



## Impact of M-Commerce on agriculture

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### Abstract

Agribazaar.co is an agriculture market place that connects farmers, vendors, market agents, consultants, food processing units and institutions on a common platform. The company works with the objective of providing high quality platform to promote and market agriculture based industries and services. AgriBazaar intends on becoming the leading online marketplace for buying or selling agri-related equipment, livestock, dairy, chemicals, agro tech, seeds, fertilizer, horticulture, food processing units etc. After the internet revolution the mobile revolution is all set to sweep the Indian soil. When e-commerce emerged as an improvement in traditional business it was said, "businesses will be e-commerce, or no business at all". These phrases have lost meaning with the emergence of m-commerce. In Indian context too the way of conducting business is due to witness an upturn not only due to technological developments that have revolutionized business to a plastic money enabled 24x7 concept but also due to the shifted business focus on the 'bottom of the pyramid'. This concept has guided the Indian business world to shift their focus towards the ignored rural markets. There is tremendous opportunity for mobile technologies based business models to explore the market around the rural poor, and translate it into a business opportunity to serve around 75 million rural population in the country.

**Keywords:** agriculture, m-commerce, internet

### Introduction

Agricultural m-commerce is the application activity of m-commerce in the field of agriculture to provide information services and match supply with demand of products by use of network in the production and operation of agriculture. Agricultural m-commerce covers agricultural information flow, business flow of agricultural products, cash flow of business transactions and physical flow of agricultural products. It broke the limit of region and time, speeded up information transmission, and helped to lower transaction cost, reduce inventory, increase business opportunities and also was conducive to developing the order awareness and brand awareness of farmers, improving the quality of agricultural products and promoting the upgrading of the industrialization level of agriculture.

Agriculture is the backbone of the Indian economy. According to a report given by FICCI, about 65 percent of the Indian population depends directly on agriculture and it accounts for around 22 percent of India's GDP. But farmers, on the other hand, face unprecedented challenges like unpredictable weather, non-availability of good quality seeds and fertilizers and un-reliable avenues to sell their crops after the harvest. There is a large scope to implement modern technology to solve these inherent problems.

While e-commerce has revolutionized the way buyers and sellers connect, it is yet to become mainstream in many niche markets, one of which is agriculture. BigHaat, an agri-commerce startup claims to have helped and impacted the lives of about 50,000 farmers through their platform over the past one year. Their goal is to help farmers reap the benefits of e-commerce and save time and money in the process.

The Indian agriculture sector accounts for 18 per cent of India's gross domestic product (GDP) and employs around 50 per cent of the country's workforce. Size of the Indian agriculture industry is pegged at \$160 Bn for 2015. Our agriculture is the backbone of our country! Yet while every other business in the country is reaping the benefits of e-commerce, agriculture remains far behind.

Unlike the e-commerce based business models, mobile technology based businesses can overcome barriers of literacy, availability and cost. The new mobile devices are feature rich and user friendly so as to enable an illiterate to operate. The mobile service charges are at an all time low in India compared to the world, enabling even the low-income groups to own and operate mobile phone. Pro-active rather than reactive public policy and regulatory initiatives are needed in India to fully utilize the opportunities offered by mobile technologies and facilitate an exponential growth of this sector.

The newer arguments for including business done while on the move, irrespective of whether a wired or a handheld device is used, in m-commerce or mobile commerce is the fact that business is being conducted while in a state of motion. This can also include a transporter who starts with goods and delivers them based on information received on the way. This broadened gamut is interesting to study but in this paper the authors considered only the transactions done using a hand held wireless device.

### Review of Literature

Kittur Nazhat *et al.*, (2016) There exists a huge dependency on ICT in the agricultural input scenario. Getting quality

inputs at the best price is the biggest challenge that today's farmers face. Growing smartphone penetration in the rural regions of India is encouraging the growth of m-commerce models to focus on agribusiness. Such a scenario can revolutionize the Indian agriculture. Almost all the farmers now own a mobile phone out of which 40% are smart phones with internet connections. This highly potential reach, if properly guided can bring about modernization in the buying of agri inputs by the farmers. 30% of the farmers in Karnataka have adapted to online shopping for their pre-planned purchases. Tech-savvy farmers research online and then make decisions. Younger and educated farmers in the state tend to use internet for making farm related decisions. Agriculture is a region specific activity and hence the potential for agri input related m-commerce has to be region specific. Understanding where such m-commerce platforms will add value to the distribution channels for agri input is a main challenge. Another challenge is the provision of logistics without increasing the farmer price and cash on delivery payments in rural areas.

N Jamaluddin (2013) During recent years e-commerce has found its way to the agricultural sector in India. The internet continues to become more popular among people who deal with agricultural business of any type. While technology availability has increased and its access has become easier, the demographic transition is also characterized by greater willingness to use technology among farming community. In the last few years agriculture has shown steady progress for which technology has made a visible contribution. This paper aims to present the existing pattern and level of adoption of e-commerce among the farmers of Trichy District in the State of Tamil Nadu, India.

G Shabir *et al.*, (2014) <sup>[1]</sup> The agriculture sector is the most important sector of the economy that can help in alleviating poverty and supporting human development in Pakistan. Most of the population of Pakistan directly or indirectly depends upon agriculture sector. Agriculture plays a vital role in the Gross Development Products (GDP) and in the foreign source of income. The purpose of this research is to study the factors (education, computer skills, internet skills, internet access, E-agri markets, government support, and political support) which are influencing the scope of electronic business in agriculture sector of southern Punjab of Pakistan. This research is first time conducted in the region of Southern Punjab which is a rich agricultural land with cotton, wheat, sugarcane, rice and tobacco etc. The targeted population is the farmers of Southern Punjab which cultivates minimum 15 Acres. The data is collected through questionnaires and interviews. The sample size is 150 and the population is divided into strata. According to situation stratified random sampling method is used. Data is analyzed through empirical study and SPSS. Surprisingly the data analysis has shown no effect of factors on the E-agriculture business. Facts are that the main hindrance in the E-agriculture business sector in Southern Punjab are the lack of education, computer skill, internet skill, internet access, online markets, awareness of online E-business sites, Political support and the most important is government support or training centers that changes the trend of traditional agriculture business to Electronic agriculture business.

### Classification of Agricultural Mobile Applications

Agricultural mobile applications can be classified through the nature of information, the applications help provided, the usability of the information and the frequency of the use. For instance an application which provides the market price of commodities is much more volatile in nature and the information provided at one instance may be of less use when the demand versus supply fluctuation ends up influencing the market rates. The short term weather forecasts can help in planning alternative crops or apply hybrid methods.

The categorization of agricultural mobile applications categories with respect to the factors like availability, criticality, applicability and usability. Though each category of applications have its unique importance and existence, there are applications which tend to combine various categories to give it a holistic view and make it more marketable. Service category gives information on educating the farming community with farming fundamentals, information on factors influencing the crop growth, articles published, breakthroughs achieved locally and globally that can motivate, location specific collated information that provides aid for taking in time and profitable decisions. Interactive Markets category includes applications that provide various commodity prices from different locations in a collated format. The applications which enable trading systems and platforms to identify best sale/buy opportunities give an interactive edge and provide a tap on the portfolio and earnings.

Support category makes provision for the process and information flowing through various processes. For example logistics update on goods tracking, governance updates / follow ups on approvals / tenders etc. It also helps to track finances like bank accounts / insurance renewals & claims / creditors & debtors, sales and purchase, invoices / inventory management. Repository category help provide regulatory updates on policies, surveys, research and other relevant information. Education category helps educate the farming community in many ways. It helps the farmers retrieve and read information on all categories like seeds, soil, moisture, pesticides, insects, diseases, rainfall, topographies, farming equipments and supporting machinery.

### Advantages of Mobile Applications

The inevitable and growing importance of mobility in agriculture offers various advantages. All types of information on crop, soil, climate, rainfall, seeds, and machinery at any point in time, and any number of times is available on finger tips of farmers, (World Bank 2011). The information available is localized, thereby increasing the comfort and precision as required. This information is updated on regular basis and delivered via various means and modules of applications that the farmer need not worry about getting the information from other sources. The available information is compiled and very well organized that farmer does not have to waste time while retrieving and referring.

The market connectivity is also improved with the visibility and knowledge of the potential buyers and sellers in the locality with an opportunity to develop direct contacts. The commodity prices can be delivered in a real time mode. Mobility can assist the farmers in better warehousing facility by updating their stock, track the dead stock, make note of the

purchase requirements and thereby honoring the delivery commitments in a timely manner and getting the stock reach the end consumer and at the same time ensuring quality.

Further this is beneficial in buying and selling of goods locally and helping them to keep a track of their buy-sell requirement. The farmers can be well updated about their investments, track orders made on purchases, view bank statements, be well informed of insurance details and deadlines and thereby plan the production effectively.

### **Disadvantages of Mobile Applications**

As much as mobility has its advantages there are some shortcomings as well. With the diversity in languages, even if the best of the applications do not support regional languages then translation will be required at all stages which will increase the dependency and in turn reduce the acceptability and popularity, (Cantor 2009). At times, due to network issues, speed of the data delivery, legal restrictions, it might prevent the farmers by getting the updated and complete information. There may be a requirement of a skilled person to understand and translate the various complex functions to be performed on farm, ambiguous information and videos in other languages. The farmers in the developing nations may not be adequately equipped to afford and use the applications which may be chargeable and also require huge data usage thereby levying the network charges on the burdened shoulders of the farmer.

**Information and learning** In general, mobile phones can reduce information search costs, e.g. for jobs, input and output prices, or potential buyers and sellers. In many parts of the developing world, the most common way of obtaining information remains personal travel which is costly both in terms of time and money.

Other channels also have their limitations, such as newspapers (which tend to be 10 concentrated in urban areas and require literacy), internet (low access) or TV and radio (limited information range and one-way communication). Thus mobile phones have the potential to not only reduce costs, but also allow for more regular and timely access to information. Several m-services have already been developed that deliver information to farmers either on demand or by sending updates via SMS or audio recordings. M-services may also serve to facilitate farmer-to-farmer or farmer-to-buyer relations, such as sharing of experiences on farming practices and market information related to prices, supply and demand.

Advice on farming practices is one of the most widely available m-service in agriculture, often as a complement to existing extension services. Some services are delivered through SMS, such as Reuters Market Light developed by the business data provider Thomson Reuters which delivers personalised information to Indian farmers.<sup>4</sup> A more sophisticated example is iCow which combines general livestock management advice with advice for individual cows (among other functions).

More often, however, such services are delivered using voice-based systems because of literacy or language barriers and the limits of SMS to convey large amounts of information. Technologies include interactive voice response systems (e.g. the government-run National Farmers Information System in Kenya or IKSL - IFFCO Kisan Sanchar Limited offered by

the Indian Farmers Fertiliser Cooperative Limited and Airtel in India), helplines (e.g. IKSL) or radio programmes that respond to questions sent by mobile phones (e.g. The Organic Farmer in Kenya). M-services are also used for training and education. In India, for instance, Lifelong Learning for Farmers offers learning modules as recorded audio content delivered to women livestock producers through mobile phones (World Bank 2011). The service is provided by the Commonwealth of Learning in collaboration with the Indian non-governmental organisation VIDYAL. The messages are recorded by VIDYAL and women farmers and sent to participating women every morning.

Another example is Nokia Life Tools operating in India which offers English learning courses through mobile phones. 5 M-services are also increasingly being used as a tool to support social learning and networking. Various mobile phone-based survey applications (e.g. Frontline Forms, Episurveyor and ODK Collect) have been developed, such as Frontline Forms, Episurveyor and ODK Collect. Such services could, for instance, be used to collect data on the performance of agricultural technologies which can then be shared with other farmers.

Data collection is also offered through the Community Knowledge Worker (CKW) programme in Uganda which gathers data from farmers by sending them questions via SMS or by designing mobile surveys through ODK Collect which are then carried out by CKW staff. There are also examples where mobile phone-based technologies are used to facilitate interaction and learning among farmers. Sautiya wakulima (The Voice of the Farmers) in Tanzania, for instance, is a collaborative knowledge base created by a small group of farmers who share two smart phones with GPS to publish images and voice recordings about their farming practices on the internet. Another example is Cocoa Link in Ghana which uses voice calls and SMS to connect farmers to each other and to experts at the Ghana Cocoa Board. Several m-services also provide information that help farmers to better assess and manage risk related to weather events and diseases.

Weather information is often combined with other types of information that is regularly disseminated to farmers (e.g. Nokia Life Tools in India or Esoko in Ghana) or can be requested via SMS (e.g. Google SMS in Uganda). There are also some dedicated weather information services. For instance, the government-run Radio and Internet for the Communication of Hydro-Meteorological Information (RANET) project in Zambia collects weather data from farmers (sent by SMS) and satellites and disseminates information on extreme weather events and seasonal climatic information to farmers via SMS.

Mobile phone-enabled technologies are also used to monitor and disseminate information about crop disease outbreak. The Digital Early Warning Network in Tanzania, for example, receives information about cassava disease outbreaks from farmers via SMS. The resulting maps are then used to focus mitigation efforts in affected areas. In Uganda, Makerere University in collaboration with the National Crops Resources Research Institute and the University of British Columbia is trialing a system to monitor cassava crop disease outbreaks using camera phones with GPS. Maps showing disease outbreaks area then displayed on a website.

Mobile communications technology has quickly become the world's most common way of transmitting voice, data, and services in the developing world. Given this dramatic change, mobile applications (m-apps) in general and mobile applications for agricultural and rural development (m-ARD apps) in particular hold significant potential for advancing development. They could provide the most affordable ways for millions of people to access information, markets, finance, and governance systems previously unavailable to them.

M-apps are software designed to take advantage of mobile technology and can be developed for technology besides mobile phones. But mobile phones have many key advantages: affordability, wide ownership, voice communications, and instant and convenient service delivery. As a result, there has been a global explosion in the number of m-apps, facilitated by the rapid evolution of mobile networks and by the increasing functions and falling prices of mobile handsets. M-apps are markedly different in developing countries because they typically run on fourth-generation (4G) phones rather than smart phones, which are far more common in developed countries.

### Conclusion

There have been many attempts, but there is still no precise definition of m-commerce in the marketing or IT literature. Every scholar or practitioner appears to have a slightly different interpretation of the term as the following examples

1. "M-commerce is the use of mobile devices to communicate, inform, transact and entertain using text and data via a connection to public and private networks".
2. "The core of mobile e-commerce is the use of a terminal (telephone, PDA, PC device, or custom terminal) and public mobile network (necessary but not sufficient) to access information and conduct transactions that result in the transfer of value in exchange for information, services or goods".
3. "Business-to-consumer transactions conducted from a mobile device"
4. "M-commerce refers to any transaction with monetary value that is conducted via a mobile telecommunications network".
5. "The use of mobile handheld devices to communicate, interact via an always-on high-speed connection to the internet".
6. "The use of wireless technologies to provide convenient personalised and location-based services to your customers, employees and partners.

Another important aspect is that for centuries efforts have been made to make farming more efficient and effective. In the past, improvements in farming techniques led to drastic output gains. Today the use of information is an increasingly important factor in helping to raise the yield. Much information has to be gathered and stored, and even more importantly, it has to be retrieved at varying places at different times. Since a lot of the actual work takes place outdoors, it seems natural that the data should be recorded and processed at the location where it occurs, which in most cases means the fields, the forests or the stables. Furthermore, by means of scanners, stored data can be read and made available immediately. More sophisticated applications can be used for

navigation of tractors and operation of machinery, thereby supporting farmers in their daily work routine. All the possibilities mentioned above can help farmers not only to save time and money but also to use their natural resources more efficiently. After having analyzed the economic importance and the overall background of the recent use of mobile applications in agriculture, it seemed quite important for us to identify the actual needs that could serve as a basis for the innovation of future applications.

### There are a number of benefits to selling and marketing on the mobile web. These Include

- Reaching the widest possible audience with your digital marketing due to an increasing number of consumers using mobile devices to access digital content
- Instant, adaptable, easily monitored communication - you can send single or bulk messages from anywhere, at any time with immediate tracking and the ability to record results
- The ability to target a large active consumer group by specific demographic information - eg age, location, gender
- Cost efficiency, with low production and distribution costs, and additional revenue from replies to promotions and competitions
- A direct link to consumers through 24-hour billing/sales/service/assistance
- Viral marketing potential, as consumers can forward messages
- Cross-media integration, which is easily tied in to other advertising media - eg TV or radio

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