Chapter I

INTRODUCTION

1.1 ECONOMY OF INDIA

Monitoring Agri-trade Policy\(^1\) (MAP) report, states that, Indian economy has seen high growth rates of more than 8% since 2003. In 2005 GDP grew at a rate of over 9%. Globally India’s growth is surpassed only by that of China. High growth rates have significantly reduced poverty in India. However, it’s GDP per head is still very low estimated at US$ 820, so it remains classified by the World Bank as a low income country. The World Development Report states that over one third of the population of India was living below the poverty line in 2004-2005, managing on less than $1 a day.

Important finding of report about Indian economy as listed below:

- India is one of the fastest growing economies of the world and is currently the focus of a great deal of international attention.
- It is the seventh largest country in the world in terms of its geographical size.
- India has a large and diverse agriculture and is one of the world’s leading agri producers.
- Because of India’s agricultural and trade policy, its presence on the world market has been modest in relation to the size of its agriculture.
- India is the third largest economy in Asia after Japan and China, as measured in terms of its Gross Domestic Product (GDP) and it is continuing to grow rapidly.
Thus Indian economy has a larger role in world economy to play. Agriculture sector is going to help it as it has great potential to grow. Agriculture is to be made more effective by supporting it with all types of infrastructure facilities for intensive farming and well planned marketing strategies with effective use of IT.

1.2 AGRICULTURE IN INDIA

Agriculture plays an important role in India, though there is a decline in it’s share in the economy. Its share in overall GDP fell from 30% in the early nineties, to below 17.5% in 2005.

Figure 1.1 : Main economic sectors share of Indian GDP

As per the World Bank Report\(^2\), over this period the share of industry has stayed relatively constant, reaching nearly 28%. Meanwhile the services sector has grown rapidly accounting for about 65% of total GDP growth from 2000-2005 GDP in 2006. The World Bank predicts that the shift towards the service sector will continue at the expense of agriculture,
whose share could decline by substantially in 2030. Despite India’s economic development, over 70% of the population still lives in rural areas. Agriculture is the key employer with around 60% of the labour force, down from 70% in the early nineties. This compares with 44% in China and 21% in Brazil.

India’s agricultural area is vast with total arable and permanent cropland of 170 million hectares in 2003-2005. It has the second largest arable area in the world after the United States. Organisation for Economic Co-operation and Development (OECD) in its Agricultural Policy Monitoring Report notes that Indian agriculture is dominated by a large number of small scale holdings that are predominantly owner occupied. The average size of holding in the late nineties was about 1.4 hectares and continues to decline, as farms are usually divided on inheritance. Out of India’s 116 million farmers, around 60% have less than 1 hectare and together they farm 17% of the land. The share of medium to large farms i.e above 4 hectares is very small at just over 7% of all holdings, but these farms account for around
40% of the land. The implication is that many of the very small farms are subsistence holdings, with low investment and little productivity growth.

Indian agriculture policy is aimed essentially at improving food self sufficiency and alleviating hunger through food distribution. Aside from investing in agricultural infrastructure, the government supports agriculture through measures including Minimum Support Prices (MSP) for the major agricultural crops, farm input subsidies and preferential credit schemes. Under the price support policy, MSPs are set annually for basic staples to protect producers from sharp price falls, to stabilise prices and to ensure adequate food stocks for public distribution. According to the International Food Policy Research Institute (IFPRI), guaranteed prices have been below the prevailing market prices. At the same time subsidies on farm inputs including fertilisers, electrical power and irrigation water have led to inefficient use of inputs and indirectly subsidise income. IFPRI concluded that “support for agriculture (from 1985-2002) has been largely counter cyclical to world prices”.

1.2.1 India’s Leadership in Agriculture

India is among the world’s leading producers of paddy rice, wheat, buffalo milk, cow milk and sugar cane. It is either the world leader or the second largest producer in eight out of its top ten products. Table 1.1 shows the composition of production by value for 2003-2005, when paddy rice was the top sector, followed by buffalo milk and wheat. India is now the largest milk producer in the world and the second largest producer of paddy rice, sugar cane, wheat, cow milk, groundnuts and certain fresh vegetables. But it is also a leading consumer. Although it exports these products the quantities will vary depending on the size of the crop and demand. India is
also the world leader in such specialist products as buffalo milk, spices and bananas, mangoes, chickpeas etc.

Table 1.1: Top 10 commodities of India and World rank

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Rank India</th>
<th>World Rank 2005</th>
<th>Production Avg 2003-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy rice</td>
<td>1</td>
<td>2</td>
<td>27.5</td>
</tr>
<tr>
<td>Buffalo milk</td>
<td>2</td>
<td>1</td>
<td>25.2</td>
</tr>
<tr>
<td>Wheat</td>
<td>3</td>
<td>2</td>
<td>10.9</td>
</tr>
<tr>
<td>Cow milk</td>
<td>4</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>Fresh vegetables</td>
<td>5</td>
<td>2</td>
<td>6.6</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>6</td>
<td>2</td>
<td>5.2</td>
</tr>
<tr>
<td>Potatoes</td>
<td>7</td>
<td>3</td>
<td>3.6</td>
</tr>
<tr>
<td>Groundnuts</td>
<td>8</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>Pimento</td>
<td>9</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Buffalo meat</td>
<td>10</td>
<td>9</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Source: FAOSTAT, world rank calculated by DG AGRI

India is the fifth largest cultivator of biotech crops in the world, ahead of China. In 2006, about 3.8 million hectares of land were cultivated with genetically modified crops, by about 2.3 million farmers. The main GM crop is Bt Cotton, which was introduced in 2002.

1.2.2 Indian Agricultural Trade

Trade in agricultural account for a relatively small share of overall Indian trade. Agricultural exports represent 9% of the value of total exports while the share of agriculture in total imports is 5%. When compared with other main players in world markets and considering the size of the country, Indian agricultural trade flows appear relatively modest. As the key goal of agricultural policy since independence has been to achieve self-sufficiency, trade has been relatively limited. However, technological developments
and macroeconomic policy reforms have brought increased liberalization, following the implementation of the Uruguay Round Agreement, and have contributed to changes in agricultural trade.

OECD and FAPRI (Food and Agricultural Policy Research Institute) both expect India to play a bigger role in world markets in future. It is likely to remain a small net exporter overall. India is to consolidate its position among the world’s leading exporters of rice, though the volume of exports has been erratic since the mid nineties depending on the size of the crop and on domestic consumption. Currently it is the second largest rice producer after China and the third largest net-exporter after Thailand and Vietnam.

As stated in Planning Commission Report, agricultural marketing and external trade in agricultural commodities are assuming increasing importance in the wake of ushering in second green revolution, improving the living standards of farm families, making India hunger free and turning poverty into history in the shortest possible time. The challenges facing the marketing system are quite different than what these used to be about two decades before.

1.3 AGRICULTURE MARKETING DEFINITION

The National Commission\(^5\) on Agriculture defined agricultural marketing as “a process which starts with a decision to produce a saleable farm commodity and it involves all aspects of market structure of system, both functional and institutional, based on technical and economic considerations and includes pre and post- harvest operations, assembling, grading, storage, transportation and distribution”. 
The Indian council of Agricultural Research defined agricultural marketing as “involvement of three important functions, namely (a) assembling (concentration) (b) preparation for consumption processing and (c) distribution”.

Planning Commission defines agricultural marketing as “physical and institutional set up to perform all activities involved in the flow of products and services from the point of initial agricultural production until they are in the hands of ultimate consumers. This includes assembling, handling, storage, transport, processing, wholesaling, retailing and export of agricultural commodities as well as accompanying supporting services such as market information, establishment of grades and standards, commodity trade, financing and price risk management and the institutions involved in performing the above functions”.

There are several complexities involved in agricultural marketing as agricultural produce involves element of risk like perishability and it again depends on the type of produce. If the agriculture produce happens to be a seasonal one it involves another kind of risk. Likewise, there are several risk elements involved in agricultural marketing. The pricing of the produce depends on factors like seasonality and perishability and it depends on the demand and supply also. And all these are interwoven and ultimately make a deep impact on agricultural marketing.

1.4 AGRICULTURAL MARKETING IN INDIA

For development of agriculture sector an efficient agriculture marketing system is essential. Before independence, for a long period of time Indian agriculture was mostly in nature of ‘subsistence farming’. To pay off
rents, debts and meet other requirements, farmers sold only a small part of their produce. Due to lack of storing facilities such sale was usually done just after harvesting of crops. This produce is often sold to the village traders and moneylenders often at prices lower than the market prices. The farmers who took their produce to mandies, need to face unfair means of cheating from middle men like village traders, kutcha arhatiya, pucca arhatiya, brokers, wholesalers, retailers and money lenders etc. The farmers were required to pay arhat to the arhatiyas, tulaii for weighing the produce, palldari to unload the bullock-carts, garda for impurities in the produce and a number of other undefined and unspecified charges. These charges often varied from person to person.

Besides these defects in the agriculture marketing there are number of other problems as stated below

- Absence of proper warehousing.
- No provision for grading.
- Inadequate transport facilities.
- Non-availability of credit.
- Absence of proper marketing information system.

Marketing of agriculture produce is complex activity involving stake holders, products and business scenarios. In a developing country like India, this activity is influenced by local, socio-economic and cultural characteristics. Evaluating the business processes at regional or national scale therefore, reveals diversity in products, terminology, and process to carry out a complete business activity. While other complex but well-defined business processes are experiencing benefits of services driven e-
business; marketing of agricultural produce can not remain untouched by this revolution.

‘4Ps’, the acronym for price, product, place and promotion is the core principle of marketing. In the case of agricultural marketing in India, it is not exactly the marketing in the literal sense and we can call it as ‘distributed handling’ of agricultural produce as there are number of intermediaries who are involved in marketing the agricultural produce.

However, with the liberalization, privatization and globalization the economic scenario in India has changed drastically. As a result we have noticed the changes in the ‘distributed handling’ and again it reinvented and evolved as agricultural marketing. It is basically because of the rise of retail giants who are the major buyers in bulk quantity and who constantly look for differentiated, graded, standardized, processed and packaged products rather than undifferentiated ones. They also look for qualitative and quantitative supply of agricultural stocks continuously to beat the competition in the retail sector.

As per Planning Commission Report, current agricultural marketing system in the country is the outcome of several years of Government intervention. The system has undergone several changes during the last 60 years owing to the increased marketed surplus; increase in urbanization and income levels and consequent changes in the pattern of demand for marketing services; increase in linkages with distant and overseas markets; and changes in the form and degree of government intervention.
There are three important dimensions of an agricultural marketing system. These are market structure, conduct and performance. Market structure determines the market conduct and performance. The structural characteristics govern the behaviour of marketing firms. The market structure has never remained static but kept on changing with the changing environment. Structure of agricultural produce markets varies from commodity to commodity and has been influenced by the intervention of the government. An important characteristic of agricultural produce markets in India has been that private trade has continued to dominate the market. With the large quantities required to be handled by the private trade, the size and structure of markets over time have considerably expanded. Around two million wholesalers and five million retailers handle the trade in food grains. Apart from traders, processors also play an important role as they also enter in the market as bulk buyers and sellers.

1.5 PROBLEMS IN AGRICULTURAL MARKETING

As stated in Report of Planning Commission, agricultural development continues to remain the most important objective of Indian planning and policy. The experience of agricultural development in India has shown that the existing systems of delivery of agricultural inputs and marketing of agricultural output have not been efficient in reaching the benefits of technology to all the sections of farmers. The timely, quality and cost effective delivery of adequate inputs still remains a dream despite the marketing attempts of the corporate sector and the developmental programmes of the state. Also, the farmers are not able to sell their surplus produce remuneratively. There is plenty of distress sales among farmers both in agriculturally developed as well as backward regions. There are
temporal and spatial variations in the markets and the producers’ share in consumers’ rupee has not been satisfactory, except for a few commodities.

In fact, in commodities like potato in some regions in India, producers end up making net losses at the same time when traders make substantial profits from the same crop. However, it needs to be recognized that producers’ relative share in the final price of a product certainly goes down with the increase in the number of value-adding stages, and therefore, cannot be used as an indicator of a market’s efficiency or inefficiency. Nevertheless, the other aspects of the market performance like absolute share of the producer in terms of remunerability, fluctuations in prices across seasons, large spatial price differences and lack of proper market outlets itself, are the issues which have become increasingly crucial in the present context. There are structural weaknesses of agricultural markets like unorganized suppliers as against organized buyers, weak holding capacity of the producers and the perishable nature of the produce in the absence of any storage infrastructure. In the presence of these characteristics of the market, the rural producers cannot simply be left to fend for themselves so far as marketing of their produce is concerned. And if the marketing system does not assure good returns to producers, not much can be achieved in the field of product quality and delivery which are critical for processing and manufacturing sectors. In the environment of liberalization and globalisation, the role of the state in agricultural marketing and input supply is being reduced, and an increasing space is being provided to the private sector to bring about better marketing efficiency in input and output markets. On the other hand, processors and/or marketers face problems in obtaining timely, cost effective, and adequate supply of quality raw materials.
There are several challenges involved in marketing of agricultural produce. There is limited access to the market information, literacy level among the farmers is low, multiple channels of distribution that eats away the pockets of both farmers and consumers. The government funding of farmers is still at nascent stage and most of the small farmers still depend on the local moneylenders who charge high rate of interest. Although we say that technology have improved but it has not gone to the rural levels as it is confined to urban areas alone. There are several loopholes in the present legislation and there is no organized and regulated marketing system for marketing the agricultural produce. The farmers have to face so many hardships and have to overcome several hurdles to get fair and just price for their sweat.

J.P. Singh in his research paper identified the problems of agriculture marketing in India as follows:

- Fluctuations in agriculture prices and supplies (surpluses/scarcities)
- Conflicting interests of farmers, middlemen and consumers
- Under utilization of resources such as rural godowns, market yards etc.
- Inadequate transportation, communication and information network.
- Imbalance in the spread of internal marketing network as well as in products
- Other factors such as distribution, seasonability, perishability, and enormity of production, storage, lack of processing make the problem of marketing more complex.
- Problem of plenty due to increased agricultural production leads to glut in the market and ultimately fall in price.
- Problem of shortage due to inadequate production, crop failure may finally result in rise in prices.
Among these problems according to him communication plays a vital role in determining the success or failure of commercialization/marketing of the agricultural produce in rural India. To overcome these problems he has suggested solutions such as audit of local resources and facilities, determining what the market wants in terms of product now and in future. He has also stressed on the importance of information services for agriculture marketing.

1.5.1 Major Constraints in Existing System

Organized marketing of agricultural commodities has been promoted in India through a network of regulated markets owned, operated, and managed by Agricultural Produce Market Committees (APMCs). Most of the State Governments and Union Territories have enacted legislation (APMC Act) to provide for regulated markets and as on today, 7557 markets have been covered under regulation. Besides, there are 2,1731 Rural Periodic Markets (RPMs), about 15 percent of which function under the ambit of regulation.

The major constraints in domestic agricultural marketing identified by Planning Commission are as follows:

- Variation in Market Fees/Market Charges
- Neglect of Rural Markets
- Absence of a Common Trade Language
- Variation in Entry Tax/Octroi and Sales Tax
- Controls Under Essential Commodities Act
- Lack of infrastructure like storage, transportation, telecommunication, quality control, packaging,
• Lack of price risk management, integration of spot markets with commodity exchanges,
• Lack of pledge financing through a chain of accredited storage and warehouse receipt system, cold chains, market led extension, and
• Lack of conducive framework for promotion of contract farming

1.6 IMPACT OF GLOBALISATION ON AGRICULTURAL MARKETING

The globalization has brought drastic changes in India across all sectors. It is more so on agriculture, farmers and made a deep impact on agricultural marketing. It is basically because of majority of Indians are farmers. It has brought several challenges and threats like uncertainty, turbulence, competitiveness, apart from compelling them to adapt to changes arising out of technologies. If it is the dark cloud there is silver lining like having excellent export opportunities for agricultural products to the outside world.

The Working Group for Planning Commission, while framing its recommendations, recognized that there are three essential/necessary requirements for evolving an efficient agricultural marketing system in India. These are (a) continuous evolution, perfection and transfer of science and technological inputs in agricultural marketing; (b) introduction of ‘scale’ in agricultural marketing for reaping the benefits of economies of scale; and (c) continuously refining and putting in place a conducive policy and regulatory framework, including withdrawal of the state in many areas.
1.7 MARKET INFORMATION: IT’S ROLE AND IMPORTANCE

According to FAO a working definition of a Market Information Service is “A service, usually operated by the public sector, which involves the collection on a regular basis of information on prices and, in some cases, quantities of widely traded agricultural products from rural assembly markets, wholesale and retail markets, as appropriate, and dissemination of this information on a timely and regular basis through various media to farmers, traders, government officials, policymakers and others, including consumers”.

Thus, FAO’s definition summaries that market information is the domain of the public sector or the responsibility of the state and convey the price and quantity arrivals and sale from the point of origin and disseminate it to the interest groups such as farmers, traders, government policy makers and consumers.

The market information services are backbone of agricultural marketing and fair prices to the beneficiaries and especially farmers and consumers. All agricultural marketing functions revolve around the economic benefits and convenience of the participants. According to Andrew Shephard⁸, Market Information Services can have the following impact on the agricultural marketing activities.

- Farmers can facilitate efficient allocation of productive resources.
- The bargaining position of farmers with traders can be improved.
- Information reduces transaction costs (i.e. the costs of selling the produce) by reducing risks. Farmers with timely and reliable information and the ability to interpret it can decide to which market they should
send their produce to maximize returns or, indeed, whether to send their produce to market at all.

- **Lack of information is an entry barrier to both production and trade.** Where farmers have had access to information, shifts in cropping patterns to higher value produce have been noted. In the area of trade, individuals find it difficult to begin trading without information, so reducing competition within markets;

- **Market information can be particularly valuable where countries are changing over from a state-controlled marketing system to one of private enterprise, in that farmers and small traders are made more aware of market opportunities;**

- **By contributing to more efficient marketing, particularly improved spatial distribution, market information should be beneficial for consumers as well as farmers and traders. Information on retail prices may also, under certain circumstances, assist consumers to bargain.**

- **The essence of a good Market Information Service is that it should provide commercially useful information on a timely basis. Information produced by an MIS is, however, also useful to policy makers. This should, in the long run, improve policy formulation as the functioning of markets comes to be better understood.**

- **Market information is also an important component of Early Warning systems for food security as it can assist in identifying areas of possible shortage and can highlight whether prices are above or below normal seasonal trends.**

Thus, market information services provides an edge to the every single participant in agricultural marketing. Farmers and small traders the most information starved segment is benefited most with price and time
advantage whereas Government is benefited by early warning system for food security. Consumers are also benefited by price information. In a global world, where every nation is freeing the economy from controls and changing it to private enterprise, demand supply rules are properly benefiting the nations as a whole.

Rural (primary and periodic) Markets (about 21731) are the first contact points of farmers with the market economy, both for selling and buying. As there have been high price differentials many times between the Wholesale Markets and the Rural Markets, there is room for arbitrage which is being exploited by the traders to their advantage. Therefore, it is imperative to make the Wholesale Markets as the price discovery point and the Rural Markets as the price takers with due consideration for transport and other costs. As the Rural Markets have few traders, the tendency to collude among them is high. In the Wholesale Markets, as traders are many, one can expect a fair price. In a country like India with 70 percent of its population living in about 6.25 lakhs villages and depending on agriculture as their main occupation, accurate and timely information about the market prices of the agricultural commodities is of extreme significance. Lack of information is not the only marketing constraint facing the farmers in remote areas who are trying to earn money by growing agricultural produce for sale, but also other difficulties which include poor roads, distance from urban markets, lack of transport, lack of a good grading system, and poor packaging.

Market information is an important aspect of Agriculture Marketing. Sound Agriculture Marketing policies for ensuring fair return to the farmers become necessary on the part of regulatory agencies. A number of
measures taken by the Government in this direction are regulation of markets, grading of agriculture produce, cooperative marketing etc. But in the absence of correct and timely market information the benefit is not reaching up to the farmers. If is available it will considerably improve the decision making of the farmers which strengthens their bargaining power. At present the information is disseminated through various media like radio, newspapers, blackboard display and public address system at Wholesale Market yards. The information provided has a limited use and helps very less to the farmers. The farmers are also unable to know about the prices in other markets because the Market Committees are disseminating information of their own markets only. Therefore even it is uneconomic, farmers have to dispose off their produce in the nearest market. For Market Committees market intelligence data are presently compiled in registers, which is difficult to maintain and analyze due to volume. Therefore to improve the existing market information system. In this direction, Central Government of India has established Agriculture Marketing Information Network AGMARKNET.

According to project developers of AGMARKNET, in the liberalized trade environment, there are several aspects of agricultural marketing with which the farming community need to be familiarized for fully utilizing the emerging trade opportunities. The G2C e-governance portal - AGMARKNET has been evolved for strengthening the interfaces among Government organizations, farmers, industry, policy makers, academic institutions and other beneficiaries. The portal caters to the diversified needs of these stakeholders by providing following agricultural marketing related information as a single window World Wide Web service over internet.
Market information is crucial to enable farmers and traders to make informed decisions about what to grow, when to harvest, to which markets produce should be sent, and whether to store it or not. The needed categories of information (Knowledge Objects) are as follows:

- daily/weekly retail and auction prices;
- trends in aggregated auction prices, retail prices, quantity traded through auction, export, import, and production;
- information on farm inputs (types, sources, and selling price);
- description of prevailing market conditions (supply and demand situation);
- information on marketing and post-harvest practices;
- information on existing food standards and regulations;
- market situation and outlook reports (annual report);
- market research and development reports;
- investment advice and success stories in agribusiness;
- relevant information/news on export markets in the region; and
- a directory of existing exporters and importers.

1.8 INFORMATION TECHNOLOGY: MEANING

Information technology\(^9\) makes an impact on any one, who watches TV or reads the newspapers. Information technology related topics such as the Internet, digital TV, DVD discs for music and movies, mobiles may address by the media continuously. Information technology affects us both as an individual and as society. Our job prospectus, as well as options for health care and education have radically changed and will continue to change due to information technology.
People are creating multimedia games and presentations, composing music, desktop publishing books, magazines and web sites; and creating business plans. With the help of information technology it is now possible to easily exchange e-mail, photos, music, manuscript and even videos with anyone, anywhere. Anyone can join this new class of computer “professionals” by applying information technology in their education or business life.

Just over 25 years ago the first microprocessor emerged on the scene. This tiny, inexpensive, mass-produced device made possible revolutionary advances in Information technology. Ten years ago, computers have limited usages and many people weren’t exposed to them. However, the impact microprocessor based information technology is now cresting and breaking in our works and lives.

The phrase information technology\(^9\) (IT) refers to the creation, gathering, processing, storage and delivery of information and the processes and devices that make all this possible.

Information technology can do at least three things.

- Information technology can process raw data into useful information. e.g series of crop production data (raw data) of different crops is used to find the pattern in the yield (information) for the respective year.
- Information technology can recycle processed information and use Information technology as data in another processing step. e.g already processed data can be combined with other information to increase its impact.
- Information technology can be package information in a new form so it’s easier to understand, more attractive, or more useful. All the rates of difference agriculture produced can be sorted in a descending order or placed on a chart to quickly see which is most yielding produce.
1.8.1 Hardware and Software : Concept

Information technology stands firmly on two legs: **hardware** and **software**.

- The term **hardware** is applied to any of the **physical equipment** in a system, usually containing electronic components and performing some kind of function in information processing. Hardware includes not only the computer and devices such as screens and printers, but also all the elements used to tie information systems together e.g. telephone wires are hardware, as are antennas used for cellular phone calls.

- **Software** is instructions that guide the hardware in the performance of its duties. e.g. application programs, such as Microsoft’s Word and Excel, or Adobe’s Photoshop and PageMaker, are what one use to do word processing, financial planning, photo manipulation, or newsletter layouts.

1.8.2 Data : Concept

A dictionary describes data as individual facts, statistics or items of information processing. Hardware and software are not designed or selected in isolation. Their purpose is to process and present data. Data range from letters and numbers, called simple data to sounds and videos called complex data.

Planning commission suggests that, the establishment of a sustainable IT system that meets the needs and wants of the rural user requires a framework that addresses critical need-gaps. This can be achieved by:
• Identifying available secondary information on key products including literature review and sources of data;
• Identifying areas of missing secondary information;
• Collecting primary data, as needed (e.g. industry surveys);
• Establishing baseline information on production, markets, trade flow, competition, market potential and consumer;
• Characteristics for the top products or product;
• Identifying resources needed for an electronic database and determine the most efficient way to organize the data electronically;
• Start assembling the data and organizing them in an orderly and useable fashion;
• Creating computer database for various information, including wholesale prices, supply and other production statistics;
• Enhancing existing portals to serve as an effective medium for information dissemination; and
• Performing basic data analysis and customized presentation.

1.9 IT APPLICATION IN AGRICULTURE AND AGRICULTURE MARKETING

1.9.1 IT Application in Agriculture

The application of Information Technology (IT) in agriculture has become increasingly important. E-Agriculture is an emerging field focusing on the enhancement of agricultural and rural development through improved information and communication processes. More specifically, e-Agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use information and communication technologies (ICT) in the rural domain, with a primary focus on agriculture. E-Agriculture is a relatively new term and we fully
expect its scope to change and evolve as our understanding of the area grows. E-Agriculture is one of the action lines identified in the declaration and plan of action of the World Summit on the Information Society (WSIS). The "Tunis Agenda for the Information Society," published on 18 November 2005, emphasizes the leading facilitating roles that UN agencies need to play in the implementation of the Geneva Plan of Action. The Food and Agriculture Organization of the United Nations (FAO) has been assigned the responsibility of organizing activities related to the action line under C.7 ICT Applications on E-Agriculture.

The main phases of the agriculture industry are, Crop cultivation, Water management, Fertilizer Application, Harvesting, Transporting of food/food products, Packaging, Food preservation, Food processing/value addition, Food quality management, Food safety, Food storage, Food marketing. All stakeholders of agriculture industry need information and knowledge about these phases to manage them efficiently. Any system applied for getting information and knowledge for making decisions in any industry should deliver accurate, complete, concise information in time or on time. The information provided by the system must be in user-friendly form, easy to access, cost-effective and well protected from unauthorized accesses.

Information and Communication Technology (ICT) can play a significant role in maintaining the above-mentioned properties of information as it consists of three main technologies. They are: Computer Technology, Communication Technology and Information Management Technology. These technologies are applied for processing, exchanging and managing data, information and knowledge. The tools provided by ICT are having ability to:
• Record text, drawings, photographs, audio, video, process descriptions, and other information in digital formats,
• Produce exact duplicates of such information at significantly lower cost,
• Transfer information and knowledge rapidly over large distances through communications networks.
• Develop standardized algorithms to large quantities of information relatively rapidly.
• Achieve greater interactivity in communicating, evaluating, producing and sharing useful information and knowledge.

1.9.1 IT Application in Agriculture Marketing

The Central Government and its agencies, the state governments and their agencies and the private sector have undertaken many path-breaking initiatives
• AGMARKNET – www.agmarket.nic.in by the Union Ministry of Agriculture,
• The e-Vipnan initiative by the Madhya Pradesh state government,
• ITC’s e-CHOUPAL,
• DCM SHRIRAM’s Hariyali Kisan Bazar,

Besides strengthening traditional information sources, such as individual State Agricultural Marketing Boards, Commodity Boards, and Commodity Exchanges. However, the absence of inter-linkages between these sources demands the establishment of a comprehensive information networking system that straddles across commodity groups and markets while delivering real-time, authentic information in a user-friendly format through localization.
National Institute of Agricultural Marketing (NIAM) has helped various State Agricultural Marketing Boards in developing their Agricultural Marketing Portals and also involved in implementing, through NIC, the “National Atlas of Agricultural Markets”. The website for Domestic & Export Market Intelligence Cell (DEMIC) (www.tnagmark.tn.nic.in) of the Government of Tamilnadu, both in Tamil and English, provides forecast information on the supply, demand and future prices of important agricultural commodities in Tamilnadu. The website interfaces with AGMARKNET website for display of daily data on arrival and transaction of important commodities. Many State Agricultural Marketing Boards, National Federations, and Agri-Business organizations, have developed Web portals on Market Information both in English and their local languages (in most cases) and their Web sites URLs are given below:

- www.msamb.com
- www.agri.rajasthan.gov.in
- www.market.ap.nic.in
- www.mandiboardpunjab.com
- www.mpmandiboard.com
- uk.gov.in/
- www.upmandiparishad.in
- www.megamb.nic.in
- www.osamboard.org
- www.nafed-india.com
- www.assamagribusiness.nic.in
- http://nhb.gov.in/

Websites which are providing agricultural products marketing information in the private sector are as given below:

- www.agriwatch.com
- www.kisan.com
At the national scene, both AGMARKNET and e-Choupal systems have emerged as operational systems with scaling up in a sustainable manner, and have received national and international appreciation and awards for their impact at grassroots level. They have established a significant trend in the Indian economy by directly linking the industry and the peasant-dominated farm sector.

Following measure are suggested by planning commission for strengthening of Agricultural Marketing Information System Using ICTs:
(i) Integrated Website for all agencies of both State and Central Government involved in Agricultural marketing services like APEDA, APMCs, KVKs, NAFED etc.
(ii) Integrating AGMARKNET with State Wide Area network (SWAN) and NICNET.
(iii) Establishment of AGMARKNET Nodes at KVKs and Panchayats with IT infrastructure along with Internet accessibility.
(iv) All agriculture wholesale markets to be the WiMAX based Internet Hubs.
(v) Computerization of all mandies/APMCs under E-Mandi project undertaken with the existing AGMARKNET Nodes (about 2850 in numbers) as the Phase-II.
(vi) Development of Agricultural Commodity-wise Portal for 300 Commodities and 2000 varieties to facilitate supply-chain (farmgate to international) management models, and development of marketwise, commodity-wise, region-wise, country-wise marketing intelligence system.
(vii) Dissemination of market information through electronic media, ICT media, telecommunication media and print media.
(viii) Linking all cooperative marketing organizations through provision of computerization and internet facility and putting them on common or interlinked websites.
(ix) E-networking of quality testing laboratories in the country.
(x) E-linking of rural business hubs with exporters, supermarkets and retailers.

The development of the agricultural sector is key to economic growth and poverty reduction of any country. Development of agricultural markets will contribute towards revitalizing the agricultural sector. An efficient agricultural marketing supported with adequate IT infrastructure is essential for the development of the agriculture sector as it provides outlets and incentives for increased production, the marketing system contribute greatly to the commercialization of subsistence farmers.

References


11. agmarknet.nic.in.