

- II. To continuously collect data on marketing and prices of agricultural, horticultural and livestock produce/ products from various sources.
- III. To suggest measures to improve the quality and accuracy of data to the Market Committees in Maharashtra
- IV. To collate and analysis data and make it useful for decision-making by various stakeholders.
- V. To develop quantitative methods of analysis of market data and prepare models of forecasting and discuss them with experts/stakeholders by holding seminars, workshops, and discussions.
- VI. To prepare long term forecasts of supply, demand and prices of important agricultural and livestock commodities of Maharashtra State and continuously update them.
- VII. To develop AMIS website and publish all market and price related information obtained from different sources (national and international) and the data/information products prepared by AMIS
- VIII. To prepare data/information products (like Alerts, Outlook Reports, Announcements, SMS, MMS, Voice Messages, emails, Bulletins, etc.) for dissemination to various stakeholders; this includes among others, price forecasts before sowing and during harvesting of selected farm commodities.
- IX. To develop scientific methods of testing/verifying data and data products and prepare quality guidelines.
- X. To arrange, if necessary, partnership with the press, TV networks, Radio and mobile networks for dissemination of data and data-products to the stakeholders.
- XI. To build archives of data and data products on marketing and prices of agricultural & allied commodities.
- XII. To provide specialized consultancy services to the stakeholders.
- XIII. To hold seminars, workshops and training courses on Marketing and Prices of Agricultural Products for the benefit of farmers and other stakeholders.
- XIV. To develop methodology for assessing the accuracy of forecasts made by AMIS, check them periodically and publish/disseminate through media, the findings appropriately

- XV. To develop methodology for assessing benefits to the farmers and other stakeholders of the services of AMIS and conduct every year such studies and publish the findings.
- XVI. To suggest policy measures to the Government of Maharashtra.

13. Scope of Services of the proposed AMIS

The following will be the stakeholders-users of the services of AMIS

- i) Farmers, their associations and groups
- ii) Service providers – transporters, warehouses, cold storages
- iii) Traders – wholesalers, middlemen, and their associations
- iv) Retailers – unorganized, organized
- v) Processors – individuals, firms, cooperatives,
- vi) Industries – users of produce as raw materials
- vii) Exporters and importers
- viii) Consumers – individuals and associations
- ix) Data Providers – Data banks, Exchanges, Consultants
- x) Policy makers – Central and State Governments, Marketing Boards, International organizations, Banks and other financial institutions, Insurance companies
- xi) Academicians – students, Colleges and Universities
- xii) Media - Press, Radio, TV, Telephone service provides, Internet Links

AMIS will strive to be an international Centre of Excellence, on par with ERS of USAID and AMIS at FAO, in conducting research on marketing and prices of agricultural commodities in India and providing data and information products to farmers, industry and policy makers in India and abroad.

14. Data/Information Products to be produced by AMIS

It will provide following data/information products to its stakeholders:

- Commodity-wise and market-wise daily spot and futures prices and arrivals
- Monthly commodity-wise bulletin on marketing and prices
- Annual commodity-wise report on marketing and prices
- Commodity-wise Seasonal Forecasts of spot prices (two for each commodity) and their revisions
- Commodity-wise Medium term Forecasts for the next year prices
- Commodity-wise Long term Forecasts for the next five years.
- Other specific data products and reports requested by the industry and policy makers

15. Commodities to be covered

On the basis of area under cultivation, following 30 commodities are shortlisted for coverage in AMIS. The years in which they will be covered are also shown in the table.

SrNo	Commodities	Year1	Year2	Year3
1	Soybean	√		
2	Tur	√		
3	Maize	√		
4	Tomato	√		
5	Gram		√	
6	Onion		√	
7	Pomegranate		√	
8	Goat		√	
9	Cotton		√	
10	Turmeric		√	
11	Mung			√
12	Safflower			√
13	Potato			√
14	Grapes			√
15	Cashew nut			√
16	Red Chilli			√
17	Udid			√

18	Groundnut			√
19	Poultry			√
20	Lemon			√
21	Jowar			
22	Rice			
23	Wheat			
24	Bajra			
25	Ragi			
26	Milk			
27	Mangoes			
28	Banana			
29	Orange			
30	Sapota			
	Total	4	6	10

During the first three years, AMIS will cover 20 commodities. In the first year, four commodities (Soybean, Tur, Maize and Tomato), in the second year, six commodities (Gram, Onion, Pomegranate, Eggs, Cotton and Turmeric), and in the third year ten commodities (Mung, Safflower, Potato, Grapes, Cashew nuts, Red Chilli, Udid, Groundnut, Poultry and Lemon) will be included in coverage of AMIS. The remaining 10 commodities will be covered subsequently.

16. Pricing of Data/Information Products

AMIS will provide some services free of charge to farmers. However, in order to maintain sustainability of the organization, AMIS will charge other stakeholders for some services. The decision in this regard will be taken by MACP and the Maharashtra State Agricultural Marketing Board.
