

Development of agricultural e-commerce framework for India, a strategic approach.

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ABSTRACT

This study is aimed to put forward an inclusive and pertinent e-commerce framework that serves as a platform for the development and improvement of rural agriculture sector in India; which plays a major role towards socioeconomic development of rural livelihoods along with food security and poverty reduction. The main approach used was to critically review and understand the National Informatics Centre (NIC) and the Ministry of Agriculture policies. In general, these policies emphasize on promoting IT based information kiosks, establishing gyan chaupals (Knowledge centers) in villages, construction of Agri-India knowledge portal. Next, the challenges and information gaps were identified and translated in the form of agriculture e-commerce framework which can be used to build an e-commerce application.

Keywords - e-commerce framework, e-commerce application, netizens, rural agriculture sector

I. INTRODUCTION

The boom of internet Information and Communication Technology (ICT) together with Internet is making it possible to share vast amount of knowledge and information and is driving all round socio-economic changes and growth. There has been a tremendous rise in the Global internet usage and for a developing country like India this growth has been phenomenal. In the world India is the third largest base with internet users of around 120 million. By 2015 India expected to have an incremented growth with 320 million to 360 million internet users making it the second largest user base in the world [1]. By 2015 with the prospective to double its economic contribution from the Internet in the next three years India's GDP will from 1.6 percent to 2.8 to 3.3 percent by 2015 [1]. India can achieve broad-based Internet impact by aiming for the digital inclusion of nearly 40 percent of its population, to reach a user base of 500 million by 2015, rather than the likely target of 330 million to 370 million [1].

Indian Economy has a major contribution from the agricultural sector. Research, extension and farmers efforts are all contributed significantly from 50 million tons in 1950-51 to land mark achievement of an estimated production of 241 million tons of food production in 2010-11 [2]. The entire requirement for food grains is proposed to touch 280 million tons by the year 2020-21. To meet this high demand a proportional growth rate of nearly 2 per cent per annum is required in food grain production and a 4 per cent per annum growth rate is required in agriculture. Planning commission of India as recommended a work group on agricultural

extension for XI five year plan (2007-2011) states that growth in agriculture is stagnant and slow [2]. So there is an urgent need of pulsating, active and inventive approach that need to adopted to achieve a growth rate in agriculture and thus the farmers are served better.

National policy on ICT in agricultural extension set up by the government has looked forward to transform agriculture into a driving force for improved economic growth within a market-oriented policy framework by promoting agriculture commercialization and diversification [2]. The government introduced a number of policies to resolve critical issues restricting the agriculture performance, including:

- Development of agricultural information based websites to give information about various crops, soil conditions, weather and pesticides.
- Strengthening of India's agricultural marketing system by publishing daily market information, such as minimum, maximum and modal prices for commodities and their varieties.
- Establishment of gyan choupals (knowledge centers) in villages for effective and timely transfer of knowledge to farmers.
- Use of modern information technology to promote communication between researchers, extension workers and their farmer clients for cost effective transfer of technologies and information .
- Envision services in agriculture as a Mission Mode Projects (MMP) in order to provide

information to the farmers on pesticides, seeds, different government schemes, eco-friendly fertilizers, recommendations on soil fertility, effective management of crops, Weather and agriculture produce marketing.

The direct effect of these policies is the ability of the agricultural stakeholders to contact, collect, analyze and use information to understand market signals and respond to it appropriately. First step is to improvise the available information system in all its different phases that is from the collection of commodity price in various key markets, analyzing the information that is received and finally broadcasting the information to farmers. Second step is the right application of the available price information on market development so that there will be an improved production choice and intelligent selling on product during non peak periods.

II. BACKGROUND

In developed countries like United States agricultural e-commerce is well developed and farmers benefit greatly from easy access to market information and vertical market integration. Information and Communication Technology (ICT) is widely used and the knowledge of ICT in farmers is considerable with timely distribution of agriculture information, consultation and monitoring, training and education, response from experts, early forecasting of price, early warning and improvement measures, information about marketing of various commodities, farm business and management, and expansion of the use of e-commerce[3].

However, the scene of agriculture in less developed nations is generally characterized by fragile infrastructure, involvement of several mediators; lack the knowledge of ICT in farmers. Even though the country becomes self-sufficient and exports agricultural products, majority of the farmers remain in poverty. This shows that although there is increase in production of agricultural products, the farmers are not benefiting. Empowering farmers through ICT can prove really beneficial in aspects such as:

- Exchange in information will reach larger masses in spite of larger limitations literacy level and local languages.
- Promoting agricultural products to larger masses
- Improved farming techniques and best practices; that enhance the yield and reduce cost of inefficiency

In the year 1995 National Informatics Centre (NIC) and the Ministry of Agriculture initiated a national conference on ICT which has enabled a digital

Network for Farmers. During this conference a plan was drafted for e-governance and formal recommendation was given to allocate 3% to 6% of the national budget for agriculture to the development of information services digital and networks. Currently the initiative has proven to be a success and 15 digital networks have been developed. They are linked to agriculture and related topics, including digital information services on seed, fertilizer, plant protection, fisheries and natural disaster management [4].

AGMARKET was the first e-governance project, which was set up in the year 2000 to strengthen India's agricultural marketing system. It has emerged to be a key national portal. In order to reach micro levels of society it has embedded many regional languages. It maintains and publishes from its well maintained database, information relating to daily minimum and maximum modal prices for about 300 commodities and their over 2,000 varieties[4].

Compared to the number of agricultural related websites in India, e-commerce implementation in these websites is scarce. Indian agriculture has not fully used the potential of ICT and it is restricted only to information side and not to the agricultural product side.

2.1 BACKGROUND SIGNIFICANCE OF AGRICULTURAL E-COMMERCE DEVELOPMENT IN INDIA.

1) e-commerce can help boost the sale of agricultural products to larger masses.

E-commerce has a reach to a large audience as the number of netizens in India is increasing at a fast phase. Using e-commerce effectively in promoting agriculture related products, the gap between the farmer and the customer is greatly reduced. Supply chain of agriculture related products can be strengthened and one can also keep track of this.

2) Expansion in agricultural product channels, reduction in transaction links and increase agricultural efficiency with the establishment of agricultural e-commerce sites along with the online trading platform, there will be a well organized circulation of agricultural products on a larger scale. This will be helpful in regaining information for both the parties and avoid any loss in profits due to asymmetry in information. This in turn will help both supply and demand sides trade at a maximum profitability and at minimum risk and also greatly reducing transaction costs and transaction links.

3) Formation of a marketing model for agricultural related products and promoting the development of related industries [5].

With the establishment of e-commerce sites will not only help in sales of agricultural related products but will also help in constructing a model with can be implemented in many parts of the country. It will help set up a base model which can be tweaked accordingly when needed.

Not only will it be helpful in promoting agriculture but also for other related industries such as Horticulture, fisheries etc. Thus on a long run it will help in speeding up the process of agricultural industrialization.

III. AGRICULTURE E-COMMERCE FRAMEWORK FOR RURAL AGRICULTURAL

Presenting an overview of Agriculture E-Commerce Framework focusing on two main aspects:

Agriculture Production -This plays a major role in educating, improving and providing ICT awareness in the rural agriculture sector. There are three main components here:

- Promoting Agricultural practices

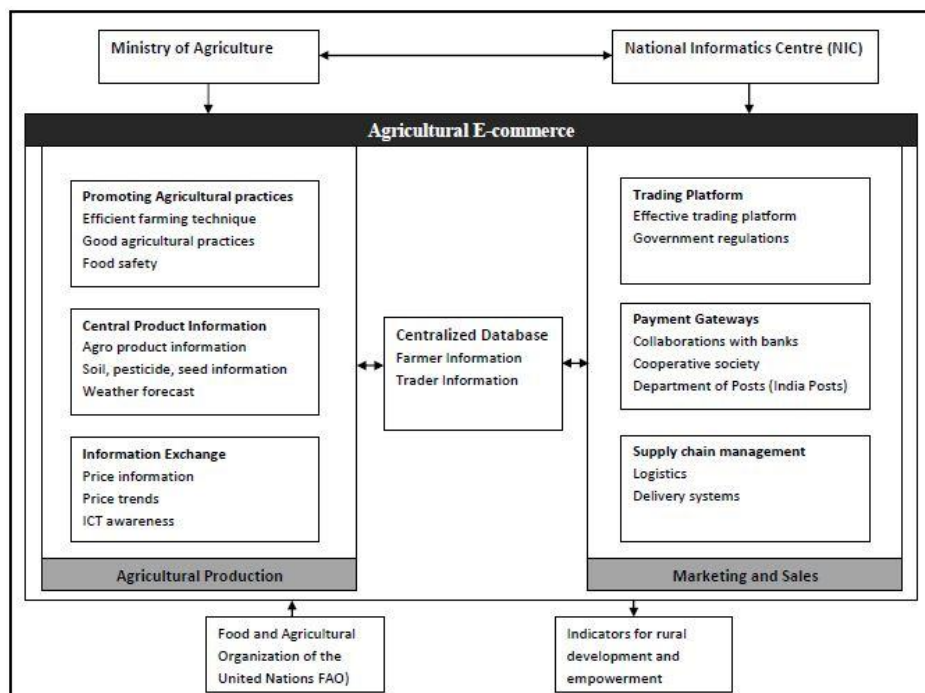


Fig 1

Many developed nations have capitalized on the benefits of e-commerce to market their agro products effectively. The contribution of agribusiness industry to the economy is significant. The fact that agricultural products require accurate, well-timed information and the distribution of the producer (farmer) and buyers (Traders and consumers) over a large geographical area has made agricultural sector a lucrative field for e-commerce intervention. There is a potential need for developing an e-commerce framework and it is well initiated by many organizations but there is no unanimity over the types of model accepted. The same framework can be used to develop an Internet platform that based upon supply chain and offers servicing assistance [6]. So a model could defer from country to country or even state to state and successful model in one country may prove to be failure in another country.

- Central Product Information
- Information Exchange

Marketing and Sales – This focuses on commodity trade exchange and multiple inputs in the distribution method. There are three main components here:

- Trading Platform
- Payment Gateways
- Supply chain management

This framework is further strengthened by two other important factors that provide significant contribution to the success in implementation of agricultural e-commerce application. These factors are National Informatics Centre (NIC) and the Ministry of Agriculture. These two Government Organizations provide further support to the smooth running of an agricultural e-commerce application. Fig1 illustrates the e-commerce framework for Agriculture sector.

This framework can be further enhanced to compete with the global Agricultural market by adopting the policies of Food and Agricultural Organization of

United Nations (FAO). This will make sure that the agricultural practices followed by the farming community in India will be in par with the Developed nations. So further the Indian agro market can be extended to a global scale giving the farming community a wide range of customers and building trust of importing countries. Besides, the framework can be used as an Indicator for rural development and empowerment.

IV. CONCLUSION

The main intent of the agricultural e-commerce framework is to improve the agricultural sector in India. In a broad spectrum, two important factors are used as a base for developing the appropriate framework. Firstly, by focussing on Agriculture Production the total agricultural output can be increased by applying better farming practice, better seeds in market, more appropriate fertilizers for crops and understanding the dynamics of prices. All these parameters along with the timely intervention of ministry of Agriculture can help boost the agricultural productivity of rural India.

Secondly, structuring the marketing and sales will help in the marketing of agricultural products. A well maintained database will help track farmer and trader information which can be used for trading purposes. The trading platform will help showcase agro products to a wide range of customers (traders) thus giving the farming community an opportunity to market their agricultural products. An effective supply chain management system which can involve government transportation such as trains and buses can ensure an effective transportation of goods. Payment gateways can be taken care by intelligent usage of nationalized banks, cooperative societies and Post office of India. The structuring of marketing and sales can be under the supervision of National Informatics Centre (NIC) which can provide a solid support.

Finally, the comprehensive framework becomes a good basis for development of an appropriate agriculture e-commerce application with relevant features that will take all parameters an actor's involved into consideration.

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