Indian Journal of Agricultural Economics 77: 3 (2022):480-490
DOI:10.63040/25827510.2022.03.008

iTEAMS – An Agri-Business Model for Enhancing Farmers' Income in Meghalaya

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ABSTRACT

An agribusiness model has been taken up as a case study to explore the scope and possibilities in Meghalaya to convert agriculture as an enterprise by transforming agriculture to agribusiness in the form of monetisation of farmers' produce, and to provide demand-led sustainable economic growth. The successful transformation of investments into developmental outcomes require a variety of strategic initiatives. Product positioning of produce in different niche markets could be successful through promotion of contract farming via value chain process particularly for high value horticultural crops. *Integrated Technology Enabled Agri Management System* (iTEAMS), a farmers/produce driven model, may be one such attempt in this direction. Establishment of market intelligence system for timely dissemination of information regarding day-to-day prices at various market points along with development of the agriculture information and capacity building services for the farmers through iTEAMS may be the order of the day for the North East as a whole and especially for Meghalaya. There is a need to standardise and validate convergence-led agribusiness models and thereby trace out location and context specificity of such models for enhancing the household level farm income and ensuring the livelihood security. There is a need to examine the imperatives which would facilitate convergence among various related sectors. The question of partnerships and linkages need serious attention for devising pragmatic pathways for a cost and time-effective outreach.

Keywords: iTEAMS, agribusiness model, sustainable economic growth

JEL: O43, Q01, Q13, Q16,

I

INTRODUCTION

Agribusiness is a combination of the words "agriculture" and "business" and refers to any business related to farming and farm-related commercial activities. Agribusiness is an emerging specialised branch of management sciences that deals with the science and practice of agricultural commercialisation. Agribusiness involves the entire process required to send an agricultural good to the market, namely, production, processing, and distribution. Companies in the agribusiness industry encompass all the aspects of food production. Any company that participate in the production, marketing, safety, and distribution of food is involved in agribusiness. More precisely it is defined as a sector that supports the growth of the agricultural industry, which is pivotal to economic growth. It also continues to play a crucial role in the growth of developing countries. Agribusiness can potentially improve agricultural productivity. It is an important asset of agricultural dependent countries in terms of employment/income generation and in reducing loss of farm

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products. Agribusiness is not limited to farming. It encompasses a broader spectrum through the agribusiness system which includes input supplies, value-addition, marketing, entrepreneurship, micro-financing and agricultural extension. The primary goal of agribusiness is to maximize profit while sustainably satisfying the needs of consumers for products related to natural resources such as biotechnology, farms, forestry, fuel and fiber – usually with the exclusion of non-renewable resources such as mining (Sunder, 2016).

Agribusiness sector in NEHR needs more organised entrepreneurial abilities to improve rural employment generation, augment farm income and raise revenue through intensified participation in export trade. Given the availability of ample resources for agribusiness which are fostering the culture of entrepreneurship, the presence of innovation and technology driven startups in the regions would invigorate the regional economic growth and development (Kadirvel *et al*., 2020).

North Eastern Hilly Region (NEHR) of India comprises seven states – Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland, Tripura and Sikkim. Agriculture is the primary occupation in this region. The farmers in the NEHR still largely aim at fulfilling their own requirements and at the household level, producing very little negligible marketable surplus. The farming systems are highly diverse in nature with multiple crops (mixed cropping), but at aggregate level the cropping pattern is skewed to paddy only. At the aggregate level, the extent of crop diversification appears to be quite low in the north-eastern states (Datta and Mandal, 2011) resulting in very low income from agriculture.

The region cultivates many high value crops (other than paddy) such as potato, fruits, vegetables, flowers, medicinal and aromatic plants, plantation crops, etc. which are highly price elastic. However, the income from agriculture is one among the lowest in the region due to high price variability. The risk of low-price for food commodities often affects the primary producers very badly and the risk is easily transmitted to the producers only. As a result, farmers' income declines drastically in the event of either production or price instability. The small and marginal farmers are producing those commodities with higher production efficiency, but their earnings are low and in most of the cases the farmers are surviving with low cost of living. A low level of income from agriculture cannot be blamed on agriculture per se rather it is due to the lower purchasing power of the people in the region.

The only source to change the levels of income from agriculture in this region is pegged with the possibilities of income of the local people from sectors other than agriculture. Mere pushing up of agricultural sector may not suffice to achieve the targeted income enhancement from agriculture. Various other factors needed to be emphasised as well. A complementary relationship between agriculture and agribusiness is well known; therefore, to increase income of the region needs support from other sectors such as industry and services sectors as well. There is a need to examine the imperatives which would facilitate convergence among various related

sectors. The question of partnerships and linkages need serious attention for devising pragmatic pathways for a cost and time-effective outreach (Datta and Mandal, 2011).

The farmers of Meghalaya are small and marginalised where majority of the agricultural production is subsistence in nature. Majority of the farmers are confined to selling their produce in daily/weekly village markets. As subsistence farming is followed by these farmers it needs to be changed to commercial farming in order to enhance farmers' income and cut down poverty and hunger. As is well known, the state has high potential for tourism and business startups that has been developed over the years, and, there is a future towards achieving the various targeted goals. In the above context, an agribusiness model has been taken up as case study to explore the scope and possibilities in Meghalaya to convert agriculture as an enterprise by transforming agriculture to agribusiness in the form of monetisation of farmers' produce, and to provide demand-led sustainable economic growth. The successful transformation of investments into developmental outcomes require a variety of strategic initiatives. A strategy has been put forward for inclusive growth/ development through empowering local people in the form of a case study of an agribusiness model – iTEAMS. Such planning will help to evolve a development strategy based on the resources, needs and aspirations of the people.

II

METHODOLOGY AND DATA

A case study can be defined as an intensive study about a person, a group of people or a unit, which is aimed to generalize over several units (Gustafsson, 2017).

A case study has also been described as an intensive, systematic investigation of a single individual, group, community or some other unit in which the researcher examines in-depth data relating to several variables (Woods and Calanzaro, 1980).

Focused Group Discussions was done with both iTEAMS officials and representatives of Umphyrnai and Mawpynthih villages inorder to understand the Modus Operandi and activity wise milestones.

Study Area

(i) iTEAMS, District Agriculture Office Complex, Shillong
(ii) Umphyrnai and Mawpynthih villages,

Both primary and secondary data were used for the study. Primary data were obtained by personal interview of the officials of the iTEAMS and through focused group discussion. Secondary data were obtained from various publications of iTEAMS.

III

RESULTS AND DISSCUSSION

The Department of Agriculture, Government of Meghalaya, with the motto of '*Connecting Farmers to Markets'*, launched the project **1917iTEAMS** (Integrated Technology Enabled Agri Management System) in December 2017. The project which is based on Information Communication Technology (ICT) aims to cater to the needs of the farmers with just a phone call away as mobile telephony is the technology of choice for people from all walks of life today. 1917iTEAMS, a first of its kind project in the hilly terrain, is designed to connect farmers to the Agri Response Centre (ARC) through a toll-free number 1917 for services related to agro-advisory services, market intelligence and transporting of agricultural produce by Agri Response Vehicles (ARVs).

iTEAMS is a Farmers/ Produce driven model through Integrated Technology Enabled Agri Management System. iTEAMS is the initiative of the Government of Meghalaya to enable and facilitate access to remunerative and sustainable markets for farmers' produce. It is a marketing portal that links the farmers to markets through the implementation and operation of logistics and extension services.

iTEAMS is a management system which connects farmers, traders, buyers and sellers to the markets through Information Technology to track and respond to all requests and services related to agri-management. Various initiatives have been taken by iTEAMS. It was compulsory to register under iTEAMS for the farmers seeking services of iTEAMS. Toll free number was provided which is accessible for all mobile services providers throughout the country. Transport vehicles given by iTEAMS, known as Agri Response Vehicles (ARVs) enables the farmers/sellers and even buyers to reach their desired targeted markets. Charges for ARVs initiated by iTEAMS were 2 paisa per kilogram per kilometre. iTEAMS connects consumers with farmers (producers) to the Agri Response Centre (ARC) through professional Incoming Call Officers (ICO). It includes agro-advisory services that cater to the needs of the farmers during times of difficulties (i.e. insect pest management, fruit and crop diseases, etc.). It connects/links the farmers/sellers even to organisations within and outside the state to sell and connect with various buyers who are interested in their produce and not just only markets.

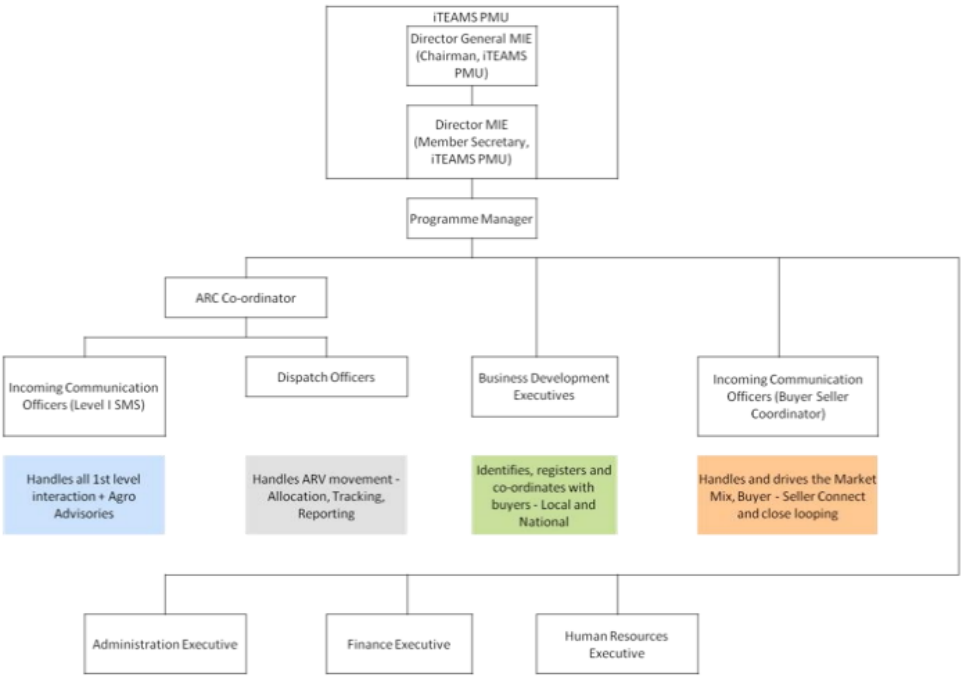

Figure 1: iTEAMS Organisational Chart

The above Figure 1 shows the Organisational Chart of iTEAMS. It can be seen that at the Director General and Director of MIE (Meghalaya Institute of Entrepreneurship) are the Chairman and Member Secretary of iTEAMS PMU (Program Management Unit) respectively. Under them is the Programme Manager and under him are the ARC Co-ordinator, Business Development Executives, Incoming Communication Officers (Buyer Seller Coordinator), Administrative Executive, Finance Executive and Human Resource Executive. Under the ARC Co-ordinator are the Incoming Communication Officers (Level 1 SMS) who handles all the 1 st level interaction and Agro Advisories; and Dispatch Officers who handles ARV movement such as allocation, tracking and reporting. The Business Development Executive identifies, registers and co-ordinates with buyers, both local and national. The Incoming Communication Officers handles and drives the market mix, buyer-seller connect and close looping.

Farmer Database

iTEAMS database is hosted by Digital India Corporation. There were 15218 Farmers (ARC Shillong 11742 + ARC Tura 3476) registered in iTEAMS as of 2018. These farmers currently are able to call 1917 and seek information and advisory services on any matter related to agriculture, horticulture, animal husbandry, fishery, etc. These farmers can also get advisory messages on a regular basis.

The new generation linkage through electronic media is the venture adopted by iTEAMS. It allows the farmers to connect through mobile phones for all the services that iTEAMS offers.

TABLE 1. REGISTRATION COUNTS IN ITEAMS DURING 2018

Month	ARC Shillong	ARC Tura	Grand Total
(1)	(2)	(3)	(4)
January	73	4	77
February	49	22	71
March	310	128	438
April	499	205	704
May	453	244	697
June	151	45	196
July	184	110	294
August	250	50	300
Total	1969	808	2777

Source: ITEAMS, 2018.

The above Table 1 showed the number of registration in iTEAMS during January to August of the year 2018 under both ARC Shillong and ARC Tura. More number of registrations was seen under ARC Shillong than that of ARC Tura. The total number of farmers registered during this period was 1969 under ARC Shillong, 808 under ARC Tura, with a grand total of 2777.

Purpose of iTEAMS

iTEAMS enables the farmers to call the toll free 1917 number with queries related to Agriculture, Horticulture, Apiculture and Sericulture. There are two Agri-Response Centres (ARCs) linked to the 1917 number to respond to these queries, as well as provide farmers information related to disease management in crops, health management in livestock and even departmental schemes and training.

(i) *Logistics Solutions*: The service enables farmers and their buyers to discuss evacuation and transportation logistics and determine viable solutions to transport goods to farms or markets. This process is also strengthened by a network of Agri-Response Vehicles (ARVs), that are entrepreneur owned pickup trucks that offer a high competitive freight rate (INR 0.02 per kg/ km).

(ii) *Market Connect*: Finally, the major benefit of 1917iTEAMS is the provision of information on potential markets, buyers and sellers and enlightening farmers and buyers of the different selling/buying options available to them. It is important to note that 1917iTEAMS connects the registered farmers with commodities to sell to the registered buyers looking to buy the same commodities but does not participate in any buying /selling negotiations.

From Table 2, it can be seen that the approximate value of goods transported during 2018 was ₹ 22,07,630 at an average of ₹ 24500 per trip. The average earning for the ARVs was ₹ 630 per trip. The average weight carried was 684 kilograms per trip. The average distance travelled was 55 kilometres per trip. The commodities transported were mainly organic manure, ginger, vegetables, hay straws, samplings, power tillers, broomsticks, cashewnuts, etc.

Process

The 1917iTEAMS enables farmers and citizens to dial a single toll free number connected to a centralized call, dispatch and facilitation centre called the Agri Response Centre (ARC). The ARC operates on a cloud based technology platform which collates (i) advisory, market, evacuation and logistics demand of farmers, FPOs, SHGs, Cooperatives etc on the supply side, and (ii) the requirement for agri produce/products from buyers on the demand side.

The ARC has a content dissemination section that processes this data and sends out important information through text-based SMS, voice calls, and through mobile apps, thereby enabling both buyers and sellers to make informed marketing choices. This includes information related to crop, weather, animal health, input dealers, market information, buyer demand, produce availability, plant protection, and expert advisories.

TABLE 2: ARVS STATUS DURING 2018

Month	ARC Shillong					ARC Tura					Trip count	Weight carried (kg)	Distance travelled (km)	Approx. value of goods (₹)	Amount (₹)
	Trip count	Weight carried (kg)	Distance travelled (km)	Appr value of goods (₹)	Amount (₹)	Trip count	Weight carried (Kg)	Distance travelled (Km)	Approx value of goods (₹)	Amount (₹)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11	(12)	(13)	(14)	(15)	(16)
February 2018	12	8460	441	-	5364	-	-	-	-	-	12	8640	441	-	5364
March, 2018	26	24820	1237	-	16100	-	-	-	-	-	26	24820	1237	-	16100
April, 2018	63	56100	2813	-	34500	8	0	479	-	6650	71	56100	3292	-	41150
May, 2018	10	7200	612	-	8150	26	3550	1601	-	15920	36	10750	2213	-	24070
June, 2018	21	15500	810	276000	8580	22	14830	1551.5	749680	21650	43	30330	2361.5	1025680	30230
July, 2018	13	9700	628	291600	6050	11	8710	677	308650	9000	24	18410	1305	600250	15050
August, 2018	10	5030	968	163200	7780	14	7460	1144	418500	8950	24	12490	2112	581700	16730
Grand Total	155	126990	7509	730800	86524	81	34550	5452.5	1476830	62170	236	161540	12961.5	2207630	148694

The other component of 1917iTEAMS is the evacuation and logistics service which consists of dedicated, entrepreneur owned, Agri Response Vehicles (ARVs)

across the state. These vehicles are backed by a GPS enabled fleet management and tracking system, which will move out, under the direction and tracking of the ARC, to lift farmer's produce from aggregation sites and transport the produce directly to the farmers' choice of markets.

iTEAMS is a cloud based platform that provides advisory services and ensures a level playing field where buyers and sellers are made aware of each other's needs and prices, and decide on whom they want to shake hands with. Once the deal is done the farmer / buyer places the call to the ARC on the toll free number for lifting and transportation of the produce by the ARVs to destinations of their choice.

Focused Group Discussions

The purpose of selecting Umphyrnai and Mawpynthih villages, Meghalaya, East Khasi Hills District, was mainly based on the transaction behaviour of production, processing and marketing. There were many different channels and different intermediaries involved in the production process; they were working as an agent or sub-agent which differentiates the norms of mode of production to process of production.

In Meghalaya, the culture of village level with self-sufficiency was still a strong element in the motivation behind farming. There was no percolation of location-specific and system based technology and use of high-yielding variety seeds, fertilisers and irrigation facilities in the region. Despite the potential of organic farming in the region, mass involvements of the farmers were missing. Similarly, the strength of farming system to harness the benefit from the complementarities of crop-livestock system through intensive integration could not be fully explored. Taking into consideration the resources of the community, their utilisation and upgradation for ensuring food and nutritional security at the household and community level were lacking. This was the most essential and primitive duty of every buyer, without which the success in buying their produce would be difficult. It was essential for every buyer to gain the community and farmers trust and vice versa.

In the present scenario, the farmers of Mawpynthih village usually wait for the buyers (middleman) to purchase the products directly from the field after the price deal is finalised between the farmers and the buyers. On the other hand, the farmers sold their produce in the local daily/weekly markets if there was no specific buyer to buy their produce from the fields.

Considering the needs of the community, it was clear that the farming community's needs met the top priority with less focus for business purpose. Their demand pattern was mainly guided by the community/ local forces. Most of them were not exposed to the urban way of living therefore their expenditure pattern was lesser as compared to the urban people.

Prior Perception of iTEAMS:

Majority of the farmers had no knowledge about the existence of iTEAMS. They were involved in their daily marketing processes as to satisfy their daily needs. During the field survey, the farmers had mentioned the ways that they would want to sell their produce in a different manner apart from their usual marketing processes and to gain knowledge and create new opportunities for themselves.

Post Perception of iTEAMS:

As mentioned, majority of the farmers did not have any knowledge on the existence of iTEAMS. After conducting a meeting about the services that iTEAMS offer, the farmers' perception towards iTEAMS had changed and were perceived with more marketing avenues. They came up with many ideas in their possible ways to market their produce apart from their daily marketing processes with the help of such organisations. The farmers expressed interest for using the services of iTEAMS and were enthusiastic in nature.

Findings of study on iTEAMS:

As the scale of operations of the respondents were limited, they were forced to rely on different intermediaries who intermediated as an agent or sub-agent and followed differential norms with different producers and in this way the farmers were deprived of the right prices for their product. The initiative of iTEAMS helps to revitalise the rural economy by exploring the linkages through digital ways of different stake holders. The farmers' perception about the digital way of connectivity and marketing through iTEAMS had changed the scope of marketing. They came up with new ideas in their possible ways to market their produce apart from their daily marketing processes with the help of such organisations. Social protection through connectivity of iTEAMS had emerged as an effective way to ensure the inclusive rural revitalisation by ensuring the social business. Finally, the contours of social protection, which included the preventive, protective and promotional measures, were crucial for which trust build up within the community and among the local people is utmost required for North Eastern Hilly Region and iTEAMS is an attempt in this direction. Efficiency and effectiveness in implementation of social transfers through iTEAMS poses a great challenge in the coming days to explore the linkage between social transfers and rural revitalization and in analysing the direct and/or indirect impacts of a set of social transfer programmes on rural economy of Meghalaya.

IV

CONCLUSION

Agriculture is an important sector of Meghalaya's economy and information is vital for development and well-being of the rural masses. ICT in agriculture can act as a driving force in this development process. 1917iTEAMS has applied ICT to the

advantage of Meghalaya's small, marginal and resource-poor farmers by disseminating timely agricultural information pertaining to soil enrichment, seed selection, disease and pest management, prevailing markets, demand-supply information in respect of different products and their current market prices. The information helps farmers in taking timely decisions on crop product diversification and positioning of the same in right market to get optimum revenue.

Product positioning of produce, in different niche markets could be successful through promotion of contract farming via value chain process particularly for high value horticultural crops. *Integrated Technology Enabled Agri Management System* (iTEAMS), a farmers/produce driven model, may be one such attempt in this direction. Establishment of market intelligence system for timely dissemination of information regarding day–to–day prices at various market points along with development of the agriculture information and capacity building services for the farmers through iTEAMS may be the need of the hour for the North East as a whole and especially for Meghalaya.

There is a need to standardise and validate convergence-led agribusiness models and thereby trace out location and context specificity of such models for enhancing the household level farm income and ensuring the livelihood security. One also needs to examine the imperatives which would facilitate convergence among various related sectors. The questions of partnerships and linkages need serious attention for devising pragmatic pathways for a cost and time-effective outreach.

REFERENCES

Datta, K.K. and S. Mandal (2011). *Outlook of the North East India: An Agricultural Perspective*, Academic Foundation, New Delhi, 2011, pp. 1-136.

Gustafsson, J. (2017). Single case studies vs. multiple case studies: a comparative study (Thesis). Halmstad, Sweden: Halmstad University. Google Scholar

https://1917iteams.in accessed on 11th August 2022

https://miemeghalaya.org>1917-iteams accessed on 10th August 2017

http://negd.gov.in>iteams_MeitY01-05-2019 accessed on 9th October 2017

Kadirvel, G., Gangmei, D.L., Banerjee, B.B., Assumi, S.R., Dkhar, S.E. and Mukherjee, A. (2020) "Agri-business in NorthEast India: Current Status, Potential Ventures and Strategies", *Current Journal of Applied Sciences and Technology*, Vol. 39, No. 33, pp. 74-85.

Sunder, I. (2016), "Agribusiness : Scope, Opportunities and Challenges in India", *EPRA International Journal of Economics and Business Review*, Vol. 4, No. 7, pp. 171-178.

Woods N.F. and Calanzaro, M. (1980), Nursing Research: Theory and Practice, St Louis: Mosby, Google Scholar.

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