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Agricultural Value Chain in the North-East Region of India: Present Scenario and Future Prospects

Priyabrata Roy[1], Sujoy Hazari[1]

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ABSTRACT

Developing agricultural value chains for local and international markets might alleviate poverty and food insecurity in northeast India. This is particularly true in north-east India, where farmers may produce agricultural commodities with higher value-added potential if processing, marketing and distribution are available, therefore boosting the value of the end product. This article addresses the need for shared knowledge and awareness of modern agricultural value chain improvements to aid decision-making. This study addressed agricultural value chain challenges holistically. Agribusiness expansion and value chain management in northeast India are also explored. A brief literature overview highlights real-world applications and ongoing research. Secondary data from value chain and related literature was utilised. The study highlighted key agricultural value chain concerns and recommended their establishment and growth in North Eastern India. This study enhances agricultural value chain management.

Key words: Agribusiness, Agriculture value chain, North-East India, Supply chain, Value chain management.

Agriculture is vital for long-term development and poverty reduction (Millerand Jones, 2010; Sugawara and Nikaido, 2014). Agriculture, particularly in India, offers the potential for market-driven economic growth, which might benefit national and regional agricultural value chains (Kumar and Sharma, 2016). 48% of India's 1.3 billion people worked in agriculture (NSSO, 2021; Mac Clay and Feeny, 2018). Globalisation creates new economic prospects for developing countries, both on nationl and international markets (Guritno, 2018). Agribusiness is essential to eliminating poverty and fostering sustainable development (Devaux *et al*., 2018). Agri-research must complement other efforts to enhance the regulatory environment, eliminate resource limits and provide communities the freedom to adapt to changing technological and economic problems and possibilities. Agricultural productivity and competitiveness programmes include value chain development (VCD) (Donovan *et al*., 2015; Humphrey and Navas-Alemán, 2010). A value chain enhances a product by linking commodities producers to processors and markets (Reddy, 2013; Kumar, 2018). Policy implications and future research goals are indicated in this study. The second part includes research and the agricultural value chain. The last part summaries the articles. To encourage innovation and inclusive agricultural value chain growth, the study also outlines research gaps and priorities. The research analyses the value chain management process in agriculture and the north east India agricultural value chain. Agricultural value chains and their advantages were explored (Rani and Roy, 2018).

Objectives of the study

The objectives of the study are to identify the key impediments to agricultural marketing and value chain development and understand how to utilize the agricultural value chain as a tool for the socioeconomic development of people in India's north-Eastern region.

Agriculture value chain management difficulties and needs are addressed in a short literature study. A qualitative investigation provided updated information on the issues. "Agricultural value chain" covers many agricultural concerns, topics and themes. Therefore, the following criteria were utilised to choose relevant research: The study should discuss agricultural value chain difficulties. The articles were found by scanning the database abstract for keywords. The review procedure improves openness and article selection. The keywords were "Agriculture value chain," "Global value chain," "poverty," "agro-food," "Business environment," "agribusiness," "supply chain," "North-east India," "Rural economies," "Value chain," "Development practise," and "Value chain development." Google Scholar, Science Direct and Scopus are this review's main data sources. The approach, notable findings and further study have been proposed.

Agricultural value chain

Consumer engagement requires producer services and physical transformation through the agricultural value chain

[1]Faculty of Management and Commerce, The ICFAI University, Agartala-799 210, Tripura, India.

Corresponding Author: Priyabrata Roy, Faculty of Management and Commerce, The ICFAI University, Agartala-799 210, Tripura, India. Email: priyabrata.r@iutripura.edu.in

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(Kaplinsky and Morris, 2000). Commodity flows into and out of agricultural value networks satisfy chain participants, secure sales, acquire inputs or output and boost efficiency (Reddy, 2013). The agricultural value chain involves several participants from production to commercialization. Value chain participants must collaborate to provide competitive inputs. Value chain evaluations should start with operational systems including labour costs, productivity and quality control (Radhakrishnan and Thomas, 2022). Product delivery is impacted by value chain operators. Consultants, financiers, brokers, facilitators, trainers and equipment suppliers finance value chains.

Value chain influences work indirectly. According to the Fig 1 in a generic value chain, VC influencers include lawmakers, scholars, NGOs, industry groups and students. Partners manage and expand the value chain. They strategize to find win-win solutions and the best work division. Agreements may result from informal collaboration or contracts. Governance drives producer and buyer-driven value chains (Gereffi, 2003). Buyer-driven commodities chains have decentralised manufacturing systems. Producer-driven commodity chains are coordinated by multinational corporations (Gereffi and Memedovic, 2003). Capital and technology-intensive industries include semiconductors, vehicles, heavy equipment, computers, aeroplanes and more. Producer-driven networks encourage FDI. Buyer-driven chains suit 21st-century outward-oriented and networked production systems more than producer-driven networks, which represent the "import substituting industrialization order.

Internal and external value chains are also used to categorise value chains. Internal value-adding processes make up the company's value chain. Porter's value chain approach mimics the internal value chain. The external value chain, sometimes called the inter-value chain, is a succession of value-adding acts by independent but linked market actors. Supply and distribution chains form the external value chain.

Value chain analysis

Agricultural value chain analysis often includes cost accretion. Business service providers and major external policy areas may improve this. An agricultural product or service value chain research identifies all value-creating activity. Breaking down the value chain reveals each sector's boundaries and possibilities and the chain's environment. Traditional industrial sector studies often disregard regional value distribution and market engagement, notably in northeast India. Value chain analysis examines information flows. Value chain analysis trumps size and production. Beyond economic and industrial sectors, it relates productive activity to manufacturing value creation. Agricultural value chain analysis examines: Who dominates agriculture's supply chain? How is the agricultural value chain institutionalised?

Agriculture in North East India

Agriculture supports rural economies (Goletti, 2005). Strong ties between agriculture and other businesses will boost food grain output via non-farm development, fertiliser usage, high-yield seed kinds and irrigation. Grain cultivation increases food security and reduces poverty. Smallholders dominate north eastern agriculture. Most north easterners live rural areas. Table 1 summarises agricultural output and commerce.

India's agricultural industry was revolutionised by 1990s economic reforms (Kumar and Sharma, 2016). Industrial food production is being promoted by farmers, processors, merchants, exporters and other agricultural value chain players (Singh *et al*., 2011). Integrated agricultural and food supply and value chains dominate North East India's market. Fruits and vegetables consume less water than grains but

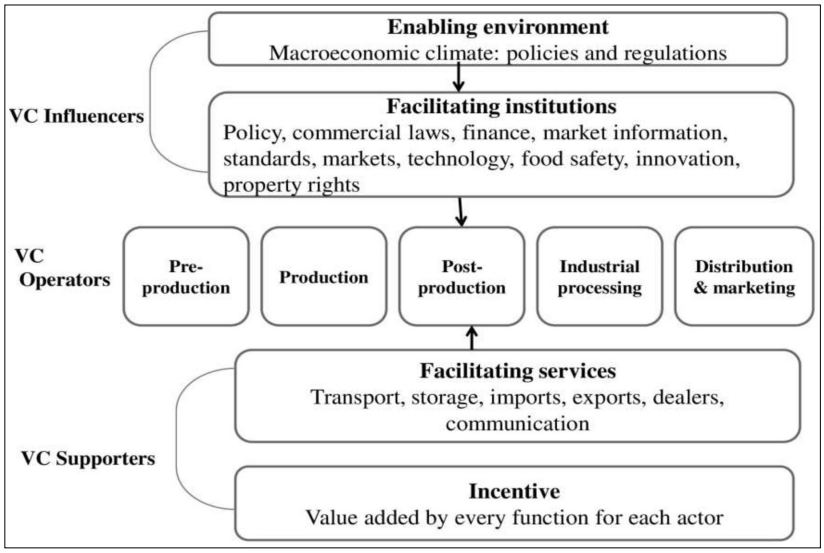

Fig 1: A generic value chain. Source: (Agro-Value Chain Analysis and Development the UNIDO Approach, 2009; Minh, 2017).

Table 1: Selected agricultural production in North-eastern region from 2015-2016 to 2019-2020.

Cereals/	A					P					Y				
States	2015-16	2016-17	2017-18	2018-19	2019-20	2015-16	2016-17	2017-18	2018-19	2019-20	2015-16	2016-17	2017-18	2018-19	2019-20
Rice															
Arunachal Pradesh	2161	2105	2156	2208	2300.1	7488.67	7452.43	8166.2	8234.67	8658.88	3465	3540	3788	3729	3765
Assam	2484.99	2467.14	2433.71	2425.18	2290.52	5125.1	4727.38	5283.66	5220.62	4984.63	2062	1916	2171	2153	2176
Manipur	237	244	236.71	233.5	175.6	338.76	430.4	607.79	401.62	385.5	1429	1764	2568	1720	2195
Meghalaya	110.46	111.18	111.14	110.93	110.98	301.08	203.01	304.55	201.98	303.44	2726	1826	2740	1821	2734
Mizoram	37.16	36.86	36.11	35.55	35.21	62.09	61.52	59.61	60.01	60.01	1671	1669	1650	1688	1704
Nagaland	201	206.66	212	214.45	216.95	318.81	336.71	349.63	356.69	363.31	1586	1629	1649	1663	1675
Tripura	269.79	277.11	274.09	269.39	267.34	794.85	814.64	812.06	793.18	810.24	2946	2940	2963	2944	3031
Sikkim	10.67	10.65	9.5	9.26	8.69	13.13	19.67	17.63	17.18	16.14	1230	1847	1856	1856	1858
NE India	5512.07	5458.6	5469.26	5506.26	5405.39	14442.49	14045.76	15601.13	15285.95	15582.15	17115	17131	19385	17574	19138
All India	434	439	43774	44156	4366	10440	10969	11275	11647	11887	240	249	25	263	272
	99.18	93.35	.06414	.44461	2.2971	8.2238	8.4304	7.6054	7.8194	0.3193	0.234	3.523	75.9	7.844	2.493
Wheat															
Arunachal Pradesh	3.91	3.91	3.93	3.93	3.39	7.7	7.7	7.74	7.74	6.68	1969	1969	1970	1970	1970
Assam	20.98	17.45	17.79	16.95	11.34	34.26	23.45	24.65	23.69	14.43	1634	1344	1386	1398	1273
Manipur	2.25	2.25	2.25	2.29	2.3	5.62	5.62	5.62	5.73	5.75	2498	2498	2498	2502	2502
Meghalaya	0.45	0.46	0.46	0.46	0.46	0.88	0.88	0.89	0.89	0.9	1953	1913	1928	1931	1935
Mizoram															
Nagaland	3.25	3.38	3.41	3.42	3.43	5.95	6.22	6.26	6.26	6.28	1831	1840	1836	1830	1831
Tripura	0.18	0.2	0.2	0.16	0.15	0.41	0.46	0.4	0.33	0.33	2236	2300	2031	2115	2230
Sikkim	0.32	0.32	0.17	0.16	0.17	0.35	0.35	0.19	0.18	0.18	1094	1078	1079	1079	1082
NE India	31.34	27.97	28.21	27.37	21.24	55.17	44.68	45.75	44.82	34.55	13215	12942	12728	12825	12823
All India	30417.8	30785.23	29650.59	29318.78	31357.02	92287.53	98510.22	99869.52	103596.23	107860.51	3034	3200	3368	3533	3440

Source: NEC report.

earn more per acre (Kumar and Sharma, 2016). Agricultural losses after harvest are concerning (Joshi *et al*., 2007). Middle-class wealth, changing tastes, lifestyles, job profiles and demographics have increased demand for high-value commodities including fruits, vegetables and animal products. People's interests, inclinations and eating habits have changed as shopping malls and restaurants have increased, especially among the young and working class. Some farmers are diversifying output. Thus, local markets for non-traditional items like fruits and vegetables may flourish. Agriculture hasn't been prioritised in North-east India's value chain. Sustainable agricultural value chains are neglected in northeast India. North-east Indian farmers may benefit from modern agricultural value chains. Modern north-east Indians, especially urbanites, may also get safer and better cuisine. Value-adding lowers costs, risks and losses for retailers and exporters. Food, jobs and foreign cash come from fruit and vegetable farm value chains. Income-dependent demand elasticity is high for these products. As north-east India develops richer, certain items are in demand. Supply and demand have changed due to technology, trade agreements and wealth and quality (Kumar and Sharma, 2016; Kumar, 2018). Technology, high-quality seeds, fertilisers, irrigation and appropriate agricultural practises are lacking for north-east Indian farmers. Agri-input innovations such climate-resilient seeds, fertilisers and irrigation are needed (Kumar and Sharma, 2016; Kumar, 2018).

Fig 2 represents a successful agro-business model for north-east India that have integrated small and marginal farmers into their networks and linked them to markets. It is critical to establish a national and regional policy framework to assist private enterprises and business houses in developing creative concepts to extend agriculture value chains in north-east India and connect farmers to markets and the larger export community (Kumar, 2018).

Existing constraints for value chain upgrading

North-East Indian agriculture has capability and competence. Researchers, scientists, agricultural goods and advanced technologies must flow freely. Transport, communications, research collaboration and market access are needed. New projects inspire collaboration (Kumar and Sharma, 2016). India's unstructured value networks hinder agricultural exports. Agricultural value chain firms in North Eastern India focus on the local market, which takes more resources to compete nationally and worldwide (Raju, 2014). New businesses and IT might help agriculture exporters. Farms and small companies need funding. Pre- and post-harvest input credit, output guarantee and risk are not covered by the north eastern region's essential agricultural and export criteria. Cashew, coffee, tea, spices and vegetables are Northeast India's exports. Exportable commodities require worldwide certification, norm adoption and quality improvements (Srinivasan, 2012). North-east India's major custom ports lack testing and certification for agricultural exports. Agriculture exports suffer from unreliable marketing (Kumar and Sharma, 2016). Northeast India's agriculture value chain is challenging to enhance. Middlemen, agents, a lack of data and knowledge about other connections and a refusal to invest in enhancing performance at most links generated inefficiencies.

Value chain business models

Business model" describes "what a company does and how it generates money" in a market network of producers, suppliers and consumers (Vorley and Nelles, 2008). "Business model" outlines value chain drivers, processes and resources for many enterprises (Miller and Jones, 2010). The value chain may help banks support farmers. Buyer-seller relationship affects numerous value chains. Producer-set prices damage market price fixing most in the spot market. Contractual agriculture needs customers to trust producers by committing financially (Miller and Jones, 2010). Value chain partnerships help banks manage market risks. Agricultural value chain financing helps small and big agribusinesses and other chain participants (Dubey *et al*., 2020). Lender and customer risk reduction helps modern smallholder farmers. Value chains necessitate smallholder agriculture programmes. A company's value chain includes design, input procurement, production, marketing,

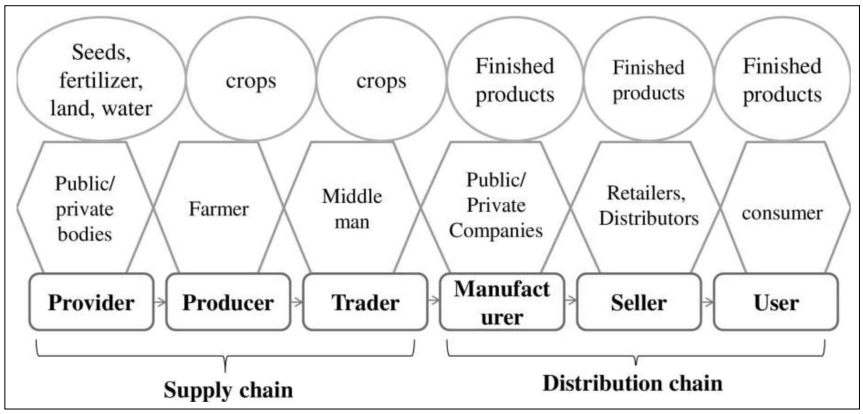

Fig 2: A Model of agriculture value chain in North-East India.

distribution and after-sales services. This "chain" adds "value" to goods. Primary producers, processors, merchants and service providers must follow a complex value chain to sell raw materials. The "broad" value chain includes manufacturing, trading, assembly, processing and others. Its supply chain includes raw materials to consumers which create value for downstream consumers, create a profitable value chain by combining the demand chain (what customers desire) with the supply chain (what is produced) and innovate product development and marketing.

Issues related to value chain management in North East India

Price increases are caused by too many middlemen in the supply chain. Farmers are frequently paid a portion of their production. Market data seldom provides helpful information. Insufficient ICT for precise price signals to farmers. Improper storage in cold chains and warehouses increases post-harvest losses. Products are mostly sold in open marketplaces since farmers have limited market access.

Future prospects of agro value chains management in North east India

Farmers are incentivized to grow high-value crops due to demand shifts. If they want to expand, those in the value chain of high-value agricultural commodities must be encouraged to invest in technology, distribution and infrastructure. Grain consumption is shifting to high-value agricultural items in rural and urban areas. However, it may boost export value. Smallholder agriculture may be commercialised *via* value chain management.

Managerial and policy implications of the study

The study will benefit academics, researchers and farmers. India's north-eastern agriculture value chain was thoroughly documented. Too many middlemen and poor ICT will hinder an agricultural value chain. The research will motivate practitioners to address problems that potentially generate excess. The study proposed an agricultural value chain classification framework. New scholars and managers may collect their opinions for study and strategy to improve the Agricultural Value chain. Our study may also help supply chain and logistics management expand the industry.

Limitations of the study

There are certain limits to this research, as there are too many others. Secondary data is used in the agricultural value chain investigation. Therefore, we may have missed something and research techniques may not be thorough. They should be considered future research participants. A complete analysis of the agricultural value chain was impossible due to time and resource constraints (Hernandez *et al*., 2017). However, further data was acquired to conclude the research. Despite the authors' best efforts, the article selection may contain some flaws.

CONCLUSION

The study examines North East India's agricultural conditions, value chain model, constraints, and future prospects. Strengthening agri-food supply networks is crucial, as the region faces challenges in processing, storing, and exporting less-produced crops due to its structure. Public, semi-public, and private funds are needed for these initiatives. Government "new IT business" schemes and private agricultural investment are viable due to poor infrastructure and limited government expenditure. A single telecom regulator like "TRAI" is needed for agro-processing in Northeast India. NGOs, SHGs, rural women's organizations, MSME, and FPOs should address agriculture, and government assistance is needed. Encouraging private and international banks to open rural branches, educating farmers and companies, and recognizing successful farmers by national authorities can also help. Policies and markets can also assist farmers, and smallholder farmers can benefit from cheap, generally available resources.

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