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Technology Based Entrepreneurship in Agriculture- Role of Agribusiness Incubators

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Abstract

India is an agro based economy. Around 65% of its population depends on Agriculture to make a livelihood. In such a scenario, Agriculture has to be seen as Agribusiness and not merely a way of life. Unless technology is blended with agri entrepreneurship, the productivity would continue to remain low as in the traditional methods of farming and agribusiness. Opening up of 22 Agribusiness Incubators by Indian Council of Agricultural Research (ICAR) through its World Bank funded National Agricultural Innovation Project (NAIP) in 2008-09 (10 Agribusiness Incubators) and 2013-14 (12 Agribusiness Incubators) has given a boost to technology based entrepreneurship in Agriculture. More so because these Agribusiness Incubators were housed either in Agriculture Research Institutes or State Agricultural Universities which are generators of Agricultural technologies. Prior to this, most of the technologies, even though viable, remained inside the laboratories because scientists neither had skill nor time to commercialize their technologies. It called for managerial and commercial inputs and expertise to commercialize these technologies. This was achieved through establishment of Agribusiness Incubators and manning them with MBA business managers with intensive experience of agri corporate.

Within a short span of five years, more than 100 technologies have been commercialized and revenue worth Rs. 10 crores generated, apart from developing a large number of entrepreneurs and providing employment to many others. In real sense, the later 12 Agribusiness Incubators were started looking at the grand success of earlier 10 Agribusiness Incubators. This paper highlights the role played by these Agribusiness Incubators in developing, supporting and promoting technology based agri entrepreneurship in the country. The paper

concludes by showing the way forward in technology based entrepreneurship in the Indian Agriculture sector.

Keywords: Agribusiness, Entrepreneurship, Incubators, Technology.

1. Introduction

Incubators have become a ubiquitous phenomenon in many parts of the world and are viewed as a tool for promoting the development of technology-based growth firms (Bergek and Norman, 2008) [1]. Business incubators play a key role in providing assistance to nascent entrepreneurs, particularly in the initial stages of their firm's life-cycle. They provide a range of services from hardware such as shared offices, access to research labs to software such access to knowledge and network pools to start up companies. Such support gives the start-up companies a relatively secure environment and a head start over others. The Agri-Business Incubator (ABI) is a place where the process of starting Agri-business venture is catalyzed by supporting the entrepreneurs with Agricultural Technology, Business Consultancy, Networking with Management Experts, Venture Capital Funding, Infrastructure and other facilities.This paper reviews the extent literature to examine the critical role of university based incubators in emerging economies in creating value. They also provide new opportunities for local customisation of products, new employment, new technology, creating entrepreneurial talent and leadership that are required for emerging economies.

Technology based entrepreneurship is not new world over. However, in India, it is a new concept. A major fillip came with the establishment of National Science and Technology Entrepreneurship Development Board (NSTEDB) under the Department of Science and Technology (DST). NSTEDB is responsible for establishment of Technology Business Incubators (TBIs) in India. A similar effort was made by the Indian Council of Agricultural Research (ICAR) through its World Bank funded National Agricultural Innovation Project (NAIP) with the establishment of 10 Agri Business Incubators (ABIs) in the name of Business Planning and Development (BPD) Units across the length and breadth of the country in 2008-09. Table-1 gives the list of these 10 ABIs.

Table1: ABIs started by ICAR in 2008-09.

S. No	Name of the Agribusiness Incubators/BPD Unit	Location	Month and Year of Establishment
1	Anand Agricultural University (AAU)	Anand	October 2009
2	Birsa Agricultural University (BAU)	Ranchi	October 2009
3	Haryana Agricultural University (HAU)	Hisar	October 2009
4	Jawahar Lal Nehru Krishi Vishwavidyalaya (JNKVV)	Jabalpur	October 2009

5	Tamil Nadu Agricultural University (TNAU)	Coimbatore	January 2010
6	Indian Agricultural Research Institute (IARI)	New Delhi	December 2008
7	Indian Veterinary Research Institute,	Izatnagar	May 2009
8	National Institute for Research on Jute and Allied Fiber Technology (NIRJAFT)	Kolkata	May 2009
9	Central Institute for Research on Cotton Technology (CIRCOT)	Mumbai	November 2008
10	Central Institute of Fisheries Technology (CIFT)	Cochin	August 2009

2. Methodology

The study was pan India, covering all the above 10 Agribusiness Incubators. In depth interviews were held with Managers of Agribusiness Incubators. In doubtful cases, the information was verified from Principal Investigators of Incubators. Questions were asked on day to day functioning of the incubator, objectives and targets and the strategies adopted by Agribusiness Incubators to achieve those targets.

3. Findings

Since most of the ABIs are situated in Govt. educational or research institutes, they have a very good access to the technologies generated in institutes. But all the technologies emerging from these institutions may not be viable in terms of market potential, demand by the farmers/end users, returns and breakeven point. Hence, all the technologies need to be sorted out on various criteria. This is called evaluation of the technologies. This method of technology evaluation is called Strategic Assessment Method (SAM). All technologies are evaluated on three main parameters.

- Technical attributes: innovativeness, compatibility with the farming systems, complexity, process advantage, developmental maturity, benefits to end user, future scope for improvement, technical expertise available and technology readiness level
- Business attributes: market demand, business opportunity, revenue potential, time to reach market, competitive advantage, entry barriers, exit barriers, cost advantage, geographical market reach, regulatory acceptability, public perception
- Social attributes: benefit to farmers, employment opportunities, benefits to society, impact on environment and other life forms).

Once the technologies are shortlisted, costing of technologies is the next important step. There are many methods of valuating the technology like Discounted Cash Flow Method (Static model), Benchmarking (In relation to competing technology), Development Cost of Technology and Pricing based on Market Potential (BPD

Managers Training Program, 2010) [2]. However, most incubators use a mix of more than one model depending upon the technology. Revenue sharing arrangements between incubator, scientist, department to which the scientist belongs and host/parent institute in which the ABI is located, need to be in place before technology commercialization can take place.

Collection model needs to be worked out i.e. whether it should be a lump sum, royalty or a mix of both. Many government incubators are hesitant for the royalty model which is mostly used by private R&D / Technology organizations as it may be difficult for government business incubators to track the sales of technology takers.

After techno economic feasibility / viability report along with a business plan has to be developed by the incubator in association with the scientist who has developed the technology. Publicity advertisement campaigns about the technology need to be done by organizing technology awareness program for industry sector. Agribusiness camps may also be held at the host institute campus to give a wide publicity to the technologies. The technology developing scientist has should be an integral part of these activities. Apart from this, technology literature can be distributed in Farmer Fairs, Technology Shows, Road Shows and other relevant forums. The incubator manager and the scientists can go around in the market to meet the industry members and present them the technology along with the business plan. Care should be taken that in such meetings the decision maker/individual entrepreneur himself apart from Technology/R&D staff of the company should be invariably present otherwise the process of technology commercialization will unnecessarily get delayed. Once an entrepreneur/corporate is interested in a technology, he should first become a member of the incubator by registering and paying the requisite membership fees.

After registration, one-two meetings of the client can be arranged with the scientist for imparting technical details of the technology. Before such meetings a non disclosure agreement should be signed by the client. The demonstration of the technology can be shown at this stage. After this it would be fit for the scientist and the incubator manager to visit the premises of the client where he wants to set up/install the technology for location feasibility and other legal aspects in the sense that all regulations in terms of environment, safety for establishment of technology are adhered to by the client. The client can be clarified if any changes need to be done in the existing infrastructure.

Once it is finalized that the client is in a position to take the technology and would be able to operate it successfully, the client and the incubator can come together to sign a Memorandum of Understanding (MoU). This MoU will specifically highlight the roles and responsibility of both the participating agencies. Apart from this it also contains, the number of visits of the consulting scientist or his authorized representative on the sight and his period of stay. It may also show the phase wise breakup of the entire technology commercialization project. In most cases (barring some specific ones where certain protocols take longer, for example tissue culture protocol in date palm takes more than three years) the process of technology commercialization should not take more than one year. The technology is licensed on

non-exclusive basis and sub-licensing is not generally allowed. The first installment of payment is usually done on the day of signing of legal MoU. In most of the technology licensing deals from ABI, there is a provision that 2-3 technocrats of the entrepreneur / corporate will be trained in the facilities of the incubator. At the same time construction work and purchasing of machines and instruments can be initiated by the client in consultation with the scientist.

Gone are the days when farmer stakeholders were mere beneficiaries of top-to-down dissemination of technologies. Days have come to recognize bottom-up innovations and of equal partnership of farmers in agricultural research and development. Apart from innovations and scientific package of practices developed and transferred from R&D institutes, innovations in the form of grass-root level technologies and methodologies developed by some of the innovative farmers and rural youth are benefiting widely to farmers and have also been accepted across the system (Farm Innovators, 2010)[3]. These innovations could range from very simple ones like staking of tomato plants to avoid touching of fruits with soil and increase aeration so as to reduce fruit rot and many other diseases to development of altogether new hybrids of crops by simple selection or other complex methods. When a rural folk invents something new which may have a commercial value in the future, he may not necessarily have the resources in terms of money, scientific consultancy, machines and instruments to take his innovation to the market. Nurturing of innovations particularly from progressive farmers and grass root communities is another focus area of Agri Business Incubators. Nurturing of innovations may range from building up on an innovative idea to test marketing and launch of a product / service. To nurture the innovations, services provided by the ABIs include making the innovators aware about the Government and other schemes particularly the funding support for start-ups, testing and trail of their products/prototypes, market surveys to find the actual demand for their innovation, arranging technical support from the scientists of the University/Institute, networking with mentors in the field of innovation.

4. Summary and Conclusion

Within a short span of five years, marvelous results have been achieved through these agribusiness incubators. More than 100 technologies have been commercialized generating a revenue of more than Rs. 10 crores, a large number of consultancy assignments have been completed to support small and medium entrepreneurs, around Rs. Five crores of funding has been mobilized for incubatee from various agencies and most importantly more than 200 start up have graduated out of these NAIP (ICAR) agribusiness incubators.

5. Future Scope

In the next few years, research on agri-preneurial contributions of ABI can focus on additional services to be provided by the agribusiness incubators, total quality management and standardizing the systems for mentoring to other new incubators and

achieving financial self sustainability. Future researchers might examine which entrepreneurial system works best for incubators and how the different actors should interact to optimize the system's performance as a whole. Since an Agribusiness Incubator In-charge has a peculiar dilemma in his mind, that how much of social development and how much of profit making, this could be a very fascinating area of research for future workers. Another issue in measuring the entrepreneurial impact of ABIs is their location in different geographies of the country; the clientele set are also different and have different requirements. Hence the service offerings of different ABIs, if examined in depth also vary widely which makes a blanket comparison difficult.

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