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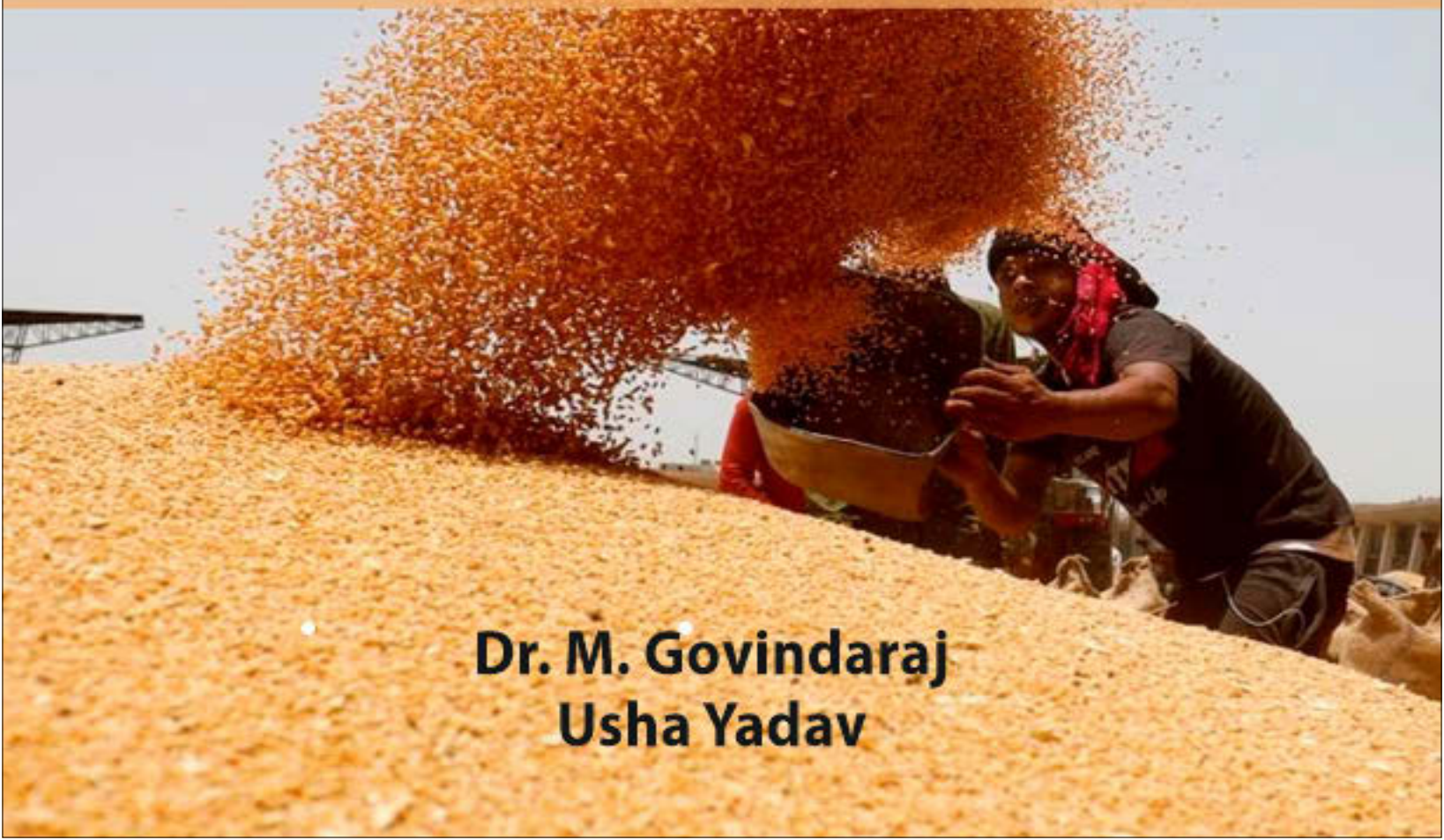
AGRICULTURAL MARKETING AND ITS MANAGEMENT



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CHAPTER 1

INDIA'S AGRICULTURAL MARKETING

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ABSTRACT:

Many agricultural goods must be assembled, stored, processed, transported, packaged, graded, and distributed throughout the nation as part of the agricultural marketing process. Marketing for agriculture is crucial for boosting economic development as well as productivity and consumption levels. Its dynamic features are essential for promoting economic progress. It has earned the moniker "the most powerful multiplier of agricultural progress" as a consequence. Between the farming and non-agricultural industries, the agricultural trade structure acts as a bridge. It involves setting up marketing strategies for agricultural products and inputs, figuring out the demand for farm inputs and raw materials, and arranging the provision of agricultural raw materials to manufacturing businesses.

KEYWORD:

Agricultural Marketing, Businesses, consumers, Economic, Management.

INTRODUCTION

A country like India, where more than 58 percent of the population relies on agriculture as their primary source of income, needs agriculture. Estimates show that during the fiscal year 2020–21, agriculture, forestry, and fishery contributed Rs 19.48 lakh crore (US$ 276.37 billion) to total value added (Agricultural and Processed Food Products Export Development Authority - APEDA, Department of Commerce and Industry, Union Budget, 2021-22). The COVID-19 epidemic and the ensuing downturn in the economy will put further strain on agricultural and related industries as migrant workers return to their home countries. Although while agriculture's contribution to the nation's GDP has decreased over time, it remains the main source of income for the vast majority of Indians who work. Given the significance of agriculture, the Indian government is developing a multifaceted plan to assist its farmers in achieving the lofty objective of doubling agricultural revenue by 2022.

India is an agrarian nation, and either directly or tangentially, one third of the populace is reliant on the industry. Since ancient times, agriculture has been the mainstay of the Indian economy. Approximately 25% of the country's GDP is contributed by farmland in India. Given that sustenance is the greatest need of humanity, commercializing farming output has received a lot of attention. Due to this, the sufficient output and equitable sharing of food has recently become a top worry for the entire world. The primary focus of farm marketing is the purchase and sale of agricultural goods. When the community economy was more or less self-sufficient in the past, selling farming products was not a problem because the farmer would sell his produce to the customer for cash or in exchange for goods.

Before reaching the customer, farm marketing in the modern era must go through a number of trades or moves from one individual to another. This involves the assembly, preparation for consuming, and dissemination of three business tasks. Any farming product's ability to be sold relies on a number of variables, including the product's current demand and storing space accessibility. The goods may be immediately sold in the market or temporarily kept locally. Furthermore, the farmer or the town trader may sanitize, grade, and prepare it before selling it

as it is taken from the field. Processing may be done to preserve a product's integrity or because customers request it. By wholesaling and distributing in various locations across various markets, such as primary, intermediate, or final markets, the distribution system's job is to balance the supply with the current demand. The majority of farming goods in India are sold by farmers in the private sector to local merchants or moneylenders (to whom the farmer may owe money). There are several methods to sell goods. For instance, it might be offered at a monthly village fair in the farmer's community or a nearby community. Produce may be sold at sporadic marketplaces in a neighboring hamlet or town or in the mandi if these venues are unavailable.

Agriculture marketing is carried out in India by a number of federal government agencies, including the Commission of Agricultural Costs and Prices, the Food Corporation of India, the Cotton Corporation of India, the Jute Corporation of India, etc. Additionally, there are organizations dedicated to the selling of rubber, tea, coffee, cigarettes, seasonings, and veggies. More than 40 main goods are compulsorily rated for export and freely evaluated for internal usage under the Agricultural Produce (grading and selling) Act of 1937. Although state governments are responsible for overseeing commodity markets, the office of marketing and inspection offers marketing and inspection services as well as financial assistance at the village level to support the establishment of commodity grading centers in some markets.

Given our history of farming production, marketing, and related commercial endeavors, it is now up to us to engage in creative brainstorming and generate fresh concepts for value-added services. These value-added services will bring a new layer to the current farming economy. The obvious next stage might be food preparation, which not only could be a new source of income but also could offer many full-time jobs to our young people. Utilizing the available resources to the fullest extent is necessary given the shifting farming landscape and increased worldwide rivalry.

A survey of 500 regulated markets was conducted by the directorate of marketing and inspection in the ministry of agriculture in 1970–1971 and 1971–1972 with the goal of determining the sufficiency and effectiveness of the current regulated markets, highlighting their shortcomings, and proposing ways to improve them. The insufficient financial means of some of the market groups have been one of the biggest disadvantages. A central sector program was developed by the ministry of agriculture during the fourth plan to offer grants at 20% of the expense of market growth, up to a limit of Rs. 2 lakhs. The private institutions will have to supply the remaining funds.

Focus reversal

According to data provided by the Ministry of Agriculture and Farmers Welfare (2021), production of foodgrains fruits and vegetables, and milk has increased significantly in India since the country gained its independence. These metrics, however, do not result in a comparable increase in the farmers' income. In the previous 22 years, between 1993–1994 and 2015–2016, actual agricultural income has hardly doubled after accounting for inflation. This most likely occurred because the government's attention was primarily focused on increasing agricultural productivity and enhancing food security rather than on farmers' income and wellbeing. The administration is now concentrating on improving the welfare and income of farmers. As a dramatic change from previous policies where the emphasis had been only on production rather than the marketability of the goods, the Government of India has focused its attention on tripling the farmers' income over the seven-year period from 2015–16 to 2022–23. As a result, Dr. Ashok Dalwai was appointed as the chairman of the Committee on Doubling Farmers' Income, which was established in April 2016. The

committee has recommended a number of actions to help farmers increase their income, including the strengthening of an integrated agricultural marketing system[1], [2].

Marketing for agriculture is Crucial

Due to the economic and agricultural sector developments, marketing is now crucial for the overall growth of agriculture and the wellbeing of farmers. A market-oriented approach to agriculture is now necessary because of the technical advancement that has made the marketable excess of crops more apparent in recent years. The following is a list of some of the developments that have made agricultural marketing significant.

Agricultural Marketing: Definitions and Concepts by generating food, agriculture meets one of humanity's fundamental needs. A century ago, farmers used to produce food products primarily for their own use or for trade with others, mostly in the same village or adjacent locations. They relied on themselves a much. Yet, the manufacturing environment has significantly altered from self-reliance to commercialization in recent years. High yielding varieties, the use of fertilizers, insecticides, and pesticides, as well as agricultural automation, have all benefited from technological improvement, increasing farm productivity and, as a result, the amount of excess that can be sold and marketed. Increased urbanization, money, changing consumer lifestyles and eating habits, and growing connections to the global market all go hand in hand with enhanced manufacturing. Consumers are no longer restricted to purchasing food from farms in rural regions. A further need for value addition in the raw agricultural production is the rise in demand for processed or semi-processed food items. Due to these advancements, food commodities must be transported from the producer to the consumer as value-added goods. Through a range of actions, agricultural marketing connects farmers and consumers, becoming a crucial aspect of the economy.

Agriculture marketing's reach extends beyond only the ultimate agricultural products. Also, it concentrates on the farmers' supply of agricultural inputs (factors). Agricultural marketing definitions Agriculture and marketing come together to form the phrase agricultural marketing. Agricultural typically refers to the raising and/or growing of plants and animals, whereas marketing refers to the actions involved in getting products from the point of production to the point of consumption. Many academics have characterized agricultural marketing and included crucial components of time, location, shape, and usefulness of passion. These are a few definitions of agricultural marketing: Human activity focused on satiating desires and needs via the trade process (Phillip Kotler). Execution of commercial operations that control the movement of products and services from manufacturers to consumers (American Marketing Association). The study of agricultural marketing includes all activities and organizations engaged in the transportation of farm-produced foods, raw materials and textiles derived from them from the fields to the ultimate customers, as well as the impact of these activities on farmers, intermediaries, and consumers (Thomsen). This definition excludes agriculture's input component. Agricultural marketing is a decision-making process that includes pre- and post-harvest operations, assembly, grading, storage, transportation, and distribution. It begins with a decision to produce a marketable farm product and involves all institutional and financial aspects of market structure or system[3], [4].

Both as a system of governance and as a function of business, there are often overlaps and ambiguities in the expectations from agricultural marketing and its results. In India, agricultural marketing has seen a transformation from subsistence farming to one that is becoming a food surplus economy. The study discusses the range of agricultural marketing, its function in the monetization of agricultural products, and the creation of value

via the delivery of pertinent market information to farmers so they may be demand-linked in all of their farming and post-production activities.

The phrase "agricultural marketing" is used to describe a variety of activities, including academic research, supply chain operations, marketing laws and policies, and more. In practice, the primary purpose of providing market intelligence is usually disregarded and reduced to just reporting on the state of the market.

As an academic topic, "Agricultural Marketing is the study of all the actions, agencies and policies involved in the purchase of farm inputs by the farmers and the transportation of agricultural goods from the farms to the consumers". It is generally accepted in developing nations that it consists of product marketing and input marketing. Farmers, merchants, wholesalers, processors, importers, exporters, marketing cooperatives, controlled market committees, and retailers are some of the participants in product marketing. Philip Kotler further defines marketing as a human activity intended to satiate needs and desires via an exchange process. Marketing is defined by the American Marketing Association as the conduct of commercial operations that control the flow of products and services from producers to consumers.

The qualifying function, which guides the flow of products from producers to satisfy consumer demand, is highlighted. This orientation results from a thorough understanding of the customer, the conversion of that knowledge into demand matrices and standards, and the dissemination of that knowledge to producers as market intelligence so they may use the appropriate tools to carry out the exchange. Contrarily, the word "agricultural marketing" is used indiscriminately to imply an umbrella label that covers all the processes associated to the purchase, collection, grading, storage, food and agro-processing, transportation, financing, and sale of the agricultural product.

Increased Marketable Surplus

India now has excesses of various agricultural goods. The accessibility of high-quality seeds and other technical advancements have enhanced output and productivity, increasing the marketable excess of the majority of agricultural goods. To deal with the rising excess, markets must become more responsive and effective. Demand on the market for horticulture crops the diversification of Indian agriculture toward high-value horticulture crops is another shift. Horticultural crops must be handled carefully to preserve their quality along the whole food supply chain, all the way up to the ultimate consumer, since they are heavy and perishable by nature. Price discovery and price signaling - Agricultural marketing is concerned with both the transmission of price signals down the marketing chain, especially from consumers to farmers, and the discovery of prices at various phases of marketing.

Focus shifting to market-driven production

Opportunities in the agriculture industry have expanded as a result of economic growth, urbanization, free trade policies, and consumer awareness of safe and high-quality food. Farmers are anticipated to take advantage of these expanded chances by reorienting their businesses from production- to market-oriented agriculture in order to boost their revenue. Feeding the urban population - Economic expansion has resulted in significant urbanization, which has increased the number of individuals who need to be fed in urban areas by rural residents. To enable effective transfer of agricultural commodities from the point of production to the point of consumption, this will need not only sound production but also excellent marketing systems.

Sustaining Smallholdings

The needs of the expanding, more affluent, and urbanized population are mostly met by small and marginal farmers. By using a market-oriented strategy, such smallholders' earning potential may be significantly increased. System of liberal and integrated marketing The Government of India's Doubling Farmers' Income (DFI) study places a strong focus on the creation of an integrated by transforming rural collecting and distribution hubs known as Gramin Agricultural Markets (GrAMs) from rural periodic markets (RPMs) and connecting these markets with knowledge hubs, banks, and other services like cold storage and warehouses. Agriculture in India is changing Indian agriculture is changing in many ways. The future development of agriculture should worry planners and all other stakeholders. Many issues in the agricultural industry are being addressed by Indian governments and groups, including small farm holdings, primary and secondary processing, supply chain management, infrastructure enabling the effective use of resources and marketing, and the elimination of intermediaries. Future events will follow the current pattern. It is crucial to comprehend these anticipated changes and plan a production and marketing strategy around them.

The demand for agricultural products is changing and will continue to do so in the future due to rising incomes, globalization, and a growing knowledge of the need of eating healthy food. Fruits, vegetables, dairy products, fish, and meat may see an increase in demand as a consequence of these consumer shifts and preferences. Demand for high-quality, reasonably priced, processed goods is expected to rise. Only technological research and advancements that result in improved output and lower prices will be able to do this[5], [6]. The creation of competition and the cost-effective supply of diverse inputs including seeds, fertilizer, plant protection goods, agricultural equipment, and animal feed would provide a higher return on investment in an environment that is friendly to private players' involvement. The creation of environmentally friendly, disease-resistant, more nutrient-rich, tastier, and climate-resilient crop types will heavily rely on breeding in addition to biotechnology.

Agriculture will benefit from the use of technology like hydroponics, bioplastics, and plastics. In order to locate a new producing area in the cutthroat market, emphasis will be placed on urban and vertical farming. For accurate and effective input application, precision farming based on soil testing and automation employing artificial intelligence is anticipated. To equip drones and sensors for quality, accuracy, and decreased input consumption that protects the environment and improves economics, the most cost-effective way will be employed. With the help of private parties, governmental organizations, and/or farmer producers, small and marginal farmers will be able to benefit from these technologies as well.

Organizations (FPOs)

Together with drones, robots, cameras, and other equipment, there will also be room for the use of GPS technology to make farming easier and more fun while increasing agricultural output and profitability. These cutting-edge tools will make agriculture simpler, more efficient, and ecologically benign. Nanotechnology will increase the efficiency of agriculture. The usage of pesticides will be decreased, nutrient losses during fertilization will be minimized, and pests and nutrients may be managed to increase production.

India's digital connection has substantially improved in recent years, improving access to both the local and international markets. By 2025, there will be more than 666.4 million internet users in the nation, according to forecasts. With the availability of mobile phones, farmers will behave more shrewdly and will have stronger connections with a variety of stakeholders. The government has elaborate plans to use digital technology to raise

awareness, disseminate information, and manage direct benefit payments for a number of farmer-centric initiatives. The preservation of rapidly dwindling natural resources like water and land would need significant participation from the federal and state governments, as well as from village communities, new agricultural ventures, and private actors. Through the use of digital technology, a revolution may be sparked in this direction. The use of IoT and drone technology, which has the capacity to gather and analyze information more accurately, swiftly, and efficiently, would aid in the provision of improved estimates for soil health, agricultural production, and a number of other relevant elements. The more accurate predictions made possible by technological application would reduce the cost of providing numerous services, including insurance. With optimal input utilization, the cost of manufacturing will likewise decrease[7], [8].

More niche markets will be present. It will be possible to simplify operations even at small farms using equipment that is particular to activities, area/region, and crop. Government policies exist both to encourage private actors to build storage capacity and to incorporate them into the market.

The market for warehouses is growing, and it is anticipated that the private sector will build out additional storage space with improved connections to public markets and warehouses. This will assist in achieving supply-demand equilibrium and stable the price of agricultural goods. The retail sector will play a significant role in the marketing of agricultural products. By 2026, the retail industry is anticipated to grow to USD 1.6 trillion.

Achieving an around 10% CAGR. From 12 percent in 2017, organized retail's share will probably rise to 22 to 25 percent in 2021. (FICCI, 2020). In the next years, a significant portion of the retail sector for agriculture will become digital. By 2025, it is anticipated that more than 90% of Kirana shops would be completely digitalized, with sophisticated logistics and a fully traceable supply chain. Consumers have already received Kirana shops from a number of players, including Amazon and Jio Mart.

DISCUSSION

Many developments are taking place in Indian agriculture, both in terms of trade and output. Because of developments like improved income due to economic growth, expanding population, urbanization, globalization, and liberalization as well as consumer awareness of safe and nutritious food, farmers are also required to produce in accordance with the needs of the market. To function in such an atmosphere, the market must be favorable. In order to bring about the needed improvements, the Indian government has implemented a number of agricultural marketing reforms. The Model State Agricultural Produce Marketing (Development & Regulation) Act, 2003 was created by the Ministry of Agriculture and Farmers Welfare and distributed to all the states with a request to amend their respective APMC Acts in accordance with the provisions, mostly for private markets and direct marketing, suggested in the model Act.

In order to speed up the pace of changes, the Ministry established a Committee of State Ministers In-charge Agricultural Marketing in 2010 due to the lackluster and uneven responses from the States. The government then proposed the Model Agriculture Product and Livestock Marketing (Promotion & Facilitation) Act in 2017, which was even more comprehensive and future-looking and suggested solutions like allowing warehouses to serve as sub-market yards. The Government of India passes three farm laws in September 2020: I the Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act, 2020; (ii) the Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020; and (iii) the Essential Commodities (Amendment) Act, 2020. These

laws are designed to create a liberal, transparent, efficient, and competitive marketing system that offers farmers alternatives[9], [10].

Although the Farm Laws have been repealed as a result of the introduction of the Farm Laws Repeal Bill, 2021 in the parliament in November 2021, it is still crucial to understand the various provisions of these bills in order to comprehend the objectives of the government and the needs of the industry. The Farm Laws, 2020's benefits and drawbacks are outlined below.

Advantage

- Allows for the selling of products outside of the Agricultural Produce Market Committee (APMC) Mandis Trading conducted outside of the Mandis is free from any cess or charge.
- This Act promotes "contract farming" by allowing farmers with purchase orders to enter into direct contracts with purchasers without using the state APMC.
- The list of vital commodities has been updated to no longer include commodities like grains, pulses, oilseeds, edible oils, onions, and potatoes. New investments in infrastructure development, including cold storage, may be made via FDI and by large corporations.

Disadvantage:

- The state may forfeit the money it receives from each Mandis if trading occurs outside of the market. The Minimum Support Price (MSP) system, which otherwise has no effect on the policy and procedure of procurement on MSP, which continues to be the goal of the Government, is feared by many farmers across states even if the Acts seek to make the marketing channels more lean and effective.
- Conflicts may occur because businesses may prefer to negotiate with groups of farmers rather than with individual farmers. Dealing with the agents would be much better from a business standpoint than dealing with a direct seller.
- If the cost of perishable or non-perishable goods increases by 100% or 50%, respectively, the Act may be used. The main goal was to safeguard consumer interests by eliminating unethical business activities including hoarding and distress sales.

The new legislation were intended to create a market environment that gave farmers and dealers options when buying or selling agricultural products. The APMC Act's concept of a trade area made it clear that only transactions taking place inside the actual buildings it created would be subject to its rules; any trade transactions taking place outside the market yard would instead need to adhere to the guidelines outlined in the Central Government's Act on Trade and Commerce.

It implies that both Acts coexist with a shared goal in assisting farmers in the genuine spirit of cooperative federalism. Farm Acts were also anticipated to play a significant role in promoting investment, supporting the development of necessary post-harvest infrastructure, and expanding markets to support farmers in realizing competitive and lucrative prices for their goods. These changes may have proven to be a crucial step in improving demand for, accessibility to, and competitiveness of Indian agriculture both domestically and internationally. The path of agricultural marketing reform will undoubtedly be slowed considerably by the abolition of the Farm Laws.

CONCLUSION

The government's production-focused policies have enabled India's agriculture to develop significantly over time. Production is now shifting to welfare and income improvement. As a result, the government has implemented a number of changes in agricultural marketing to strengthen the framework and assist farmers in getting greater access to markets. More market access is anticipated to help farmers generate higher revenue. Their capacity to invest in new technology will therefore increase. The cumulative impacts of technology are anticipated to transform Indian agriculture in the days to come, with private investors investing and young people from rural areas becoming involved in various agribusiness ventures. Notwithstanding the challenges the agricultural sector faces, which make it difficult to estimate returns, the industry still has a tremendous amount of unrealized potential. Due to the favorable weather and soil conditions, many people, large corporations, start-ups, and entrepreneurial endeavors are substantially investing in innovations, inventions, research and development, as well as other commercial elements. The government is providing a variety of incentives to farmers and other stakeholders to encourage them to take advantage of the many untapped potential that exist in the food industry. The success of Indian agriculture depends on this procedure.

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CHAPTER 2

AGRICULTURAL ECONOMICS AND RURAL MARKET SUSTAINABILITY

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ABSTRACT:

Agricultural economics explains how resource allocation, pricing mechanisms, and institutional structures influence the functioning of rural markets. Sustainable rural market systems are essential for ensuring stable farm incomes, food security, and long-term economic resilience. By examining production costs, market behavior, and policy interventions, agricultural economics provides insights into reducing market inefficiencies and strengthening farmer participation. A sustainability-oriented economic approach supports inclusive growth, efficient value chains, and balanced rural development in agrarian economies.

KEYWORD:

Agricultural Economics, Rural Markets, Market Sustainability, Farm Income, Price Formation, Institutional Frameworks, Small Farmers, Inclusive Growth.

INTRODUCTION

The theoretical underpinnings of agricultural economics have evolved significantly from classical agrarian studies to complex, multi-dimensional frameworks that integrate ecological and social sustainability. Fundamentally, this field examines how resources—land, labor, capital, and water—are allocated in the production of food and fiber. In the context of rural sustainability, the theoretical focus shifts from pure productivity maximization to the resilience of economic systems against external shocks. Classical economic theories, such as those proposed by Ricardo regarding land rent, remain relevant but are now reinterpreted through the lens of environmental constraints. The marginal productivity theory, for instance, suggests that inputs should be used until the additional cost equals the additional revenue; however, in sustainable agricultural economics, "cost" is expanded to include the depletion of natural capital and long-term soil health, creating a shadow price for environmental degradation that market mechanisms often fail to capture.

Building upon these foundations, the concept of dualism in rural economies provides a critical theoretical lens for understanding market sustainability. This perspective posits that the agricultural sector often operates with two distinct sub-sectors: a modern, capital-intensive export-oriented sector and a traditional, labor-intensive subsistence sector. The interaction between these two is complex; sustainability theories argue that focusing solely on the modern sector can lead to the marginalization of smallholders, who are crucial for local food security and biodiversity. The Lewis model of development, which describes the transfer of surplus labor from agriculture to the industrial sector, is frequently critiqued in modern agricultural economics for underestimating the economic value of rural labor in maintaining ecological balance and social structures. Therefore, sustainable economics

advocates for a balanced growth path where the traditional sector is modernized without displacing the workforce that sustains rural communities.

Furthermore, the New Institutional Economics (NIE) framework has become indispensable for analyzing rural market sustainability. NIE emphasizes that economic activity is embedded within social and legal institutions. In rural agriculture, transaction costs—the costs of making an exchange—are often prohibitively high due to poor infrastructure, lack of information, and weak contract enforcement. Theoretical models suggest that for a rural market to be sustainable, institutions must be designed to minimize these transaction costs. This includes the development of property rights that are secure yet flexible enough to accommodate communal land tenure systems often found in developing regions. Without secure tenure, the economic incentive for long-term investment in land sustainability (such as terracing or irrigation maintenance) is absent, leading to resource mining rather than resource management.

Another critical aspect is the application of risk theory to agricultural decision-making. Unlike industrial firms, agricultural enterprises face unique biological and climatic risks that are systemic and often uninsurable through conventional markets. Theoretical models of risk aversion explain why small farmers may resist adopting new, potentially more profitable technologies if those technologies carry a higher variance in yield. Sustainable agricultural economics posits that market viability relies on mitigating these risks not just through financial instruments, but through diversification strategies. The portfolio theory of investment can be applied here, suggesting that biodiversity in crops acts as a hedge against market volatility and climate change. Thus, economic sustainability is theoretically linked to biological diversity, creating a synthesis between ecological science and economic behavior.

Finally, the discourse on agricultural economics has increasingly embraced the capabilities approach, moving beyond income as the sole metric of welfare. In this view, the sustainability of a rural market is not just about the volume of trade but about how the market enhances the capabilities of rural populations to lead valued lives. This involves analyzing how market structures influence food sovereignty, nutritional outcomes, and social equity. Theoretical constructs now frequently include the "circular economy" model, which

challenges the linear "take-make-dispose" pattern of conventional agriculture. Instead, it promotes a regenerative system where waste from one process becomes input for another, theoretically closing the loop and decoupling economic growth from resource consumption. This shift represents a fundamental transformation in how value is defined and measured in rural economic systems.

Dynamics of Rural Market Structures, Supply Chains, and Price Discovery Mechanisms

The structure of rural markets is rarely perfectly competitive; instead, it is often characterized by imperfections such as oligopsony, where many small farmers sell to a few large buyers. This structural imbalance creates a power asymmetry that is central to theoretical discussions on market sustainability. In an oligopsonistic setting, buyers have the market power to dictate prices, often keeping them below the marginal value product of the produce. This reduces the surplus available to farmers for reinvestment in their farms, creating a cycle of undercapitalization and low productivity. Theoretical models of bargaining power suggest that without collective action or regulatory intervention, the natural tendency of such markets is towards the extraction of rural surplus by urban or corporate intermediaries, undermining the long-term economic viability of the producer base.

Information asymmetry is another theoretical pillar explaining the inefficiencies in rural supply chains. In many rural markets, intermediaries possess superior knowledge regarding final market prices, quality standards, and demand trends compared to the producers. This informational gap leads to market failure, where the price mechanism fails to signal the true value of goods. Theories of "The Market for Lemons" can be adapted to this context; if quality cannot be reliably verified or rewarded due to poor information flow, the market may deteriorate as high-quality producers exit or lower their standards. Sustainable supply chain management theory counters this by advocating for transparency and short supply chains. By reducing the number of intermediaries, producers can capture a larger share of the value, and the direct flow of information facilitates better alignment between production decisions and consumer preferences.

Spatial market integration is a key concept in understanding how rural markets connect with broader national and global economies. According to the Law of One Price, adjusted for transport and transaction costs, prices for the same good should equalize across different locations in an efficient market. However, rural markets are often segmented due to physical barriers and infrastructural deficits. Spatial equilibrium models analyze how these frictions prevent price transmission. When markets are not integrated, a surplus in one region cannot alleviate a deficit in another, leading to extreme price volatility. Sustainability in this context requires investments that reduce "distance friction," ensuring that rural markets are responsive to external demand shocks without being destabilized by them. This integration must be carefully managed to prevent the complete exposure of fragile local economies to global price shocks.

Value chain analysis provides a framework for deconstructing the sequence of activities that add value to an agricultural product. In traditional theoretical models, value is added primarily through processing and distribution. However, modern sustainability frameworks emphasize "value creation" at the source through branding, geographical indications, and certification (e.g., organic or fair trade). This theoretical shift moves the focus from cost-

reduction to value-enhancement. It posits that rural market sustainability depends on the ability of producers to de-commoditize their products. By embedding social or environmental attributes into the product, producers can escape the "race to the bottom" characteristic of commodity markets and access niche markets with lower price elasticity of demand.

Lastly, the theory of contract farming acts as a mechanism to coordinate supply and demand in the absence of well-functioning spot markets. Theoretically, contracts can resolve issues of risk and credit access by providing farmers with guaranteed markets and inputs. However, the principal-agent problem is prevalent here. The processing firm (principal) and the farmer (agent) may have diverging interests regarding effort and quality. Agency theory suggests that optimal contracts must balance risk-sharing and incentives. If contracts are too rigid or exploitative, they lead to breach and mistrust, destroying the social capital necessary for market sustainability. Therefore, the theoretical design of resilient rural markets involves creating governance structures for vertical coordination that are equitable and self-enforcing.

Socio-Economic Determinants and Institutional Embeddedness of Market Sustainability:

Social capital theory is fundamental to understanding the resilience of rural markets. Economic actions in rural areas are deeply embedded in social relations, a concept known as "embeddedness." Unlike the atomistic actors in standard neoclassical models, rural economic agents operate within dense networks of kinship, community, and tradition. These networks facilitate trust, which acts as a substitute for formal legal contracts in environments where the rule of law may be weak. Theoretical literature suggests that high levels of social capital reduce transaction costs and enable collective action, such as the management of common irrigation systems or the formation of cooperatives. Consequently, the sustainability of a rural market is not merely a function of economic policy but of the preservation and enhancement of these social fabrics.

The role of cooperatives is supported by the theory of collective action. Individual smallholders face high barriers to market entry and possess little bargaining power. By pooling resources, they can achieve economies of scale and countervailing power against large buyers. However, collective action is plagued by the "free-rider problem," where individuals benefit from the group's efforts without contributing. Institutional design principles, such as those proposed by Elinor Ostrom, are critical here. Successful cooperatives require clear boundaries, participatory decision-making, and graduated sanctions for rule violators. Theoretically, these institutions serve as a "meso-level" governance structure that bridges the gap between the micro-level of the household and the macro-level of the state, providing stability essential for long-term market sustainability.

Gender dynamics also play a critical, often under-theorized, role in agricultural sustainability. Feminist economics critiques traditional agricultural models for treating the household as a unitary decision-making entity. In reality, intra-household resource allocation is complex and often gendered. Women frequently control specific crops or livestock but may lack access to markets, credit, or land rights due to structural barriers. Theories of allocative efficiency suggest that removing these barriers would significantly increase total agricultural output and market sustainability. Furthermore, women often prioritize spending on household welfare and nutrition; thus, empowering women economically leads to better development outcomes, reinforcing the long-term viability of the rural labor force.

Migration and labor mobility theories further complicate the picture of rural sustainability. The New Economics of Labor Migration (NELM) views migration not as a sign of failure, but as a household strategy to diversify risk and overcome capital constraints. Remittances sent back to rural areas can theoretically loosen credit constraints, allowing for investment in farm technology and non-farm enterprises. However, this can also lead to a "hollowed-out" labor force, where the most productive members leave, leading to the feminization and aging of the agricultural sector. Sustainable rural development theory therefore seeks equilibrium where migration is a choice rather than a necessity, and where rural markets are dynamic enough to absorb skilled labor and capital.

DISCUSSION

Current agri-food systems are not sustainable, neither in terms of reaching important nutrition and human health goals, nor in terms of operating within the planetary boundaries. More than 700 million people are currently affected by chronic undernutrition. Over 3 billion people suffer from micronutrient deficiencies because healthy and nutrient-adequate diets are unaffordable. Energy and nutrient deficiencies increase people's susceptibility to infectious diseases, physical and cognitive development impairments, and premature death. While the proportion of undernourished people globally declined substantially between 1950 and 2015, the absolute numbers of people suffering from nutritional deficiencies have remained stubbornly high, making it unlikely that the zero-hunger sustainable develop goal (SDG 2) will be achieved by 2030. At the same time, more than 2 billion people worldwide are overweight or obese, leading to serious chronic health issues and noncommunicable disease risk. Overall, unhealthy diets and malnutrition in its various forms account for more than one-third of the total global burden of disease. Beyond nutrition and health, other social issues in agri-food systems include precarious labor conditions, discrimination against women, and other inequities along agricultural and food value chains.

In terms of environmental dimensions, agri-food systems are responsible for one-third of all greenhouse gas (GHG) emissions, with land use, land-use change, and livestock husbandry being the main sources. Even if the combustion of fossil fuels were stopped immediately at global scale, the GHG emissions from food and agriculture alone would suffice to thwart the Paris climate targets until 2050 and beyond. Agriculture is also responsible for the largest part of global biodiversity loss and many other environmental problems, including soil and land degradation, air pollution, water quality degradation, and related loss of important ecosystem functions. Climate change and other environmental issues are already contributing to yield failures and food production declines in many regions. These problems will likely get worse in the coming years and decades. The worst impacts of climate change on agriculture and food security are expected to occur in tropical and subtropical regions, where malnutrition is widespread anyway and where many of the poor depend on agriculture for their livelihoods.

There is broad international consensus that agri-food systems need major transformations to become more sustainable. The urgent need for action was the main motivation for the first United Nations' Food Systems Summit that was held in New York in 2021. Agriculture and food systems also featured prominently at recent UN Climate Change and Biodiversity Conferences. However, while the need for transformation is widely recognized, there are many open questions. What concrete steps could be useful, and through which policies and

mechanisms could these steps be most effectively instigated? Because of the complexities of food systems, changes at one level (e.g., farm production) may have undesirable effects at other levels (e.g., consumption) or may lead to leakage effects and spillovers in other parts of the world. Possible tradeoffs between the multiple sustainability dimensions (e.g., human nutrition vs. nature conservation goals) also need to be considered. And, since food production, processing, trade, and consumption decisions are made by billions of individuals around the globe, the most suitable leverage points for policymaking toward improved agri-food systems' sustainability need to be determined.

Recent modeling studies show how sustainable agri-food systems could look like. These modeling studies suggest that sustainable food and nutrition security for all within the planetary boundaries is possible in principle, but that major changes in production, distribution, and consumption are needed. However, most of these modeling studies include little economics research. This means that key questions, such as how to get to those sustainability scenarios, how to incentivize the needed behavioral change, and what this would mean for broader economic development, are not yet sufficiently addressed. Without more economic research, the needed policy steps cannot be taken, at least not in targeted and efficient ways.

Major Roles and Challenges for Agricultural Economics

Need for Economics in Agri-Food Systems Analysis:

The recognition that agri-food systems are a major contributor to some of the most pressing global challenges, such as climate change, biodiversity loss, hunger, poverty, and obesity, but also a crucial part of the solution is still relatively recent. Economists, and in particular agricultural economists, can play an important role in finding pathways to more sustainable agri-food systems. With our educational background at the interface of economics, behavioral sciences, environmental sciences, and natural sciences, we are well equipped and experienced to help understand critical system transformation needs and constraints, such as the conceptualization and measurement of externalities, synergies and tradeoffs between various sustainability dimensions, as well as incentive structures and responses of different food system actors, including farmers, traders, processors, and consumers, among others.

However, broader international research and policy initiatives around sustainable agri-food systems seem to be dominated by other disciplines, including nutritionists and climate and environmental scientists, with agricultural economists being underrepresented. There is definitely scope for a stronger role of agricultural economists in high-level interdisciplinary analyses. For example, numerous reports on sustainable agri-food systems highlight the need for healthier diets, more sustainable farming practices, and reduced food waste, but the proposed scenarios and strategies oftentimes lack rigorous economics and behavioral analysis. This is a missed opportunity, since agri-food systems analyses without considering economic realities, opportunities, and constraints are incomplete and may result in unrealistic and/or inefficient and inequitable outcomes.

If agricultural economists do not get more involved in addressing policy-relevant questions related to the economics of agri-food systems transformation, other disciplines—less suited to take on this task—will likely do so, which would gradually render our own profession meaningless. This must not happen because we have a lot to contribute.

Interdisciplinary Cooperation and Disciplinary Rigor:

As agricultural economists, we are used to interdisciplinary perspectives, using economics tools to analyze questions of agricultural production, markets, as well as environmental and nutrition outcomes. We are able to look across various scales and thus integrate micro-, meso-, and macro-level perspectives. These skills are extremely useful for connecting to other relevant disciplines—such as agronomy, nutrition, environmental sciences, and social sciences—and thus shaping the research of interdisciplinary agri-food systems consortia. By fostering interdisciplinary collaboration, agricultural economists can make a strong contribution to transformation processes.

However, realizing this potential requires deliberate action. Agricultural economists should not try to mimic mainstream economists, who often shy away from interdisciplinary cooperation. In the journals and career tracks of mainstream economics, interdisciplinary approaches are hardly rewarded. To build on our comparative advantages, agricultural economics programs should embrace interdisciplinary skills development, such as systems thinking, data science, and effective communication and cooperation across disciplines and beyond narrowly-defined academic circles. In addition, academic institutions should shape incentive structures such that interdisciplinary research and real-world relevance are valued appropriately in hiring, tenure, and promotion processes. This includes broadening the horizon of journals considered relevant beyond the field of economics, rewarding policy-oriented, cross-disciplinary work, and recognizing the larger time and financial resources needed for meaningful interdisciplinary cooperation in comparison to purely disciplinary work.

Nevertheless, while expanding the scope beyond narrowly-defined disciplinary boundaries is key for remaining relevant, it is also crucial to preserve and further develop some core principles and methods of agricultural economics. Any scientific discipline risks losing its identity and strength if it tries to include too many aspects without maintaining a solid foundation. We remain economists and need to build our interdisciplinary analysis on economic theory and rigor. Without this, our contribution would remain shallow.

One important example where a strong economic foundation is needed to accelerate transformation is the analysis and design of incentive structures. Progress toward more sustainable agri-food systems has been frustratingly slow, even though the major issues and the need for change have been widely recognized for years. Agricultural economics must use its core economics principles and methods to enhance our understanding of why transformation processes are not advancing as rapidly as they should, and how relevant steps at various system levels can be accelerated. In this context, a closer integration with political economy and industrial economics to better understand structural and institutional barriers is also important.

From Identifying Tradeoffs to Shaping Solutions:

A central challenge in achieving sustainable agri-food systems is managing tradeoffs between different dimensions of sustainability. While agricultural economics has made significant strides in identifying tradeoffs, our discipline must go further and also identify solutions for how to reduce such tradeoffs efficiently.

A few examples may be instructive. More environmentally-friendly agricultural practices can enhance biodiversity, but—at the same time—may also increase labor demand and possibly lower farmers' incomes. Specific innovations to reduce labor needs and well-targeted compensation measures may possibly help overcome the tradeoff and incentivize innovation adoption.

Supermarkets and other modern retailers may increase market efficiency and make foods more accessible and affordable for consumers, but may also contribute to higher consumption of ultra-processed foods, thus contributing to rising obesity and chronic health risks. Smart regulation of the food industry and of market food environments could be designed to avoid such undesirable diet, nutrition, and health effects.

Creating new employment opportunities in rural areas that are also accessible for women can contribute to women's empowerment and higher financial autonomy, but may also exacerbate women's time constraints with possible negative effects for childcare and nutrition. A fairer distribution of childcare and other housework tasks within the family and/or more accessible external childcare options could be useful to better align household income, women's empowerment, and child nutrition goals.

Identifying tradeoffs is important, but stopping there can also lead to a "do nothing" approach because it is unclear what exactly should be done to promote sustainable development. Inaction, however, is not helpful in a situation where agri-food systems transformation is urgently needed. Agricultural economists can play an important role in analyzing and fine-tuning solutions to reduce existing tradeoffs, which involves not only understanding the technical aspects of various sustainability dimensions, but also addressing the political, social, and economic contexts in which decisions are made.

The Role of Agricultural Economics Associations:

Topics around agri-food systems, land-use change, the bioeconomy, and sustainable development have attracted broad research and policy attention in recent years, which is great for our agricultural economics profession. As argued above, we need to broaden our horizon and get more involved in policy-relevant interdisciplinary cooperation. However, interdisciplinary work also comes with challenges. There is an increasing number of interdisciplinary conferences and journals, sponsored by various types of organizations. While such dynamics are welcome in general, they can also lead to a situation where especially young colleagues may lack attachment to a disciplinary community that is important for benchmarking, quality control, and professional development. We need to communicate that interdisciplinary work is great, but comes with the risk of staying superficial if not grounded in rigorous theories and methods.

Agricultural economics associations, their journals, and regular conferences play an important role in providing platforms for exchange and disciplinary homes for agricultural economists. It is important to further develop our agricultural economics associations, conferences, and journals by advancing new topics, experimenting with new formats, and increasing our attractiveness and visibility also beyond our traditional target groups. Also here, we should not try to mimic mainstream economics associations and journals but have a stronger emphasis on interdisciplinary approaches and policy relevance. Our profession will continue to thrive when we proactively address economic issues of sustainable agri-food

systems and contribute to shape and accelerate much needed transformation processes at global, regional, and local levels.

ICAE 2024

The ICAE (International Conference of Agricultural Economists) is the major triennial event of the International Association of Agricultural Economists (IAAE), bringing together scholars from all continents working on economic and social aspects of agri-food systems. The ICAE events have a tradition of almost 100 years. The 31st ICAE in 2021 had to be held online due to the COVID-19 pandemic. Hence, the 32nd ICAE in 2024 was the first in-person IAAE conference after 6 years. ICAE 2024 was held from August 2–7, 2024 in New Delhi, India, and was a very successful event. ICAE 2024 under the theme "Transformation Towards Sustainable Agri-Food Systems" was inaugurated by the Indian Prime Minister, Narendra Modi, and attracted around 1100 participants from 70 countries. Many of the participants were early-career researchers. This ICAE 2024 Special Issue of IAAE's journal "Agricultural Economics" features the plenary study presented at the Conference.

Healthy and Sustainable Diets and Nutrition:

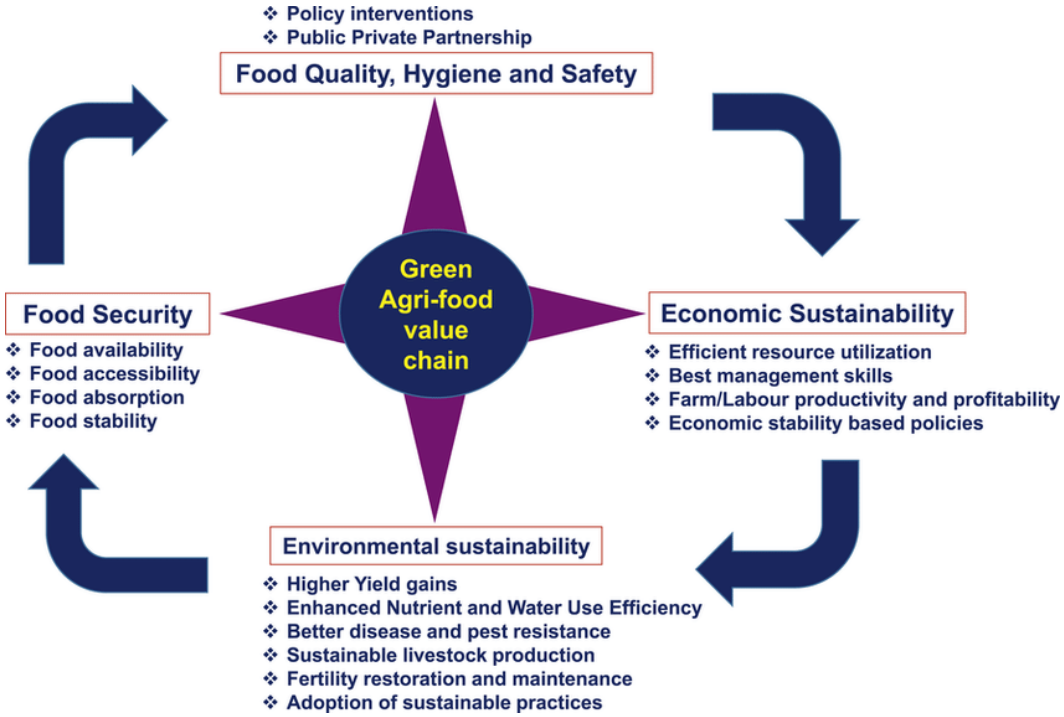
The second plenary session at ICAE 2024 focused on the economic aspects of healthy and sustainable diets, that is, diets that are nutritious, healthy, and affordable for consumers while having as little impact on the environment as possible. Most diets observed around the world today are not healthy and sustainable, which is true in low- and middle-income countries as well as in high-income countries. In other words, substantial dietary shifts are needed to make agri-food systems more healthy and sustainable.

In Special Issue, Zhang et al. examine dietary transitions in China over the past two decades and propose a multifaceted policy approach to integrate both supply-side and demand-side interventions to make diets more healthy and sustainable. China has experienced a rapid change of diets in the last two decades with strong implications for dietary quality and environmental burdens. In their analysis, Zhang et al. address key factors such as affordability and environmental impacts of diets, while acknowledging the importance of regional contextualization. The also translate their findings from China into lessons for other countries undergoing similar dietary shifts.

The costs and affordability of diets are further analyzed by Masters. The authors provide a detailed global analysis of food access using the "cost of a healthy diet" metric, highlighting its utility in measuring the affordability of nutritious diets. Affordability as a main barrier to food security and healthy diets has gained wide recognition in recent years. By incorporating updated food price data and affordability thresholds, Masters et al. reveal that nearly three billion people worldwide are unable to afford a healthy diet. The study further demonstrates how variations in diet costs across food groups and income levels provide critical insights into the structural barriers to food security. The study adds to calls for continuous global monitoring and the development of methodologies that link food prices to agricultural policies and social protection measures. The approach by Masters et al. provides actionable information for governments and organizations aiming to enhance food security and access to nutritious diets worldwide.

Agri-Food Value Chains and Sustainability:

The third plenary session at ICAE 2024 focused on the economics of agri-food value chains and sustainable development. Most of the negative environmental and social externalities in agri-food systems occur in farming and along the value chains, including processing and trade, meaning that interventions aimed at sustainability have to focus on value chains and how to organize them better.



In evaluate the role of voluntary sustainability standards, such as Fairtrade, Organic, or Rainforest Alliance, offering a conceptual framework to assess their impacts across environmental, economic, and equity dimensions. Using case studies from Ghana, Rwanda, and Peru, the authors reveal both synergies and tradeoffs between the different sustainability dimensions, such as improved incomes at the cost of equity or environmental goals. Wollni et al. advocate for a comprehensive evaluation approach that integrates context-specific factors and policy alignment to optimize sustainability outcomes.

Much of the value in agri-food supply chains is generated by midstream actors, especially the food processing and trading industries. Against this background, Barrett and Gómez argue in their study in this Special Issue that these midstream actors deserve particular attention. Midstream value chain actors are often not in the focus of agricultural economics research, likely also because of data limitations. Barrett and Gómez highlight how targeted policies and natural market processes can incentivize midstream actors to adopt practices that align profitability with broader societal objectives, such as equity, resilience, and environmental sustainability. The number of actors in the midstream is much smaller than the number of actors at both ends of agri-food value chains (namely, farmers and consumers), meaning that the implementation and monitoring of sustainability interventions at this midstream level may be easier in general. This midstream potential for agri-food systems transformations is not yet fully realized.

Another area of study that deserves relatively little attention in agricultural economics research, likely also due to data issues, is labor in farming and along agri-food value chains. In the pressing problem of precarious employment conditions in agri-food systems. The study provides a comprehensive review of policy tools to promote decent work in agri-food. Agricultural labor markets often have unique characteristics that complicate policy interventions. The authors underline the lack of robust evaluations of existing labor policies and advocate for rigorous research designs, including transdisciplinary collaboration. The study calls for integrating labor, migration, trade, and social policies into coherent strategies that address both regional and global employment challenges.

Gender in Agri-Food Systems:

The fourth plenary session at ICAE 2024 dealt with gender in agri-food systems. Gender gaps are rampant in almost all economic and policy spheres around the world. A particular focus on gender in agri-food systems is important for at least two reasons. First, women are critical actors in agriculture and agri-food systems sustainability, playing essential roles in production, processing, and distribution, as well as in food consumption decisions and meal preparation within the household. Their contributions are fundamental to ensuring food security and resilient supply chains. Second, if gender dynamics are overlooked, agri-food systems transformation steps—such as increased commercialization of the small farm sector or the concentration of value creation in high-value nodes of food supply chains—could further marginalize women. This could reinforce existing inequalities rather than making agri-food systems more inclusive and equitable.

The study describes and analyzes the evolution of the research field from early bargaining power models to contemporary empowerment indices like the women's empowerment in agriculture index (WEAI). By highlighting the significance of joint decision-making and ownership in household dynamics, the paper emphasizes the need for nuanced policy responses that go beyond traditional two-person bargaining frameworks.

The division of labor in agri-food systems between men and women is further analyzed by Doss and Gottlieb. Doss and Gottlieb critique simplistic narratives around the feminization of agriculture. They advocate for a deeper examination of gendered labor patterns and how structural transformations, including shifts in rural employment and migration dynamics, shape opportunities for men and women differently. Gender is a crucial analytical category to further understand the reallocation of labor within the agricultural sector and to nonagricultural activities. The study also contributes to the literature on intersectional barriers that influence who can access emerging economic opportunities, primarily relating to gender, socioeconomic status, and institutional constraints.

The nexus of gender and climate resilience in agriculture is at the center of the study by Akter. The study introduces the climate resilient development for agriculture (CRDA) framework, which incorporates mitigation, adaptation, and equity considerations into a roadmap for agricultural transformation in the face of climate change. Akter emphasizes the need for integrating a development perspective into climate resilience frameworks and for explicitly addressing climate-induced losses and damages incurred by different actors in agri-food systems. Actionable pathways for ensuring sustainable and inclusive transitions in agri-food systems could be leveraged through innovative financing mechanisms, such as green

bonds and insurance. However, more research is needed to understand how to reach and support the poorest households.

Agri-Food Systems, Climate, and the Environment:

The fifth plenary session at ICAE 2024 focused more specifically on climate and environmental issues in agri-food systems and how to address them through appropriate research and policy. Agri-food systems contribute significantly to climate change and many other environmental problems. Conversely, global environmental change is also negatively impacting agriculture and food security in many ways.

Benami et al. analyze the implementation and evaluation of major agri-environmental programs in the United States. The advocate for leveraging geospatial data and experimental methods to enhance program efficacy and ensure equitable outcomes, particularly for historically underserved producers. The study makes a compelling case for more tailored, data-driven programs and robust monitoring frameworks at the agriculture-environment nexus.

Groundwater and energy are also key agricultural inputs, with severe implications for natural resource-use efficiency and the environment. Balasubramanya explores the role of irrigation technologies with a particular focus on South Asia. In many parts of South Asia, agricultural production heavily relies on irrigation, and groundwater depletion rates are staggering. Balasubramanya emphasizes the challenges posed by political and administrative barriers to pricing water and energy. Efficient irrigation technologies could play a major role in mitigating environmental pressures. However, there seem to be significant awareness and knowledge gaps in the heterogeneous small farm systems, with widely varying levels of technology adoption and impacts. Balasubramanya advocates for more microdata-driven studies to evaluate the scalability and efficacy of irrigation technologies while also considering behavioral and institutional factors. Closer collaboration between researchers, practitioners, and policymakers is needed for the design of appropriate and evidence-based interventions that support sustainable groundwater use without compromising farmer livelihoods.

Addressing another critical dimension of agriculture's role in sustainable development, Chand examines the broader economic and social contributions of the sector. He argues that agriculture's contributions to poverty reduction, nutrition, and climate change mitigation requires a renewed policy emphasis. The study highlights a disconnect between structural and occupational transformations, emphasizing the need for agriculture-centric strategies that address disparities in income and employment. By framing agriculture as a critical driver of sustainable development, Chand calls for integrated approaches that bridge traditional sectoral boundaries.

CONCLUSION

Current agri-food systems are not sustainable. Substantial systems transformations are needed to ensure food and nutrition security for all within the planetary boundaries. While several modeling studies exist that show how healthy and sustainable diets and agri-food systems could look like, the big open question is how to get there. What types of innovations and policies are needed at what levels to bring about systemic change? How can behavioral constraints and political economy motives that hinder transformative change be overcome?

How can effective economic incentives look like, and what needs to be done to ensure efficient and equitable outcomes? These and other questions need to be addressed by economists, which is not yet happening sufficiently.

Agricultural economists can and should play a stronger role in addressing relevant knowledge gaps and in developing strategies that can guide the much-needed transformation processes. Agricultural economists are trained to understand not only the economics principles, but also many of the agronomic, environmental, nutrition, health, and natural science relationships, at least broadly, as is needed for successful interdisciplinary cooperation. Our profession knows how to conceptualize and evaluate externalities, how to identify synergies and tradeoffs between various sustainability dimensions, and how to analyze people's preferences and behavioral constraints. In order to remain policy-relevant, agricultural economists should be more involved in interdisciplinary and transdisciplinary agri-food systems consortia. In fact, we should drive the transformation research agenda, as we are better able to bridge across disciplines and scales and between research and policy-making than many other scientific communities.

Global research cooperation and benchmarking is facilitated by international associations and their regular conferences. The plenary study presented at ICAE 2024, and included in this Special Issue, underscore the dynamics of our agricultural economics profession and the growing attention to policy-relevant work around sustainable agri-food systems. More of this is needed. ICAE 2024 was a landmark event, showing that agricultural economists have much to contribute to making our world a better place.

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CHAPTER 3

AGRICULTURAL MARKETING: THE IDEA AND IMPLEMENTATION IN INDIA

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ABSTRACT:

Many agricultural goods must be assembled, stored, processed, transported, packaged, graded, and distributed throughout the nation as part of the agricultural marketing process. Agricultural marketing connects producers and consumers together via a range of actions and so becomes an integral aspect of the economy. Agriculture marketing's reach extends beyond only the ultimate agricultural products. Also, it concentrates on the farmers' supply of agricultural inputs.

KEYWORDS:

Agricultural Marketing, Businesses, consumers, Economic, Management.

INTRODUCTION

Due to increased production and marketable surplus of key agricultural commodities, higher income levels, urbanization, which changed the pattern of demand for farm products, a slow and steady increase in links with foreign markets, and changes in the form and intensity of government intervention in agricultural markets, agricultural marketing in India has undergone a radical transformation over the past 70 years. A successful marketing strategy reduces expenses and optimizes gains for all parties involved in the food supply chain. It will make high-quality food more affordable for consumers and assist farmers in realizing remunerative pricing. Also, it will provide the best margins for the various supply chain participants so they can keep running their businesses.

The business activities engaged in moving farm, gardening, and other related agricultural goods from provider to customer are referred to as agricultural marketing. Agricultural marketing encompasses all actions taken to move agricultural products from producers to customers through different levels of marketing networks in terms of time (storing), space (transit), shape (processing), and title transfer. The foundation of the Indian economy is agriculture. The 170 million out of 320 million workers labor in agribusiness. It not only meets India's enormous population's dietary needs, but it also generates profitable profits. Indian agriculture experienced significant and quick development after freedom, at a rate of 2.6% annually. When it comes to milk output, India comes in first place worldwide.

India is ranked second in the world for the output of grains, wheat, groundnuts, and tobacco, and third for coffee. Additionally, India has the second-highest amount of fertile territory in the world, but due to poor output, its food yields are only 30% of what they should be by international standards. India has sufficient technology, but it is not completely utilized because our makers are uninformed. Despite working long hours day and night in their farms, producers still anticipate greater results. Planning and preparation should go into agricultural marketing. Agriculture marketplaces in emerging nations like India suffer from inadequate

infrastructure, bad transportation and communication, lax enforcement of the law, restricted access to capital, etc. Failure of the market is the outcome.

The focus on market failure made room for market-oriented deregulation with the goal of "getting prices and institutions right." As a result, state-run marketing committees and supplier marketing networks spanning from credit unions to farming cooperatives to commercial cooperatives have emerged. Producers ought to have access to competitive market rates, which is only possible if the government makes every effort to make the competitive marketing system stronger. In the interim, the marketing organizations must increase speed and openness in their dealings with producers as well as in the retail/consumer prices that benefit the farms. The natural shift of agriculture towards industrialization may be slowed down by some exterior factors, such as the framework of agricultural policies, the degree of market flaws, the general standard of living, etc. The desire for agricultural products by customers must be taken into account by Indian agricultural managers. Instead of its present emphasis on output direction, the farming sector should now try to attain increased market orientation on a national and foreign level.

India is an agricultural nation, and either directly or indirectly, one third of the population is reliant on the industry. From ancient times, agriculture has been the mainstay of the Indian economy. Around 25% of the country's GDP is contributed by agriculture in India. Since that food is the greatest requirement of humanity, commercializing agricultural output has received a lot of attention. Due to this, the proper production and equitable distribution of food has recently become a top issue for the whole world. The primary focus of agricultural marketing is the purchase and sale of agricultural goods. When the village economy was more or less self-sufficient in the past, selling agricultural products was not a problem since the farmer would sell his output to the customer for cash or in exchange for goods.

Before reaching the customer, agricultural marketing in the modern day must go through a number of exchanges or transfers from one person to another. This involves the assembly, preparation for consumption, and distribution of three marketing services. Each agricultural product's ability to be sold relies on a number of variables, including the product's current demand and storage space accessibility. The goods may be immediately sold on the market or temporarily held locally. Moreover, the farmer or the local trader may clean, grade, and process it before selling it as it is taken from the field. Processing may be done to preserve a product's quality or because customers request it. Through wholesaling and retailing in multiple locations across various markets, such as primary, secondary, or terminal markets, the distribution system's purpose is to balance the supply with the current demand. The majority of agricultural goods in India are sold by farmers in the private sector to village merchants or moneylenders (to whom the farmer may owe money). There are many methods to sell goods. For instance, it could be offered in a weekly village market in the farmer's community or a nearby community. Produce may be sold in sporadic marketplaces in a local hamlet or town or in the mind if these outlets are unavailable.

Agriculture marketing is carried out in India through a number of central government agencies, including the Commission of Agricultural Costs and Prices, the Food Corporation of India, the Cotton Corporation of India, the Jute Corporation of India, etc. Also, there are organizations dedicated to the marketing of rubber, tea, coffee, tobacco, spices, and vegetables. More than 40 main commodities are compulsorily rated for export and voluntarily graded for domestic use under the Agricultural Product (grading and marketing) Act of 1937. While state governments are responsible for overseeing commodity markets, the directorate of marketing and inspection offers marketing and inspection services as well as financial assistance at the village level to support the establishment of commodity grading centers in

certain markets.With our history of agricultural production, marketing, and related commercial endeavors, it is now up to us to engage in creative brainstorming and generate fresh concepts for value-added services. These value-added services will add a new dimension to the current agricultural engine. The natural next step may be food processing, which not only might be a new source of income but also could provide many full-time jobs to our young people. Using the available resources to the fullest extent is necessary given the shifting agricultural landscape and increased global competitiveness.

Marketing Performs

The flow of agricultural commodities from producer to consumer is handled by an extensive network of services under the agricultural marketing system as shown in Figure 1.

Figure 1:Illustrate Activities related to agriculture marketing.

Three categories: trade functions, physical functions, and facilitating functions, which were used to classify diverse marketing tasks. Buying and selling fall under the heading of exchange functions. As was previously noted, when we talk about agricultural marketing, we just talk about purchasing and selling. Nevertheless, agricultural marketing goes much beyond that, including both practical storage, transportation, and processing and enabling standardization, Figure 2 shows these activities funding, risk taking, and market knowledge. This classification of functions is crucial because it will aid in a better comprehension of other ideas, such as the National Agricultural Market, which integrates functions including storage, transportation, grading and assaying, and market information and is discussed separately[1]–[3].

Exchange Functions	Physical Functions	Facilitating Functions
Buying	Storage	Standardization
Selling	Transportation	Financing
	Processing	Risk Bearing
		Market Intelligence

Figure 2: Illustrate the Classification of Marketing Activities.

Marketing subsystems for agriculture

It's also critical to realize that the four sub-systems of agricultural marketing are production, consumption, distribution, and regulatory framework. There is a network of distribution/channels that the government's current rules and policies will have an impact on as the produce is transported from the site of production to the location of consumption.

Agricultural Marketing Subsystems the application of the idea

We have so far made an effort to comprehend the idea of agricultural marketing. We shall now attempt to comprehend how this idea is being used in India. A network of controlled wholesale marketplaces handles the marketing of agricultural products (APMCs). Building well-designed market yards was seen vital for controlling the activities. The regulation and growth of agricultural product markets was adopted as an institutional innovation.

Wholesaling marketplaces then came

To assist primarily the purchasing and selling of agricultural commodities, the regulated marketing system is centered primarily on wholesale physical marketplaces. While it is restricted to a small number of markets, we may see additional tasks, such as storage, being performed in some of the marketplaces. Due to market flaws and a lack of infrastructure in agricultural supply chains, farmers' incomes remain muted despite major advancements in the production of numerous agri-commodities. Government has implemented a variety of legislative efforts to help develop an integrated marketing system that takes into account not just physical marketplaces but also diverse marketing services including warehousing, banking, and assaying in order to get around these constraints. But first, we'll attempt to comprehend the rules governing agricultural marketing since they'll be useful in understanding the other policy measures, particularly market changes[4], [5].

Background of Regulation

Before to independence, the principal objective of the government policies connected to agricultural marketing was to keep the price of food for the consumers and agro- raw-material for the industry in control. As a result, legislation passed throughout the eighteenth century focused primarily on ensuring Manchester's textile mills had access to pure cotton at fair prices. The Hyderabad Residency order's first controlled market was created in 1886 at the Karanjia Cotton Market. The Berar Cotton and Grain Market Act of 1897 was the country's first piece of law and served as a model for legislation in other regions.

DISCUSSION

The Royal Commission on Agriculture in 1928 and the Central Banking Inquiry Committee in 1931 both recommended the establishment of rules in agricultural marketing in order to further improve the system and to protect farmers' interests by addressing its flaws. The Directorate of Marketing and Inspection (DMI) was created in 1935 specifically for this purpose, and in 1938, DMI alone was responsible for creating a Model Law on rules in agricultural marketing. In order to protect the interests of the producers by eradicating the prevalent fraud in agricultural markets, DMI encouraged state governments to regulate markets. The national government's DMI only served as an advisory body for agriculture since it was a state issue (though subsequently in year 2020, central government introduced Ordinances having their pan India application for trade in food-stuff). The main goal of implementing regulation was to stop the exploitation of farmers and aid in the development of an effective agricultural marketing system that ensured farmers received fair prices for their output and that consumers received items at reasonable prices[6].

Recognizing Regulations

From the perspective of implementation, regulations primarily consist of three elements: actual markets, activities that a market carries out, and various participants accountable for carrying out these duties. Physical marketplaces are governed by the APMC Acts' regulations, which are set out therein for the orderly trading of agricultural products. Only the

state government, as specified by the relevant APMC Act, has the authority to establish physical markets. Before carrying out any market function, the market functionaries must first get authorization or a license from the relevant state authorities. The rules also specified how other marketing tasks would be carried out, such as price discovery, which had to be done in accordance with open auction or tender procedures to guarantee the discovery of a transparent and competitive price, as seen in Figure 3.

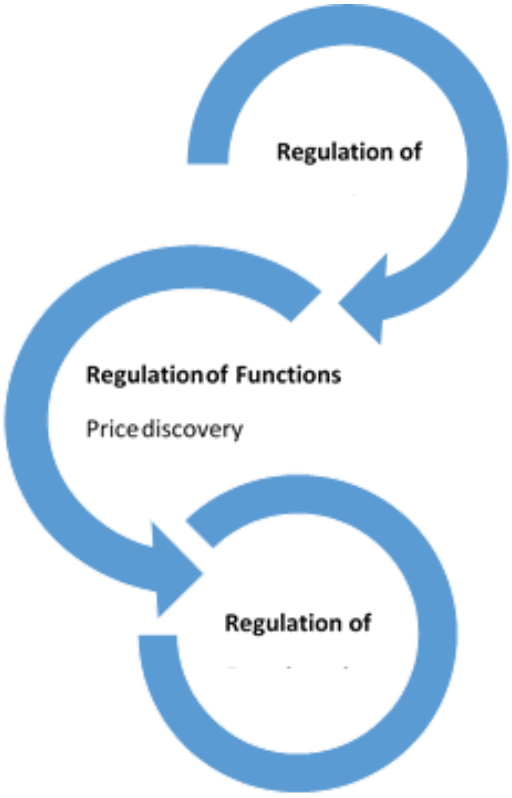

Figure 3: Framework for wholesale market regulation

The Agricultural Product Market Committee (APMC), which was founded by the APMC Act, issues licenses to different market functionaries (Traders, Commission Agents, Hamali, weighman, etc.). The Agricultural Marketing Department/ Board now issues the Single Unified License after the implementation of eNAM. The rules have achieved a number of significant goals, removed a number of flaws and irregularities from the current agricultural markets, and assured that farmers get a fair price for their goods. Yet, the restrictions were only seen to be important when commercial power was in control of undeveloped, exploitative private commerce. Regulation is said to have lost its usefulness as commerce has become more open and the global economy has become more integrated.

As a result, changes in agricultural marketing were made to permit involvement from private parties and one-on-one interactions between farmers and customers. The introduction of eNAM, the distribution of Model Acts, 2003 and 2017, and ordinances like the Farmers' Produce Trade and Commerce (Promotion & Facilitation) Ordinance, 2020, and the Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Ordinance, 2020 have all been implemented by the government as part of the reform process for agricultural marketing. Further measures, such as the adoption of the Food Safety and Standards Act (FSSA), 2006, and the Warehousing (Development and Regulation) Act, 2007, are in addition to the reforms made in the agricultural marketing sector. By promise finance, the warehouse regulatory act will aid in the growth of storage and safeguard farmers against

distressed sales. Food Safety and Standards Authority of India (FSSAI), created under FSSA Act, 2006, is establishing a food certification program and advising farmers and industry to embrace the Act's regulations in order to preserve the food safety and quality standards of agricultural output. These actions will make it easier to create a favorable trading environment for agricultural products[7], [8].

Agriculture marketing changes

Market reforms were implemented in agricultural marketing in 2003 with the goal of advancing the nation's agricultural marketing system to the next level of development through openness, competition, market efficiency, participation of private players, and taking advantage of the shifting global trade environment. The Inter-Ministerial Task Force (2002), established by the Ministry of Agriculture and Farmers Welfare (GoI) to bring about improvements in agricultural marketing, looked at a number of the proposals given by the Expert Committee (2001). To develop a road plan for bolstering the nation's agricultural marketing sector, the Task Force highlighted nine areas. These areas included direct marketing, market infrastructure, pledge financing, warehousing receipts system, forward and futures markets, price support policy, information technology in agricultural marketing, and marketing extension training and research, in addition to legal reforms in the current APMC Act. Agriculture Produce Marketing (Development and Regulation) Model State Act of 2003.

The Agricultural Produce Marketing (Development & Regulation) Act, 2003, is a Model Act that was produced and distributed to all states by the Ministry of Agriculture and Farmers Welfare, Government of India, in order to expedite the process of modification/amendment of the APMC Act. Establishing private/cooperative marketplaces, direct marketing, contract farming, creating a farmer/consumer market, and a single point levy of taxes are some of the primary aspects of the Model Act. The establishment of a market fee, the State Agricultural Product Marketing Standards Bureau, and a single, uniform trade license for all mandis in the state. The adoption of the specified provisions received tepid and inconsistent support from various States and UTs. In order to hasten the pace of changes, the Ministry of Agriculture and Farmers Welfare established a Committee of State Ministers In-Charge Agricultural Marketing in 2010. Agriculture Product and Livestock Marketing (Promotion and Facilitation) Act of Model States and UTs, 2017.

The Model Agricultural Product and Livestock Marketing (Promotion & Facilitation) Act was created by the government in 2017 with the goal of further strengthening the agricultural marketing system via reforms. It was subsequently distributed to the states for acceptance of the Act's proposed provisions. The new Model Act, which was circulated in 2017, is extensive and has a number of provisions that look to the future, including (a) declaring the entire state or the entire UT to be one unified market; (b) requiring APMCs to only regulate practices in their respective principal market yards and sub-yards; and (c) allowing warehouses to function as sub-market yards. (d) granting a single trading license for the whole state; (e) enabling and promoting private wholesale market yards; (f) boosting farmer-consumer marketplaces; (g) encouraging e-trading; and (h) establishing a common national market for agricultural goods.

In order to transform agriculture by assisting farmers in obtaining guaranteed markets for their produce and having alternative options for transactions where prices are in their favor, the Government of India recently introduced new Ordinances in the month of June 2020 with a focus on trade and commerce and price assurance. In order to improve the agribusiness environment for engagement of private actors, aggregators, and processors, the Essential Commodities Act, 1955 has also been updated by eliminating some commodities from the list

of essential commodities. The list of vital commodities no longer includes goods like grains, legumes, oilseeds, edible oils, onions, and potatoes. Ordinance of 2020 Concerning Farmers' Produce Trade and Commerce (Promotion and Facilitation).

The primary goal of the Farmers' Produce Trade and Commerce (Promotion & Facilitation) Law, 2020 is to lower barriers to interstate and intrastate commerce across the nation. The terms of the Ordinance allow for the unrestricted exchange of agricultural products outside of the APMC Market Yards. Trade was formerly limited to the APMC market yards, and all transactions involving agricultural products had to go via the relevant APMC and include the payment of any appropriate market fees or levies. To do business in the notified markets region for the sale and purchase of notified agricultural commodities under the jurisdiction of whose authority trading is taking place, the traders/commission agents were needed to get the necessary license from the respective APMCs. Following the implementation of this Law, all taxes and permits are no longer required for any transaction occurring outside the actual market yard. A clause in the legislation also allows for the establishment of an electronic trading platform. After completing the necessary procedures, anybody with a PAN or other documentation as specified by the government may use this platform.

The FPOs and farm cooperatives may also create such a platform to make it easier for scheduled farmers' products in a trade area to be traded between and within states. Farmer negotiating power will increase as a result, and economies of scale will also benefit. According to the Ordinance, a trading area is any area or site where products from farmers may be produced, collected, or gathered. This includes farm gates, manufacturing premises, warehouses, silos, cold-storage facilities, and any other buildings or locations. Nevertheless, the physical markets set up and run in accordance with the APMC Act are not included in the trading area. This Law will increase trading opportunities for both merchants and farmers throughout all of India, remove obstacles to interstate and intrastate trade, and commerce outside of physical marketplaces. It will also lower marketing expenses and improve farmer compensation. Agreement on Pricing for Farmers (Empowerment and Protection).

The Department of Agricultural Marketing & Agri Business's vision is to ensure a fair price for the farming community, which is often left behind in a competitive marketing environment. The department's mission is to accomplish this by effectively enforcing current laws and regulations as well as by developing and implementing new technologies aimed at minimizing pre- and post-harvest losses and promoting value addition. Initiatives from the Green Revolution increased the production of food grains to reach self-sufficiency. Many programs have been launched concurrently to encourage agricultural marketing in the state. Infrastructure for agricultural marketing is essential for developing and maintaining the pace of rural economic growth. As important to improved agricultural performance as farming itself is marketing.

Agri Business is a process, which begins with a choice to produce a saleable agricultural product and it covers all the components connected to pre and post-harvest activities including grading, value addition, packing, processing and shipping. These processes raise the value of agricultural products. In order to concentrate on other activities like Agri Export, Post-Harvest Management, Food Processing, etc., the Department of Agricultural Marketing, which has been in operation since 1977 with the primary goal of regulating agricultural marketing, changed its name to Department of Agricultural Marketing and Agri Business in 2001.

Restructure

As part of the reorganization to control Agri Business and support entrepreneurs, one Deputy Director of Agriculture (Agri Business) for each district, one Agricultural Officer for every

two blocks, and one Assistant Agricultural Officer for one block have been assigned. Agriculture Officers and 52 Deputy Agricultural Officers are deployed in 103 Uzhavar Sandhais. At the Agriculture Marketing and Agri Business Department, 239 initial jobs have been increased to 906 posts as a result of restructuring.

The Primary Tasks

Creation and upkeep of Uzhavar Sandhaigal in the interests of both farmers and customers. To establish groups that encompass production, storage, and export in order to provide small and marginal farmers with commercial options in the cultivation of fruits, vegetables, and flowers. The creation and upkeep of regulated marketplaces to make it easier for people to purchase and sell agricultural goods for the benefit of the farming community. Agricultural output is graded at controlled markets and on farm holdings to assist farmers get a fair price for their goods. By using training, advertising, and propaganda, it will be possible to educate farmers about the advantages of grading, selling, adding value, and processing their goods via controlled marketplaces.

To create agriculture export zones for the purpose of promoting the export of agricultural products by expanding the area under crops that are exportable, providing the post-harvest infrastructure that is necessary, and providing information on prices that are currently being paid on global markets using an integrated approach and computers. For the advantage of customers, to start Agmark rating agricultural, animal husbandry, and forestry goods. To build cutting-edge cold storage facilities so that farmers may keep and sell their produce at a profit and so that customers can acquire high-quality food. To reduce agricultural product waste, expand job possibilities, and improve foreign exchange, food processing industries are pushed[9].

Introduction to Agricultural Marketing

Ideally near farmers, the agriculture industry requires organized and effective marketplaces to drive growth, employment, a fair price, and economic development in the nation's rural communities. It was also necessary to put in place enabling mechanisms to purchase agricultural products directly from farmers' fields and to create a strong connection between the farming, retail, and food processing sectors.

A Model APMC Act was created and sent to the States/UTs in 2003 for implementation since agriculture is a state concern. Contract farming, direct marketing, market establishment in the private and cooperative sectors, e-trading, one point market fee collection, single registration of market functionaries, farmer-consumer marketplaces, etc. are all covered under the Model Act.

Direct marketing, contract farming, and markets in the private and cooperative sectors are now permitted in States and UTs where the APMC Act has been amended to include these provisions. Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Mizoram, Nagaland, Orissa, Rajasthan, Sikkim, Uttarakhand, and Tripura are the states/UTs that have implemented these three reforms. States/ UTs where amendments to APMC Act have been done partly include NCT of Delhi, Madhya Pradesh, Chhattisgarh, Haryana, Punjab and Chandigarh. Kerala, Bihar (where the APMC Act was abolished in 2006), Manipur, the Andaman and Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu, and Lakshadweep are the states and union territories where there is no APMC Act. Instead of altering the APMC Act, Tamil Nadu has implemented changes via executive orders. Meghalaya, J&K, West Bengal, Puducherry, and Uttar Pradesh are among the states and union territories where changes are necessary.

The Committee of State Ministers Responsible for Selling Agricultural

The Ministry of Agriculture established a Committee of ten State Ministers in charge of Agriculture Marketing in 2010 with the goal of convincing the various State Governments/ UTs to implement the reforms in agricultural marketing by adopting various provisions of the Model APMC Act and to suggest additional reforms. The Committee has been discussing several market reform-related matters. On September 8, 2011, the Committee turned in its first report, which has since been sent to the States and UTs for feedback. The committee's final report is forthcoming, and action will be done in response to its recommendations.

Agmark Grading Facilities (SAGF) Strengthening

Agricultural product must be graded and marked according to the 1937 Agricultural Produce (Grading and Marking) Act. It entails establishing grades, standards, and certification for the agricultural commodities included in the Act's schedule. With the use of lab equipment and other resources, the SAGF Scheme intends to assist 11 Regional Agmark Laboratories and a Central Agmark Laboratory in Nagpur in their development and promotion of the grading and standardization of agricultural commodities under the Agmark brand. Grading and Marking Regulations, which are periodically formulated, provide criteria for a variety of commodities and agricultural product. This is how the Agricultural Produce (Grading & Marking) Act, 1937 is put into practice. There are now 108 rules regarding agricultural commodities[10].

Institutional Intervention in Agricultural Marketing Development

Three marketing-related organizations are under the administrative control of the Department of Agriculture and Cooperation: the Ch. Charan Singh National Institute of Agricultural Marketing (NIAM), Jaipur, which offers training in the agribusiness industry; the Directorate of Marketing & Inspection (DMI), Faridabad, which promotes standards and grading of agricultural and allied produce.

Marketing and Inspection Directorate

The Ministry of Agriculture has an affiliated office called the Directorate of Marketing and Inspection (DMI). It was established in 1935 to carry out the Central Government's goals and programs for agricultural marketing. From its foundation, the Directorate has been charged with developing an integrated system for the marketing of agricultural and related products in the nation while protecting the interests of both consumers and producer-sellers. It keeps a strong line of communication open between the Central and State Governments in putting the nation's agriculture marketing plans into practice. In order to carry out the Agmark certification program, the Directorate maintains a Central Agmark laboratory (apex Laboratory), 11 Regional Offices, 26 Sub-Offices, 11 Regional Agmark Labs (RALs), and a Head Office in Faridabad (Haryana) and a Branch Head Office in Nagpur (Maharashtra).

There are no offices of the Directorate overseas

The process of pre-shipment inspection under Agmark for the export of fruit and vegetables to EU nations has received approval from the European Commission. DMI has also been authorized by the Directorate General of Foreign Trade to serve as the inspection and certification authority for produce exports to EU nations. Inspection and certification are entirely optional. The inspection and certification of fruits and vegetables, such as grapes and onions, is being handled by DMI. The Fruit and Vegetables Grading and Marking

Regulations, 2004, are followed for inspection and certification in order to maintain grade standards. In addition to performing the required grading, DMI also handles the issuance of health certificates for the export of grapes, okra, and groundnuts to the European Union in accordance with European Commission Regulation (EU) No-91/2013.

The Small Farmers' Agribusiness Consortium (SFAC)

The Small Farmers Agri-Business Consortium (SFAC) was incorporated as an organization under the Societies Registration Act of 1860 on January 18, 1994. The current members include the Oriental Bank of Commerce, RBI, SBI, IDBI, EXIM Bank, NABARD, Canara Bank, NAFED, United Phosphorous Ltd., etc. The society's goal is to encourage private investment in agribusiness initiatives in order to promote creative ideas for creating revenue and jobs in rural regions. In close collaboration with commercial banks, SFAC is implementing a central sector scheme for the development of the agribusiness sector to provide I venture funding to agribusiness projects and (ii) support to farmers and producer groups for the creation of high-quality Detailed Project Reports (DPR). With 21 commercial banks, SFAC has already inked MOUs in order to successfully execute the plan. The program is accessible to female entrepreneurs as well. The promotion of FPOs, purchases of oilseeds and pulses under MSP, and the development of vegetable clusters are all tasks assigned to SFAC.

The Government of India established the National Institute of Agricultural Marketing (NIAM) in August 1988 as a leading national level institute to provide specialized training, research, teaching, and consulting in the area of agricultural marketing. Under its mission, NIAM is significantly advancing the reform process and expanding the pool of qualified managers. For senior and medium level personnel from different line departments of State Governments, Cooperatives, Marketing Boards, and Agribusiness Entrepreneurs, NIAM organizes training programs in agricultural marketing and related fields. The institution is actively involved in assisting agricultural extension workers in becoming more market-oriented. NIAM has taken a leading role in agricultural marketing research, training, and consulting.

Ordinance 2020 on Assurance and Farm Services

A national framework for farming agreements is provided by the Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Ordinance 2020, which will allow farmers to engage with agricultural business firms, processors, wholesalers, exporters, or large retailers for farm services and the sale of future agricultural produce at a fair price in a transparent manner.

Upon registration with the required authorities, the farmer may engage into a farming agreement with the sponsor. The contract should address matters such as input supply, ownership of agricultural products throughout production, timing of supply, quality, grade, standards, price, and delivery method.

The goal of a farming agreement is to provide farmers with a variety of benefits, including better access to supplies, services, and loans, enhanced production and management skills, and a stable market. The sponsor will also get a supply of guaranteed high-quality products. The terms of the Ordinance protect both parties' interests. There is a mechanism for a conciliation board to resolve disagreements amicably. If any sum is recovered, it cannot even more generous than the sponsor's offer of assistance and entirely protect the farmers' farms, since no action will ever be taken to reclaim any money from them.

The Agri-marketing efforts must be significant and well-structured. The current market needs to address the real control of market behavior as well as two elements of marketing networks. The shifting character of the connections between farmland and marketplaces creates a need to strengthen the controlled market system. It has been noted that improved market accessibility and effective information movement can lead to the production system's much-desired market focus. As Indian agriculture transitions from commoditization to marketing, it becomes more focused on the market. India can boast of having the biggest global network of agribusiness unions, which are involved in the production, acquisition, and selling of farm products.

These have demonstrated to play a significant role in our prosperity. In order to strengthen the marketing network, guarantee that rates are set on a fair footing, and prevent market manipulation, the government must review its policies and laws. By efficiently facilitating farm marketing functions and processes like purchasing and selling, payment, classification, regulation, and shipping, using contemporary ICT can lead to improved solutions.

CONCLUSION

A broad variety of tasks are performed by agricultural marketing, which transports commodities from the site of production to the point of consumption. The government has launched many steps to fortify the framework. To circumvent systemic shortcomings and protect farmers' interests, regulations in agricultural marketing were developed. Regulation had certain valuable functions, but as trade was liberalized and the global economy became more integrated, it became less relevant. As a result, changes were made to agricultural marketing to make it more flexible and accessible to private participants. With implications at the state and federal levels, the Indian government has undertaken a number of policy initiatives in the area of agricultural marketing, with a primary focus on enhancing marketing effectiveness, better farmer participation, price assurance, and the availability of better alternatives, scale of operations, participation of private players, transparency, and increased levels of competition. Farmers must be made aware of these programs via the extension system in order for them to profit from the advantages that are now accessible.

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CHAPTER 4

RECENT DEVELOPMENT IN AGRICULTURAL MARKETING IN INDIA

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ABSTRACT:

Agriculture diversification often entails the development of horticultural crops, vegetables, oils, nitrogen-fixing plants, etc. One of the most recent agricultural developments in India is this. This modification is essential since the newest technological trend also need a name. The Union Government has introduced e-platforms for agricultural commodity selling and online auctioning. E-platforms will be beneficial for the growth of the nation's integrated common agriculture market. The numerous government initiatives and programs used in agricultural marketing are discussed in this study.

KEYWORDS:

Agricultural Marketing, Businesses, Consumers, Economic, Management.

INTRODUCTION

Indian agriculture has been successful recent years, with an average yearly growth rate of 3 to 5 percent. Both in terms of output and geographic reach, the broad-based increase has been noted. On the basis of expected record outputs of rice, wheat, maize, and pulses, the advance projections for the 2020–21 crop year imply record production of foodgrains at 308.65 million tonnes. During the crop year 2020–2021, the second advance estimates predict that horticulture output would total 329.86 million tonnes. The non-agricultural sectors suffered from the problems brought on by COVID-induced lockdowns, whereas the agricultural sector had a strong growth rate of 3.4% at constant prices during 2020–21. However, according to data from the Food Corporation of India (FCI), the central pool of wheat and rice is predicted to have 70.02 million tonnes as of September 2020, which is three times the operational buffer/strategic stock's 21.04 million tonnes. Given these elements, the nation's food supply seem to be more than sufficient.

While Indian agriculture has seen tremendous progress in terms of output, more work still needs to be done to enhance marketing and distribution. The limits put in place to slow the spread of COVID-19 have had an even greater impact on the agri-supply chain, particularly for commodities used in horticulture. India has seen significant challenges with the production and selling of fresh fruits and vegetables because to COVID-19. In order to connect with regional and global markets, value chains must be strengthened and made more resilient. Understanding the current difficulties encountered by agricultural marketing in India is essential for the creation of robust value chains. To tackle rural poverty, food insecurity, unemployment, and the depletion of natural resources, agriculture must be strengthened. The efficacy (efficiency) of the marketing system, which is dependent on the makeup and behavior of the market, is the main focus in marketing.

India's agriculture marketing has Problems

The global trade climate is evolving, creating possibilities for global commerce. Although though the Indian government has made several steps to improve the infrastructure and

responsiveness of the marketing system, there are still numerous obstacles that farmers and other stakeholders must overcome in order to sell their goods. Below is a list of some of them: Insufficient transit infrastructure the distribution of agricultural goods, the creation of markets for agricultural output, and the reduction of spoilage and loss are all significant aspects of transportation. Due to limited transportation infrastructure, there is a rise in the waste of agricultural products. To increase the accessibility of transportation amenities in rural regions, the government has launched applications like Kissan Rath[1]–[3].

FPOs, or Farmer Producer Organizations, were first established in 2011–2012. An official group created by primary producers, such as farmers, milk producers, fishers, weavers, country artists, and crafters, is known as a producer organization. It can take the shape of a production business, a cooperative society, or any other formal structure that allows for the distribution of earnings and advantages among the participants. There are currently more than 5000 FPOs, and the Union Budget 2019–20 sets a goal of 10,000 new FPOs to guarantee farms have access to efficiencies of scale over the following five years. Increasing producers' viability and edge in new market possibilities is the aim of FPOs. The main activities of FPOs are seed distribution, market connections and fertilizers, equipment, training, finance, networking, and technological guidance. Major characteristics of FPOs are listed below.

FPOs are open to anyone who is willing to accept the responsibilities of membership without regard for social, gender, political, racial, or religious differences. FPOs provide training and education to their farmer-members, managers, elected representatives, and employees in order for them to effectively contribute to the FPOs'. Cluster-Based Business Organizations (CBBO) foster and create FPOs, which administering organizations then work with at the cluster or state level.

India's populace is overwhelmingly rural, and farmland provides the bulk of their income. The communities were self-sufficient in the past, and selling was primarily a transportation operation. The process of selling farm products became more and more complicated as communication and transit infrastructure improved and national economies became more and more complex. India has an abundant supply of farming basic materials. In an effort to take advantage of this extensive farming base, global corporations working in the quick food and packaged food industries are swarming to India. Opportunities and difficulties have resulted from this for farm marketing.

Marketing for Agriculture

Agriculture and marketing come together to form the phrase farm marketing. Marketing refers to a set of activities engaged in transporting the products from the point of production to the point of consumption. Agriculture, in a wider sense, refers to activities targeted at using natural resources for human wellbeing. The agriculture and non-farm industries are connected by the agrarian trading system. Since marketing encourages an agriculturist to increase expenditure and output, it is thought of as a crucial component of agriculture. As a result, people are becoming more and more conscious that growing a product is not enough; they also need to sell it. Agricultural marketing was described by the National Commission on Agriculture as a process that begins with the choice to create a marketable farm product and involves pre- and post-harvest activities, assembly, grading, warehousing, shipping, and dissemination.

1. **Market Ignorance:** Agriculture has become an information-intensive industry. To make decisions at each stage of production and selling, farmers need information. Farmers only have a limited amount of access to market-related information, such as the price and arrival of certain agricultural goods. Access to market pricing data is

necessary to create a plan that will help producers realize a higher price for their goods. Even though there are several governmental and private sector efforts, such as agmarknet and IFFCO Kisan Sanchar, it might be difficult to provide all farmers access to information that is user-friendly. Farmers who lack credit and are in desperate need of cash are forced to sell their property. The capacity to pay for new technologies often plays a role in their acceptance. Farmers need to be connected to institutional lending. In order to encourage pledge financing and prevent farmers from being forced to sell their crop at a loss as soon as it is harvested, the government has recently introduced a number of initiatives, including NWR and eNWR. Farmers and other stakeholders need to be made aware of the situation. Long chain of intermediaries: Farmers' share of consumer rupee is low as a result of the supply chain's abundance of middlemen. Long chains of intermediaries make the system inefficient and result in unfavorable pricing for both the producer and the customer.

2. **Absence of suitable storage facilities:** The inability to securely store food until the availability of a favorable price on the market may result in post-harvest losses and force the producer to sell the fruit at a discount. Rodents and insects cause around 20 to 30 percent of the gains to be lost. Inadequate storage facilities cause to boost the agricultural produce's distressed sales. The government has recently launched a number of efforts to support eNWR, pledge financing, and the use of warehouses as market yards. Integrated with marketplaces like the national agriculture market is the idea of storage (eNAM). Farmers must, however, be made aware of the advantages in order to take use of them, and raising stakeholder knowledge is necessary to encourage acceptance of these improvements.

3. **Lack of knowledge about standards and grading:** The Indian agricultural marketing system often exhibits a lack of commerce that occurs on the basis of uniformity and grade. As a result, setting a price for agricultural products is challenging. Customers have trouble finding high-quality products due of improper standards and grading, while farmers suffer as a result of price volatility. The availability of equipment and labor - Agricultural labor migration across states to engage in various agriculture-related tasks, from planting to harvesting throughout a regular year, is highly prevalent. Due to lock down and other limitations, the availability of labor, equipment, and their mobility was impacted during COVID-2019[4].

4. **Preserving social distance and cleanliness in markets:** Agricultural markets are often visited by a variety of parties, including farmers, laborers, transporters, weighers, dealers, and commission agents. Following the appropriate criteria, such as keeping social distance and ensuring good hygiene during marketing activities, was exceedingly difficult during the pandemic time. The key stakeholders need to be made aware of the need of upholding safety standards both during COVID and other normal periods. Average size of land holdings - More than 85% of farmers are engaged in small-scale and marginal farming operations. Little operational holdings make it difficult to achieve economies of scale and result in limited marketable surpluses accessible to farmers.

New techniques and advancements

The government has come to understand the value of an effective agricultural marketing system in assisting farmers not only in achieving the best price but also in diversifying into other crops and businesses and benefiting from the global market. Thus, the following list

includes some of the most significant advancements in farm product marketing. Enhancing the effectiveness of wholesale marketplaces across the nation, there are more than 7000 regulated wholesale marketplaces in operation. The Government of the United Kingdom is working to improve the wholesale marketing system[5].

DISCUSSION

India has recommended a number of actions via Model Acts that were distributed in 2003 and 2017. Direct marketing and markets in the private and cooperative sectors have been made available in more than 16 states. More than 50 private markets have been developed or licenses have been obtained as a result of these activities (dmi.gov.in). Another crucial endeavor to enhance business operations in regulated wholesale marketplaces is the unified license. More than 20 states and UTs have together granted 72260 unified licenses. Deregulation/Delisting and Exemption of Market Fee on Fruits and Vegetables. Several states have deregulated/delisted and exempted Market Fee on Fruits & Vegetables in order to encourage the creation of alternative marketing channels for fruits and vegetables. To promote the selling of perishables in their state, states like Assam, Odisha, Meghalaya, Gujarat, West Bengal, Madhya Pradesh, Delhi, Nagaland, Karnataka, Himachal Pradesh, Haryana, Chhattisgarh, and Maharashtra have supported this project in various ways.

Strengthening of farmers' markets: Farmers' markets have been tried out in many states under various titles, such as Apni Mandis in Punjab and Haryana. Rythu Bazars, Raitha Santhe in Karnataka, and Uzhavar Santhai in Tamil Nadu have all helped to spread the idea with some variations in Telangana and Andhra Pradesh. There are around 488 such farmers' markets functioning in various States throughout the US. These markets, however, primarily provide a platform for direct trade between producer and buyer for the supply of locally produced fresh product, in contrast to western concepts where the platform is used for marketing as well as education and extension[6], [7].

Infrastructure Development:

The presence of infrastructure in markets aids in effective handling and lowers post-harvest losses. Yet, according to the Doubling Farmers' Income Reports, the state of the market's infrastructure is not particularly promising. About two-thirds of the regulated markets have covered and open auction platforms, and only one-fourth of the markets have communal drying yards. Less than one-tenth of markets have cold storage units, and less than one-third of markets have grading facilities. There aren't many marketplaces where you can buy an electronic weigh-bridge. For instance, throughout Tamil Nadu's several regulated marketplaces, there are only 447 godowns and 334 drying yards accessible. To aid in the development of market-related infrastructure, the government has developed a number of programs, including the Agricultural Infrastructure Fund and the Integrated System for Agricultural Marketing (ISAM). Grameen now has the option to enhance Rural Haats / RPMs.

Agricultural markets (GrAMs), as recommended in the DFI Report under the Agricultural Marketing Infrastructure Sub-Strategy of the Integrated Scheme for Agricultural Marketing. Thinking about online trading the government began testing the idea of e-NAM in 21 APMC markets across 8 States. 1000 marketplaces from 21 States/UTs have now been connected with the electronic site. By adding a module for FPO participation and a module for trading based on warehouses, the platform has become more comprehensive and user-friendly. Telangana and Andhra Pradesh have already had around 37 warehouses designated as considered markets. Nonetheless, farmers and dealers are now participating at a fairly low rate[8], [9].

Establishing regional businesses in each village It would be helpful to establish local markets where farmers may sell their produce directly to customers or licensed purchasers. Government involvement is necessary for farmers to profit from this network. According to the DFI Study, the rural haats or rural periodic marketplaces should evolve into GrAMs to serve as collecting and distribution hubs. Tactics used by the government and wholesale markets during the epidemic - The federal and state governments have taken a number of actions to control the epidemic. On the ground, several small-scale inventions based on unmet needs are occurring. Standard operating procedures (SOPs) have been recommended by agricultural marketing boards and departments for the execution of different activities in wholesale marketplaces. Maintaining appropriate social distance and cleanliness in wholesale marketplaces was stressed.

Every day, a recommended chemical was sprayed across the market's grounds. Farmer's and loader's vehicles were placed in separate locations. Certain times were set aside for the functioning of various activities. Visitors to the wholesale market were subjected to thermal scanning to look for any indications. During the harvest season, a harvest permit was granted. Token systems were used in several marketplaces with heavy foot traffic during the selling season to reduce congestion. Farmers were advised to dry their crops according to requirements since crops with excessive moisture levels would be rejected. This resulted to lengthen the selling season of crop and large waits were avoided.

From the earliest human populations, agriculture has been developing. The department of agriculture has not been ignored by the world's rapid use of technology. In these situations, startups, also known as new enterprises, innovate and compete to use cutting-edge technology like the Internet of Things (IoT), artificial intelligence, machine learning, etc. to improve the world. In this blog, we'll talk about emerging firms that are driving innovation as well as the newest trends in Indian agriculture. Also, new technologies have improved society's standard of living. This has occurred all across the globe, not just in India. After talking about this, we'll move on to current advancements in the industry.

An increase in Food Grain Production

In India, the Green Revolution has considerably improved food production. Congressman Shri Lal Bahadur Shastri served as its head when this movement got underway in 1967. The primary three Indian states targeted for this initiative were Punjab, Haryana, and Uttar Pradesh. Punjab, frequently referred to as the breadbasket of India, excelled in the execution of the concept.And it was accomplished thanks to the introduction of new food grain kinds that had their DNA altered. As a result, this tendency has had an influence on the development of higher-yielding food grain types and drought-resistant crop varieties, among other things. This was and still is India's newest agricultural trend. Due to research and development, new crop kinds are introduced every year.

Agriculture’s Diversification

In order to enhance soil fertility and quality when there was a rush for crop output, agriculture needed to diversify. Agriculture diversification often entails the development of horticultural crops, vegetables, oils, nitrogen-fixing plants, etc. One of the most recent agricultural developments in India is this. This modification is essential since the newest technological trend also need a name.

Horticulture and its results under the current conditions

Horticulture is continually expanding in India because of the country's diverse range of soil

types and soil textures. According to statistics, India is the world's top producer of fruits and the second-largest producer of vegetable crops. India's most recent agricultural trend is expanding together with the tide. Hence making up a significant portion of India's GDP.

The Indian economy's growing Impact of Floriculture

With a contribution of INR 266 billion, floriculture is one of India's newest agricultural innovations. The cultivation of flowers, often known as floriculture, is evolving along with agriculture-related technologies. According to studies, 31000 hectares of land in southern Indian states are used for floriculture. If you're a farmer, of course, the new advancements could drive you insane. Yet, we have selected some of the most recent developments in Indian agricultural technology. Real-time changes brought forth by these technologies are affecting agriculture. Also, this could alter how agriculture develops in the future. The top 10 Agritech developments and innovations' effects in 2022 are shown in the data below:

Internet of Things

The Internet of Things is the utilization of synchronized data across several platforms to share vital information in real-time. Crop monitoring in conventional farming needs a lot of labor and time. As a result, the Internet of things uses technology to alter this whole situation and make it real-time. The use of sensors, such as soil temperature and humidity sensors, plant and livestock monitoring sensors, etc., allows for the collection of a lot of data. Farmers may get this information in real time on their mobile devices thanks to these sensors. As a result, India's agriculture is now following the most recent trend in technology.

Robotic Agriculture

In Indian agriculture, agricultural robots is beginning to take form. Despite the fact that the idea has been around for a while. Businesses concerned in technology are now working very hard. This most recent development in technology is used for sowing, picking fruit, harvesting, planting, and a lot more things.

Artificial Intelligence

Farmers may get real-time data by using artificial intelligence in farming. Since then, this technology has only provided farmers with the crucial real-time information they need, such as weather information, crop output, and pricing information. Farmers are able to decide with knowledge thanks to this. Additionally, this technology makes it feasible for prompt rectification and remedial action.

Drones

The major uses of drones are to monitor crops, apply pesticides and fertilizers, etc. They are what they are described to be and are known as unmanned aerial vehicles. This most recent development in farming and agricultural technology is revolutionizing farming practices by lowering the labor intensity needed to raise a crop.

Drones from Equinox

This Indian firm focuses on using cutting-edge technology, such as ortho-mosaic maps, 3-D point clouds, contour maps, etc., to monitor crops using unmanned aerial vehicles (UAVs). The start-up gathers, edits, and analyzes crop picture data. They may use this information to estimate the crop danger and possible season production. In India's rural and urban regions, this most recent development in agricultural technology is bringing about significant change[10].

The Bottom Line

In this blog, we spoke about the most recent agricultural developments in India and the innovative start-up companies. We also spoke about the numerous facets of the most recent technologies that are popular in India. We also spoke about a few Indian startups that were engaged in the same.

Recent Developments in Agricultural Marketing:

The agricultural industry has shifted from being deficit to excess focused. Farmers are seeing improved results from new marketing strategies like contract farming. Other corporate companies, such as Tata, Birla, and Mahindra, are growing their farming businesses. Commercial banks and regional banks have exceptional power in funding agribusiness enterprises thanks to their more than 68,000 locations. Bilateral, regional, and trade agreements have made it possible to open up financial markets and reduce tariff and non-tariff obstacles to cross-border movements of farming production.

Globalization and liberalization have opened doors for the transformation of India's agro-food marketplaces. Another centralized open electronic spot exchange with its headquarters in Mumbai is called National Spot Exchange Limited. It was founded in 2005. It is a cutting-edge marketplace that offers specialized answers to a variety of issues encountered by crop growers, manufacturers, shippers, buyers, investors, and general players in the commodity industry. The e-seva Kendra operated by Grameen Sanchar Society (GRASSO) offers agri-related services like market access, farm product pricing, access to refrigerated storage facilities, workforce supply, and employment possibilities. The Agricultural and Processed Food Products Export Development Authority serves as a conduit between Indian farmers and international marketplaces and offers financial support through a number of programs to encourage and expand agricultural shipments. The e-choupal from ITC was very effective in farm promotion. ITC has installed a tiny computer terminal in each hamlet to give producers access to up-to-the-minute market and pricing information. Additionally, websites like ikisan.com, krishivihar.com, agriwatch.com, and commodityindia.com give producers knowledge about the creation and selling of agricultural products.

India has a lot of promise and room for agricultural marketing growth, so agricultural marketing efforts must be significant and well-organized. It is important to enable improved and simple market entry as well as effective information movement. Marketers should make investments in all the tools necessary for farm marketing, including infrastructure. Because producers will have more discretionary money if their farming products are properly and promptly marketed. To improve the marketing network and make sure that rates are set on a fair footing, the government must review its policies and laws. By efficiently facilitating farm marketing functions and processes like purchasing and selling, payment, classification, regulation, and shipping, using contemporary ICT can lead to improved solutions.

CONCLUSION

Indian markets face a number of obstacles that prevent them from operating to their full potential, including insufficient agri-produce transport facilities, poor market infrastructure, a lack of market information, an insufficient number of processing units and storage facilities, and price volatility. Regulating to properly integrate farmers with the market and enable them to realize the highest possible price for their produce, it is necessary to eliminate the presence of too many middlemen, build adequate storage facilities and other infrastructure, connect farmers with formal credit, provide adequate transportation facilities at reasonable rates, and strengthen the capacity of all relevant stakeholders.

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CHAPTER 5

USING ICT TOOLS TO CONNECT FARMERS AND MARKETS

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ABSTRACT:

Electronic media, computer gear, software services, and radio and television broadcasts are all possible inclusions. The development of ICTs as a crucial instrument for accelerating agricultural growth in a developing nation like India has witnessed considerable improvements in recent years. It offers practical methods for distributing agricultural information to rural regions where the majority of farmers are located. In order to increase agricultural productivity, farmers need knowledge. The main goals of ICT in rural development are to increase effectiveness, transparency, and responsiveness as well as public engagement in the creation and execution of rural development programs. It helps to modify the rural way of life in both qualitative and quantitative ways.

KEYWORDS:

Agricultural Marketing, Businesses, Consumers, Economic, Management.

INTRODUCTION

The kind and extent to which information and communication technology (ICT) is used to mobilize the populace determines how successful agricultural development projects in underdeveloped nations will be. As a result of shifting global trade conditions and government regulations, India's agricultural marketing sector is undergoing a fast development.

Farmers, merchants, and other stakeholders are working together to replace outdated, ineffective marketing methods with more recent, effective ones. Indian small-holder farmers provide the majority of the country's agricultural output, which supports economic stability and national food security. Even though these smallholders are vital to the country's overall development, they still face a number of challenges, including poverty, low yields, inconsistent quality, post-harvest losses, ignorance of domestic and foreign markets, climatic changes, a lack of access to and understanding of technology, a lengthy chain of intermediaries, and many others. Use of ICT may play a critical role in assisting small farmers and assisting them in connecting with the market.

Farmers and marketplaces are connected

In order to connect farmers to markets, one of two approaches is required: either the "bottom-up" approach, which identifies farmers or farmers groups to work with before finding a market that they can link to for supplying the produce, or the "top-down" approach, which first determines market demand before seeking farmers or farmers groups to satisfy it. For market linkage development to be effective, farmers must be aware of the markets and the state of the marketing environment. Having marketplaces may not be enough to guarantee success; they also need to be in a position to help farmers and other stakeholders who are connected to entrepreneurs or farmers realize the benefit. Also, participants must be guaranteed higher net revenues from joining a new connection than they would get from their current activity.

Farm profitability must be taken into consideration from the outset of the links by adopting reasonable production and distribution assumptions. Also, it's critical to identify the market and to put farmers in a position to provide high-quality food at the correct moment, which will obviously result in greater returns on their efforts. Information technology may be used to facilitate the creation of these links and associated information requirements. The use of ICT may streamline the whole "Linking" of farmers with markets process[1], [2].

Many forms of Farmer-Market Connections

The Indian government has recently introduced a number of legislative initiatives to improve the efficiency and suitability of the country's agricultural marketing system. Due to these changes in legislation, a number of alternatives have emerged that help connect farmers and markets, including

- Producer Organizations for Farmers
- Connections via a prominent farmer
- Cooperative connections
- A domestic merchant to farmers
- Producers and retailers
- Farmers to food manufacturers
- Agricultural to export
- Government to Farmers

Farmers require up-to-date information to enable them to access markets, bargain for pricing, carry out research on the ground, get timely and enough credit, seek and act on market intelligence reports, and access financing. This important information may help farmers work more productively, earn more money, and safeguard their livelihoods and access to food. Innovative uses of information and communication technology (ICT) via ICT-enabled services aid in the timely dissemination of information to farmers on agricultural advice, financial services, agricultural markets, and risk transfer, enhancing their ability and reducing hazards.

Agricultural Advisory

Accurate local weather predictions, crop-specific advisories that are arranged in accordance with the stage of the agricultural cycle, and pricing information are among the information priorities for farmers. ICTs assist in obtaining up-to-date research results on crops via the web-based platforms of agricultural colleges and research institutes, collecting commodity pricing using mobile technologies, and recording real-time meteorological factors through remote sensors. ICTs have undergone significant change in recent years and are now becoming an effective instrument for boosting agrarian development in developing nations like India. Since the late 1980s, the ICT industry has experienced fast development, and since the 1990s, ICT use has increased significantly. The involvement of both men and women in agricultural growth and development has significantly increased as Indian agriculture simultaneously moves toward feminization.

By 2050, the population of the world is predicted to reach 9 billion, and to satisfy the extra demand for food, crop output will need to rise by 60% from 2005–2007 levels. Applications

of ICT can significantly help to satisfy the future dietary requirements of the world. Facilitatingthe interchange and sharing of farming information, expertise, and skills is a key responsibility of agricultural extension services. The dissemination of agricultural knowledge from study facilities to farmers is crucial because it enables farmers to learn about advancements that increase agricultural output. Therefore, it is crucial for every country, particularly emerging ones, to take into account the need of producers for pertinent and current knowledge on novel farming practices.

By gathering and disseminating timely and accurate information on weather, inputs, markets, and prices; by feeding information into research and development projects; by educating farmers; by bridging producers and consumers; and through a variety of other means, information and communication technology can achieve this. A few of these characteristics are the focus of the current research. This research particularly looks at producers' access to and supply of various ICTs devices. ICT are frequently seen as helpful, according to if they are cheap cost, have the ability to thrive in a broader market, and are prepared to collect a large amount of information quickly.

Through this research, we may learn more about how producers use their cell phones. Are they effectively using the phone, are they doing so easily, are they using the phone's standard features or not, and what are they using it for? We can use the information about their expertise and cell usage to effectively use technology to teach them in farming and related outdoor tasks once we have it. Claim that mobile technology has given farming people numerous advantages, including improved communication, ease, and quick/timely information sharing.As a result, data is gathered, stored in a database, and automatically activated to send registered farmers localized and personalized information via Short Messaging Service (SMS) and Interactive Voice Response (IVR) over the mobile communication channel about the weather, commodity prices, and crop cultivation. Farmers now have more influence because they are more equipped and more knowledgeable to use their resources successfully.

Financial Services

For farming to be sustainable and lucrative, there must be appropriate, timely, and affordable finance available from banks. With the use of portable biometric transaction equipment, remote bank transactions have resolved the problems of bringing all farmers within an affordable financial reach. With the assistance of these gadgets, which are accessible by smart cards, the Banks provide financial services such as savings, credit, insurance, and remittance. Smart cards save information about farmers' lands, past crops, and financial activities that enable banks review and approve agricultural loans more quickly. Hence, the farmer must start the loan process using a handheld device that is accessible in the village and then go to the bank to receive the loan money when loan approval is confirmed. The farmer will spend less time and effort applying for institutional loans as a result[3], [4].

Marketing for Agriculture

Due to connections with far-off and international markets, the scale and scope of the agricultural market have grown significantly over time. For the purpose of promoting their product, farmers use a variety of ICT platforms, including mobile devices, websites, information kiosks, online marketplaces, etc. ICT platforms expand market information, provide farmers more assurance that they understand consumer demand, and improve their capacity to manage supply chains and regulate output. Dealing directly with big wholesalers, merchants, or processors rather than small-scale middlemen also benefits farmers. Hence, ICT platforms aid in creating a wider network of connections, which helps in making better

decisions about logistics and transportation, pricing and location, supply and demand, and more affordable input access.

Risk Shifting

Climate change and commodity price volatility have raised interest in risk transfer tools like insurance and price hedging, making them more practical and inexpensive for farmers. Scaling up risk transfer instruments for farmers may undoubtedly be aided by the mobile platform's capacity to ease financial transactions, capture real-time data on crop loss, and automatically do damage assessment. Agri-commodity farmers and farmer organizations may hedge their holdings or take advantage of the possibility to sell online at the spot markets by having access to national futures and spot markets for those commodities with real-time price dissemination.

Way Ahead

It is essential for the flow of critical information between farmers and service providers to have a robust and affordable mobile infrastructure. Moreover, using smartphones and tablets for information distribution is more effective and customized for the consumers since it allows for the installation of software apps for obtaining sophisticated risk mitigation measures like early warnings and advisory information. Also, it aids in the integration of the supply chain with GPS, which offers mapping capabilities. ICT innovation therefore gives farmers more control over their production, risks, and marketing of their food to recognized market prospects by enabling quick access to localized and individualized information[5], [6].

Information and communications technology instruments are now essential for agricultural output on a global scale, but particularly in sub-Saharan African farming businesses. Access to scientific and market knowledge is facilitated by the use of ICT in agricultural output, which boosts yield along all agricultural value networks. . ICT is thought to encourage young people to work in farming and make farmland more appealing to them. . Youth are open to using ICT tools, particularly when it comes to getting services and information like agricultural planning, mobile banking, meteorological data, marketing, financial and credit support, input supply, and guidance from development specialists. Young agripreneurs may be better able to make daily choices about their farming operations by using ICT, which could contribute to increased output and revenue, decreased postharvest losses, and increased resistance to the effects of climate change. Additionally, over the past two decades, ICT tools have developed into powerful tools that are used by many practitioners in development research, academics, and industry to connect with and impart knowledge and experience to young agripreneurs.

Information ease and availability are essential for efficient and fruitful dairy output. . Young dairy farmers require access to data on animal illnesses, nourishment, disease prevention and therapy, breeding methods, marketplaces for their goods, markets for their inputs, and finance and loan services. . The information is available to these dairy agribusiness owners via radio, television, and mobile devices in a variety of formats, including agricultural programs, advertisements, feature stories, agricultural subscription and free SMS services, mobile applications, and e-commerce platforms for inputs and produce as well as videos. iCow, which disseminates information through SMSs and through their mobile application, and the African Dairy Genetic Gains program, which records and disseminates on-farm productivity and genetic information through SMS service through partnership with iCow, are some examples of recent ICT-based initiatives that target Tanzanian dairy farmers. Shamba-shape up airs on radio and TV and also through their website iShamba. .

The government is encouraging initiatives to expand the use of ICT in agribusiness, which would boost young people's involvement in the industry. ICT incorporation in agriculture is supported, for instance, by Tanzania's National Agriculture Policy of 2013, which was put into practice by the country's former Ministry of Agriculture and Cooperatives. . To promote the use, acceptance, and utilization of ICT farm goods and services, the policy statement offers revenue levers and other benefits, such as the construction of community information centers with working partners. The acceptance and consumption of ICT for getting technological, market, and financial information among rural agripreneurs in Tanzania remains a challenge despite attempts for ICT growth and the availability of these ICT services. With little attention paid to the characteristics of the ICT tools that are currently available as a potential cause. Complementarity, ease, applicability, speed, input, mobility, and other qualities make up this list.

By analyzing the effects of ICT instrument characteristics on obtaining technological, market, and financial information, this study adds to the corpus of knowledge. It is essential to comprehend the functions of ICT tools because doing so will guide the creation and execution of specialized ICT-based programs for dairy young agripreneurs. Increasing the use of ICT among young dairy agripreneurs in remote areas. Our use of the multivariate probit model to concurrently describe the use of the three primary ICT tools mobile phones, TVs, and radios used by the bulk of remote agripreneurs is another addition to the literature. This association has been examined separately in previous research. This method made it easier to evaluate the collaborative decision-making of a single dairy young agripreneur who employs multiple ICT tools at once. In this study, a young agripreneur is a dairy farmer who is between the ages of 18 and 35.

DISCUSSION

Technology for Information and Communication (ICT)

Understanding Information and Communication Technology (ICT) is essential because it may help farmers participate more effectively in new marketing channels. The technology for information communication is known as ICT. Radio, television, mobile phones, computers, networks, hardware, software, satellite-linked systems, and their related services and applications, such video conferencing, community radio, and distant learning systems, are just a few examples of digital ICT technologies. India's introduction of the Educational Research Network (ERNET) initiative in 1986 marked the beginning of the country's online education industry. ICT has significantly changed how the world works, runs, communicates, and shops during the last ten years. Information and communication technology (ICT) applications may be crucial for effective information distribution. The ICT can provide quick, dependable, and accurate information in a simple way that the end user can really utilize. The information shared helps farmers determine what and when to plan, how to plant, when and how to harvest, and what post-harvest practices to use.

When and where to sell the fruit, as well as the procedures for harvest management. By providing them with proper training and knowledge, the Indian government has been implementing numerous initiatives and programmes to link rural regions with social media. In India, there will be approximately three times as many social media users in 2020 as there were in 2015. The development of smartphones throughout time is the main factor behind this surge. India's use of smartphones has steadily expanded over time, and by 2023, 448 million are expected to be in use there.

Information on science and technology is crucial for advancing national growth across all sectors and levels. Nearly half of the country's revenue is generated by agriculture, which has

a significant impact on the Indian economy. India's success is reliant on the expansion of its agricultural and related industries. Agriculture has the potential to be a significant economic development driver. Information and communication technology (ICT) adoption in agribusiness will guarantee the timely spread of necessary information. ICTs have the ability to be an instrument for the development of rural India. Agriculture study has enhanced the production system, but scholars and professors still disagree with these findings. ICT can give producers access to the most recent local and international weather information as well as all the information they require to increase output, market recognition, and weather access. Small producers and craftsmen in remote regions can obtain prices, financing options, market rates, and other information through ICT. Farmers still rely on conventional methods and recommendations from other farmers because the material is not tailored to the local population and because they are unaware of the ICT resources available to them.

Interest in agriculture is resurging after about two decades (since the middle of the 1980s) of neglect and disinterest by academics, researchers, donor communities, and some developing countries. This is largely due to a new understanding that agricultural growth plays a major role in overall growth and poverty reduction through linkages to manufacturing and services in a supply chain and international trading network framework as well as in connecting the poor along the emergence of stores, the reduction of poverty, and environmental friendliness are the three main forces behind this resurgence in interest in farmland.

Nowadays, the majority of Malaysians own ICT equipment. This is based on recent data from the Malaysian Communications and Multimedia Commission (MCMC), which revealed that the country has more than 13 million mobile phone subscribers, with the penetration rate now surpassing 50% and more than 84 million SMS being sent each day. A local daily, Utusan Melayu, reported in 2008 that 500,000 Malaysian blogs had been established and that, as of 2006, more than 500,000 Malaysians had access to the internet at home.This truth demonstrates that millions of Malaysians are capable of owning their own ICT equipment. It is clear from RMKe-9 that using specialized expertise in the farming industry is essential to the prosperity of this industry. Farmers will be introduced to information and cutting-edge agricultural technology through the use of ICT, especially the internet.

Mastering ICT expertise is one method to support agribusiness as the third moving force in this nation's economy. In contrast to this, the degree of ICT practice among farms in emerging countries like Malaysia is still at an ordinary level, according to a report written by the United Nations ICT Task Force in 2005. Malaysia is one of the nations with a high demand for ICT company. Farmers Organization Authority Malaysia (2004) asserts that the ICT practice gives feedback or data to farmers and breeders regarding modern technology, seeds, and the cost of agricultural goods. Additionally, according to Obiechina (2004), agricultural producers have the chance to connect with other farmers and development organizations through ICT, increasing their possibilities of growing their agricultural enterprise.

According to study by, ICT has a lot to give and is one of the instruments for overcoming poverty. Which claimed that ICT can lessen poverty, particularly in the remote region, supports this. According to a study conducted by Public Opinion and Customer Research (COMPAS) Canada in 2005, the use of ICT by farms has significantly changed the community. Farmers are becoming more competitive, farming output is increasing to meet market demand, and more educated farmers are being created, among other changes. In addition to these, ICT offers producers the chance to expand their business and find new clients online. All of these changes offer farmers the chance to develop projects that are both cost-effective and improve living quality. The World Summit on the Information Society

(WSIS) 2003–2005 acknowledged and supported the importance of ICT in enhancing agricultural living. The use of computers, the internet, location information systems, cell phones, and conventional media like radio and television are all included in this.This emphasis on the relationship between ICT and farmland is known as "e-Agriculture" worldwide.

A more exact definition of e-Agriculture is a new discipline that aims to improve sustainable agriculture and food security by streamlining knowledge access and sharing procedures through the use of information and communication technologies. (ICT). Mobile phone serves as an illustration of the effective application of ICT to farm growth. It has been used to get information on market values, the weather, and other things. As the most accessible ICT presently on the market, it gives access to a wide range of users, including those who are disadvantaged and live in distant country regions. ICT technology development must be strengthened because it has the potential to advance the agricultural industry. However, if the farmers, who are the accountable group, do not seize the opportunity to learn the technology, ICT will be useless to them.

From here, some significant issues could be addressed, such as how prevalent ICT use is among Malaysia's agricultural entrepreneurs. Do the entrepreneurs incorporate ICT into their farming projects? What effects would ICT use have on our agricultural entrepreneurs' output and progress in terms of quality of life? The World Trade Organization (WTO) has demanded that our agricultural community be more skilled, informed, and competitive, so this research is important for the government of Malaysia to understand the state of ICT utilization among agri-based entrepreneurs in Malaysia.

In order to increase output and job effectiveness, information and communication technology has been applied to various areas of the global economy. One industry in the global economy that has seen significant ICT implementation in all areas of its activities is the farm sector. Daum noted that ICTs had evolved in recent years into one of the primary propelling instruments used by producers to control the crucial output factors in agriculture. Numerous issues in the field of agriculture, such as extended droughts, insect and disease epidemics, periodicity and geographic spread of farming, high transaction costs, and communication inequality, may be identified and solved with the help of ICT apps. The use of ICT in the agricultural value chain may provide chances for chain participants to access accurate, prompt, and pertinent information, enhancing not only revenue but also food security, healthy agriculture, and profitable agriculture. ICT also has the ability to address problems with land value, registry, and taxes that affect states, farms, and other land users. For instance, in India, cultivators were able to save close to 1.32 million working days of labor and about 806 million Rupees in bribes as a result of the better system, which decreased the level of graft. The use of ICT in farming operations is not only becoming more and more common, but it is also changing the sector's companies.

Over the past ten years, the agricultural industry has undergone a new technical transformation. This new technical innovation has the ability to correctly and quickly address the requirements of farms compared to a decade ago. According to Wolfert et al., technical development in recent years has sped up contact and information exchange among farms. Examples of this include e-commerce, agro-advisory applications, big data, processing capacity, and satellite systems like remote sensing. The most common ICT gadgets used worldwide are mobile phones with internet access. According to Statista research, there were 3.2 billion smartphone consumers worldwide in 2019 and that number is expected to rise to 3.8 billion by 2021. The study also revealed that emerging nations globally have the greatest percentage of smartphone consumers. Different ICT applications have been developed in the

agriculture sector as a result of the fast growth of ICT applications across all industries to facilitate the quick access to information by farmers, outreach services, and other sector participants.

Globally, extension services involve educating farmers and remote residents about new tools, farming information, and knowledge. Agricultural expansion is essential for boosting output, boosting food security, enhancing rural incomes, and supporting agriculture as a pro-poor economic development driver, according to the International Food Policy Research Institute. The extension services use a variety of strategies and techniques to bring new concepts and tools to remote residents. The primary goal of these methods is to assist farmers in comprehending the knowledge agricultural extension officials have provided to them. By doing this, farmers may implement new technologies to better their incomes and increase their resilience to problems that may arise in their farming operations. Agricultural extension and consulting services, according to Davis and Franzel, can be a potent instrument for assisting smallholders in ending the pattern of poor output, susceptibility, and poverty. The extension services are better positioned to give producers access to funding, market solutions, and information and instruments about contemporary farming methods. Rural and poor farmers, who form the foundation of farmland and food supply networks in low-income nations, depend heavily on extension and consulting services. To support new technologies, disseminate information, and foster knowledge sharing among farmers and rural residents, the extension services use an interdisciplinary instrument that blends instructional methods, communication, and group tactics. ICTs can make a substantial contribution to farming extension services, whose primary goal is to disseminate knowledge among producers.

ICT tools are needed in Agriculture

IT is currently seen as a crucial instrument for agricultural growth. The following examples demonstrate why ICT applications in agriculture are necessary. Inadequate information on agricultural inputs such as seeds, fertilizers and pesticides. Lack of market information such as commodity prices, Mandi information and information on alternative market channels, and consumer behaviors Lack of extension facilities.

- Platforms for internet marketing aren't available.
- Poor degree of knowledge on testing of soil and water.
- Lack of understanding of current technology and market values
- Being unable to compete with contemporary farmers.
- Farmers have a poor education level.
- Lack of understanding of how credit is created.
- A technological gap between old and new

Instruments that farmers employ in ICT

Various ICT tools are accessible, and choosing the right tool is crucial in a setting where literacy levels are low and infrastructure is only sparingly and selectively available. The following list of frequently used tools is discussed:

TV and Radio

Agriculture-related programming is aired on All India Radio (AIR) stations throughout the nation in all of India's regional languages. With the assistance of the United Nations

Educational Scientific and Cultural Organization (UNESCO), India was one of the first developing nations to explore the use of television for teaching in 1959. The choice of communication technology is crucial in a country with low literacy rates, and these gadgets play a significant role.

Mobile Device

Farmers are adopting mobile devices to expand their customer base and grow their businesses. The increased use of mobile phones is anticipated to enhance farmers' access to market information and their ability to communicate with one another.

The use of smartphones not only keeps farmers in contact with various other supply chain participants, but also keeps them informed about weather forecasts, the proper use of inputs, and access to various warnings and advisories issued by meteorological departments and scientific institutions to avoid any crop-related catastrophe. Farmers now have a lot of opportunity to contact directly with middlemen and sell their goods to customers at fair pricing thanks to smartphones.

Neighborhood Radio

Community radio is a social activity in which community people connect together to plan, produce and broadcast programming. This social media gives the voiceless a voice, acting as the representative of the poor farmers. It acts as the brain and center of democracy and communicative processes in society. Progressive farmers now have the tools to express their own opinions and choices about problematic crops thanks to community radio. The link between producers and receivers is always seamless, and the feedback network is constantly available.

Progressive farmers are welcome to participate in radio at all stages, including project development, execution, and assessment.

Social Media

Social media is an important instrument in agriculture for bridging vast geographic gaps between farmers and agribusiness professionals. Also, it is essential in amplifying contacts and information flows among those involved in the agricultural supply chain and expanding the reach of the agricultural extension system and consultants.

By fostering social networks that are based on needs or commodities, the sharing of this knowledge strengthens the marketing network and boosts the sales of the farmers' goods. A sizable number of individuals in India are now using the internet since it is available on an inexpensive basis. In 2021, there were around 400 million regular users of social media. As of January 2021, around 86 percent and 76 percent of individuals were affected by YouTube and Facebook, respectively[7], [8].

The use of ICT to provide farmers with information

Here are some of the models that are developing under various sectors to ease the spread of knowledge on agriculture and related topics in the nation:

Electronic Mandi:

BSNL and IIT Kanpur together developed a digital tool to provide farmers access to agricultural commodities' current market prices. This assists farmers in choosing the best market and selling window for their goods in order to maximize their returns.

M-Krishi:

Farmers may email their inquiries and get information on the weather and neighborhood Mandi prices using TCS' mobile and sensing technologies. Also, farmers get professional guidance and other pertinent information in their own tongue. Also, this software allows text, audio, and images. M-Kisan is a mobile-based agro advice providing useful information for farmers. Mobile methods including voice, text, on-demand movies, and farmer's hotline are used to provide the information. This software offers farmers the right guidance on pertinent livestock and agricultural challenges, as well as a forum for information sharing.

YouTube:

With engaging videos, YouTube offers a road map to a successful agricultural business component. As visual access is simple for many individuals, this technology effectively communicates the advantages and characteristics of products and services. When filming events and activities at the farm or garden, video may be very helpful in demonstrating viewers a process (such as seed sowing, techniques of harvesting, usage of fertilizers and pesticides). Also, farmers may register for a YouTube account and "subscribe" to channels that are tailored to their interests. Farmers who subscribe get alert messages whenever a new video is uploaded to the channel. When farmers go onto YouTube, they will also get a list of suggested films based on their membership selections. Farmers who follow YouTube's monetization guidelines may profit from their videos, which is another significant element of the site.

WhatsApp:

One of the most popular communication tools of the twenty-first century, WhatsApp transmits messages in real time. WhatsApp may be used to create connections between the many players in the agricultural value chain, including extension workers, small and medium businesses (SMEs), input dealers, and business centers for agriculture. This opens the door to generating more value for marginal and small farmers. The capacity of WhatsApp's platform to communicate messages, photographs, and videos to people and groups in an economical way has been its standout feature. There are several instances in the agriculture sector where WhatsApp has been utilized for speedy information exchange on different production-related topics as well as for promoting locally produced food.

Facebook:

Farmers may utilize Facebook in a variety of ways for areas of production and marketing. It provides a channel for keeping in touch with consumers and the broader public. Facebook offers tools such as digital walls, postings, status updates, videos, and links that let farmers promote their agricultural products and value-added goods.

Telegram:

When protecting the confidentiality of the cell number from others, Telegram has enormous possibilities. A group on Telegram may have up to 2 lakh members. More and more farmers may join a group and exchange their products, expertise, and other helpful information thanks to this wide-ranging service. Transferring information through PDF, PPT, Documents, and Links is possible. With the use of mobile GPS, the AgriMarket smartphone app informs farmers about market news (arrivals and pricing) of agricultural commodities within 50 kilometers of their location. If someone does not want to utilize GPS location, there is another option to get the price of any market and any crop[9]–[11].

e-NAM:

A nationwide market for agricultural commodities is created by connecting the current APMC Mandis via the pan-Indian electronic trading system known as the National Agricultural Market (eNAM). The nodal organization for implementing eNAM under the direction of the Ministry of Agriculture and Farmers Welfare, Government of India, is the Small Farmers Agribusiness Consortium (SFAC). In addition to the scientific, open, and competitive price discovery of pricing, it is a complete model designed to handle different physical and enabling tasks of the market, such as storage, grading, packaging, financing, insurance, and advertising.

Agriculture Portal:

The Farmers Portal website aims to serve as a one-stop shop for all information requirements on agricultural, animal husbandry, and fisheries sector production, sales, and storage for farmers. A farmer will be able to access relevant information sources on their region of interest by using the Portal. The sources of information sent to the farmers in local languages in text, audio, and video forms. Via a distinct feedback method built with interactive elements to solve their difficulties, farmer inquiries are correctly handled.

Call Centers for Kisan:

With the sole purpose of providing farmers with a phone helpline in their native tongues, Kisan Call Centers were created. Every state has a Kisan call center to handle inquiries efficiently from all parts of each state. The exporters provide answers to questions on agriculture and associated industries via their call centers. Farmers may contact the Kisan Call Center by dialing the toll-free number 1551 or 1800-180-1551 to discuss problems with their crops. The Kisan Call Center personnel will attempt to respond as quickly as possible to the farmers' questions based on their expertise or by referring them to a subject matter expert.

Incorporated by IFFCO Kisan Sanchar:

The mission of IFFCO Kisan Sanchar Ltd is to improve farmer livelihoods by offering a variety of useful solutions. By the use of technology, it seeks to revolutionize agriculture while assisting farmers by offering mobile advisory services through the IFFCO Kisan Agriculture App and IFFCO Kisan call center. They have their own distribution system for a wide range of products, including honey, spices, and animal feed. They assist farmers associations and Farmers Producers Organizations (FPO) in improving the quality of their output and in providing viable choices for selling their goods directly to manufacturing and processing facilities by collaborating closely with their institutional partners.

Agmarknet:

The Ministry of Agriculture established the Agricultural Marketing Information Network (AGMARKNET), an ICT-based central sector program that links state agricultural marketing boards and directorates with important regulated marketplaces spread throughout the nation. Farmers and other beneficiaries may communicate with one another via AGMARKNET and exchange market-related information.

e-Choupal:

ITC's effort offers farmers knowledge and different marketing channels to assist them overcome the many difficulties they encounter while practicing agriculture. A kiosk run by a qualified sanchalak and furnished with a computer with internet connection is erected at the village level as part of the campaign. The village internet kiosks are used by the sanchalaks to

communicate risk-aversion techniques and offer access to data on variables like weather forecasts and Market prices. Also, it makes it easier to buy agricultural products directly from farmers and sell farm supplies. e-Choupal offers customized information for farmers as well as real-time information on market-related topics. This makes it possible for farmers to make decisions that are timely and appropriate for the local market's needs for agricultural products. Individual farmers' demands for agricultural supplies are combined, giving them access to high-quality products from reputable, seasoned manufacturers at reasonable costs.

CONCLUSION

Farmers that connect with the market effectively may earn the greatest price for their goods. By using ICT, this market connection process may be improved. As a result, numerous communication methods including social media, mobile phones, community radio, and television have been used in agriculture.

The significance that IT application may play in the advancement of agriculture and strengthening the connection between farmers and markets has been recognized by several projects, including digital mandi, m-Krishi, m-Kisan, National Agricultural Market (eNAM), Kisan Call Centre, AgriMarket, and Agmarknet, that operate in the government, non-government, commercial, and cooperative sectors. Nevertheless, the most effective use of the system and the information sent will rely on a variety of variables, including literacy level, grasp of ICT, the availability of communications infrastructure, degree of farmer awareness, farmer information needs, etc. Provide farmers access to a range of ICT tools, and allow them choose the one that best suits their needs and convenience. By delivering pertinent information in real time, the extension system will also be crucial in ensuring that benefits reach farmers and other stakeholders and facilitating the process of tripling farmers' income.

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CHAPTER 6

FARMER PRODUCER ORGANIZATIONS (FPOS): A COMPREHENSIVE STRATEGY

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ABSTRACT:

Since the FPO enables members to bargain collectively and supports small farmers in both input and output markets, it may assist farmers compete with major corporate entities in negotiations. The cost of aggregation: The FPO may provide its member farmers low-cost, high-quality inputs. Farmer Producer Associations are based on the idea that farmers, who produce agricultural goods, may organize organizations. The Department of Agriculture and Cooperation, Ministry of Agriculture, Government of Canada, authorized the Small Farmers' Agribusiness Consortium (SFAC) to assist in this process.

KEYWORDS:

Agricultural Marketing, Businesses, Consumers, Economic, Management.

INTRODUCTION

Agriculture, which is mostly comprised of several dispersed small holdings and is heavily production oriented, drives the Indian economy. It contributes to the general expansion of the economy, employs approximately 56% of the Indian labor force, and lowers poverty by guaranteeing employment and access to food for the vast majority of the populace. Due to fragmented, dispersed, and varied landholdings, increased cultivation costs, and restricted access to public resources and markets, smallholding-based agriculture has steadily lost its viability. Farmers have become reliant on shady middlemen and neighborhood money lenders as a result of the poor quality of their output, the limited availability of public funding, high-quality inputs, credit facilities, modern technology, frequent crop failures, a poorly developed supply chain, and insufficient market and income security.

Small and marginal farmers own about 86 percent of all land holdings. Inadequate delivery of agricultural services, low technology adoption owing to financial constraints, a lack of business skills, low income due to subpar infrastructure, and inefficient markets are just a few of the major issues affecting small farm owners. Small-scale manufacturers suffer from the market due to a lack of investment capital, a lack of alternate marketing avenues, and a dependence on family labor. The aforementioned situation necessitates significant structural reforms and transformational initiatives to revitalize Indian agriculture by increasing productivity-enhancing investments as well as implementing the necessary agricultural marketing and post-harvest agricultural logistics reforms to ensure the desired growth in agriculture. In this situation, collectivizing agricultural products and encouraging primary farmers to band together via different models supported by the government might lead to a durable solution. By actively involving farmers, achieving economies of scale in agriculture for value addition, effective marketing of agricultural output, and creation of commodity-specific agricultural value chains.

Following the recommendations of the Alagh Committee (1999), which was set up with a mandate to frame a legislation that would 'accommodate the spirit of a cooperative with the

operational flexibility of a private company,' \sFarmer Producer Companies (FPCs) have emerged as an alternative to statesponsored or state-led cooperatives since 2003. The Small Farmers' Agribusiness Consortium (SFAC), an organization within the Ministry of Agriculture, developed guidelines for the expansion of FPOs in 2013. Many FPOs have been encouraged around the nation since 2014 thanks to the PRODUCE Fund, which is handled by NABARD and has a 200 crore rupee budget.

The Rural Livelihood Mission (sponsored by the World Bank) and state-specific initiatives, in addition to donor and CSR monies, provided another push. Farmers themselves make up the membership of the FPO. It offers complete help and services to small farmers, including technical support, marketing, processing, and other areas of agriculture inputs. An FPO's primary goal is to provide producers with a higher revenue via a well-organized system on their own. The creation of FPOs will help farmers since they may combine their funds for easier access to high-quality input and technology. Also, the farmers will be able to access better financial and marketing opportunities thanks to economies of scale for higher revenue realization. As a result of its awareness of the issues facing India's small and marginal farmers, the government is aggressively supporting Farmers Producer Organization (FPO). The grouping of small, marginal, and landless farmers into FPOs has improved the farmers' access to markets and economic power, which has increased their ability to increase their income.

Describe FPOs:

FPOs are non-profit groups run by the farmers who actively engage in deciding on policies and defining priorities for the organization. They do not discriminate on the basis of gender, socioeconomic class, race, political affiliation, or religion and are available to anybody who can utilize their services and is ready to accept the obligations of membership. To help them successfully contribute to the growth of their FPOs, FPO operatives give education and training to their farmer members, elected representatives, managers, and staff. FPOs in Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, and several other states have achieved positive outcomes and increased rewards for their output. For instance, tribal women in Rajasthan's Pali area established a producer firm, and now they are able to sell custard apples for better rates[1].

Required FPOs

The primary goal of the Farmer Producer Organization is to provide farmers with a higher income via a self-governing group. Tiny producers lack the volume necessary to individually profit from economies of scale. In agricultural marketing, there is a network of middlemen that often operate opaquely, resulting in a scenario where the producer only obtains a tiny portion of the value that the final customer pays. Due to the fact that the primary producers may take advantage of the economies of scale, this will be done away with via accumulation. Farmers who are also producers have more clout with suppliers of inputs and bulk consumers of product.

Manufacturer Organizations

An organization known as a "Producer Organization" was created by the primary producers, such as farmers, milk producers, fishers, weavers, and other rural artisans and craftsmen. Any legal structure that allows for the distribution of earnings and advantages among the members qualifies as a producer organization, including producer companies, cooperative societies, and others. Institutions of primary producers may join producer organizations in various forms, such as producer firms.

Farmers are restricted to solely selling their products in local marketplaces as a result of the difficulties they encounter, especially smallholder farmers, including poor yields, financing restrictions, unfair market conditions, and a lack of efficient organizational structures. Farmers must be collectively minded if they are to succeed in overcoming these obstacles. Farmers will benefit from collective action by achieving economies of scale, lowering input costs, strengthening their collective bargaining position, and having a greater voice. Throughout time, farmers in India have embraced a variety of collectivization techniques. Some of the well-known examples are cooperative societies, federations of self-help organizations, joint liability groups, farmer clubs, common interest groups, and Farmer Producer Companies.

The main obstacles cited in the majority of research evaluations include bad professional management, insufficient funding, an ineffective government pricing strategy, farmer mobilization, and a lack of enough resources lack of sufficient market information, lack of link with financial institutions, and knowledge of lending facilities. Other obstacles include a lack of timely, affordable, and high-quality inputs, inadequate infrastructure (such as tools, irrigation facilities, power, and electricity), a lack of computer literacy that prevents people from taking advantage of the ICT tools that are available, a lack of skilled labor for harvesting and processing, inadequate crop insurance facilities, a lack of market competition, and the nature of the products (perishability)[2], [3].

There is an urgent need to teach the individuals engaged in the administration of FPOs or to set requirements for the office bearers of the FPOs, since inadequate professional management has been identified by all research on the operation of FPOs as the primary restriction. This will support efficient FPO management. To enable FPO members and office bearers to make wise choices on time, a suitable capacity-building strategy should be established. To encourage the formation of agri-enterprises on a wide scale, appropriate connectivity between financial institutions and FPO should be reinforced. It is important to give sufficient skill-embedded knowledge about agricultural product processing, value addition, storage, and the use of information and communication technology in marketing. To acquire the best price for the product, it is important to support a strong supply chain, enough market infrastructure, and market information. A policy should be created to make the FPO the organization at the farm level responsible for spreading agricultural and agribusiness expertise among the farmers[4], [5].

DISCUSSION

Producer Organization for Farmers (FPO)

To take advantage of group economies of scale in the production and sale of agricultural and associated goods, a Farmers' Producer Organization is formed. These organizations are created or registered in accordance with the applicable state's Cooperative Societies Act or Part IXA of the Companies Act. A FPO that has been registered with the State under the Co-operative Societies Act (also known as the Mutually Aided or Self-Reliant Societies Act, by whatever name) is entitled to protection from any interference from any source, including management of the election process, and is also entitled to encouragement to grow. The bylaws of these FPOs must abide by the cooperative society statutes of their respective states.

The Duties of FPOs

Aggregation under a proper model for an organization of originating farmers may assist them in carrying out a variety of tasks for their farmer-members. The following is a list of some of the functions: Provide competitive wholesale pricing for high-quality production inputs

including seeds, fertilizer, insecticides, and other goods. To lower the cost of production per unit, members may reserve need-based production and post-production equipment, such as cultivators, tillers, sprinkler sets, combine harvesters, and other gear and equipment, on a reservation basis. Make value-adding services like cleaning, analyzing, sorting, grading, packing, and farm-level processing accessible at a fair price[5], [6].

Engage in higher-paying pursuits like mushroom cultivation, beekeeping, and seed production. Having the ability to combine smaller lots of product from farmer-members, adding value to those combined lots, and connecting such collections with the market for greater price realization. On a cost-sharing basis, provide logistical services such as loading, unloading, and storage. The capacity of the farmer-members to bargain for a better price may be improved with the integration of aggregated and value-added products at the appropriate level in the supply chain.

Farmers Producer Organizations are Important (FPO) Farmers who want to increase their revenue may do so by forming their own organization, especially in areas where smallholder farmers predominate. Small manufacturers are exempt from economies of scale (both inputs and outputs). Because to the prevalence of several intermediaries in agro marketing channels, primary producers sometimes only earn a tiny portion of the ultimate price paid by consumers. But, by grouping together, primary producers will be able to take advantage of economies of scale and effectively integrate in the marketing channels more geared toward consumers, improving the producer's share of the consumer's rupee. They will be in a stronger position to haggle with large agri-commodity purchasers and large input suppliers. Several instances point to the significance of such organizations for improved market integration, organized retail, and global market.

What a Farmer Producer Organization Must Have (PO)

It is a collection of producers, whether they are farming or not.

- It is a recognized organization and a legal person.
- Shareholders in the company are the producers.
- It deals with commercial operations relating to the main produce/product.
- It functions in the member producers' best interests.
- The producers split a portion of the proceeds.
- The remaining excess is added to the money already possessed for company development.

Producer Organizations (POs) may have a variety of legal forms. A PO can be registered under any of the following legal provisions: Multi-State Cooperative Society Act of 2002, Cooperative Societies Act, and Autonomous or Mutually Aided Cooperative Societies Act of the relevant State Societies registered under the Society Registration Act of 1860 Public Trusts registered under the Indian Trusts Act of 1882 Producer Company under Section 581(C) of the Indian Companies Act of 1956, as amended in 2013, Section 25 Company of the Indian Companies Act of 1956, as amended as Section 8 in 2013[7].

Capital creation for FPO

All organization must deal with the crucial problem of capital development. Contribution from member farms is essential for the first investment. For a farmers organization to have a

solid financial foundation and to be able to access financial resources for their projects and business growth, the producer members' share must be matched by a matching equity grant from the government. First, up to Rs. 15.00 lakh in equity awards, each up to Rs. 2,000, are available to FPO members. The government claims that the subsidies offered as the farmers' equity portion merely equal the equity grants for farmer cooperatives.

Promotional plan for Farmer Producer Associations

In a situation where the majority of farmers are engaged in small-scale, marginal land operations, farmer grouping is crucial. But, in order to create and maintain such organizations, a thorough approach must be followed. A good plan will include:

Forming farmer groups via the detection of Natural Clusters

The closeness of players in FPOs, including NGOs, banks, and the government Best practices, pilot projects, and success stories development for more exposure and field-level replication mission-mode implementation with quarterly quantitative and qualitative benchmarks. Publicity for the FPO Program in the mainstream media, including print and electronic media. Methods for generating publicity and awareness that are traditional or unconventional. Learn about several FPO models and their effective replication techniques[8], [9].

The difficulties in promoting FPOs

Farmers may be hard to organize in a country with such a varied population as India. Due to the officers' low capability at the organizations participating in the promotion of FPOs, there is also a delay in the establishment of many FPOs. The Board of Directors members and FPO executives also don't have a solid grasp of company planning and the advantages of teamwork. Building the ability of FPO board members and CEOs is necessary to enable them to lead the members and grasp the possibilities presented by the evolving agricultural and trade environments. FPOs struggle to network and negotiate with many stakeholders for the execution of their business objectives, which makes it difficult for them to achieve the anticipated economies of scale. At various phases of development, FPOs need to be nurtured and maintained.

The membership bases of the organizations must be expanded. Several Indian groups that support FPOs have between 50 and 1000 members. The proper organizational size is crucial since a too-large company may be burdensome to run and difficult to develop. Obtaining the requisite equity is an additional crucial factor. At a maximum of Rs. 15 lakh, the SFAC gives FPOs an equity grant program that matches their equity stakes (1:1). The maximum amount of shares that farmers may hold is Rs. 1000.

FPOs are also dealing with issues connected to policy. FPOs are unable to take advantage of the advantages of the present environment due to information asymmetry and a lack of awareness of policy-related elements. The FPOs need to be aware of the policy changes occurring in the area of trade, such as various provisions added to the APMC Acts to assist farmers and farmers' organizations, warehouses' ability to function as mandis, the ability of FPOs to directly participate on the National Agricultural Market (eNAM) platform, and provisions relating to warehouses.

FPO's Current Situation

During the last eight to ten years, more than 8500 FPOs including FPCs have been built around the nation, working on a variety of projects for State governments, NABARD, and

other organizations. The remaining are cooperatives and other groups, with a little over 3200 of them being producer businesses. These FPOs need appropriate finance, infrastructure, and market connections in addition to technical help in order to maintain their commercial operations. NABARD data indicates that 4251 FPOs will be promoted by March 2021, compared to 177 organizations by NRLM and another 910 organizations by SFAC. Farmers, milk producers, fishers, weavers, and other primary producers create the FPO, a legal body that may be a private business or cooperative society with a mechanism for distributing earnings and advantages among its owners.

By adopting a business model, act as corporate entities integrating small and marginal farmers (SMF) into input/output supply chain networks and assisting them in gaining the advantages of scale economies. Between January 2003 and March 2019, an estimated 5,000 to 7,000 FPOs were registered, accounting for around 4.3 million SMF. A further boost in 2020 will be provided by the creation and promotion of 10,000 FPOs over the course of the next five years with a budget of Rs. 6866 crores. The ultimate goal is to establish one FPO in each of the 14000 blocks and Tehsils that make up the nation. For India's inclusive and sustainable agricultural development (increasing the profitability of agriculture, doubling farm incomes, and enhancing the welfare of farming communities), FPOs are viewed as a crucial intervention[10], [11].

FPOs' Operation and Effect

The majority of FPOs are only allowed to engage in input sales. Just a few companies, particularly those concentrating on conventional agricultural products, implemented the whole business model, as intended. Only the dairy cooperatives and other FPOs with a specific product (coconut, etc.) have significant paid-up capital and have been expanding over time. The FPOs that cater to the traditional agricultural products, on the other hand, are either failing or stagnating due to their low paid-up capital (low membership base), limited government assistance, difficult access to finance, lack of integration or links with institutions or market chains, etc. FPOs are unlikely to adequately handle the price risk in the context of ordinary agricultural goods since the bulk of these crops lack price support. Even after joining the FPO, according to 65% of farmers, price risk (drop or collapse) continues to be the top concern.

CONCLUSION

In Indian agriculture, farmer groups play a significant role. For success, a farmer’s organization needs a solid finance structure, management system, and governance framework. Also, it is critical that the government deal with problems relating to an effective system for pricing commodities, better infrastructure, market and financial access, and the availability of credit at reasonable rates. For new as well as existing non-profit organizations to improve, solid institutional methods must be developed. There are several concerns, which makes it possible for research organizations and policy institutions to participate. Farmers, meanwhile, should get frequent training on a variety of production and marketing topics, such as business management, management information systems, production techniques, and production-based technical skills. If properly implemented and backed by suitable legislation, farmer organizations have the ability to make agriculture lucrative and assist farmers enhance their income in the long term.

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CHAPTER 7

POSTHARVEST PROCESSING AND HORTICULTURE CROP VALUE

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ABSTRACT:

Conversely, value addition in horticulture refers to the practice of realizing a high price for a same amount of a main product by the use of processing, packaging, improving the quality, or other similar techniques. Creating strawberry and pomegranate jam, for instance to increase farmers' profitability. Post-harvest technology decreases the price for the customer, lowers the cost of production, packing, storage, marketing, transportation, and distribution, and raises the farmer's revenue. Post-harvest processing is done to preserve or improve the quality of the product and make it more easily marketable. Rice, a significant crop in India, is a prime example of agricultural goods that have been processed after harvest. Rice is made by harvesting and processing paddy.

KEYWORDS:

Agricultural Marketing, Businesses, Consumers, Economic, Management, Postharvest.

INTRODUCTION

Processing is the primary way that significant value may be added to the Indian food industry for growth and profit-oriented development. In terms of output, consumption, exports, and projected growth, the food processing sector is the fifth biggest in the nation and accounts for 32% of the entire food market. Its share of the Gross Value Added (GVA) in manufacturing and agriculture, respectively, is 8% and 8.39%. Moreover, it contributes 6% of total industrial investment and 13% of all exports from India (ibef.org). The Indian gourmet food business is now worth US$ 1.3 billion and has been expanding at a 20 percent compound annual growth rate (CAGR) since 2011. While still in its infancy, the online meal ordering industry has recently seen exponential development. Several firms in the food delivery industry, including Food Panda, Zomato, TinyOwl, and Swiggy, have indicated a bright future for the organized food industry. By 2016, the net merchandise value (GMV) of online meal delivery had increased by 150 percent year over year to a total of $300 million. Between April 2000 and March 2017, foreign direct investments in India's food processing industry totaled over US$7.54 billion (Department of Industrial Policies and Promotion – DIPP). According to the Confederation of Indian Industry (CII), the food processing industry is predicted to bring in up to US$33 billion in investment over the next ten years and create nine million person-days' worth of jobs.

Government programs to enhance India's Food Processing Industries

To change the nation's food processing industry, the government has implemented a number of infrastructure-based programs and regulatory initiatives. Indian regulations on foreign direct investment (FDI) have been loosened for this industry, enabling up to 100% FDI in the e-commerce of food items. Together with this, there are incentives to improve infrastructure across the whole supply chain. According to a statement made in the Union Budget 2017–18, India has established an infrastructure fund for dairy processing of Rs 8000 crores ($1.2 billion)[1], [2].

The Food Safety and Standards Authority (FSSAI) of India intends to upgrade 59 current food testing facilities and establish 62 new mobile testing laboratories around the nation with an estimated investment of Rs 482 crores (US$ 72.3 million) in food testing infrastructure. The Indian Council for Fertilizer and Nutrient Research (ICFNRfertilizer)'s industry research will promote the adoption of global best practices, allowing farmers to buy high-quality fertilizer at reasonable costs and maintaining food security for the general populace. The Ministry of Food Processing Industries has included Human Resource Development (HRD) to the list of industries involved in food processing. The State Governments are putting the National Mission on Food Processing's Human Resource Development agenda into action. The program consists of the four elements listed below:

- Building of infrastructure for degree- and diploma-granting programs in the food processing industry
- Program to Encourage Entrepreneurship (EDP)
- Centers for Training in Food Processing (FPTC)
- Training at state- or nationally-recognized institutes.

India is the world's second-biggest producer of food after China, and it has the potential to overtake. China as the top producer of food and agricultural goods. Large investments in infrastructure, expertise, and technology related to food and food processing are possible, particularly in the fields of canning, dairy packaging, frozen food/refrigeration, and thermal processing. Important sub-sectors of the food processing business include fruits and vegetables, milk and milk products, meat and poultry, packaged/convenience meals, alcoholic beverages, soft drinks, and grains. Another area of this market that is expanding quickly is that of health foods and supplements.

India is the world's second-largest producer of vegetables and third-largest producer of fruits. For the next ten years, rice output is expected to expand at the greatest rate in the world, according to India. In terms of inland fish output, India is only surpassed by Japan. Fruit, vegetables, meat, poultry, milk, alcoholic beverages, fisheries, plantations, grain processing, and other consumer product categories like confectionery, chocolates and cocoa products, soy-based goods, mineral water, high-protein foods, etc. are all included in India's food processing industry[3].

Foods (such as fruits, vegetables, milk, meat, and fish) are susceptible to accelerated physiological, chemical, and microbiological processes after harvesting. These processes always result in food degradation and loss of wholesomeness. Then, in order to reduce perishability, some kind of processing must be used, such as a decrease in moisture content, denaturation of natural enzymes and microbes, or packing. Without such processing, there might be significant post-harvest losses. To assure food availability, acceptability, and safety, it is the duty of the food scientist or technologist to comprehend the underlying mechanisms causing food deterioration and rotting and to devise suitable measures and techniques of preservation.

As a result of the variety of socioeconomic situations, industrial expansion, urbanization, and globalization, value addition to food items has gained crucial relevance in our nation. Better flavor and nutrition are intended in addition to increased monitory returns to please growers and processors. Perishables may be given more value by modifying their shape, color, and other characteristics, which extends their shelf life. Although the Ministry of Food Processing

Industry's efforts have accelerated this sector's growth, it is still necessary for people from different categories to discuss and resolve a variety of related issues in order to raise the level of value addition and enhance the quality of value-added food products for both the domestic market and export.

Post-Harvest Technology: Its Value and Function

Utilizing the best harvesting conditions, minimizing losses during handling, packaging, transportation, and storage with modern infrastructure machinery, processing into a wide range of products, and home-scale preservation with low-cost technology are all included in post-harvest loss reduction technology. To improve the storability, heat processing, low temperature, drying, chemical and biological interactions, along with other preservation procedures, are used. Containers and packing supplies increase mobility and shelf life. By preventing losses, providing better food and nutrition, more raw materials for processing, and assuring greater returns for the farmers, these strategies might make a huge amount of food accessible[4], [5].

The potential of post-harvest technology to satisfy food needs of an expanding population by decreasing losses and producing more nutritious food products from raw materials via appropriate processing and fortification is what gives it its importance. Technology used after harvest has the ability to develop rural industry. The food, feed, and fiber industries have moved to urban areas as a result of industrialization in India, where 80 percent of the population lives in villages and 70 percent depends on agriculture. This trend has led to a capital outflow from rural to urban regions, a decline in rural job prospects, a trade imbalance favoring the urban sector, and unequal economic development and living standards between rural and urban residents. It is feasible to develop the right technology to create rural industries based on agriculture. The farmer, whose function has been reduced to that of a producer, may become a producer and processor, reaping greater rewards for his or her labor and investment, taking on more risks, and producing resources that will help society's economic development keep up with the times.

Industrial Situation in Food Processing

Fruit and vegetable processing, grain processing, fish processing, milk processing, meat and poultry processing, packaged/convenience meals, alcoholic beverages and soft drinks, etc. are significant agro processing industries. Agricultural processing is any operation done to preserve, enhance, or modify the qualities, forms, or features of an agricultural product. After production, processing processes are carried out to increase the value of agricultural products. The fundamental goal of agricultural processing is to reduce the material's quality and quantity loss after harvest.

Purification of raw materials by eliminating immature grain and foreign matter, followed by grading the raw material into distinct lots or transforming the raw material into a form suitable for further processing, is known as primary processing. After being cooked, roasted, fried, etc., primary processed raw materials undergo secondary processing to create a product fit for culinary purposes or consumption. Secondary processed material is transformed into ready-to-eat form during tertiary processing.

Food products are sold in a variety of processing stages, including raw, primary processing, secondary processing, and tertiary processing. The majority of farmers prefer to sell their harvested crops right away, saving some for their personal use and seed production. According to estimates, farmers keep 44% of the overall wheat crop and 48% of the paddy. The remaining grain is acquired by mandies and grain dealers for processing and/or

marketing. Due to customer preferences for ready to cook (RTC) and ready to eat (RTE) meals, as well as rising demand for snack foods and drinks, the food processing industry in India has become more significant. The organized sector makes up as much as 42% of the food business, while the small, cottage, and indie sectors make up 33%.

- Industry-specific food processing
- Processing of fruits and vegetables

The second-largest producer of fruits and vegetables in the world is India. Because of the diverse agro-climatic variability, it has the potential to produce all varieties of temperate, sub-tropical, and tropical fruits and vegetables. More than 45 million tonnes and 85 million tonnes, respectively, of fruits and vegetables are produced annually. Due to inadequate harvesting, processing, and storage facilities, losses are expected to be between 20 and 30 percent, costing Rs. 230 billion. Beverages, jams, jellies, sweets, preserves, canned and dried fruits and vegetables, pickles, soup bases, sauces, and ketchups are some of the processed fruits and vegetables. Pickles, chutneys, fruit pulps, canned fruits and vegetables, concentrated pulps and juices, dehydrated vegetables, and frozen fruits and vegetables are among the products with rising demand, particularly in the Middle Eastern nations.

In India, people tend to favor fresh fruits and vegetables since there are so many seasonal fruits accessible all year long at inexpensive prices. Pickle and chutney manufacture has historically been a cottage industry in rural areas. Nevertheless, processed meals in the form of canned fruits, such pineapple, mango slices and pulp, grapes, apples, peaches, etc., have significantly expanded in recent years. Fruits are becoming more often used in jams, jellies, dry powder, concentrated juice, and other products. Fruit juice and fruit pulp account for 27 percent of the output of processed fruits and vegetables, followed by jams and jellies, pickles, ready-to-drink drinks, synthetic syrups, squash, tomato products, canned vegetables, and others (18 percent).

Mangoes, grapes, apples, and citrus are the principal fruits that reach the export market. Other fruits that have been designated for export include bananas, sapota, litchis, and others. Fruits are mostly exported to the Middle East, the United Kingdom, Europe, and to a lesser degree Singapore, Malaysia, etc. Potatoes (28.0%), onions (7.1%), cauliflower and cabbage (4.0% each), okra (3.0%), peas (3.0%), and miscellaneous vegetables (50.0%) are the major vegetables shipped. Exports are restricted to the Middle East, Europe, the United Kingdom, Singapore, etc. For the production of ethnic food items like raisins, onion flakes and powder, chips, veggies, etc. in rural areas, solar assisted dehydrators might be encouraged.

Food-Grain Industry

In the next years, grains could surpass other commodities as India's top export. India produces rice, jowar, bajra, maize, wheat, gram, and pulses as well as other food grains.

Rice Milling:

Traditional rice hullers, which have a population of 91287, are quite common in rural regions for milling rice. Bran and husk cannot be separated during production in traditional rice hullers. Typically, the by-product is burned. The dehusking and polishing of the paddy are handled separately by different processing mechanisms in contemporary rice mills. The bran may be used to extract both edible and non-edible grades of oil, and the husk can be used to make furfural and other industrial goods. In comparison to traditional hullers, these mills also offer higher recovery and use less energy[6].

Wheat Milling:

The nation now produces more than 73.53 million tonnes of wheat. Both rural and urban communities often use burr mills (chakkis) to grind wheat. The states with the most roller flour mills are Uttar Pradesh, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Bihar, West Bengal, Punjab, Haryana, Madhya Pradesh, Assam, Gujarat, and Kerala. Due to the lack of an open policy for the selling of wheat flour via the public distribution system, roller mills now only sell their products to institutional customers like the military, hotels, and other businesses, with home purchases being restricted to only 1%. Better quality flour is projected to improve sales of soy-blend and branded wheat flour, expanding the potential for organized wheat milling in the process.

Pulse milling:

For vegetarians in India, pulses are the main source of protein. Two-thirds of the 60 million tonnes of pulses produced worldwide are produced in India, China, Brazil, Turkey, and Mexico. Dehusking and dehulling the pulses results in dhal.

Extraction of oil:

The Technological Mission on Oilseeds has assisted in boosting output of oilseeds to 24.5 million tonnes. Kolhus and Oil Ghanis have made oil extraction a cottage industry throughout the nation. Modernization has been facilitated by the development of large capacity mechanical expellers and solvent extraction technologies. Small capacity oil expellers that might be deployed in rural regions to promote agribusiness and perhaps increase employment have been created. In addition to being a wonderful supply of oil, soy is also a strong source of protein. With 5.2 million tons of output, India is now the fifth-largest producer of soybeans worldwide. Nuggets, mixes, and mimics of soymilk are being sold.

Crops used in commerce are processed

The three main commercial crops cultivated in India are sugarcane, tea, and coffee. Tea has become a significant source of foreign currency. The biggest producer and exporter of black tea is India. Every year, India exports between 150 and 170 million kg of tea. Naturally, there is room for foreign investment in this industry, and global tea businesses will either want to form marketing partnerships with Indian growers or buy stock in Indian tea firms. Around 299 million tons of sugarcane are now produced annually. It is believed that sugar mills process around 50% of the sugarcane, with the remaining 40% going to Gur and Khandsari small-scale processing facilities. While the efficiency of the Gur and Khandsari industry is lower than that of sugar mills, it cannot be overlooked since it offers more job chances to the rural labor population. In order to produce sanitary gur for the local and international markets, improved sugarcane crushers and furnaces have been created.

Packaged and ready-to-eat meals

Although traditional foods like roasted, puffed, sweet meat and baked goods were used in the nation, modern packaged and convenience foods like bread, biscuits, confectionery, chocolates, ready-to-eat foods like noodles, cereal flakes, etc. have become more popular in recent years, especially in urban areas. The unorganized sector is where the majority of the extruded foods are produced. There is a sizable local and international demand for traditional ethnic ready-to-eat dishes that are made in sanitary circumstances and sold in improved packaging.

Fish processing and Fishing

Fisheries is one of the most appealing investment niches. Prawns, shrimp, tuna, cuttlefish, catfish, squid, octopus, ribbon fish, red snapper, mackerel, lobsters, etc. are some of the marine fish. Fish from India is increasingly being prepared and bottled.

Processing of poultry and Meat

India is home to one-sixth of the world's goats, 50% of the buffalo, and the majority of the world's cattle. In the meat and poultry processing industry, there is a ton of room for the establishment of contemporary slaughterhouses and cold storage networks. The poultry sector has seen substantial expansion when compared to the meat industry. India is now ranked fifth in the world, and the number of chicken and egg processing facilities there has increased significantly. To Europe, Japan, and other nations, India exports egg powder, frozen egg yolk, and albumin powder. Most poultry exports go to Oman and the Maldives. India's chicken meat exports perform well in Singapore, Malaysia, Indonesia, and Japan. Just five egg powder factories exist in India at the moment, which is deemed inadequate given the rising export demand for diverse types of powder, including whole eggs, yolks, and albumin.

The development of cutting-edge slaughterhouses and cold-chain infrastructure in the meat and poultry processing industry has enormous potential. In the home market, as well as for exports to adjacent countries, particularly the Middle East, the market for ready-to-eat and semi-processed meat products has not yet been fully exploited. There is an abundance of buffalo meat in the nation, and it has tremendous export potential[7].

Milk and Milk-Related Items

Nowadays, there are over 100 million tons of milk produced worldwide, and demand is thought to be significantly greater. The potential for manufacturing casein and lactose, which are now mostly imported, is excellent.

Alcoholic and Non-Alcoholic Beverages

Alcoholic drinks are another industry that saw significant foreign investment in India. The main ingredients of IMFL (Indian Manufactured Foreign Liquor) include wine, brandy, vodka, gin, and whiskey. An estimated 7000 million rupees are spent on beer in India each year. The fact that India has an ample supply of raw materials for the sector, including molasses, barley, maize, potatoes, grapes, yeast, and hops, is one of the main benefits for any investor interested in the Indian liquor market. Almost 100 facilities in all states make up India's aerated soft drink sector. The third most popular packaged item that is routinely eaten, after packaged tea and packaged cookies, is soft drinks. Processing may always bring in more money for the producers and support price stabilization via financial gains. It shows how a company adds value to an industry, and value addition is a good measure of how much an industry contributes to GDP. Processing facilities are beneficial for the welfare of orchardists because they may prevent crop waste while also increasing the value and marketability of their fruit via post-harvest handling, packing, and processing into a variety of goods.

DISCUSSION

Processing of fruits and vegetables in India

The production of horticulture is expected to increase from 310.73 million tons (mt) in 2018–19 to 320.77 million tons (mt) in 2019–20. (pib.gov.in). The USDA states that the annual vegetable production increased to 191.77 million tons due to productivity increases (MT). 51.03 million tons of potatoes are expected to be produced between 2019 and 20. India will

produce 99.09 million tons of fruits in 2019–20, up from 97.96 million tons in 2018–19, making it the second-largest fruit grower in the world. The Fruits & Vegetables Export Statement for the years 2017 to 20. The table demonstrates that throughout the time period, India's export of processed fruits and vegetables increased in value but somewhat decreased in volume. The loss in exports of goods like cucumber, gherkins, and mango pulp over time is mostly to blame for this drop in export volume. Nonetheless, the amount of exported processed fruits and vegetables, juices, and nuts has increased.

Harvesting

Harvesting should be done on colder days, especially early in the morning. After harvesting, if at all feasible, relocate the crops to a shady place. When gathered during hot weather, the product may wilt and shrivel due to temperature exposure. When the weather is bad or just after a lot of rain, harvesting should be avoided since it could encourage microorganisms to grow quickly. The crop must be harvested at the right time and state of development, primarily keeping the intended use in mind. According to the objective, the step of leading flower harvesting is described. Taking good care of food both before and after the harvest is crucial. The quality and market value of product may be significantly influenced by the appropriate care given to it. Mangos should not have latex emerge from the stem right away after harvesting since this might result in black stains on the fruit and lower market value. Little and compact cabbage heads should be favored since they have greater ascorbic acid concentrations than big ones. Carotenoids in tomato fruit rise as the fruit ripens. In general, the storage life of fruit is lower when it develops early and has a shorter growing season.

Pre-Cooling

The most crucial strategy for removing field heat is pre-cooling. For example, cryogenic chilling techniques, which include cryogenic water cooling, forced air cooling, vacuum cooling, and packaging, may be used to precool horticulture crops. The kind of crop determines which cooling technique should be used.

Cooling a Room:

It is the precooling technique that is most often utilized. The perishables are cooled by packing them in boxes and putting them in a space with cold air. To spread the cooled air, fans move the air across evaporator coils that have been installed with fans. Forced draft coolers, also known as induced draft coolers, are used in the cooling process. As a result, for quick and effective cooling, adequate packing (with well-ventilated containers) and stacking patterns are crucial.

Forced Air Cooling:

Used for a variety of horticulture products, forced air cooling is the quickest pre-cooling technique. Storage container vents and perforations are pulled or pushed by forced air cooling. The airflow, commodity kind, temperature differential between the produce and the cold air, produce diameter, and cooling time all affect how long it takes to cool anything down. The earliest and fastest way to precool fruits and vegetables is hydrocooling, which uses cold water. It is not appropriate for packaged goods. The two kinds of hydrocoolers that are often utilized are the shower and immersion varieties.

Vacuum Cooling:

Vacuum cooling, which is often appropriate for leafy vegetables, works by evaporating water from the product at extremely low air pressure. The removal of air decreases the pressure of

the environment around the product, which further lowers the water's boiling point. When the pressure drops, the heat from the product is released, causing the water to swiftly boil. For every 6 ^{o} C of cooling, vacuum causes around 1% of weight loss (mainly water).

Package icing: This technique involves packing fruit with crushed or flaked ice for quick cooling. The process maintains a high relative humidity level close to the product. It is frequently done with flowers and flowery varieties of vegetables and with water-tolerant, non-chill-sensitive items. It is also used with water-resistant containers for ice, such as waxed fiberboard, plastic, or wood.

Handling and Storing

Hexose sugars serve as the primary substrate for respiration in horticultural crops, with organic or fatty acids serving as secondary substrates. During the process, "vital heat" or "heat of respiration" is released when the substrate is oxidized by O2 and breaks down to CO2. From the standpoint of cooling and the design of refrigeration equipment, "vital heat" is crucial. If a product is not appropriately refrigerated, the amount of heat it produces increases with respiration rate. A clear indication of postharvest or storage life is the rate of respiration. Items with a short postharvest life are considered perishable and have a rapid respiration rate. The most crucial postharvest method for maintaining fresh horticulture crops is temperature regulation. Any other postharvest treatments and methods, including as the use of chemicals, irradiation, and altered and regulated environments, may only be used in addition to refrigeration. In general, the pace of degradation of fresh horticulture crops decreases with decreasing temperature, whereas the rate of deterioration increases with increasing temperature, resulting in increased losses. According to Van't Hoff's rule, biological activity or chemical/biochemical processes (such as respiration rate) double by two to four for every 10°C rise in temperature[8].

Losses after Harvest

The use of appropriate maturity indices, the reduction of losses during handling, packing, shipping, storage, and distribution using contemporary infrastructure and equipment, and processing and preservation using inexpensive technologies are all examples of postharvest loss reduction technology. To increase the storability, several preservation procedures are used, including low temperature (cold storage, freezing, etc.), high temperature (drying, frying, canning, etc.), chemicals and biological processes. In addition to extending shelf life, proper packaging in the right containers or packing materials also enhances distribution. By reducing waste, these methods might provide access to a huge amount of food. By increasing the amount of food accessible and the amount of raw materials for processing, this would provide higher quality nutrition more profits for the farmers. The agri-produce may suffer losses in the following areas if effective postharvest loss control methods are not adopted:

- Quantitative loss refers to the decrease in weight brought on by the removal of water from the product and the loss of dry matter due to respiration and metabolism.
- Loss of consumer appeal changes in form, color, flavor, and other factors and nutritional loss cause freshness to degrade, which is referred to as qualitative loss (vitamins, minerals, sugars, etc.).

In general, it is less expensive to avoid losses after harvest than it is to produce an equivalent quantity of food, thus decreasing losses is a complementary method of raising output. Pre-harvest preparations, harvesting at the proper stage of maturity, using the right harvesting methods, stem cutting, curing greens, trimming vegetables, waxing fruits, cool chain

transportation, packing, and storage are a few strategies that can minimize both qualitative and quantitative post-harvest losses. The causes that cause the quantity or quality of agricultural products to decline are as follows:

Factors that are biological in nature include the rate of respiration, the generation of ethylene, compositional changes, growth and development, transpiration, physiological breakdown, physical harm, pathological breakdown, surface area to volume, and membrane permeability. Environmental elements, including temperature, relative humidity, the makeup of the atmosphere's gases, ethylene, and light.

Processing and Adding Value

Fruit and vegetable processing, cereal processing, milk processing, meat, fish, and poultry processing, instant food processing, non-alcoholic and alcoholic beverage processing, and plantation crop processing are significant sectors in the food-processing industries (tea, coffee, cocoa, etc). The majority of food items, including fruits, vegetables, milk, meat, and fish, are perishable and must be properly handled and stored to extend their shelf lives. It is vital to monitor moisture loss, enzyme denaturation, microorganism activity, and adequate packing in order to increase their shelf life. In order to assure food availability, acceptability, and safety, it is crucial to understand the main processes causing food degradation and spoiling. If processing is not done, this might result in significant post-harvest losses.

A nation like India, with its wide range of socioeconomic circumstances, rate of industrial expansion, urbanization, and globalization, values the addition of value to agricultural products. There are other aspects besides commercial opportunity. But also about the quality, nutrient content, and safety of the food that is supplied to the customer. Perishable agricultural food may suffer changes in shape, color, taste, and flavor during processing to lengthen its shelf life. The availability of perishables, particularly horticultural produce, can assist the nation in transitioning from food security to nutritional security because the majority of these crops are good sources of vitamin A. This can be accomplished not only through improved production but also through better post-harvest management.

The state of the Food Processing Sector

Food processing is the process of bringing desired changes in the shape or qualities of agricultural food to a marketable form. The main goal of food processing is to lessen the qualitative and quantitative changes that take place after harvest. Processing may be categorized as follows:

1. Initial processing the act of removing foreign matter, immature components, and sick sections from raw materials, classifying them into distinct lots, and then transforming them into a state appropriate for secondary processing are all considered to be primary processing.
2. Secondary processing is the conversion of a primary processed raw material into a finished good fit for use in or consumption as food following minor alterations such as cooking, roasting, frying, etc.
3. Tertiary processing is transforming previously processed goods into edible forms, such as biscuits. In general, farmers don't go for processing and favor selling their food as soon as it is harvested.

According to estimates, farmers save 44% of the entire wheat supply and 48% of the paddy for their own use and as seed (Anonymous, 2019). The desire for rapid meals, together with

rising demand for snack foods and drinks, has enhanced the significance of the food processing industry in India.

Processing of fruits and vegetables

India ranks second in the world for the production of fruits and vegetables. Due to its diverse agro-climate, it has the capacity to produce all varieties of temperate, subtropical, and tropical fruits and vegetables. Nevertheless, the losses are anticipated to be between 20 and 30 percent owing to inadequate facilities for harvesting, processing, and storing (Abrol et al., 2021). Due to the affordable year-round availability of seasonal fruits, Indians often favor fresh vegetables. The possibility for conveniently processing fruits and vegetables into a variety of goods, such as drinks, jams, jellies, sweets, preserves, canned and dried fruits and vegetables, pickles, soup mixes, sauces, ketchup, etc. Fruits are now being used more often in jams, jellies, dry powder, concentrated juice, and other products. Fruit juice and pulp production accounts for 27%, jam and jellies 10%, pickles 12%, ready-to-serve drinks 13%, artificial syrups 8%, squash 4%, tomato products 4%, canned vegetables 4%, and other goods account for the remaining 18%.

Floristry Industry

The management of flowers before and after harvest determines the quality that is delivered to the ultimate customer. The foundation for generating value and ensuring customer happiness is quality. Flowers require the greatest care after being harvested since they are very perishable and lose access to nutrients, water, minerals, and hormones when they are separated from the plant. In general, flower cultivars and species have varying levels of flower keeping quality. This variation may be caused by genetic or inherent characteristics, such as variations in anatomical, physiological, physical, and genetic composition. In addition to these, the ability of flowers to remain fresh is also influenced by factors such as the amount of stored carbohydrates, osmotic concentration, pressure potential of petal cells, stomatal function, variation in the number of thick-walled supporting cells in the xylem element and phloem fiber, presence or absence of a complete ring of secondary thickening in flower peduncles, level of plant hormones, susceptibility to disease, and ins Thus, it is crucial to comprehend the significance of managing flowers after harvest in order to maintain their quality[9], [10]. Agriculture now contributes significantly to the Indian economy, and this trend is expected to continue for some time to come. According to the Ministry of Agriculture (2015), the Agricultural and Associated Sector generated around 13.9% of India's GDP in 2013–14 and employs nearly 50% of the workforce. India is a wealthy nation in horticulture, producing a vast range of fruits, vegetables, spices, decorative, and therapeutic plants. India is the world's second-largest producer of veggies. Due to improvements in production technology, food production has constantly grown in India, but poor post-harvest handling, processing, value addition, and storage lead to significant losses in agricultural output. However, despite having such a large yield, postharvest losses of 10 to 25% of vegetables occur yearly, mostly as a result of poor postharvest management techniques.

Post-harvest losses in India total between 12 and 16 million metric tonnes of food grains annually, which the World Bank estimates could feed one-third of the country's impoverished. These losses have a monetary worth of more than Rs 50,000 crores each year (Singh, 2010). According to Chaturvedi and Raj (2015), India produces roughly 263.2 million MT (in 2013–14) of food grains per year, of which 60–70% are kept by the farmers for their own use. Not all horticulture products need the same postharvest handling practices. If the postharvest shelf life and quality are to be maximized, growers, wholesalers, exporters, and retailers must all be aware of the special demands of a product. Hence, reducing post-harvest

losses is urgently needed to feed the nation's expanding population. Food processing is a long-standing custom that has been ingrained in many of the nation's traditions, usually as a cottage enterprise. Yet, the importance of the food processing industry has greatly expanded as a result of changing living habits, rising incomes, and growing desire for packaged and ready-to-eat meals.

Methods for Post-Harvest Management

By using breeding strategies for longer shelf lives, improving pre-harvest variables and harvesting processes, employing correct handling, marketing, packing, shipping, and storage procedures, and developing appropriate processing technology, post-harvest losses may be decreased.

Harvesting:

Harvesting should be done as quickly and cheaply as possible, at the correct stage when there is the least amount of loss and harm. The best times to harvest are early in the morning or late at night. While harvesting, a temperature of more than 27 0C should be avoided. Although goods for local markets are harvested early in the morning, goods to be sent to distant markets are picked in the evening and carried during the cool hours of the night. For various vegetables, varieties should be produced and chosen that are more tolerant to handling and have superior keeping and processing qualities. It is not advisable to harvest right away after irrigation or rain. Maximum quality and production are ensured by harvesting at the ideal stage of ripeness. To prevent mechanical damage to the product, caution must be used.

Sorting/Grading:

Harvested vegetable product is sorted to eliminate rotting, diseased, damaged, or otherwise undesirable vegetables. To prevent the transmission of illness to healthy and normal vegetable and fruit produce, diseased or insect-attacked produce should also be thrown away. Systematic grading together with suitable packing and storage would increase postharvest shelf life, improve wholesomeness, freshness, and quality, and significantly lower losses and marketing expenses. Produce from horticulture has to be sorted and graded based on factors including ripeness, maturity, size, shape, color, weight, and pest- and insect-free status. The size, shape, weight, and stage of development are used to provide grades to vegetables including onions, potatoes, tomatoes, chillies, okra, and french beans. Pest and sick horticultural crops should be removed to stop the spread of illness. Typically, horticultural crops are ranked according to their size and weight.

Washing:

To enhance appearance and get rid of residue from sprays and insects, the produce is cleaned or washed. After harvest, okra, mushrooms, onions, and garlic are not cleaned. Surface decontamination may be accomplished chemically using glacial acetic acid, Nacl (1%) or mild detergent (soap solution). Surface decontamination may also be accomplished with the use of chlorinated water (100 ppm chlorine). Before packaging, fruits and vegetables should get a second rinse, clean waste removed, and any surplus water allowed to dry.

Trimming:

Crops like lettuce and cabbage, among others, are trimmed. To eliminate undesired, soiled, rotting, and damaged components. Trimming makes fruit look better, slows down degradation, and makes handling, packing, and transportation easier.

Curing:

Curing is the process of fortifying and wounding the periderm (skin) of root and tuber crops for a predetermined amount of time under well-defined temperature and relative humidity conditions. This process increases the shelf life of these crops by forming a corky layer that guards against water loss and infections from decaying organisms. Within bulb crops (onion &garlic). Curing is a drying technique that helps to tighten necks and toughen the skin on the outside. The ideal conditions for potato curing are about 200°C and 80% relative humidity.

Waxing:

Waxing is primarily done to decrease water loss, shriveling, and wilting to prolong storage life. The primary pathways for transpiration the stem near the petiole and the pores on the surface of fruits are blocked by wax. The primary channels for transpiration on the fruit or vegetable products have waxing on their surfaces. Produce's beauty is also enhanced by waxing. For the creation of a wax emulsion, typical forms of wax include paraffin wax, carnuba wax, and different resins. Waxes are commonly applied by foaming, spraying and brushing of which foaming is the best, \ssince it leaves a very thin covering. Semperfresh, extend, and waxol are a few of the often used coating ingredients. To reduce moisture loss from the product and enhance shine, vegetables including tomato, brinjal, sweet pepper, cucumber, muskmelon, and carrot are often dipped in or sprayed with a water emulsion wax. In general, this method of maintaining the product's soundness and luster is not popular in our nation. Using diverse plant-based coating materials, such as neem extract, tulsi extract, aloe vera extract, etc., may increase the shelf life of fruits and vegetables. May be utilized locally by farmers to increase the return on their agricultural output since they contain anti-fungal characteristics.

Precooling:

When a crop is harvested in hot weather, precooling is the process of removing field heat from the harvested product. Pre-cooling reduces transpiration and respiration rates, delays ripening, and lessens the demand on transport or storage chambers' cooling systems. There are many pre-cooling processes, including: Vaccum cooling, contact icing, hydro-cooling, and room cooling

Control of Post-Harvest Disease:

Vegetables suffer greatly from the invasion of fungus and bacteria that cause illness and lead to considerable Post-Harvest Losses. Vegetables are susceptible to microbial infection because of their succulence. Products become more susceptible to illnesses because of mechanical damage, vegetable contamination from diseases, heat, and other environmental factors. Fungicides may be applied as sprays, dips, inclusions in wax, or impregnations in packing materials to combat post-harvest infections.

Sprout Inhibition:

As tuber and bulb crops (onion and potato) reach maturity, they go into a dormant stage. Sprouting begins when the dormancy or rest period ends. A process of resuming growth is sprouting. Because to the respiratory consumption of substrates during sprouting, there is a significant loss. As sprout inhibitors, chemicals like maleic hydrazide (MH-40), 3-cholorisopropyly-N-phynle carbamate (CIPC), methyl naphthalene acetic acid (MENA), and 2,3,4,6-tetranitrobenzene (TCNB) are often utilized. Several nations allow gamma irradiation at 0.02-0.15 KGY for successfully inhibiting onion and potato sprouting without impacting other quality parameters.

CONCLUSION

Fruits and vegetables may be maintained and have their shelf lives extended using a variety of physical and chemical treatments. Minimizing post-harvest handling losses, adding value, using byproducts, and promoting export via public-private partnerships are the primary concerns that need to be addressed. Recently, there has been a rise in demand for healthy foods because of the current Covid issue. The new government program "One District, One Product" will revolutionize how farmers' economies are improved. In the future, the adoption of modern innovation and safety measures will benefit the food processing sector in a number of ways and reduce waste. Also, there is a lot of room for job creation in the food processing industry.

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CHAPTER 8

AGRICULTURE AND PUBLIC PRIVATE PARTNERSHIPS

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ABSTRACT:

PPPs in e-Agriculture are often found at the local level, where the public and private sectors' capabilities may be combined to provide information and advisory services that cater to the requirements of farmers and rural communities. In the context of infrastructure and other services, the phrase "public-private partnership" refers to a variety of conceivable connections between public and private enterprises. Privatization and private sector participation (PSP) are other titles for this kind of activity. PPPs allow the private sector to borrow money while the government agrees to a predetermined level of payments to the private sector, as opposed to the government borrowing money to invest in infrastructure or services like a road or hospital.

KEYWORDS:

Agricultural Marketing, Businesses, Consumers, Economic, Management, Private Partnerships.

INTRODUCTION

It has long been understood that infrastructure investment and agricultural growth work best together. In order to carry out marketing activities, increase market size, and send effective pricing signals that boost marketing effectiveness, a suitable market infrastructure is necessary. Infrastructure makes vertical and horizontal integration possible, which helps the supply chain achieve economies of scale and cost reductions.

In order to invest in agricultural marketing infrastructure to the tune of 12,400 crore by the year 2012, the Inter Ministerial Task Force on Marketing Reforms, established by the Government of India in 2002, has estimated the amount of investment needed. This assessment demonstrates the type of investment needed in the agricultural marketing sector. According to the NCCD (2016) evaluation used in the DFI Report, an investment of Rs 89,375 crores is needed for specialized infrastructure to integrate cold chains. Together with the availability of private money, the engagement of the private sector will lead to the best possible use of resources with private management experience and the sharing of risks between the public and private sectors. This highlights how crucial it is to provide suitable models of public-private partnership initiatives in the industry.

Reform is necessary before establishing a PPP

The Agricultural Product Market Regulation Act is the most significant regulation regulating the selling of agricultural goods in India. The different State Governments execute this Act to control agricultural marketing operations. Rules were put in place to guarantee accurate weighing, fast payment of farmers for their produce, and protection against middlemen's abuse. Nevertheless, the marketplaces that were initially intended to shield farmers from middlemen's snares ended up stifling the free development of market forces and putting farmers' interests on the back burner.

According to the Inter-Ministerial Task Force on Market Reform, the country's agricultural marketing system needs to be reformatted effectively if our farmers are to be helped in overcoming obstacles and reaping the benefits of changes in the trade environment brought on by privatization, liberalization, and globalization. As a result, in conjunction with all the state Governments/UTs, the Ministry of Agriculture, Government of India, created a Model Act titled Agricultural Product Marketing (Regulation & Development) Act, 2003. To implement the necessary changes in the sector, all the States/UTs have agreed to alter their individual State APMR Acts in accordance with the guidelines provided in the Model Act. Setting up marketplaces in the private/cooperative sector, rationalizing market fees, promoting contract farming, direct marketing, and grading and standards in each State/UT are the key components of the Model Act[1], [2].

PPP models' effects on agriculture

The public and private sectors must collaborate and pool their best resources for PPP to succeed. Together with strengthening farm-family capability, lowering risks and uncertainties, and promoting economic empowerment for farmers, PPP has the potential to improve the following conditions:

Knowledge Administration

Knowledge management integration in public-private partnerships may boost output and improve services. Basmati rice has taken the place of conventional rice types in the Patna area of Bihar, which has also cultivated medicinal plants and mushrooms.

Creation of cutting-edge technology

PPP may aid in enhancing management capabilities for public sector technological information databases and intellectual property. High end technologies have been developed through PPP approaches in the commercialization of Bt maize varieties based on a partnership between the Agricultural Genetic Engineering Institute (AGERI) of Egypt and Pioneer Hi-Bred Company, developing delayed ripening variety of papaya between Syngenta and University of Nottingham, developing GM sweet potatoes in Kenya, developing super sorghum through nine internationally renowned institutions, and finishing the rice genome sequencing project.

Reduction of uncertainty and dangers

PPPs provide for more accurate forecasting of crops, the eradication of pests and illnesses, the management of natural disasters, and the reduction of risks. PPPs addressed export-related food safety restrictions in the exports of grapes from India and green beans from Kenya. In 2009, a PPP between Syngenta East Africa and MEA made drought insurance really cheap (a fertilizer company).

Social Engagement

SHGs may help improve social ties in the community and aid development departments working to promote group dynamics. Agricultural clubs, commodities associations, federations, and organizations. In the Khurda area of Odisha, tribal farmers formed a producer organization with both men and women as members, and in 2011 they built a selling unit for maize under PPP (Ponnusamy and Kishore 2012).

Increasing Productivity

Talks with Monsanto to transfer Bt cotton technology to India were started by ICAR and the

Department of Biotechnology, Government of India. Later, Mahayco teamed up with Monsanto, and as a result of their collaboration, Bt cotton was launched in India (APCoAB 2007). India has raised the amount of Bt cotton cultivated from 29,000 hectares in 2002 to 9.4 million acres in 2010. (James 2010). The distribution of agricultural revenue has become more equitable because to bt cotton technology (Morse et al. 2007). Cotton productivity grew from 301 kg/ha in 2002-03 to 526 kg/ha in 2009-10, while the actual cost of production fell by 16 to 46%.

Farmgirls' Economic Empowerment

Public-private partnerships for service delivery have shown a variety of potential for providing local services and fostering empowerment, according to women business owners and organizations. Under a public-private collaboration, Cadbury India, Kerala Agricultural University, and DBT have constructed 28 cocoa chocolate factories over the last 23 years in various regions of Kerala. Using public-private partnerships, the Thirumadhuram Pineapple Project, which included the Department of Agriculture, Kudumbhasree Project Mission, women SHGs, and Nadukkora Agro-processing Center, could generate 25000 tonnes of pineapple in 500 hectares and directly employ 12500 women[3], [4].

DISCUSSION

Mainstreaming gender issues in agriculture

With participative gender-sensitive maize production, women of tribal farms in Odisha saw increases in productivity and revenue. With a PPP model, Assam Agricultural University encourages organic farming in order to improve farmers' abilities and knowledge. An effective PPP is likely to increase productivity, open up new chances for cooperation, and foster meaningful relationships between people, groups, and organizations. It is crucial to eliminate or scale back fees associated with the purchase of agricultural and horticultural products made possible by registered contract-farming programs. Additionally, it is crucial to create new structures, such as pure returns models, in which both public and private businesses invest equity and carry out business as usual. The agricultural sector may go from an unorganized, low-tech, supply-led, and low-value business environment to an organized, high-tech, demand-led, and high-value condition when PPP models are effectively reproduced across diverse production centers. Incorporating lessons from prior PPP experiences is also important. PPP would be effective if government policies offered all stakeholders an equal playing field. As part of the plan to encourage PPPs in infrastructure to attract private investment, infrastructure viability gap financing should be expanded to irrigation, farm markets, terminal markets, and shared infrastructure in the fertilizer industry. Minimal private sector involvement in India's infrastructure focused on agricultural marketing

Early 1990s economic liberalization and reforms in India created an atmosphere that encouraged private sector involvement in infrastructure construction. According to the report of the Planning Commission's subgroup on public-private partnerships (PRIs & NGO), public-private partnerships are a way for the government to carry out programs and schemes in collaboration with the private sector. The word "private" in PPP is often used to describe both large private firms and more localized small businesses like farms.

Opportunities for PPP in agricultural marketing were established when the APMR Acts of the various Indian states were modified in accordance with the Model Act produced by the Central Government in the early 2000s. Both the Expert Committee Report from 2001 and the Inter-Ministerial Task Force that the Indian government established in 2002 produced

extensive assessments of the need for infrastructure. The scope for reaching the intended outcome has been constrained by the fact that various states have not implemented the Model Act/Model Regulations produced by the Central Government in the proper spirit. For the sector's efforts to draw in private investment, this has been a significant setback[5].

Government may assist in creating a standardized platform so that farmers and farmer producers organizations (FPOs) can find different hi-tech services, such as market connect platforms, farm level agricultural advice, financial technology and insurance services, and drones-as-a-service. Moreover, it may provide farmers and FPOs direct assistance and incentives, which might be used exclusively for agricultural technology services. "Public private partnership for digital services in agriculture is an important demand to assist grow the agri start-up ecosystem and allow innovation to reach smallholding farmers," says Jinesh Shah, Managing Partner at Omnivore, a top venture capital firm with a focus on agriculture."

What's being worked on: According to G R Chintala, Chairman of the National Bank for Agriculture and Rural Development (Nabard), a public sector organization that has set a goal to create 10,000 FPOs by 2027–2028, the main challenge facing FPOs is a lack of access to institutional credit because of their low capital base, lack of credit history, and lack of collateral. FPOs would be crucial in ensuring that Indian agriculture is profitable for farmers and competitive on a global scale." Agriculture technology development initiatives several initiatives have already begun to take form. IDEA (India Digital Ecosystem for Agriculture) is a project that the Indian agriculture minister launched in 2021 to enable a multi-stakeholder ecosystem, as shown Figure 1. IDEA will open up infrastructure, data sets, academic and research expertise, and innovative policies in order to partner with a significant private ecosystem. A dynamic agricultural technology start-up ecosystem is already supported by a private ecosystem made up of farm goods, banking and finance, technology, and the services sector.

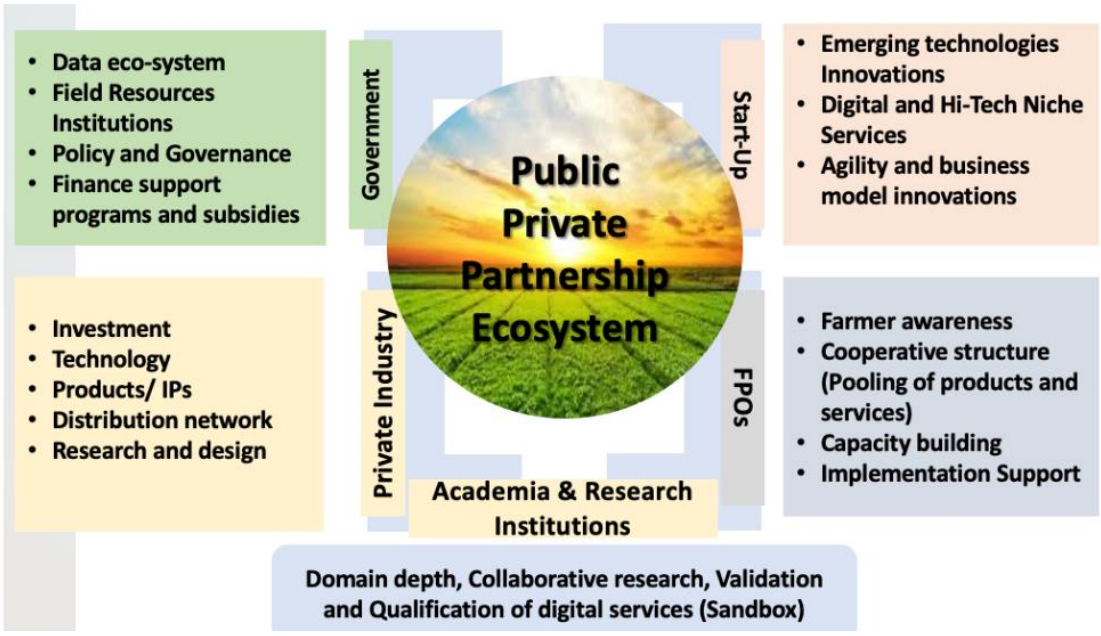

Figure 1: Regarding agricultural technology, the public-private cooperation.

Agriculture needs a Technological Revolution

There must be significant change for agricultural and food systems to take advantage of developing technology. It would be important, for instance, to create a flexible framework or manual for developing a PPP strategy via multi-stakeholder dialogues, which may then be

adopted by governments to address particular needs. Instead of the selection technique used in current procurement models, innovators should be given the opportunity to collaborate with academic and research institutions to co-create solutions and build a qualifying strategy. Also, there should be a timeline for developing, in collaboration with governments and industry partners, suitable personal data security measures and opening the farm data ecosystem. Large agricultural stakeholders should, in general, aim to provide a framework for combining finances and resources to support and grow PPP agricultural technology ventures.

With the budget proposal for PPP-based high-tech services for farmers, this effort has to be launched in mission mode. Governments at the federal and state levels may use consultations and evidence-based learning from pilot projects to deepen the conversation with the private stakeholder ecosystem and create the PPP framework. Overall, it's a great chance to review the policies that encourage innovation and altering the face of agriculture. PPPs in agricultural research and development are increasingly seen as a successful way to carry out cutting-edge research, develop new technology, and introduce new products for the benefit of small-scale, resource-poor farmers and other disadvantaged groups in developing nations. There are, however, few studies that empirically demonstrate whether PPPs serve this function in the context of agriculture in poor countries[6], [7].

The findings of a study that looks at how PPPs in agricultural research encourage more investment in pro-poor innovation in developing nation agriculture are presented in this short. The brief offers a clearer understanding of how these partnerships function, what kinds of obstacles they encounter, and how their operation may be enhanced to make a stronger contribution to food security and poverty reduction to policymakers, research managers, and commercial decisionmakers.

It is encouraging to see that sixteen Indian states have modified their state APMR Acts to conform to the Model Act, 2003 that the Indian government disseminated. Unfortunately, so far, only eight states have established the guidelines for carrying out the terms of their individual state APMC Acts, which makes it difficult for the reformation process to proceed logically. Andhra Pradesh, Sikkim, Maharashtra, Assam, Chhattisgarh, Arunachal Pradesh, Himachal Pradesh, Goa, Gujarat, Karnataka, Madhya Pradesh, Orissa, Rajasthan, Nagaland, Tripura, and Jharkhand are the states that have changed their Acts. Andhra Pradesh, Rajasthan, Maharashtra, Orissa, Himachal Pradesh, Karnataka, Madhya Pradesh, and Haryana have all created state regulations only applicable to contract farming.

If the states have changed their Acts in at least three areas direct marketing, contract farming, and the establishment of Mandies in the private or cooperative sector they are regarded to have accepted reforms. The fact that many states have only made superficial changes to their Acts in these areas, stifling the very spirit of reforms in the sector, is observed despite the fact that these areas are focused to be the key areas and counted as the minimum reforms that a state should undertake to be eligible for funds under various reforms-linked Central Sector Schemes. The Regulations that the various States are now drafting do not entirely reflect the spirit in which the Model Act was designed. Imposition of restrictions such as minimum distance from the government-owned APMCs, minimum investment requirement of Rs. 10 crore to 25 crore for setting up of private Mandis (Andhra Pradesh and Karnataka), mandatory registration of contract farming with the APMCs themselves, private Mandis to collect market fees and share the same with the APMCs (e.g., in Orissa private market to share 5% of user fees with Marketing Board), and undefined

Agricultural Product Market (Development and Regulation) Act, 2003 is the name of the model law. In order to emphasize that it is time to go beyond regulation and concentrate on

development, the term "development" was initially added to the Act's title. This allowed for a transition from the current paradigm of the agricultural marketing system. It has been noted that several states have kept their original titles for their Acts, focusing instead on regulation and control, rather than include the term "development" in the title. Moreover, it has been noted that several states have included conflicting terms into their state Acts after altering them to conform to the Model Act's requirements. For instance, several states have not ratified Section 3 of the Model Act, which grants the authority to establish a new market to any person, entity, or organization. Some states just kept the previous clause in their respective state laws, which stated that only the state government may initiate the establishment of a new market. The Agricultural Product and Livestock Marketing (Promotion & Facilitation) Act, 2017, places even more emphasis on private actors' involvement with clauses including limiting rules to actual markets and allowing warehouses to function as sub-market yards.

A method that Benefits Both Parties

Governments may take into account various policy alternatives, such as public investment, policy instruments like subsidies or tax incentives, and a PPP approach, when markets for the delivery of innovation fail, typically at the early stage of research, for the provision of social and environmental services, or at the stage of adoption. Although participation in PPPs should be open to all innovative players, the government's choice to use a PPP strategy to achieve a specific goal should be determined by the costs and advantages relative to other options. The primary justification for public and private actors to collaborate in a PPP is when they cannot individually provide the same service or product or do it more expensively. The advantages of PPPs arise from the complementarity of capabilities and the pooling of resources, while risks and costs are decreased since they are shared between the public and private sectors. PPPs, as opposed to subsidies, assist prevent obstructing future growth and enable the creation of integrated solutions[8], [9].

Yet, two cost-related concerns must be taken into account when it comes to PPPs: transaction costs and failure risk. The goal of the government's participation in PPPs for innovation is to enhance the economic and social returns from investments in public research by: enhancing the corporate community's ability to leverage public assistance; Sharing costs and risks, securing higher-quality private sector contributions to government mission-oriented R&D, creating new opportunities for commercial spillovers from public research, encouraging the commercialization of research results, and modernizing knowledge infrastructures are all ways to improve research and development.

Public research, which is often of a fundamental and basic character, is keen to collaborate with private businesses that are closer to the creation of new technologies for the industry. Partnering with public research may help businesses find answers to issues, create new markets, or add value via collaboration and coproduction (OECD, 2014). The public sector often uses PPPs in agricultural innovation systems as a means of enhancing the transmission of information from public research organizations. Another factor is making use of limited public research money. PPPs may be used to refocus innovation efforts toward topics with public benefit features, lengthy time horizons, and higher risks as private investment often focuses on areas where the private returns on investment are large. PPPs are being used more often by innovation players to improve vertical coordination in the value chain. In this situation, the focus is more on effectively disseminating existing information to businesses that can use it to integrate global value chains and compete on international markets rather than on the collaborative development of new knowledge.

Non-public partners in the agri-food industry include everything from farmers and input suppliers to processors, retailers, NGOs, and consumers' advocates. It is anticipated that having a diverse representation in partnerships would make it easier for customers to embrace innovations. Throughout the Technological Readiness Level (TRL) spectrum, from fundamental research to operational system deployment, the allocation of labor between the public and private sectors varies.

It depends on the state of the technology, the level of uncertainty, and whether or not the study is general or location-specific. Public financing prioritizes early stages and very general and unpredictable research. Knowledge and publications are the primary output at this point. Throughout the TRL scale, the proportion of private investment and the potential for collaborations both grow. There are other situations when working together is the only option. PPPs are a response to the partial failure of traditional policy tools to fulfill goals as innovation processes grow more complicated and societal requirements change. PPPs are sometimes the only way to achieve social benefits, such as when pursuing global issues that call for coordinated action and novel approaches, such as climate change, biodiversity, aging farmers, and food security, or when building very expensive physical and intellectual infrastructure, or when addressing complex issues and strategic challenges, like green growth, which call for a variety of skills and occasionally multidisciplinary approaches.

The reason for PPPs in the field of innovation also includes coordination issues in addition to policy and market failures, albeit other policy tools might be employed to solve these (e.g. tax credits for collaboration). PPPs in this field are also justified by the broad justifications for public involvement in innovation, such as the development of skills, the growth of networks, or the capacity to participate in international innovation networks. PPPs assist in developing new innovative capabilities, enhancing interoperability across national innovation systems, and provide reasonable incentives to all parties involved. Lowering transaction costs between players, which facilitates future cooperation, and improving knowledge transfer, where a smaller organization or country lacks the capacity to fund the critical mass necessary to enable knowledge spill-in, are two areas where fostering relationships and understandings between public and private researchers, as well as between the research and business/farm community, can be particularly helpful[10], [11].

Public-Private Partnerships (PPPs) are being employed more often in agricultural innovation to increase efficiency, leverage public funding, and improve innovation's ability to adapt to market demands for broader and quicker dissemination. PPPs for innovation for governments are just one possible course of action, the costs and advantages of which must be contrasted with those of alternative possibilities. Governments have put in place a legislative and regulatory framework, including funding mechanisms and Intellectual Property (IP) protection, to support the growth of PPPs for innovation.

The majority of programs are applicable to the innovation system throughout the whole economy rather than just the food and agricultural sector. Existence of shared aims, sharing of mutual advantages, and complementarity of human and financial resources are the key prerequisites for creating a successful partnership between public and private actors. Institutional structures must be transparent, yet there are different levels of formality [6]. Setting explicit goals and regulations, carrying out routine monitoring and assessment, and choosing PPPs for public involvement via established, transparent, and competitive procedures are all aspects of effective governance. Transparency is preferred throughout the whole implementation process. Enhancing partners' abilities to create, oversee, and take part in PPPs is crucial to their success, and this is truer than ever for agricultural innovation.

CONCLUSION

One of the main goals of the reform process started by the federal and state governments is to encourage private investment. Thus, the states must execute all specified reform measures in the proper spirit by amending their individual state APMC Acts in order for a public private partnership regime to develop in the sector. Private investment cannot be seen in isolation when it comes to the agriculture marketing industry. In order to do this, it is necessary to promote direct marketing, contract farming, the establishment of markets in the private and cooperative sectors, the development of a responsive market information system, a dynamic mechanism for price discovery and risk management, a system for need-based marketing extension, the promotion of grading and standardization, and the promotion of contemporary marketing systems like the hub-and-spoke model of terminal markets. Each model should be clear on how financial investments, components of research and development, and company operations are shared. Unequal partners may prevent a consortium from forming a successful partnership. The model should also incorporate every step of the development process, from idea to launch. Recognizing and fostering harmonious working relationships between the public and private sectors' various operating systems is necessary. By adopting PPP as an empowerment paradigm, the affordability of new technology and other interests of small farmers need to be kept in mind.

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CHAPTER 9

A BRIEF DESCRIPTION ON CROP DIVERSIFICATION

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ABSTRACT:

The major focus of agricultural growth over the last 50 years has been on boosting agricultural output and guaranteeing food security. To their great joy, Indian farmers were able to bring about the "Green Revolution" and the "Rainbow Revolution" with the aid of agricultural experts and policy leaders. In addition to making millions of Indians happy, this helped India become an agriculturally self-sufficient nation and gave the Indian agricultural sector a boost on the global agricultural map. These tactics included, among other things, improving agricultural output via the use of improved crop types and technology. It demonstrated a 45% increase in food output per person, making India not just a net food exporting nation but also food self-sufficient overall.

KEYWORDS:

Agricultural Marketing, Businesses, CropDiversification, Economic, Management.

INTRODUCTION

The most significant factor in the country's development of agrarian distress throughout the 1990s is the low level of absolute income as well as the significant and worsening income gap between farmers and nonagricultural workers, which has become even more acute in recent years. In light of this, the target to double farmer income by 2022–2023 may play a critical role in promoting farmer welfare, lowering agrarian distress, and achieving income parity between farmers and those in non–agricultural professions.

Agriculture diversification is crucial for the economic development of rural areas. In addition to technology, government regulations, transportation, and infrastructure, consumer demand shifts also assist agricultural diversification. In order to achieve the extra profits created by value-added crops, which give alternative selling prospects for the farm, agriculturalists diversify their output by introducing other crops or systems to their farms. The revenue of farmers may be raised to a certain amount by diversifying crop kinds and adding new ones. Farmers that diversify their crop production may generate money from a variety of sources rather than relying primarily on one. If unpredictable climatic events like insect outbreaks, frost, or drought wreak havoc on the crop, resulting in significant output loss, a farmer who selects a single crop variety is exposed to high risks. As new varieties are introduced into an agroecosystem, the cropping system becomes more diversified, increasing natural biodiversity and the agroecosystem's capacity to adapt to shocks.

Diversification enables the introduction of new plants and better agricultural types, making crops more productive, nutritious, healthier, and tolerant to diseases, pests, and environmental challenges. As different crops will respond differently to various climate change scenarios, this technique also offers alternate income-generating strategies by lowering the danger of complete crop failure. By diversifying one's crop production, one may increase the activities involved in the production of various crops while at the same time reducing the risks involved in the production of certain crops in a given location. The cultivation of many crops concurrently is conducted in dryland regions to lessen the likelihood of harvests failure owing

to recurrent droughts. In India, diversification often refers to a change from traditionally produced less profitable crops to more lucrative ones.

During the 1990s, especially in regions that profited from the green revolution, the diversification of agriculture has garnered considerable attention. Farmers increasingly find that horticulture and commercial crops are more profitable than food grains. In order to stop the loss of ground water and restore soil fertility, a specific strategy on crop diversification was launched under RKVY in 2013–14 in Punjab (20 districts), Haryana (10 districts), and Western Uttar Pradesh (15 districts). Understanding this might be beneficial for basis for the diversification initiatives' future growth. For this endeavor to be significantly successful, there must be collaboration and synergy among programs for rural development (land and water concerns), agricultural production, marketing, and input assistance, post-harvest industries processing and abattoirs, water resources, etc. It is vital to give better marketing and storage services to the alternative crops introduced in these. Reforms in agricultural marketing, land leases, tenancy regulations, and risk management will make it easier for farmers to engage in alternative crops and businesses particularly in rainfed regions that focus on oilseeds, pulses, horticulture, and livestock.

Diversification of Crops

Depending on how a country or society views it, agricultural variety protects the ecosystem from the loss of biodiversity and fosters sustainable development. Due to changing domestic or international pricing or natural catastrophes that impair the system of specialized farming, countries with fewer specialist crops or crop-based industries are more vulnerable to low-income risk. A careful balance must be maintained between agricultural operations that are more lucrative and those that are less profitable but eco-friendly in order to preserve national food security, income and price stability, and safeguard the nation's bio-diversity. Nevertheless, there is a consensus that, if implemented methodically, diversified farming may be advantageous to both people and society. It is in the best interests of small farmers and the country to diversify both vertically and horizontally within agriculture via businesses that small farms run outside of agriculture[1], [2].

Advantages of Crop Diversity

Crop diversity increases the link between livestock and food production. It guarantees the year-round availability of rural jobs and the viability of Indian agriculture. Genetic engineering also contributes to agricultural intensification (higher yield per hectare). When crops are grown in their natural setting, irrigation needs may be minimal. Also, it enhances environmental sustainability and replenishes the nutritional profile of the soil. Following are some advantages of crop diversity. Boost revenue from a modest landholding More than 86 percent of farmers now work on marginal or small properties. Existing agricultural patterns may be changed by incorporating high-value crops into them, including maize and pulses. Economic stability: If crop diversification can better withstand the ups and downs in prices of diverse goods, it may assure the economic stability of agricultural product.

Natural Disaster Mitigation:

Growing a variety of crops may help reduce the effects of irregular weather patterns including floods, drought, hail, and bug and pest outbreaks. Demand for food must be balanced since the majority of Indians suffer from malnutrition. We may increase food and nutritional security by expanding the food basket to include pulse, oilseed, horticultural, and vegetable crops. Increased planting of pulses and oilseeds is a goal of the National Food Security Mission (NFSM) in India[3], [4].

Conservation: By implementing crop diversity, we may protect natural resources. For instance, the addition of legumes to rice-wheat cropping systems, which absorb atmospheric nitrogen and assist increase soil fertility, is one example. Farmers might be included in Soil Health Card (SHC) programs as an addition to this procedure. This might assist farmers in learning more about the nutritional state of the soil and applying fertilizer appropriately to improve soil health.

DISCUSSION

Diversification-Promoting Initiatives

Since the 1970s, the Indian government has focused its pricing strategy on cereals in an attempt to increase food security. After achieving national self-sufficiency, the government is now fostering diversification to guarantee resource conservation and make agriculture more advantageous for the poor. Yet, marketing is crucial if you want to get the most out of diversification since without strong market connections, farmers won't be able to get a fair price for their products. The government wants to double farmers' incomes, and diversification is one of the methods that may be employed to assist farmers in increasing their revenue[5], [6].

Crop Diversification Plan (CDP), a sub-scheme of Rashtriya Krishi Vikas Yojana (RKVY), is being implemented by the government in Original Green Revolution States in order to encourage diversification. In rice-growing areas like Punjab, Haryana, and Uttar Pradesh, the component tries to redirect paddy crop land to other crops. But encouraging tobacco farmers to switch to other crops or cropping systems is the main goal in states where tobacco is grown. The help is offered as part of the component for alternative crop demonstrations, farm mechanization and value addition, site-specific initiatives, and support for awareness, training, and monitoring. Nonetheless, states that cultivate tobacco have been allowed leeway to implement the necessary actions and interventions to replace the tobacco crop with other horticultural or agricultural crops.

Policy Backing

Agriculture development policies in India have historically not favored varied farming. This has been especially true for rural areas and small farms. Reforming the current policies could be required to promote small-scale agricultural diversification in various agroclimatic zones of the nation. In terms of procurement and minimum support prices, the agricultural pricing strategy does not adequately safeguard products like fruits and vegetables. As the output and price of these commodities vary greatly, a price protection mechanism would be beneficial to small farmers. The limits for small farmers in underdeveloped areas include a lack of cold storage, markets, and transportation infrastructure. Similar to how steady energy availability would stop the development of non-farm enterprises like agro-processing. Together with encouraging private companies to engage in the process of infrastructure development, government should take the necessary steps to construct these infrastructure assets.

In order for big farmers to participate in businesses other than farming and for marginal and small farmers to have greater access to land via lease markets, it may be necessary to alter the tenancy rules in the majority of the states. Their agricultural diversification and rise in profitability would help them compete better. Similar to this, grouping together smaller assets could result in bigger economies of scale. To end income gaps between agricultural and non-agricultural families, rural policy adjustments for horizontal and vertical diversification are required. While small farm diversification in India has excellent potential, it can only be made practical and sustainable with the right assistance from administrators, policymakers,

scientists, and extension specialists. The yield gaps may be closed with the use of specific action plans, which will in turn aid in increasing the productivity of agricultural operations. Farmers, at least medium and large farmers affiliated with small- and marginal-farmers, may consider switching to different forms of agriculture, such as crop diversification and integrated farming systems, which may be more lucrative, better at using inputs, and less risky[5], [6].

In order to promote integrated agricultural system approaches, it is necessary to combine crops, horticulture, dairy, fisheries, poultry, etc. in a synergistic manner. Priority should be made to enabling farmers with microirrigation since it may be very effective when used in conjunction with the administration of nutrients. In order to fully handle the drudgery problem and the time component, the right moment has arrived to promote energy-efficient and gender-neutral agricultural equipment, machinery, and small engine-driven tractors. Crop diversification and the addition of new varieties are among the technologies that are emphasized in order to improve farm revenue and profitability. Increasing crop diversity and using new varieties: Diversifying agricultural crops is a significant stress-relieving strategy for the farming community's economic development.

In the early Green Revolution regions like Punjab, Haryana, and Western Uttar Pradesh, agricultural diversification appears to be urgently necessary. In order to increase agricultural productivity on a certain farm while taking into consideration the various returns from value-added crops with complementary selling potential, crop diversification is the inclusion of additional crops or cropping systems. Crop diversification and the use of novel kinds may be one of the key technologies for at least partially tripling the revenue of farmers. Crop diversification aims to broaden the farmer's crop options so that they are less reliant on a single crop to support their livelihood. When farmers choose a single crop variety, they are more vulnerable to unanticipated climatic events like the appearance of pests and the unexpected advent of frost or drought, which might have a significant negative effect on agricultural productivity.

An agro-capacity ecosystem's to adapt to these pressures is strengthened when a wider variety of types are introduced. This diversification of agricultural output also increases natural biodiversity. Technology aimed at boosting plant production, quality, health, and nutritional value as well as developing crop resistance to diseases, pest organisms, and environmental challenges includes the introduction of new cultivated species and enhanced crop varieties. While various crops will react to climatic situations differently, it lowers the danger of complete crop failure and also offers alternate methods to make money. Although the cold can harm one crop, it might boost the output of a different one[7], [8].

In India, crop diversification is often understood to mean switching from historically cultivated, less lucrative crop(s) to more lucrative crop(s) (s). To lower the danger of crop failures caused by recurrent droughts, dryland regions practice crop diversification by planting a wide variety of crops. Crop shifts and crop substitutions are also occurring in locations that have unique soil-related issues, such as salinity, sodicity, acidity, etc. In crop diversification has major benefits for boosting small farm holdings' income, reducing risk from price fluctuations, climatic variability, etc., balancing food demand, increasing the production of high-quality livestock feed, helping to conserve natural resources, minimizing environmental pollution, reducing reliance on off-farm inputs, and improving community food security. Research institutions should develop more technical innovations to expand the boundaries of production, improve the efficiency of the use of inputs, increase the yield and income of farmers significantly, etc. Modern farm mechanization with tools like the precision seeder, laser land leveler, and planter, as well as techniques like SRI (system of rice

intensification), direct seeded rice, zero tillage, raised bed and ridge plantations, drip irrigation, and sprinkler irrigation, enable technically high-efficient farming and sustainably increase income.

Crop diversification improves the circumstances for food security and allows farmers to produce excess goods for market sales, which contributes to improved revenue for other family requirements. Farmers that diversify their crops may be able to sell new goods, food, and medicinal plants on the domestic and foreign markets. For farmers in developing nations, breaking away from the monoculture of conventional staples may have significant nutritional advantages. It can also help a nation become more food self-sufficient. On the premise that not all goods will experience low market prices at once, diversification may help control price risk and boost the viability of the agricultural sector[9]–[11].

CONCLUSION

The future of agriculture in the nation might be seriously harmed by a persistently low level of farmer income. Enough attention must be paid to enhancing farmer welfare and increasing agricultural revenue in order to safeguard the future of agriculture and enhance the standard of living for half of India's population. By raising yields, enhancing drought resilience, strengthening resistance to pests and diseases, and also by seizing new market possibilities, new varieties and emerging production technology have the potential to benefit farmers' cropping systems. Identification of crops and kinds that could be suitable for various locations and farmer preferences is necessary.Diversification of crops is crucial in a nation like India. To fully use the notion, it is crucial to research all of its potential facets. Studies that are relevant (qualitative and quantitative) are required, with a focus on its consequences in the context of fragmented agriculture. In terms of market and consumption patterns, the degree of crop variety should correspond to the degree of economic efficiency.

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CHAPTER 10

MARKET BARRIERS PREVENT DOUBLING OF AGRICULTURAL INCOME

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ABSTRACT:

If the important players choose for a comprehensive, multifaceted, and targeted plan that takes into consideration potential income streams and the conditions that make them possible, such as the expansion of institutions, the availability of human resources, and expenditures in agricultural research. To double farmers' incomes, it could be required to adopt novel strategies and alter policy. The major seven sources of a farmer's income are an increase in crop productivity, an increase in animal output, an increase in crop intensity on the farmer's land, and an increase in input usage efficiency. Diversification towards high-value commodities, higher farmer compensation, transferring excess labor from agriculture to non-agricultural industries, technology creation and diffusion, in addition to laws and regulatory framework.

KEYWORDS:

Agricultural Marketing, Businesses, Crop Diversification, Economic.

INTRODUCTION

Notwithstanding the structural shift towards the services sector that has been noticed over the last several decades, agriculture has been playing a significant part in the overall development of the Indian economy. Despite the fact that agriculture's contribution to GDP has declined from 55.1% in 1950–1951 to 19.9% in 2020–2021, this industry continues to be a significant source of employment for those living in rural areas. Despite agriculture's declining GDP contribution, the rural labor force's reliance on it for employment has not decreased proportionally. The gap in income between the agricultural and non-agricultural sectors has widened as a result. India has attained macro-level self-sufficiency in food production, but still confronts significant challenges due to the high prevalence of rural poverty and the enormous number of undernourished children.

The Agricultural Census 2015–16 indicates that around 86.8% of Indian farmers are small and marginal. Small and marginal farmers cultivate around 46.9% of the total agricultural land area. The majority of farmers who live on the vast plateaus of central and eastern India have limited access to irrigation infrastructure. These elements contribute to poor crop yield, which in turn causes low surplus that may be sold and, eventually, low revenue. Government attention has recently shifted away from production and toward marketing and revenue augmentation in the agricultural sector. Modern food value chains have made it easier for impoverished farmers in developing nations to connect with consumers, which has been advantageous for them. In order to secure the future of agriculture and enhance living conditions, a stronger welfare system for farmers and increasing agricultural revenue are crucial. Agrarian hardship will be lessened, inclusive development and dynamism in the agricultural sector will be encouraged, and persistent income gaps between farmers and non-farmers would be eliminated.

On February 28, 2016, the objective of tripling farmers' income by 2022 was expressed by the Honorable Prime Minister. The seven-point plan addresses how to double farmers' revenue. By concentrating on irrigation, "Per Drop, More Crop" using soil health cards to determine the best seeds and nutrients for each field Substantial investment in cold chains and storage is needed to stop or reduce crop losses after harvest. Value addition produced through food processing. A nationwide e-platform that connects a few wholesale marketplaces might help create a national agriculture market and remove market inefficiencies. A new, cutting-edge crop insurance plan to reduce risks affordably. Introducing the Pradhan Mantri Fasal Bima Yojana, a new crop insurance program that will provide the most protection for the least cost.

The government's change in emphasis to double farmers' income is well-received, but it won't be without difficulties, particularly when it comes to integrating farmers with the market so they can get the greatest price for their goods. The government has recently made a number of actions to enhance the agricultural marketing sector and ensure that it is appropriately furnished with infrastructure. The Government Budget for 2020–21 proposed an increase in the Rural Infrastructure Development Fund from Rs 30,000 crore to Rs 40,000 crore. This financing for rural agriculture will aid in building top-notch agricultural infrastructure. The investment will advance scientific crop growth and post-harvest infrastructure while assisting in minimizing waste from farm to fork. The APMCs will also have access to the agricultural infrastructure fund for improving their infrastructural facilities. This comprises the "one district, one product" policy of states, the concept of Krishi Udaan, and Kisan Rail, as well as storage and cold storage in villages. The Farm Acts, 2020, which define the trading area, the framework of agreement, and the inclusion of commodities as vital commodities, were recently introduced by the government as a means of expressing its goal for a liberal and integrated agricultural marketing system. The Government has since abolished the Acts, nevertheless[1]–[3].

1. **Government intervention:** Unless the government's policies on agriculture are comprehensive, give freedom of technology and market, and invest more money in infrastructure development, the government's programs won't help them double their revenue. As long as the government intervenes in the market to regulate pricing to make consumers happy at the expense of farmers, ad hoc policies and programs won't benefit farmers.

2. **Technology and new methods are required:** The nation must employ more high-quality seed, fertilizer, and power supplies in agriculture. Use of precision farming techniques can significantly increase farmers' output and revenue. Since India is a diverse nation with a large portion of its agriculture dependent on the monsoon, interventions are required that include research, technology promotion, extension, post-harvest management, processing, and marketing, in accordance with each State's or region's comparative advantage and unique agro-climatic characteristics. Every year, 1.78 million hectares of land must be added to irrigation, and 1.85 million hectares must be added to double cropping. In addition, the space needed for fruits and vegetables must grow by 5% year.

3. **Enhancing Livestock Management:** For cattle, improving nutrition, increasing artificial insemination, shortening the calving interval, and reducing the age at first calving are all possible growth drivers.Necessity for Broad-Based Reforms achieving a higher price realization, effective post-harvest management, competitive value

chains, and adoption of related activities may easily account for around one-third of the increase in farmers' income. This necessitates extensive market, land-lease, and tree-planting changes on privately owned property.

4. **Increasing Participation:** The States are responsible for implementing the majority of agricultural development programs and policies. To own and accomplish the aim of doubling farmers' income, it is crucial to mobilize States and UTs. Agriculture has to be liberalized in order to draw ethical private capital to the market and to production. Similar to this, FPC/FPO (Farmers Producer Company) may significantly contribute to the promotion of small farm companies[4], [5].

DISCUSSION

The difficulties of Increasing Farmers' Income

Notwithstanding these efforts, due to a number of impediments in the agricultural sector, it would be challenging to realize the aim of Double Framers' Income in the allotted period. The following are some of the factors discussed:

Little Amount of Agricultural Land

The average size of agricultural land holdings is 1.08 hectares, and 86.8% of farmers are small and marginal, with less than 2 hectares of land under their control, according to the Agricultural Census statistics for 2015–16. The fragmentation of land ownership causes input costs for labor, fertilizer, and pesticides to rise. It is challenging to use contemporary technologies and maintain efficient management of agricultural operations due to the modest amount of land holdings. It is difficult to increase farm revenue in India as a consequence of land fragmentation due to low agricultural yield and land waste.

Farmers' inability to get credit

More than 50% of Indian farmers who live in rural areas lack access to institutional financing. The majority of rural regions are inaccessible to institutional loans due to a lack of sufficient farmer collateral and a dearth of bank branches. Farmers are more reliant on non-institutional lenders like Mahajan, landlords, and local moneylenders and pay higher interest rates as a result. The majority of small and marginal farmers generate poor farm income as a consequence of the insufficient financial options available to them, which hinders their ability to embrace new agricultural techniques and technologies.

Agriculture marketing system that is inadequate

The inadequate marketing setup for agricultural goods is one of the main obstacles to boosting farm revenue. The government has recently taken a number of actions to assist the establishment of an effective and liberal system as well as to provide the necessary infrastructure for the current system. Agricultural Infrastructure Fund, Integrated Scheme for Agricultural Marketing (ISAM), and Rural Infrastructure Development Fund are new initiatives from the government. The government has also undertaken a number of steps to enhance the marketing system, including the establishment of an alternative marketing channel and the transformation of rural haats into GrAMs, which will act as points of collection and distribution in the production chain. Despite these efforts, private merchants dominate the agricultural marketing system, often influencing prices and giving farmers a little percentage of consumer dollars[6].

Agriculture marketing is a very complex process that involves moving produce from the point of production to the point of consumption while performing a variety of tasks including

assembly, handling, storage, transport, processing, wholesaling, retailing, grading and sorting, financing, promotion, and market information. There are a lot of intermediaries involved in this food flow. The frequency of these middlemen varies depending on the commodities and the distribution method of the goods. Low producer share in consumer spending is caused by the abundance of middlemen.

Communication Difficulty

Information exchange is essential for connecting farmers with the right markets. Lack of accessibility to communication tools like the internet, telephones, and telegraphs, as well as low literacy levels, hinder effective communication amongst various parties.

Inadequate Transit Infrastructure

Another difficulty in selling agricultural products is the lack of adequate transportation infrastructure at competitive prices. Absence of transportation facilities includes seasonality, high freight costs owing to insufficiency, a lack of all-weather roads and transport vehicles, and an inability of various items, mostly perishables like fruits, vegetables, and eggs, to be transported using the current transportation infrastructure.

Despite the development of automated transportation, it is still not accessible to all farmers in all places. Farmers and business owners are concerned about the availability of parcel vans for the transportation of perishable goods like fruits and vegetables despite the fact that railroads also provide transportation services. A key factor in increasing the effectiveness of agricultural marketing is transportation. Every marketing step calls for it. Income is the most pertinent indicator of how well farmers are doing and how agriculture is changing, whereas corporate investment lacks the scale and agricultural investment still produces the best returns per unit.

Compelled Sales

Despite the fact that prices would often be low owing to good arrivals, farmers are forced to sell of the commodity soon after harvest due to financial obligations they undertook throughout the production phase. The farmers would be trapped in a cycle of poverty if forced sales or distress sales take place. According to the National Planning Commission's report on rural marketing and financing, farmers often sell their goods at unfavorable times and locations and frequently on unfavorable conditions[7], [8].

Issues with Technological Development

Poor price realization may also result from technological changes in how certain production- and harvesting-related tasks are carried out. Examples include the problem of rubbish being mixed with cotton when it is mechanically picked, the cutting of potatoes by potato diggers, and the issue of trash being mixed with cane when sugarcane is mechanically harvested. These kinds of issues caused the quality of agricultural products to decline, which therefore caused the price to drop.

Inadequate Market Knowledge

For all parties involved, from producers to dealers to consumers and policymakers, market knowledge is essential. Even though there are several attempts in both the public and commercial sectors to improve the gathering and transmission of market information, it may be difficult to offer the appropriate information at the appropriate time to support farmers' decision-making.

Small and marginal farmers are affected by high marketing costs

Increased marketing expenses have a direct impact on how well agricultural goods is marketed. In a nation like India, where farmers often have little marketable surpluses, greater transaction costs, and low negotiating power, this has an influence on actual price realization, particularly for the small and marginal farmers. To improve the system's efficiency, the government has recently implemented a number of policy changes. Effective product distribution is also necessary in a globalized, open market.

Reforms in the Agriculture Market Are Required

Markets must be operating efficiently for the agriculture industry to reach its full potential. A nation with a well-developed and effective marketing system would encourage competitive trade and make it easier for farmers to access value-added services like grading, storage, and packaging. Moreover, it will aid in reducing post-harvest losses and correcting inadequacies in the supply chain. Private entities would be required to help enable enough investment in various agri-marketing-related infrastructure. To establish a favorable policy climate that would stimulate private actors' engagement, the government has enacted a number of reform initiatives.

They include changes made between 2003 and 2017 as well as initiatives made via programs like Agmarknet and the national agricultural market (eNAM) (MRIN). Supporting these initiatives is bringing about the needed improvements in other industry components, such as infrastructure, food safety, and storage. The concept is to operate a liberal and barrier-free charge system across state lines. The Indian farmers' ability to realize higher prices would be impacted by the elimination of interstate barriers since supply networks between producers and consumers would be fairly simplified (FAO, 2005). The government has adopted a comprehensive strategy that includes changes to policy, the introduction of concepts like the national agricultural market, the launch of Agmarknet to provide market information, the introduction of concepts like the negotiable warehouse receipt, the aggregation of farmers by fostering farmer-organizations, and the encouragement of entrepreneurship to have better resource management.

It may take creative approaches and a shift in policy to double the income of farmers. One possibility is identifying and concentrating on the low-income or underprivileged farmers. Until it is recognized who the low-income and/or disadvantaged members of the agriculture industry are to double a farmer's income in such a short amount of time would be challenging in terms of access to markets, financing, knowledge, and infrastructure. In India, 70% of farmers earn less than Rs. 15,000 per crop annually. Only 10% of them have incomes more than Rs 30,000. Income and land size have been shown to strongly correlate.

As marginal farmers, who cultivate landholdings of less than or equal to one hectare, make up more than three-fourths of low income farmers (about Rs. 15,000. The fact that only 7% of marginal farmers make more Rs 30,000 per year may be attributable to a more diversified income portfolio in terms of the number of revenue sources used and the level of participation. Due to a number of factors, including underinvestment in agricultural research, poor electricity, market, and road infrastructure, and underdevelopment of institutions like credit, extension, insurance, etc., approximately 80% of low-income marginal farmers are concentrated in the eastern (58%) and western (21%) regions.

Due to two consecutive drought conditions in various sections of the nation, India's agriculture is experiencing challenging times, which has led to widespread despair among farmers. These rural communities are experiencing a food and livelihood crisis, more notably a fodder and water deficit. In order to empower farmers on a social and economic level, the

government has to take aggressive action and implement more long-term policies focused on farmers, such as those relating to irrigation, farm diversification, farm profitability, and community assistance initiatives.

Raising revenue through increased productivity

Through improving yields, nutritional profit, stress tolerance, and crop protection, biotechnology is poised to play a significant role in agricultural and animal production. The policies should assist the nation's biotech and seed industries in the appropriate manner. According to research, BT cotton has given farmers an increase in production value of more than Rs. 80,000 crores. Several additional crops may offer similar possibilities for Indian agriculture and for boosting farmers' income. Increasing agricultural output in India's rainfed areas, which make up more than half of the nation's arable land. In addition to watershed management, building check dams and farm ponds should be undertaken as a mission to provide irrigation for the crops that would save their lives. The implementation of the precision agricultural model must be coupled with the extension of the land and public subsidies.

Closing yield gaps across states, such as the almost three-fold price yield difference between Punjab and Chhattisgarh, is crucial to increasing national productivity. It is necessary to create a strategy document to evaluate the current trends in crop production. vis-à-vis the potential yield of the primary crop system, so that particular action plans for closing the yield gaps may be taken up, which in turn will lead to increased farming system productivity. India suffers enormous crop losses. Pesticides are crucial for protecting crops from pests and illnesses as well as increasing agricultural output, cutting costs, and improving quality. Using pesticides has a significant cost-benefit ratio that favors farmers.

But, the government must regulate registration, increase quality enforcement, and combat corruption by implementing measures for joint testing of samples in order to stop the flow of fake pesticides being sold in the market by fly-by-night operations[9], [10]. Tractorization has been the tale of farm mechanization in India. It is now necessary to promote effective machinery, tools, and small-engine-powered tractors in order to fully meet the needs of small farms. The development of a custom recruiting facility for agricultural mechanization should get high priority via a combination of specialist CHCs (custom hiring centers) and with state Agros, co-operatives, and input merchants.

An integrated water usage policy is required. India should evaluate various projects critically and create a national framework for the wise and coordinated use and management of water. To evaluate the many challenges, regulatory concerns, water laws and legislations, research, technological development, and community engagement, a national commission on efficient water use in agriculture should be set up. Particularly resource-strapped farmers who engage in less-intensive agriculture in rainfed habitats would benefit from this. Farmers must, however, be taught about water use practices to get them away from flood irrigation systems, which reduce production and waste water. The most crucial step is designing the crops, which must take into account the region's water supplies as well as how much water certain crops need. For instance, locations with high rainfall rates are ideal for growing high water-use crops like sugarcane and rice.

A method of Integrated Farming

The promotion of integrated farming system approaches, which involve the synergistic blending of crops, horticulture, dairy, fisheries, poultry, etc., appears to be a viable option to give small landowners regular income and on-site employment while lowering cultivation

costs through the use of multiple resources and providing much-needed resilience for predicted climate change scenarios. The practice of dairy husbandry benefits small farmers, who may earn between Rs. 50,000 and 60,000 per year from a family of three cows or buffaloes while also preserving our priceless local breeds. The supply of dung will rise by three to four times with stall-fed, high-yielding animals, boosting biogas and agricultural output. By choosing local kids to lead the activities as field guides, appropriate goat husbandry methods would be introduced.

Improved realization of market prices

Farmers should have simple access to direct marketing and contract farming. Also, to promote contract farming in the States, wherein the buyer may provide the farmer access to cutting-edge equipment, high-quality inputs, other assistance, and a guaranteed price. Licensing standards that facilitate the involvement of purchasers from all over the nation, the free movement of commodities, the harmonization of tax laws (including a uniform GST), the standardization of grades, and the acceptance of electronic transactions. Exchanges would also have to extend the involvement by allowing farmers to take positions via cooperative or other aggregators. Endorsement of policies that require the standardization of agricultural products, such as indicating that the product satisfies all standardization and grading requirements for packing, sealing, etc.; "Certificates of Authorization" are only granted to traders who are willing to abide by the regulation.

Special Actions

The market's governing rules for movement and Farmers' ability to realize their prices is being hampered by private actors' purchases and state governments' land leasing rules. The trials with contract farming are built on "win all," delivering benefit to all stakeholders in operations, and this has to be supported on a big scale if the idea is to be successful. This mission must be completed if India is to have long-term success in the global market.A review of the existing mechanism for distributing agricultural loans and subsidies. All financial advantages, especially the subsidies in various forms, should be given to and distributed to farmers directly via e-governance, which allows for online monitoring of farmers' applications, statuses, and scheme approvals.

Progressively phase off all subsidies, including those for fertilizer, and only provide payments to farmers while determining the total amount of assistance. This boosts the effectiveness of government investments[11]. This will transform the agricultural industry and generate employment. The project will enhance agricultural value annually while opening up more market prospects and launching other socioeconomic initiatives targeted at boosting farm incomes. ICP-based agricultural extension offers fantastic chances and may help rural communities gain more power. Information technology can assist in more effective planning of crop, fertilizer, and pesticide use as well as disease monitoring and prevention in both crop and animal husbandry. It can also help farmers manage their operations and finances more efficiently and connect them to markets more effectively for higher price realization.

Making monitoring equivalency (profit margin) between the replacement crop/commodity and enterprise and the once scheduled to be introduced is necessary to encourage diversification based on ecological principles. The profit a farmer makes from a specific crop or product is his major priority. A practical way to accomplish this goal is to increase the MSP (maximum selling price) in favor of the planned diversification crops, such as maize, soybean, pulses, oilseeds, fruits, and vegetables, which have the potential to replace rice and wheat in this region. Instead of focusing on lowering input costs, all federal and state

subsidies should be integrated to empower farmers through the development of rural infrastructure to support agribusiness, food processing, water management, soil health and enhancement, seed production and processing, custom hiring, plant protection, dairy, poultry, fisheries, and other enterprises, which will increase farm profitability and sustainability.

Expanding India's organic food program to capture 10% of the 60 billion USD worldwide market for each. For the producers to benefit from market value, major regions of India, including NER, H.P., J&K, Uttarakhand, M.P., Chhattisgarh, and Jharkhand, which are organic by default, must be converted to organic status. By choosing expert-oriented and industrial-use crops, promoting crop stewardship programs, Good Agricultural Practices and Certification, and creating global commodity boards in the style of California Walnuts, Washington Apples, etc., it is possible to double the level of agricultural exports in five years, which will greatly benefit farmers. We need to promote Geographic Appellation by positioning Indian food and agricultural products such as Kashmiri Apples, Bihar Litchies, Soybean of Indore and Nilgiris, Spices of Kerala, Cardamom of Sikkim, Orange of Nagpur, Mangoes of Ratnagiri and Malihabad, Tea of Darjeeling and Assam, and so forth on a global scale. The country must organize its several agricultural belts, which include those for rice, wheat, apple, mango, banana, tomato, ginger, turmeric, orange-lime-lemon, orchids, and flowers, among others. To increase production and export, similar livestock, fisheries, dairy, and sericulture sectors must be developed nationwide. Priority should be given to providing farmers with micro irrigation since it may be very effective to promote scientific agriculture micro-irrigation on a very big scale coupled with the application of nutrients. Large-scale promotion of the advanced idea of precision agriculture is required.

CONCLUSION

Small holding sizes, inefficient and fragmented markets, restrictions on movement within and between states, a lack of adequate infrastructure, particularly for storage and transportation, an insufficient number of markets, and a lack of readily available market information are just a few of the problems facing Indian agriculture. To assist realize the goal of doubling farmers' income in a certain amount of time, these difficulties will always make it challenging to have the necessary rate of development in agriculture. Nonetheless, it is feasible provided a supportive atmosphere is established and the sector's full potential is achieved. To build the necessary ecology, the government has already implemented a number of initiatives.

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CHAPTER 11

SIGNIFICANCE OF MARKET-DRIVEN EXTENSION

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ABSTRACT:

Making extension approaches market-driven rather than production-driven is urgently needed. During the last ten years, agricultural productivity has dramatically expanded. We are announcing a record 241 million ton output of food grains. Yet, farmers are killing themselves; this indicates that they are not receiving a fair price for their goods. Extension may play a crucial role not only by transferring technology to the farm, but also by providing the necessary market knowledge. Extension agents must inform farmers on what to grow, when to grow it, how much to grow, when and where to sell it, how much to sell it for, and in what form. The diversification of agriculture would be aided by efficient links between production systems and marketing, agro processing, and other value-added businesses.

KEYWORDS:

Agricultural Marketing, Businesses, Crop Diversification, Economic, Management.

INTRODUCTION

India's agriculture has made enormous strides since winning independence, and the country can now produce enough food grains on its own. Despite the fact that production has increased significantly, farmers have not been attracted by the financial benefits. As a consequence of the globalization of the commodities markets, farmers must transition into producers and sellers if they want to optimize their return on investment. Most farmers employ extension services to get technologies relevant to agriculture. It is essential that extension delivery techniques shift from being production-focused to market-focused in the current context to help farmers enhance their revenue via agriculture. Market-led extension is essential to assisting farmers in raising the quality of their agricultural goods, as well as its worth and marketability, and therefore increasing their earnings.

By emphasizing money-to-money exchange over seed-to-seed exchange, the concept of market-led extension might assist farmers in raising the value and marketability of their products, cutting production costs, and ultimately maximizing their returns on investment. In reality, the shift from a supply-driven to a demand-driven paradigm encourages farmers to produce in accordance with market needs and helps them to generate greater profits. India has made significant technical advancements, as seen by the increase in production of several agricultural products. India produces a wide range of agricultural goods, including millets, cash crops, oilseeds, pulses, rice, wheat, pulses, and crops for horticulture and medicine. The current agricultural environment is rife with difficulties and risks from global competition, even in our local markets. A lot of fresh chances are also accessible to rural residents so they may use and increase their income from farming.

The agricultural system was formerly centered on production, but the current agriculture sector will grow primarily along the lines of a market-based economy. Market-led extension holds the key to the future since up to now, the primary emphasis of extension agencies has been on production processes. With the new international trade system established by the WTA and the increased export potential, this becomes more importance. Functionaries in

public extension are now ill-prepared to handle such difficulties. The multi-agency extension service will need to solve these difficulties by enhancing the public agency's capability, assisting the private sector in market-driven extension and marketing, and making broad use of media in the distribution of information and technology. Market-led extension has so far been a side problem in the extension scenario; this has to change. An early definition of a successful farmer was one who produced more. With an increase in annual food grain output from 51 million tonnes in the early 1950s to 235 million tonnes in 2009–2010, Indian agriculture has achieved significant achievements in the previous 50 years, leading the nation to a position of self-sufficiency. With an increasing population, it has been able to keep up with the expanding food demand. Although the population almost tripled during this time, from 350 million to 1 billion, food grain output increased by a factor of four in the previous 50 years.

Notably, in addition to agricultural scientists, farmers, and the marketing network, the extension system has tirelessly contributed to the transfer of production technology from the lab to the field. Market-led extension holds the key to the future since up to now, the primary emphasis of extension agencies has been on production processes. The multi-agency extension service will need to solve these difficulties by bolstering the public agency's capability, assisting the private sector in market-led extension and marketing, and making broad use of media in the distribution of information and technology. Market-led extension has so far been a side problem in the extension scenario; this has to change. Small and marginal farmers are often more likely to sell their food on a "as is where basis" owing to a variety of restrictions, including the need to repay personal hand loans and satisfy home requirements, even when output has grown significantly.

Farmers must change from being only producers-sellers in the home markets to producers-sellers in a broader market sense in order to maximize their returns on their investments, risks, and efforts in the face of market globalization. Farmers must have the answers to questions like what to produce, when to produce it, how much to produce, when and where to sell it, and at what price and in what shape to do this. The extension system provided the majority of the productive technology to farmers. The extension system now requires market-related knowledge and abilities. The growth of the agriculture industry depends on an effective marketing strategy[1]–[3]. The marketing system significantly aids in the commercialization of subsistence farmers by offering markets and incentives for higher output. The majority, if not all, of the attempts to raise are likely to be ineffective if the agricultural marketing system is not developed.

DISCUSSION

The stance of the market-led expansion system is established by assisting farmers in receiving high returns for their food, lowering production costs, and enhancing the quality and marketability of the supply. Indian farmers have transitioned from subsistence to self-sufficiency as a result of the development of production methods, and information technology, electronic, and print media must be used to communicate the production and market information. They must change their emphasis from being "supply driven" to "market driven" and produce in accordance with the demands of the market in order to succeed in the liberalized market setting.

New Paradigm

The reform known as "market driven extension" promoted producing agricultural products with a stronger focus on the market. The paradigm shift from production-focused to market-driven extension will necessitate reorientation at every level, including the goals to be

attained, the expected results, the use of technology, the approach taken by the extension agent when interacting with farmers, networking, and emphasizing the significance of maintaining records and information in order to make the best decisions. The strategy will assist in changing the emphasis from production to market and revenue augmentation, or from seed-to-seed to money-to-money[4], [5].

Conversation enabled by a focus on the Market

With a market-oriented strategy, many more elements will be taken into account, such as choosing the product to be produced while taking into account its relevance for the area, identifying the most suitable market (location), and locating prospective buyers to assure the greatest possible price. The government has also launched a number of schemes to speed up this procedure. One district one product for multiple agricultural goods is an example of such an endeavor. The Ministry of Agriculture and Farmers Welfare is assisting farmers to converge resources from ongoing centrally sponsored schemes such as the Value addition to the agricultural goods may contextualize the whole process. Producing in accordance with market need would not only satisfy consumer desire but also aid in building a customer base. To achieve greater returns, the consumption patterns of various consumer categories must be coordinated with the right mix of production portfolios at the field level. This process will be aided by the use of the market-led-extension strategy.

Using technology to Lengthen Sentences

Information will become more important as a result of the market orientation of extension, and it will be expected that information will be gathered and given at the proper stages of production and marketing. The use of technology (ICT) offers the potential to develop methods for the real-time gathering and distribution of information. Farmers and other interested parties need extensive information on a variety of marketing-related topics, from price-related issues to infrastructure needs to market requirements. The Indian government has recognized the value of providing market information via a single channel. Agmarknet has been implemented by window as part of the Integrated Scheme for Agricultural Marketing's Marketing Research & Information Network (MRIN) component (ISAM)[6], [7].

Such initiatives in agricultural marketing reduces the search for information and provide a single window information system. In addition, there are various other initiatives under public and private sector to provide farmers with information on wide range of aspects related to production and marketing. Some of them are worth mentioning for their impact in improving traditional extension system as well as bringing market orientation in extension. Market connection broadens the current relationship between research, extension, and farmers.

- To recognize and share innovations in techniques and post-harvest technology that provide value.
- To create a network and action plans for expansion to assist the product's marketing at all levels.

Indian agriculture has advanced significantly over the last 50 years, achieving self-sufficiency in the production of food grains. Although though output has greatly grown, monetary incentives to entice farmers have not been successful. Because to the globalization of the commodities market, farmers must reposition themselves as producers and sellers in order to get the best returns on their investments. The majority of production-related technologies are delivered to farmers through an extension delivery system. To boost farmers' income in the

current environment, it is critical to shift the extension delivery system's emphasis from production to market. Market-led extension aids farmers in enhancing the caliber of agricultural output, raising the product value and marketability, and improving the farmers' income.

In the past, extension has been a strategy used to disseminate research findings to farmers through extension agents. In that instance, information flowed from the top down (from researchers to farmers). Farmers were thought to be ignorant, thus there was no need for them to provide researchers with input. Extension has changed over time from top-down methods to more two-way methods like participatory extension, farmer field schools, etc. Extension is now often referred to as "communication for growth," which stresses the need of conversation and feedback.Extension may assist farmers with the adoption of new technology, enhanced marketing, and improved managerial abilities. Farmers are empowered by effective agricultural extension. Nevertheless, the effectiveness of extension, particularly when introducing new technology, relies on how effectively it meets the requirements of the farmers and how much the farmers are involved in choosing their own fate. When we bring new technology to communities, it is imperative that we assess our extension strategies.

Extension strategies that include participation are promoted for agricultural advances. Farmers are engaged in issue identification through participatory extension approaches, and the extension agent acts as a facilitator, leading them through problem-solving techniques. From the assessment stage to the evaluation and marketing of an invention, active farmer engagement is encouraged.

This strategy may be used in a variety of ways, such as agricultural systems research, farmer-to-farmer extension, look-and-learn visits, participatory rural assessment, farmer field schools, and lead farmer methods. In this essay, we go through some of the key methods for developing successful extension services. They include doing frequent farmer visits following training, creating a successful training program, and facilitating by asking questions. The use of instruments like farmer field schools, farmer-to-farmer training, field days, radio programming, etc., may improve extension. The use of incentives to promote new technology and staffing for efficient extension are related topics.

Market-Led Expansion Idea

Farmers need to have access to accurate, current information in the ever-changing world of agriculture, from production technology to market-focused knowledge, such as Market-led extension basically views farmers as agripreneurs and gives them the tools they need to earn high returns (money to money) from their whole farming operation. Also, this provides farmers with a variety of practice packages that are appropriate for regional circumstances or agricultural systems.

The purpose of market-driven extension

a. To identify potential agricultural marketing extension and intervention locations.

b. To develop and apply efficient extension approaches to provide the agricultural community need-based assistance in selling their product.

c. Extension methods for raising farmers' understanding of market-led extension

d. Finding individuals or groups of farmers interested in exporting agricultural products

Commodities.

a. Raising awareness of market-led expansion among farmers.

b. Teach farmers how to save costs in their agricultural operations.

c. The development of agricultural farming techniques for export.

d. Giving farmers access to information about finances and markets.

e. Organizing grading and packaging instruction for the farmers.

f. Disseminating information through electronic mass media, TV, Internet, etc.

Market-led Extension Difficulties

The public extension system is enormous in scope and overburdened with several tasks. Adding a new marketing component to this system may now become a priority with a number of challenges to overcome. Once again, those who work in marketing extension must be driven to acquire a variety of marketing talents. The main obstacle in market-led expansion would be gathering precise, pertinent, thorough, and timely market knowledge about products, market practices, consumers, and commodity pricing. A revised information policy is required in order to provide farmers with access to updated websites that are information-rich. The discrepancy of storage, warehouse, and transportation facilities in various locations is another significant issue.

Extension in agriculture and rural areas: a broader definition

The extension function's scope expands even more when rural extension objectives are paired with agricultural extension aims. For instance, non-agricultural activities like microenterprise development are included in rural extension, a priority being promoted by the Inter-American Development Bank[8]. The majority of rural residents rely on a variety of sources of income, including small trading, primary production, remittances, and temporary work. In other words, rural residents do not rely primarily on agriculture or natural resources for a living. According to Carney (1998), "these could offer the foundation for their survival, but it may well be that the greatest opportunities for considerable lifestyle improvement lay outside the natural resources sector in the development of off-farm income. The poor may also be reached via rural public employment, or labor-intensive rural public works projects, in addition to microenterprise growth.

As the AKIS/RD document integrates rural with agricultural aims, and since rural development comprises both farm-related and non-farm-related activities, it appears suitable for some extension programmes to be involved in activities beyond those previously specified. In rural regions where such a focus would be appropriate for extension programs, FAO might encourage the growth of agriculture-related microbusinesses. To this end, it can establish a specific partnership with relevant institutions like the Inter-American Development Bank.Technological enlargement. Several technical and service divisions are in charge of agricultural and rural extension, which has multiple uses. Agricultural extension is a role that pursues a variety of goals, according to the several technical departments within FAO, including crop development, livestock development, forest use and conservation, fisheries engineering and capture, food and nutrition education, and food and nutrition research. Extension may be concerned with giving knowledge on other critical concerns including food storage development, processing, farm management, and marketing even in programs intended to promote agricultural crop productivity. At one point or another, FAO has promoted and pursued all of the aforementioned agricultural and rural extension goals.

Marketing extension is one of the other goals of agricultural and rural extension. Marketing extension offers details on how specialty crops are treated after harvest and is a crucial service in nations that trade in food crops, especially delicate goods like cocoa and bananas. There are other, distinct types of marketing information services known as "market extension" as well; these services offer details on changes in commodity prices, information on where to sell specific goods, details on issues relating to the quality, availability, and costs of inputs, and details on the actual level of market competition.

It is important to distinguish between these market intelligence services and marketing extension services, which work to streamline the processing and distribution of agricultural products.

Agricultural organizations. In order to fulfill their common agricultural interests, farmers and food processors might organize themselves with the aid of agricultural and rural extension agencies. Group organization and promotion have a long history in extension, and FAO's dedication to these goals is widely recognized. In fact, the Organization uses autonomous agricultural and rural development group organizations as one of several methods to encourage people to take part in development. In these attempts to build farmers' organizations, financing economic self-sufficiency and member engagement in organization operations are crucial. Others claim that working indirectly with and via farmers' associations or organizations will allow extension to fulfill its mission more successfully than working directly with individual farmers (Byrnes 2001). The National Union of Cotton and Food Crop Producers (Syndicat des Producteurs de Coton de Vivriers, SYCOV) was founded in Mali in 1998. In "Cotton, Democracy and Development in Mali," Bingen (1998) details this development and emphasizes the link between small farmer organization, democracy, and development.

Emerging objectives. Extension may have to deal with urban and suburban customers as populations rise and rural residents move to metropolitan areas, as it currently does in certain nations (FAO 2000). The term "agricultural and rural extension" may ultimately be replaced with "food and agriculture, rural and urban extension". In reality, extension extends beyond technical agriculture and rural development alone and already offers information and education services in metropolitan areas in high-income nations. A possible area for information transfer development is urban expansion. As a result, it speaks to new audiences, offers fresh programming, and reflects the rising urbanization of the globe. For instance, urbanization in Latin America (74% in 1998) will have an impact on 83% of the population by 2020 (Sanchez-Grian 1998).

Together with epidemiological, institutional, and socio-demographic changes, this process will also entail socio-economic and demographic changes that will have an impact on food and nutrition. Africa, Asia, North America, and Western Europe all exhibit the same trend. Governments that are now dismantling extension programs will likely need to focus on food security, youth employment in the food sector, small urban enterprises using ecologically friendly techniques, and other food and agriculture-related programs. It is narrow and short-sighted to see extension as just an agricultural product rather than an educational service[9], [10].

Government's involvement in reforming rural and Agricultural Extension

Even though the government's role in extension financing and delivery is evolving, it still plays a significant part in agricultural and rural development. Government, at whatever level, must be concerned with productivity, the effects of agricultural practices on the environment, laws controlling quality standards, food safety, and the general welfare of the populace. This

is true even when agricultural extension is farmer-led. There is a misconception about "the helpless condition" that has emerged. The fact that NGOs and private business extension have often replaced government extension and bypassed it is not a fiction, however. Yet in the end, it is up to the government to determine whether or not to become engaged in agricultural and rural extension on a direct level.

The need to feed everyone, increase rural incomes and alleviate poverty, and sustainably manage natural resources are new problems that governments must address. These significant problems occur in a world that is changing very quickly. Globalization, new technologies, the evolving public-private relationship, the multidisciplinary nature of agriculture, country-to-country heterogeneity, the geographic dispersion of rural people—all these realities are increasing pressure on developing nations to make progress in their economic and social advancement.

Given this, the government must play a major role in funding advisory services, which are necessary but not profitable for the private sector. The state has a crucial role to play in creating markets for commercial and farmer-to-farmer extension services, providing rural communication infrastructure, and developing human resources, in addition to offering advice on the management of natural resources, integrated pest management, and advisory services to the very poor. The development of diverse alliances is essential given the variety of challenges facing emerging nations.

The benefits and drawbacks of institutional change should be taken into account by those governments that have not yet done so. Governments and international organizations should compare the advantages and disadvantages of recently revised institutional arrangements for agricultural and rural extension systems and learn from one another in this respect. Institutional changes seem to have been implemented effectively in a number of nations, and governments may find value in them as they assess whether to alter their own agricultural and rural extension. Yet, no one reform strategy can be seen as a miracle cure. All of them are "works in progress" and rely on the dedication, resources, ability, attitudes, and motivations of the many stakeholders.

Extension is crucial in helping Indian agriculture overcome its difficulties. Not only are investments in expansion urgently needed, but also a market-oriented strategy. The focus is expanding to include a larger variety of agricultural topics, from seeds to markets. Various stakeholders need knowledge on post-harvest techniques, including processing, marketing, storage, and handling, which are at the heart of market-led extension, in addition to best practices and technology for crop production. There is a need for an integrated, one platform or window where information and communication technology may be used to bring together all quarries and provide clarity of aim, flexibility of work plan, and other factors.

This best fit approach needs farmers to become involved, network with other stakeholders and provide room to the agricultural innovation system, which includes research institutions, input dealers, processors, buyers, and finance agencies. It also has to be customized depending on regional needs.

This must be comprehensive in nature so that market intelligence and profit-driven agriculture can strike a balance between both production factors and raising remunerability in agriculture so that farmers may have a bigger proportion of the rupee spent by consumers. Market-led extension may give innovative solutions to the problems encountered by farmers and other stakeholders in the currentdynamic and liberal trade environment and assist them in using the potential advantages.

CONCLUSION

Farmers are now able to get high returns for their products, reduce production costs, and increase the product's value and marketability thanks to market-led extension. To provide farmers with information on production and markets, it is necessary to fully use the possibilities of electronic, print, and information communication technologies. Due to the development of production methods, Indian farmers have transitioned from subsistence to self-sufficiency. The emphasis must be changed from being "supply driven" to "market driven" in order for farmers to succeed in the liberalized market setting and produce in a way that generates high profits.

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CHAPTER 12

EXTENSION TACTICS TO IMPROVE MARKET ACCESS

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ABSTRACT:

Agricultural extension, commonly referred to as agricultural advisory services, is essential for enhancing agricultural production, strengthening food security, enhancing rural lives, and promoting agriculture as a pro-poor economic development engine. Agricultural extension is a role that pursues a variety of goals, according to the several technical departments within FAO, including crop development, livestock development, forest use and conservation, fisheries engineering and capture, food and nutrition education, and food and nutrition research. A service or system known as agricultural extension helps farmers by educating them on how to improve their farming practices, raise their revenue and production efficiency, improve their quality of living, and raise the social and educational standards of rural life.

KEYWORDS:

Agricultural Marketing, Businesses, Farming Practices, Management.

INTRODUCTION

Agriculture is the foundation of the Indian economy since it is essential for supplying raw materials for quick industrial growth while also providing essential nutrients for people. In addition to industrial industries, agriculture provides rural adolescents with excellent job and entrepreneurial options. Between 1982–1983 and 2015–16, the percentage of agriculture in the gross domestic product declined gradually, from 36.4 to 17.4 percent. Despite the fact that its contribution to GDP has decreased, it continues to employ 49% of the Indian labor force, or more than a half a billion people. It is also utilized as a raw material to make a broad range of industrial items, including as fertilizer, insecticides, agricultural equipment, and consumer goods. Urban populations require food and raw materials, which causes the secondary and tertiary sectors of the economy to grow. Industrial product markets will also expand, foreign exchange will be secured, prices will be stable, and capital will be mobilized for growth, all of which are dependent on agriculture. Agricultural development therefore facilitates a process of cumulative expansion.

Integration into international markets gives the chance for faster economic development, the creation of higher-paying employment, and the eradication of poverty. Opening markets won't solve the problem on its own, but in previous decades, success in development has often been linked to an outward focus. It has been challenging for many of the less developed, poorer nations to fully capitalize on market prospects. The lackluster supply response has been caused by a number of structural factors, including insufficient institutional capability as well as often unhelpful policies. Market access restrictions and agricultural regulations that punish items characteristic of underdeveloped countries are still in place in industrialized nations. The scenario is similar in Timor-Leste, where poverty has persisted despite recent and fast oil-fueled prosperity, with half the population subsisting on less than a dollar per day. Rural regions are where 75% of the impoverished reside, and most of them are farmers.

While the demand for vegetable goods is increasing in the nation's capital, Dili, it is mostly being met by increasing imports. Vegetables are only seldom produced domestically, in tiny quantities, and without enough assistance. For instance, the nation's first solely focused provider of agricultural inputs just began operations in 2012.

Josephina Farm, a business that provides organic vegetable products for later retail sale in the capital, and the ILO Business Opportunities and Support Services (BOSS) have teamed. In order to get fruit from farmers in Ainaro, one of Timor-poorest Leste's districts but one with an altitude, temperature, and soil quality ideal for horticulture production, Josephina Farm put up an out-grower program with the help of BOSS. The agreement was made in order to enable smallholder farmers access to a better value-added market and assist the corporation in securing a consistent, affordable supply of vegetable production. The development impact logic of contract farming models is predicated on the idea that shifting from producing for own consumption (where family food needs are satisfied first, with only the excess sold) to producing for commercial markets (where market needs are satisfied first, and farmers may have to buy staple crops to feed their family) leads to net positive outcomes. Moreover, it is predicated on the idea that the agreement will last after the financial advantages have been established and farmers and the business have benefited financially. Nevertheless, in the real world of volatile markets, success cannot be taken for granted, and there are no assurances that the results will be long-lasting[1].

The farmers received a one-day on-site instruction from Josephina Farm on appropriate farm management techniques, including information on irrigation and seed beds. After agreeing with farmers on the veggies to grow based on end-market demand, Josephina Farm offered a verbal buy-back guarantee for a certain amount and a minimum quality of output. Also, Josephina Farm offered farmers enhanced seeds to entice them to cultivate novel types like zucchini and coriander. Farmers were given at least one follow-up monitoring visit from the firm throughout the growing season to provide guidance on horticultural production, including seed management, planting, and watering.

Globalization has opened up the market, which has caused attention to move from internal issues like monsoons, marginal landholdings, expensive inputs, unpredictable input utilization, scattered processing facilities, and a lack of professionalism to external issues like climate change. Farmers must add value to the agricultural goods they produce before selling them to customers, which requires primary and secondary processing as well as marketing. This suggests that through developing market performance strategies, agricultural marketing management refers to all commercial operations involving the flow of agricultural goods and services. Regardless of whether these tendencies point to serving a bigger customer base with rising affluence, both supply and demand have been prompted to express worry as a consequence of these developing trends. Modern integrated value chains benefit producers by enhancing product quality and food safety, decreasing costs and losses, increasing sales, and giving them the ability to add value to the product. The strengthening of connections between consumers and farmers in developing countries has been a second advantage of contemporary food value chains for smallholders.

Nations, which have aided smallholder farmers' well-being. The word "agribusiness" therefore refers to all businesses engaged in the production, distribution, and post-harvest handling of agricultural goods. Agribusiness also includes the processing of these goods as well as agricultural and related industries including dairy, poultry, fishery, and forestry, as well as the part of industry that produces farm inputs or consumes farm supplies. Via the supply chain, the processed or completed goods are delivered to the final users or customers. There is a need to decrease inventory with an information-driven integrated supply chain,

boost the product value, improve resource availability, and simplify market access in order to lower final product costs for consumers and make them more competitive. Together with current changes in the existing supply chain, it is critical to comprehend the function of agricultural extension in the growing integrated supply chain in agriculture[2], [3].

Agriculture's contribution to Economic Growth

Farmers and other stakeholders have the chance to take part in the supply chain's expansion thanks to the agricultural industry. As a result, agriculture is crucial for economic development and eradicating poverty. It has also recently attracted increased attention for the reasons listed in the following three points: Revolution in agri-biotechnology: Agricultural biotechnology may significantly contribute to new developments, cost savings, increased production, and novel procedures and goods. The development of supermarkets the supermarket revolution in agri-food supply chains has altered the Indian food retail business. Food producers and other stakeholders are more closely linked to shifting consumer preferences and expectations as those preferences and wants change.

Rural economic development is essential for decreasing poverty and protecting the environment in the aftermath of the tremendous pace of urbanization that has been witnessed. Agriculture is a key factor in rural economic development (together with the value contributed throughout the value chain). Integration cases with agricultural value chains. This section is a collection of a few supply/value chain management case studies undertaken by NAARM, Hyderabad. Due to low intermediary payment, increased transportation costs during the harvest, a little financial share for producers, and higher commission agency costs, farmers in the Nalgonda area have trouble selling oranges. In the research, it was recommended that the government implement a number of steps to guarantee that a product reaches the customer at the appropriate time and that stronger safety procedures be adopted to ensure the prevention of product damage. The research reveals that even if the market price is relatively low, it is still feasible to entice the manufacturer to cooperate directly with a private firm under contract, guaranteeing the agreed price. The agreement would help farmers get a higher price by removing middlemen and intermediaries. The report suggested policy changes to increase farmer incomes, reduce market volatility, and increase pricing transparency[4].

DISCUSSION

The Four Strategies for Growth

On the basis of this, four different growth plans are suggested. The following are the four primary growth strategies:

Pecoration of the Market

This tactic's goal is to boost sales of currently offered goods and services in active marketplaces, which will raise your market share. You may do this by luring clients away from your rivals and/or ensuring that your current clients purchase your goods and services more often. This may be achieved by lowering prices, increasing advertising and distribution assistance, acquiring a competitor in the same market, or making minor product improvements.

Market Expansion

This entails boosting sales of already offered goods or services in untapped areas. Market expansion entails analyzing how to expand an existing market or how to sell a company's

current product on new markets. Different consumer categories, such as industrial purchasers for an item that was previously marketed solely to homes, new places or regions of the nation, and so on, may achieve this.

Product Manufacturing

Launching new goods or services on already-existing markets is the goal. Product development may be used to expand the offer given to existing clients in an effort to boost sales. Purchase of the rights to create someone else's goods; Investment in the product and "branding" it; Investment in the research and development of further items; Investment in these products; Co-development with another business that needs access to the company's brands or distribution networks.

Diversification

This entails the introduction of fresh goods or services on untapped marketplaces. The riskiest tactic is diversification. It entails the corporation offering brand-new goods and services on a fully untapped market. Other types of diversification include:

Perspective Diversification

This entails the business creating or acquiring new items with the intention of marketing them to its current clientele. Current consumers could be interested in these new items even if they are often technologically or economically unrelated to present products. For instance, a business that formerly produced notebooks may now introduce a new product into the pen industry.

Divergence in the Vertical

The business moves into its customers' or suppliers' markets. As an example, imagine starting to offer paints and other building supplies for use in your company's home and office renovation work.

Diversification Centralization

Concentric diversification refers to the creation of a new line of goods or services that are comparable to an existing product line in terms of both technical and/or financial aspects. Small manufacturers of consumer goods often use this form of diversification, for example, when a bakery begins making pastries or dough products[5], [6].

Combined Diversification

Means switching to new goods or services that don't have any commercial or technical ties to the equipment, products, or distribution channels that are now in use, but which could be interesting to new client groups. The high return on investment in the new sector is the primary driver of this kind of diversification. Large corporations often utilize it when seeking for strategies to balance their non-cyclical and cyclical portfolios.

A corporation may choose one of these four tactics depending on the techniques it currently employs and its goals. The approach taken by a company's product or market and the latter's tolerance for risk are key factors in this decision. It is important to educate farmers about the futures market and their alternatives. The commodities exchanges could designate someone to keep an eye on the spot markets so they can verify the information gathered from all stakeholders. Bank participation in the futures market should be encouraged since it makes them the greatest candidates to serve as an aggregator.

Farmers face a significant challenge since a PAN card is required for futures trading. To solve this issue, farmers should be permitted to register trade accounts using Kisan Credit Cards. The Khufri Chipsona variety makes up around 25–30% of all potato output in Uttar Pradesh, therefore commodities markets should start issuing futures for this variety or at the very least, give it some thought.

Organized retailing may improve supply chain efficiency and improve manufacturers' access to markets, including both small and big producers. On the one hand, this will aid in cutting consumer prices, while on the other, producers will realize higher pricing. Retail food chains' sales on the local and international markets would be further boosted by a supportive government approach and improved basic infrastructure. Moreover, the importance of consumer education, post-harvest management, and sustainable production techniques is equal to that of legislation.

International Strategy Types

A multinational company is a business that operates in many nations (MNC). The biggest MNCs are significant participants on the global stage. For instance, Walmart's yearly global sales surpass the combined GDPs of Austria, Norway, and Saudi Arabia in terms of dollars. Despite the fact that Walmart is often thought of as an American store, 35% of its income comes from sources outside of the country. In Mexico, Central America, Brazil, Japan, the UK, Canada, Chile, Botswana, and Argentina, Walmart has a significant number of shops. Also, Walmart takes engaged in joint ventures in China and India. MNCs of even smaller sizes may nevertheless have significant influence. With current sales of almost $21 billion, Kia would rank in the top 100 countries out of the more than 180 countries in the globe. Multinational corporations like Kia and Walmart must decide on an international strategy to direct their work across several nations. There are four primary global strategies to choose from: International, local, and worldwide transnational. Each strategy takes a unique approach to attempting to be responsive to (1) variations in prices and efficiency on the one hand and (2) variations in consumer preferences and market circumstances across countries on the other. Which of the four categories of foreign strategies will be undertaken depends on how the two constraints of cost and local cultural factors are handled[7], [8]. A service or system known as agricultural extension helps farmers by educating them on how to improve their farming practices, raise their revenue and production efficiency, improve their quality of living, and raise the social and educational standards of rural life.

Historic Extension of Agriculture

Early in the 19th century, the British university system was the first to adopt the word "extension" to describe educational activities that took place beyond the main campus or were intended for audiences other than those enrolled in higher education. Yet, the Americans adopted this idea when they were looking for a technical and agricultural answer for their nation. So, in the beginning of the 20th century, the phrase "Agricultural Extension" was first used in the United States. After that, services for farmers were created in collaboration with Land Grant Colleges. The federal government provided land to every state in the union so that they might establish agricultural experiment stations and related educational facilities or universities. These colleges are now mostly large universities, but they continue to serve as the central offices for county-based advising and extension services.

Agriculture Expanded

All extension work is to educate rural residents how to improve their level of life with the least amount of government aid, their own initiative, and their own resources. By civic pride,

self-reliance, and local leadership, it promotes progressive development. Extension fills the gap between traditional farming's poor yields and the high yields seen in scientific farms. The Department's mission is to create graduates who are competent to successfully impart their knowledge, skills, and attitudes about the agricultural development process to farmers and other members of the public.

The goal of a degree in agricultural extension and management is to generate graduates who have a thorough understanding of the course's theoretical and practical components and are capable enough to work for themselves after graduation. The majority of the time that students are in class is spent learning the fundamental sciences, humanities, workshop skills, engineering drawing, and general agriculture. Students are required to have a broad understanding of extension theory, its application to current agricultural issues, and the capacity to perform agricultural and rural development research using quantitative and qualitative approaches.

Worldwide Strategy

Companies who are pursuing a worldwide strategy don't care about expenses or cultural adaptation. They make little to no changes while they try to market their items abroad. Harley Davidson does not need to reduce pricing or modify the motorbike to meet local motorcycle requirements while selling bikes overseas. Since a Harley is unique compared to the bikes made locally, people from other nations like to purchase one. Customers are willing to pay more for a Harley's distinctive American appearance, sound, and power. In order to compete with Hershey's on the US market, Belgian chocolate producers do not reduce their prices, nor do they modify their goods to suit American preferences. They have a global approach. Some businesses using a worldwide approach include Rolex and Starbucks.

Multinational Strategy

A company using a multi-domestic approach places more emphasis on market response to local needs than cost or efficiency. Netflix adapts the content that is shown on its channels in dozens of nations, including New Zealand, Portugal, Pakistan, and India, rather than attempting to push all of its American-produced series on viewers throughout the world. Similar to this, the food business H. J. Heinz modifies its goods to suit regional tastes. Heinz provides an alternative version of their famous ketchup to Indians since some of them would not consume garlic or onions, for instance. In the many nations where it operates, Outback Steakhouse employs the multi-domestic approach, according to local dietary preferences without drastically cutting pricing.

Worldwide Strategy

When a company adopts a global strategy, it compromises local market response in favor of a focus on reduced costs and increased efficiency. An antithesis of a multi-domestic approach is this one. A global strategy emphasizes the need to acquire low prices and economies of scale by delivering basically the same goods or services in each market, notwithstanding the possibility of some small product and service variations in different areas.

For instance, Microsoft makes the identical software applications available in several languages throughout the globe. Similar to other manufacturers of consumer products, Procter & Gamble looks for every opportunity to build worldwide brands in order to increase efficiency. For companies like silicon chip manufacturer Intel, whose product or service is mostly concealed from the customer's perspective, global strategies may also be highly successful. Lenovo also employs similar tactic. Variation in local tastes is less significant for

these businesses than price. The growth of agriculture continues to be essential to the battle against global poverty. According to recently revised estimates, even a one percentage point rise in agricultural income growth-related GDP corresponds to an increase in the growth rate of expenditures in the weakest sectors of society of 5.6%. Despite this potential, the world's poorest nations consistently underperform when it comes to some of the most crucial aspects of agricultural systems, such as access to financing, insurance, or inputs. To choose when to grow and sell, or what kind of fertilizer to use, for instance, farmers need fast and high-quality information. Yet, in sub-Saharan Africa and South Asia, the conventional agricultural extension services established to meet these requirements often have severe staff shortages and make suggestions that few farmers choose to implement[9], [10].

With funding from the Bill & Melinda Gates Foundation, UK Aid from the Department for International Development, and an unidentified donor over the past eight years, the Agricultural Technology Adoption Initiative (ATAI) has supported nearly 50 randomised evaluations on the obstacles to the productivity and profitability of smallholder farming. In a series of policy papers and presentations, findings from this body of research are summarized, including information on farmer credit and savings, risk, markets, and agricultural extension.

Information services could be improved, according to research from ATAI and other sources, by better understanding how to target using social networks, tailoring information to the specific needs of individual farmers, and raising awareness of information needs in the context of the use of new technologies. We also discover that pricing information sharing with farmers to provide them more negotiating leverage during sale talks may not be sufficient on their own to have an effect on incomes or prices. Here, we provide some recent findings on ATAI's farmer advising and information services.

Worldwide Strategy

A company that employs a transnational strategy looks for a balance between a multi-domestic and a worldwide strategy. Such a company seeks to strike a balance between the necessity to adapt to local tastes in multiple regions and the aim for reduced costs and greater efficiency. Many fast-food franchises, like McDonald's and Kentucky Fried Chicken (KFC), for instance, depend on the same brand names and basic menu items all over the globe. These businesses also give in to regional preferences. For instance, you can buy wine in McDonald's in France. Given that French diets heavily include wine, McDonald's strategy makes sense. McDonald's offers a McArabia Chicken sandwich in Saudi Arabia and does not provide any breakfast items that include pork, such as ham, bacon, or sausage.

The government of Andhra Pradesh abolished the need for middlemen in the sale of fruit and vegetables by creating Rythu Bazars, or producer's marketplaces, by enabling a direct link between growers and customers. Example 5: Trading in futures and the supply chain for cardamom in Kerala. Owing to the lengthy supply chain in the sale of cardamom, dealers profit most at the cost of planters. When it comes to the supply chain, there is also a margin gain. As a consequence, the eventual customer must pay more money.

The research presented an aggregation model that would benefit both the farmers and other stakeholders involved in the cardamom value chain based on an investigation of the unfair marketing strategies used by cardamom producers. Extension personnel's function in the agri-supply chain. The extension method is production-driven, which prioritizes the production above marketing. An effective marketing system incorporating the following factors is necessary to distribute information about what to create, what to sell, and where to sell.

Purchasing of materials

Transportation, material management, sourcing of industrial inputs, and storage are all included in logistics. Contracting, forming alliances and partnerships strategically, and vertical integration are examples of organizational management. Use of Effective Consumer Response (ECR) systems that automate every step of the distribution chain, such as digital sale points. Models for managing the agri-supply chain Traditional Supply Chain the "Traditional Model" is a convoluted network in which producers would mostly follow the flow of fruits and vegetables. Agents (commission agents), auctioneers, wholesalers, conventional retailers, including mom and pop stores, roadside shops and sidewalk shops, and vendors, including farmers themselves, will all be major actors in the business. Farmers grow and produce the F&V in the supply chain, while agents, auctioneers, and wholesalers are traders. In the conventional supply chain model, producers sell their goods to consumers via a large number of middlemen who take the lion's share of their overall market share.

Hub-and-Skew Diagram

The hub-and-spoke strategy is used by organized businesses to offer food and beverages, including Food Bazaar and Spencer's Retail and More. With this kind of supply chain arrangement, there aren't many participants. Farmers, grocery stores, distributors, and consumers are all players in this network. These concepts include hubs, storefronts (retail outlets), and purchasing centers run by professional merchants. This model states that contract farmers and small farmers account for the bulk of the F&V production.

Value Chain Diagram

Just a few organized retail firms, like Reliance Fresh, now adhere to the Value Chain Model. In this strategy, organized merchants buy produce directly from farmers via contracts or leases and then sell it to consumers without the use of any middlemen. The concept aims to create a value chain that extends from farmers to consumers and only uses backward integration.

Rules of conduct for Extension Programs

Under the Twelfth Five Year Plan, it was intended to combine 17 distinct DAC&FW, MoA&FW, and GoI programs into the National Mission on Agricultural Extension and Technology (NMAET). Agricultural Extension, Seed and Planting Material, Agricultural Mechanization and Plant Protection, and Plant Quarantine are the four sub missions suggested under NMAET. The objective is expected to be achieved by utilizing a comprehensive combination of extensive physical outreach and information dissemination methods, ICT use, popularization of modern and appropriate technologies, capacity building, institution strengthening, and promotion of the association of farmers into Farmers Interest Groups (FIGs) to form Farmer Producer Organizations (FPOs).

Technical, legal, administrative, and regulatory tasks continue to be completed on an autonomous basis under the control of the relevant Sub-Missions. The four proposals' skill development programs for farmers and extension agents will be combined with related ATMA initiatives. To establish a reliable extension system in the nation, a multi-agency strategy is used in consideration of the information needs of the many stakeholders engaged in the production and selling of agricultural products.

Extension via Krishi Vigyan Kendra - Farm Science Center or Krishi Vigyan Kendra (KVK) is a learning organization that prioritizes district-level interdisciplinary education in addition to technical support from ICAR. In India, there are 687 KVKs, or almost one for every

district. An NGO, state agricultural university, state department of agriculture, or national research institution is in charge of each of the centers. By connecting researchers, extension systems, and farmers, these KVKs, as frontline extension systems, have carved out a place for themselves.

Private Sector Extension

In India, the private sector is becoming more and more crucial to extension services. It creates context-specific models and makes use of ICT technologies to provide farmers with information directly. Agricultural input firms utilize a broad range of strategies as a kind of extension. Several private businesses have established one-stop agricultural solution centers to provide extended services. Mahindra Krishi Vihar, Tata Kisan Sansar, and Godrej Agrovet are a few examples. Given the prevalence of marginal and small land holdings in India, extension via NGOs - Farmers organizations and SHGs may play a crucial role in communicating farmer needs to knowledge intermediaries. Several Organizations provide extension services, including BAIF, Basix, and PRADAN. Extension using ICT apps, such as e-Choupal, aAqua, Avaaj Otalo, and Kisan Call Centres (KCC), all use ICT in agriculture to benefit farmers. These applications include both public and commercial institutions[11], [12].

CONCLUSION

By combining their expertise and abilities, extension professionals will serve as facilitators for various agri-supply chain players, including farmers (producers), input suppliers, and marketers, and assist expand value-added activities. Supply chains may thus provide synergy in three distinct ways: Market development beyond of established bounds boosts member sales. Comparatively to rival chains, the chain has decreased delivery costs while raising gross margins in exchange for working capital commitments from chain members. To provide customers a better sense of the value of the goods they get, specialized items are supplied to certain market groups, and they vary in terms of service quality, product reputation, or brand familiarity. Because of this, chain participants may charge greater prices.

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CHAPTER 13

IN INDIA, AGRICULTURAL MARKETING DEVELOPMENT

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ABSTRACT:

Agricultural marketing is crucial for boosting consumption and output as well as for quickening the pace of economic growth. Its dynamic capabilities are crucial for advancing economic progress. The benefit of marketing for your company is that it engages consumers and helps them decide whether to purchase your goods or services. A marketing strategy, which is a component of your company plan, also aids in establishing and sustaining demand, relevance, reputation, competitiveness, etc. Development of Agricultural Marketing Systems Program. The initiative will help the government implement a significant reform in the agricultural marketing sector in an effort to improve rural markets and give smallholders in those markets more authority.

KEYWORDS:

Agricultural Marketing, Businesses, Management, Smallholders.

INTRODUCTION

After the man's ability to produce more food than he required for himself, trade of his goods with others began, and marketing of agricultural commodities emerged. Production for exchange gradually replaced production for consumption at this point. Farmers used to eat the majority of what they produced about a century ago; nowadays, the majority of what farmers produce is traded for other goods that they need. Their reliance on marketing has expanded as a consequence of this trend, which has contributed to the general growth of the market mechanism. By periodically adopting different administrative and legislative measures, the government has made significant progress since that time. A few of the steps taken to enhance the marketing environment and make agricultural marketing as effective as possible include the creation of the Directorate of Marketing and Inspection in 1935, the adoption of the act for the grading and standardization of agricultural commodities in 1937, the carrying out of market surveys, and the establishment of regulated markets in the nation. Agriculture marketing received little attention during the first or second five-year programs. The slow move towards commercializing agriculture was the cause of all marketing-related advancements, not any particular government initiatives.

"There is a growing knowledge that it is not enough to produce a crop or animal product, it must be efficiently marketed," the National Commission on Agriculture the first panel to advise measures for the development of agriculture in the post-independence era observed. A quick upgrade in the current marketing system is required due to increased output, which causes a bigger percentage rise in the marketable surplus together with an increase in demand from the urban population. Since then, several initiatives have been taken in a number of five-year plans to encourage the structured sale of agricultural goods via a system of regulated marketplaces. The majority of the states and union territories passed laws (Agricultural Product Market Regulation Acts), and as of March 31, 2009, there were 7139 regulated marketplaces. They have assisted in reducing the market disadvantages faced by manufacturers and sellers at the wholesale assembly level. The establishment of private

markets/yards, direct purchase centers, consumers' or farmers' markets for direct sale, and promotion of public-private partnerships in the management and development of agricultural markets in the country were all addressed by the union Ministry of Agriculture during the 10th Five Year Plan.

India's agriculture marketing industry's growth factors

1. **Agriculture-related technological change:** Farm output has significantly grown as a consequence of technological advancements in agriculture, such as the introduction of high yielding seed types, increasing use of modern inputs, and changes in cultivation techniques. As a result, there is now a greater market excess of agricultural products. The marketing system has grown as a consequence of this.

2. **Specialization:** Farmers' and areas' propensity to become more specialized in certain crops or animals has increased their efficiency and undermined the ability of the family to support themselves. As a consequence, specialization has led to greater output, which is the foundation for the expansion of marketing and, therefore, of the economy. Also, the efficiency with which natural resources like land and water are used has increased as a consequence.

3. **Urbanization:**The majority of consumers of agricultural surpluses are urban residents. India's urban population has greatly grown, which has forced agricultural commercial operations to expand more quickly. Due to rural-urban migration, the rate of growth of the urban population is much larger than that of the rural population, which has enhanced the significance of the agricultural product marketing system[1], [2].

Access to and use of communication

The market for agricultural goods has expanded due to the expansion of communication and transportation infrastructure. A product's market reach has grown in both length and breadth since it was removed from the producing regions. Without these infrastructure, it was difficult to transfer products across regions, and consumers could only consume a product in the regions where it was produced or, at most, in close proximity. As a result, marketing's reach has greatly expanded.

Makes a Developed Market

Each growing economy requires a developed market as a precondition. For all those involved in marketing throughout the process of moving product from producer to consumer, it should fulfill the goals of the marketing system. The following traits should be present in a well-developed market:

1. A well-developed market should provide products that customer’s desire and are willing to pay for.

2. It should provide customers a broad range of items so they may pick what they want without difficulty. The variations shouldn't be so varied that they get perplexed.

3. No dangerous goods should be made available for purchase in the marketplace. Consumers should be safeguarded with vigilance.

4. All potential customers should have access to information about the products that are offered on the market and their respective advantages.

5. Consumers should not be under any compulsion to purchase goods from a certain vendor or group of traders.
6. Retailing services should be offered to small clients in the market together with the wholesale facilities.
7. Pricing for items should be reasonable and consistent across all customer groups.
8. There shouldn't be any product waste in the marketplace.
9. The producer should be able to swiftly sell his excess and get a price that is in line with the current supply and demand conditions.
10. There should be adequate and effective processing, transportation, and storage facilities.
11. There should be facilities for proper grading.
12. The packaging strategies should be tailored to the needs of the various agricultural goods. India's agriculture marketing has problems.
13. The Indian agriculture marketing system has a number of flaws. As a result, the Indian farmer does not get a fair price for his harvest. Here, the primary flaws in the agricultural marketing system are covered.

Poor Warehouse Facilities:

The settlements lack adequate warehouse facilities. In order to keep his goods, the farmer is forced to employ trenches, mud vessels, "Kutcha" storehouses, etc. These illogical storage techniques result in a great deal of waste. The amount of produce that goes bad and cannot be eaten by humans is around 1.5%. As a result, there is a significant increase in supply at the village market, which makes it difficult for the farmers to get a reasonable price for their goods. The situation has improved to some degree as a result of the establishment of the Central Warehousing Corporation and State Warehousing Corporation[3], [4].

Lack of Standardization and Grading: Various types of agricultural output are not adequately rated. The "dara" sales technique, in which a large quantity of product of various grades is sold in a single lot, is the one that is most often used. Hence, the farmer providing superior goods cannot be certain of receiving a higher price. Hence, there is little motivation to utilize superior seeds or create superior kinds. Transportation Facilities: India has very poor transportation facilities. Just a few villages are connected to mandies by railroads and pucca roads. Produce must be transported on cumbersome conveyances like bullock carts. Naturally, such transportation cannot be utilized to transport goods to far locations, and the farmer is forced to sell his produce in neighboring marketplaces even if the price received in these markets is quite low[5], [6].

A vast number of intermediaries are present in the agricultural marketing chain, which significantly reduces the share of farmers. For instance, a research by D.D. Sidhan found that farmers only get around 53% of the price of rice, with middlemen taking a share of 31% and marketing costs accounting for the remaining 16%. The percentage was much lower for fruits and vegetables, at 34% and 39%, respectively. In the case of vegetables, the middle-share men's was 29.5%, whereas in the case of fruits, it was 46.5%. Village merchants, Kutchaarhatiyas, Puccaarhatiyas, brokers, wholesalers, retailers, money lenders, etc. are a few of the intermediates in the agricultural marketing system.

Mistakes in Unregulated Markets: The nation still has a sizable number of uncontrolled marketplaces. Arhatiyas and brokers take advantage of the farmers' ignorance and illiteracy to defraud them through unscrupulous methods. The farmers must pay the arhat (pledging charge) to the arhatiyas, the "tulaii" (weight charge) for weighing the produce, the "palledari" (other miscellaneous types of allied work) to unload the bullock-carts, the "garda" (for impurities in the produce), and a number of other undefined and unspecified charges. The use of incorrect weights and measurements in regulated marketplaces is another malpractice in the mandies. In certain uncontrolled marketplaces, incorrect weights are still utilized with the intention of defrauding the farmers. Lack of Market Information: It is sometimes impossible for farmers to learn the actual market pricing in various marketplaces. As a result, they agree to pay whatever the dealers offer. The government often broadcasts market prices on radio and television in an effort to address this issue. The news publications also inform farmers on the most recent pricing adjustments. Unfortunately, there are situations when the price quotes are not accurate and there is a significant time lag. Often, the trader gives less than the price stated in the official news media.

Missing Credit Facilities

Poor Indian farmers try to sell their product as soon as the crop is produced, even if the prices are quite low at that time. Giving the farmer credit allows him to postpone such "forced sales" and wait for better circumstances and pricing. Farmers are compelled to borrow money from money lenders while agreeing to commit their product to them at prices below market rates since such credit facilities are not accessible. The major farmers' demands have often been met by cooperative marketing groups, leaving the small farmers at the whim of money lenders. Market Regulation is Required Producer sellers faced excessive marketing costs, improper marketing charge deductions, and a plethora of malpractices under the conventional method of selling agricultural goods. Market regulation is desperately needed to enhance marketing conditions and to foster an environment conducive to fair competition. A market that is controlled attempts to do away with unhealthy and dishonest activities, lower marketing costs, and provide producer-sellers in the market facilities. The term "market regulation" refers to any legislative action intended to control the marketing of agricultural products in order to develop, enhance, and enforce accepted marketing practices. A different marketing system is not what is supposed to be created by the introduction of a controlled market. The main goal has been to encourage open and informal competition in order to foster the environment for effective private commerce. The farmer may use open and competitive bidding in the regulated marketplaces to sell his market excess in front of several purchasers. The farmer is not required by the statute establishing regulated markets to sell his product in the yard of a regulated market. The fundamental tenet of creating regulated markets is doing away with unfair tactics in the system and giving controlling authority to farmers or their representatives in how the markets operate[7].

DISCUSSION

Producers of Agricultural Commodities in Surplus

The amount that is or may be made available to the nation's non-producing population is known as the producer's surplus. This excess, in terms of marketing, is more significant. The speed of agricultural development is determined by the rate of increase in agricultural output, but the rate of increase in the marketable surplus defines the rate of economic development. For the nation's economic progress, a rise in output must be matched by an increase in marketable surplus. The following sectors are helped by both traders and policy makers having an understanding of producer surplus:

Formulating sensible pricing policies: Programs to support prices are an essential component of agricultural policies that are required to boost agricultural productivity. The amount of marketable excess is a factor in how these policies are framed. Creating effective procurement and buy strategies: The strategy for procuring food to feed the public distribution system must take into consideration the volume and behavior of marketable and marketed excess. Similar to farmers, merchants, processors, and exporters must base their buying decisions on the amounts of various agricultural goods that are currently on the market.

Preventing unwarranted price changes: By allowing the government and traders to make the proper arrangements for the movement of produce from one area where it is in surplus to another area where it is deficient, knowledge of the size and scope of the surplus helps minimize price changes in agricultural commodities. The government and merchants benefit from knowing about the sold excess when making judgments about storage. Decisions about the export and import of the commodity might benefit from advanced estimations of the excess of such goods that have the potential for external commerce. The nation may prepare for imports if the surplus is anticipated to be less than what is required, and options for exporting the excess can be investigated if the surplus is anticipated to be more than what is required. Creation of a transport and storage system: Understanding the marketing excess helps in creating a system with the capacity to manage it[8], [9].

Many forms of producer excess

There are two categories of the producer's excess: 1) marketable surplus and 2) marketable surplus.

Commercial Excess

The amount of food that can be distributed to the nation's non-farm population is known as the marketable surplus. It is a surplus idea that is theoretical. The producer's or farmer's remaining resources after meeting their needs for family consumption, farm needs for seeds and cattle feed, payment to labor in kind, payment to artisans (carpenters, blacksmiths, potters, and mechanics), payment to the landlord as rent, and social and religious payments in kind are referred to as the marketable surplus.

Marketed surplus is the amount of food that a producer farmer actually sells in the market, notwithstanding his needs for family consumption, agricultural needs, and other demands. The marketable excess may be more, less than, or equal to the surplus that is sold. There is just one phrase, according to Bansil: marketable excess. You may define this either subjectively or objectively. Marketable surplus, as used here, refers to the excess that the producer-farmer would theoretically have after complying with all criteria and be able to sell. The entire number of fresh crop arrivals on the market is, objectively, the marketable surplus. Marketed excess and marketable surplus in relation to one another. Depending on many factors, the marketed surplus may be more, less, or equal to the marketable surplus.

The farmer's health and the sort of produce

1. When the farmer keeps a smaller amount of the produce than his real needs for his family and farm, the marketed surplus is more than the marketable surplus. This is particularly true for small and marginal farmers, whose immediate and urgent financial needs are greater. Distress or forced sale refers to this scenario of selling more than the marketable excess. To satisfy the needs of their families and/or their farms, these farmers often purchase the product from the market at a later time. When

the price of the goods declines, the number of distress sales rises. If you want to satisfy a certain monetary need, you must sell more product at a cheaper price.

2. When the farmer keeps part of the extra product, the surplus that is sold is less than the surplus that is marketable. The following circumstances result in this condition becoming true. Big farmers often sell fewer products than the marketable surplus because they hold onto additional goods in the anticipation of receiving a greater price in the future.
3. Due to price variations, farmers may switch out one crop for another, either for personal use or to feed their animals. The farmer may eat more of the first harvest and less of the second crop as a result of the crop's price dropping in comparison to its rival crop. When the farmer does not hold more than is necessary or less than is necessary, the marketed surplus may be equal to the marketable surplus. With perishable goods, this is true.

Marketable Surplus-Affecting Variables

From area to region and within a single region, crop to crop, the marketable excess varies. Also, it differs amongst farms. The amount of marketable excess on a certain farm relies on the following criteria;

1. **Holding Size:** The size of the holding and the marketable excess have a positive connection.
2. **Production:** The marketable excess will be bigger on a farm with higher productivity, and vice versa.
3. **Commodity Price:** There is a positive and negative link between the commodity price and the marketable excess.
4. **Family Size:** The more people a family has, the less there is to spare on the farm.
5. Seed and feed requirements: The lower the marketable surplus of the crop, the greater the requirements for these applications.
6. **Commodity Characteristics:** Compared to food crops, non-food crops (such as cotton, jute, and rubber) often have a bigger marketable surplus. Even among food crops, the marketable surplus as a percentage of total production is higher for products like sugarcane, spices, and oilseeds that must be processed before ultimate consumption.
7. **Consumption Patterns:** The farming family's production retention relies on their consumption patterns. For instance, compared to agricultural households in southern or eastern regions, rice makes up a very modest fraction of the overall amount of grains ingested. As a result, Punjabi farmers sell a higher percentage of their paddy/rice yield than do farmers in other states that grow rice.

The premise behind the favorable connection is that farmers are cost-conscious. Farmers are enticed to sell more and keep less as the price of the commodity increases. There is hence more excess. The opposite is also true. The farmers' inelastic cash needs are predicated on the negative relationship between prices and marketable excess. Farmers are said to sell that much of their produce, which provides them with the funds they need to meet their monetary needs. They sell fewer units when the price of the product rises in order to raise the money they need, and vice versa. In other words, as prices increase, farmers sell less, and when prices decrease, they sell more[10].

Market Classification

According to the following criteria, markets may be categorized:

1. **Based on location or place of operation**

a. **Village market:** A market in a small hamlet where significant business is conducted between the village's buyers and sellers is referred to as a village market.

b. **Primary Market:** These marketplaces are found in cities close to the agricultural products' production hubs. The majority of the product sold in these marketplaces was brought by the producer-farmers themselves. Farmers and primary dealers often do business at these marketplaces.

c. **Secondary Wholesale Market:** These marketplaces are often found near district administrative centers, significant commercial hubs, or railway intersections. Primary/village merchants and wholesalers do the majority of the commodity trading in these marketplaces. These markets get the majority of their arrivals from other markets. Large amounts of produce are handled at these marketplaces. As a result, distinct marketing tasks are carried out by specialized marketing companies (commission agents, brokers, etc.).

d. **Terminal Markets:** A terminal market is one where product is either assembled for export or eventually disposed of to consumers or processors. These marketplaces have well-organized vendors that use cutting-edge advertising strategies. Some markets have a commodity exchange that offers the ability to trade certain commodities ahead. Such marketplaces may be found near seaports or in large cities.

e. **Modern Terminal Market:** The Ministry of Agriculture, Department of Agriculture and Cooperation, has taken the initiative to establish modern terminal markets for fruits, vegetables, and other perishable commodities in significant metropolitan centers around the nation. These terminal markets are designed to function in a "hub and spoke" configuration, where the terminal market acts as the hub and is connected to a number of collection centers as the spokes, providing farmers with convenient access to the market for their product. A corporate, private, or cooperative enterprise is to construct, own, and run these marketplaces. The Government of India has introduced a program under which private organizations may spend up to Rs 50 lakhs in agricultural marketing infrastructure and get subsidies of up to 25%. Markets that are close to the coast and are used mostly for import and/or export of commodities are known as seaboard markets.

2. Based on territory/coverage:

a. **Local or village market:** A market where transactions are restricted to residents of the same or surrounding villages, with no outsiders allowed. These marketplaces often exist for small amounts of perishable goods. A market where buyers and sellers of a product come from a wider region than the local markets is referred to as a regional market. In India, there are often local markets for grains.

b. **Market at the national level:** In the market at the national level, buyers and sellers are dispersed. In the past, only durable products like jute and tea had nationwide markets. The markets for the majority of agricultural goods now exist as national markets, however, as a result of the construction of roads, transportation, and communication infrastructure. A global or worldwide market is one where customers

and sellers come from other nations or the whole globe. These markets exist for commodities like coffee, equipment, gold, silver, and other items that are in high demand or low supply globally. A lot of nations have recently shifted toward a system of open international commerce in agricultural commodities such raw cotton, sugar, rice, and wheat.

c. **Short-period markets:** These are marketplaces that are only held for a day or a short amount of time. These marketplaces deal mostly in very perishable goods including seafood, fresh produce, and liquid milk. Prices in these markets are more heavily influenced by the size of the demand than by the amount of the commodity's supply.

d. **Periodic market:** During set days and hours, buyers and sellers congregate at designated locations in villages, semi-urban regions, or select portions of metropolitan areas. Depending on the customs of the community, these markets are held weekly, biweekly, fortnightly, or monthly.

e. **Long-term markets:** Unlike short-term markets, these markets are held for a longer length of time. Foodgrains and oilseeds are two examples of the less perishable goods sold in these marketplaces that may be kept for a while. The factors of supply and demand both influence pricing. The market for permanent nature is the secular market. These marketplaces deal in durable goods that can be kept in storage for a long time. Markets for manufactured products and equipment are two examples.

f. **Wholesale market:** A wholesale market is a place where goods are purchased and sold in bulk or in big amounts. Primary, secondary, and terminal wholesale markets may be further divided into these segments.

g. **Retail markets:** A retail market is one where goods are purchased and sold to customers in accordance with their needs. In these marketplaces, consumers and merchants transact with one another. Retailers buy products from the wholesale market and distribute them to customers in small batches.

CONCLUSION

In contrast to a wholesale market, where purchasers may be wholesalers or retailers, a retail market indicates that buyers are often the final customers. Yet, wholesale marketplaces may sometimes see purchases from large consumers.

In comparison to wholesale markets, retail markets often transact less money. The delivery of farm products to consumers is made simple thanks in large part to agricultural marketing. It has the same financial goal as all marketing initiatives. It facilitates the producers' quick delivery of goods to consumers.

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CHAPTER 14

MARKET EFFICIENCY AND MARKETING EFFECTIVENESS

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ABSTRACT:

The connection between efficiency and effectiveness. A marketing plan that optimizes expenditures for ROI is successful. Lowering cost per acquisition is one of the key objectives of marketing effectiveness. Yet every method of doing so revolves on boosting your marketing effectiveness. Efficiency in marketing may mean raising conversion rates while lowering acquisition costs, whilst effectiveness may involve assisting a broader variety of marketing goals while enhancing the overall success and return on investment of the company.

KEYWORDS:

Agricultural Marketing, Businesses, Management, Market Efficiency.

INTRODUCTION

India's changing agricultural environment necessitates a corresponding modification to the objectives sought by the marketing system. It is necessary to adopt a new mentality that broadens the market ecology, includes a larger range of players, and allows farmers to reach areas farther afield rather than one that facilitates and protects agricultural commerce at preset locations that are easily accessible to farmers. Since their products is distributed to people distant from the producing regions, farmers no longer just satisfy local need. Formerly, a marketing system was deemed successful if it allowed for market yards and transactions close to farmers; now, the yardstick must take into account market interconnection and value distribution between farms and consumers.

Operational inefficiencies in the flow of goods are not a deterrent for an effective marketing system; rather, they are overcome by effective dissemination of market intelligence (demand) and information (price), as well as by easing rules and regulations to support more relevant and responsive supply chains. An agricultural marketing system's performance will vary based on the target areas' condition, the customer, the product, and the technology available. However, for certain commodities, global influences may be relevant; in these cases, predicting and anticipating elements from beyond the local area are also anticipated to have an impact on marketing efficacy. To show the success and efficiency of the marketing system from the standpoint of increasing farmers' income, the following particular objectives and criteria might be used:

Demand signals to the supply side: A well-organized marketing system will communicate from farm to fork ahead of time to manufacturing, allowing the whole supply chain to operate to meet the anticipated demand. A significant motivator, particularly during periods of unplanned excess production, is market data based on historical patterns and forecast analyses. A successful marketing strategy will work to minimize the blind push into markets and encourage a pull strategy. A well-organized marketing system will raise the overall amount of income earned in the agricultural value chain system, increasing revenue creation. A successful marketing strategy will also try to encourage all the participants in the value chain to share the net income created more fairly[1]–[3]. Rate of market expansion:

Organized marketing will continually endeavor to expand supply chains and establish new markets. When agricultural commerce includes cross-regional demand and supply, it has a stabilizing effect on the underlying economy. An efficient marketing strategy will constantly encourage the producer's or supplier's market expansion and provide the customer a variety of options. Moreover, market growth increases the dynamism of domestic agricultural commerce. Unified market - A well-organized domestic marketing system will integrate by establishing wide connection across a network of supplier areas and demand centers, bringing about uniformity in the market environment. The whole nation must be seen as a single market. A more effective marketing system integration would lessen price dispersion (difference in pricing among vendors of the same product throughout the nation), particularly that which results from inconsistent regional demand. Value swings are tempered by a unified market. A strong marketing network will foster a competitive market environment, increasing competition. One of the goals of efficient markets is competition, which has the significant consequence of promoting transparency and optimum price discovery. Moreover, increased resource optimization and cost-effective procedures are brought about through competition. Hence, an efficient market system results in efficient output marketing, with metrics like food loss, inventory holding costs, inventory turn ratios, etc., and profitability.

Enable selling channels - A successful marketing strategy will establish more market channels to increase the clientele. Nowadays, the agricultural market yards serve as a single location for transactions. Without the possibility of enabling the sale at another market site, a main transaction with farmers takes place in the first instance. A farmer in these yards has no choice to use marketing services to conduct a deal at another market location or channel (e-commerce, institutional, etc.). Thus, a marketing strategy is successful if it encourages a variety of selling or market possibilities[4], [5].

A unified market for farmers was suggested by the 2004-established National Commission on Farmers (NCF). Agriculture marketing was also suggested for inclusion on the Concurrent List by the Commission. The NCF said that there has to be a change in the marketing, storage, and processing of agricultural products to one that encourages grading, branding, packaging, and the growth of domestic and worldwide markets for local food. The differentiation mentioned is that the marketing system has to improve post-production care and provide open access to connect with new market channels in order to become successful. Although measuring efficiency is based on operational or tactical outcomes, marketing effectiveness is an issue of strategic purpose.

DISCUSSION

Market Effectiveness

Markets serve as the central center for the condensed transit of products from producers to consumers. These businesses' primary goal is to carry out actual deliveries in accordance with individual transactions. It may be said that such activities are efficient when they are carried out as cheaply as feasible while still providing the necessary services.

a. Effective agricultural product market operations guarantee that an increase in agricultural output results in a corresponding rise in real income levels across the economy, which encourages the creation of more surpluses.

b. With efficient storage, appropriate regional distribution, and channeling of latent demand, high production years are not accompanied by poor earnings to the producers.

c. Customers get the highest level of pleasure at the lowest price. Raising the income levels of farmers and the levels of customer happiness are both significant goals of a successful marketing strategy, which also serves as a powerful agent of change. It may be used to raise the standard of living for the majority of people. There are several methods for evaluating a product's marketing effectiveness in a certain market channel. Hence, market efficiency is influenced by: I the efficiency with which a marketing service is provided; (ii) the cost at which market operations are provided; and (iii) the impact of both the cost and the service on production and consumption[6], [7].

An ideal measure of marketing effectiveness should consider the following factors: I total cost of operations; (ii) net operating margins; (iii) income received by the farmers; and (iv) prices paid by the consumer. This is especially important when comparing the effectiveness of alternative markets / channels. Every modification that further lowers the expenses of carrying out a certain task without lowering customer demand denotes an increase in market efficiency. Yet, a modification that lowers costs but simultaneously lowers customer satisfaction does not signify a rise in efficiency. Moreover, a high degree of customer pleasure, even at a higher operational cost, may indicate enhanced marketing effectiveness if the increased demand as a consequence of the consumer's added satisfaction is sufficient to offset the increased cost of the marketing activities. The Cobweb: The Necessity of Successful & Efficient Markets The extra output is not finding buyers in the present circumstances. Prices have increased throughout the nation as a result of the unmet demand. The promotion of free commerce and consumer choice are crucial.

When a demand-supply mismatch cannot be resolved, the marketing system is ineffective. Operations over location, time, and form are some of the strategies utilized to fulfill demand. The system's inefficiencies have a detrimental effect on the farmer, but also provide opportunity for others. Commodities dealers will purchase foodgrain during harvest season and store it for later sales at a higher price point when supply is constrained. Farmers could do the same, assuming they had the financial means to cover the expense of keeping inventory. A farmer's cash flow needs may be satisfied by credit against warehouse receipts and other options, giving them the chance to take advantage of price arbitrage over time. Storage capacity allocated for usage of small farmers, or group of farmers, notably viable in case of foodgrains, may also serve this function. There might be various causes for excess output not finding a market, but the major one is lack of marketing connections for a significant number of supply kinds. The infrastructure of the market is unable to manage the production and connect it to the rest of the nation. It is necessary to fix the markets' lack of integration. The majority of market development takes place at the state level, where it mainly focuses on intra-state marketing and ignores the idea of a national market system. Farmers' lack of access to demand-side information causes a reverse correlation between output and revenue. There are often, and sometimes to extremes, supply gluts with price declines and production slumps with price increases. While there is a natural inverse link between market supply and price, demand analytics is crucial to comprehend and deal with the extremes. With the greater number of product available for sale and the ideal scenario in which revenue is maintained, a decrease in price shouldn't always result in a decrease in income. The excess that is available may be distributed and production volume can be directed to different demand destinations by mapping the demand at marketplaces[8], [9].

With perishables, a production glut is more localized to a location than it is with crops with extended storage lives and a "spread in time," but a supply slump may occur in another area of the nation. By moving the items spatially to an area where demand is present, marketing must establish a "spread in place" as necessary. The marketing system must acquire the

capacity to detect and connect demand in this way. While using the Central Pool, keeping the stock near to populated areas improves system efficiency and spreads out its availability before demand. This strategy also prevents a significant accumulation of inventory in the production regions, which often occurs as a result of warehouse infrastructure being built on the basis of current output rather than future demand.

Depending on demand predictions (from secondary processors and from public distribution), the allocation of warehouses may be streamlined. Effective marketing goes beyond producing a profitable return on marketing expenditure. In the end, the goal is to build long-term strategic value for the company via improved profitability, market share, and brand power.

To get these results, you need work to enhance:

- Positionings/Product/Service
- Audience
- Messages/Price

Here's an example: Let's imagine your goal is to raise brand recognition and you decide to invest in an OTT (connected TV) campaign. Although having the ideal message, target, and distribution channel, your campaign would sadly have inadequate reach and frequency given the budget you have available. Should you continue? If you do, your investment would have been a waste since you didn't buy enough frequency and reach to raise brand recognition.

Instead, think about these possibilities to increase effectiveness:

Unless your present level of spending produces acceptable reach and frequency but will the audience still be big enough to be meaningful, narrow your targeting to minimize the audience size. Raise your investment to reach and frequency targets but does the firm have the resources to do so. Redirect your funds to strategies with a better chance of increasing brand recognition. Are there any workable alternatives that you have the ability to implement, in other words? There are benefits and drawbacks to each choice, and a variety of circumstances will influence your choice. Performance metrics that assess marketing effectiveness include Cost per Acquisition and Conversion Rate. It involves getting the most possible performance out of your marketing strategies and initiatives.

Examples of projects to increase marketing effectiveness:

a. Reduce online shopping cart abandonment
b. Boost email opening rates
c. Boost keyword ranks in SERPs for desired keywords
d. CTR for sponsored search advertising should rise
e. lower purchase costs

Consider that 1% of people who visit a campaign landing page convert. You execute an A/B test after making the assumption that changing the page layout would increase conversions. You adopt the new landing page layout after learning that it converts 10% more visitors than the old landing page layout. It represents an increase in marketing effectiveness.

Define Important Measures

Metrics That Matter should be used to evaluate the efficacy and efficiency of marketing (MTM). There are no vanity metrics in Measurements That Matter. MTMs result in choices and activities that add to the value of the company. Here are some illustrations.

Marketing Strategy

A sizable population base, including residents of rural and urban areas, is directly impacted by the expansion and development of agricultural and related industries. The prosperity and job opportunities in the rural economy are other indicators of the immediate effect. The socioeconomic growth of the nation's rural regions has a significant impact on the trajectory of the nation's development. The majority of the population lives in villages, which contribute to and propel the country's progress. The human background, situational reality, and level of development differ in a nation as varied as India. Government level actions are usually required to provide guidance for more inclusive and equitable development. Hence, in addition to controlling market information, agricultural marketing also involves the government, which steps in to encourage both local and international agricultural commerce. Policies and rules governing agricultural marketing are designed to safeguard farmers from being taken advantage of by market intermediaries and dealers, as well as to guarantee fair dealings and prompt payment of the revenues of their sales. Figure 1 show the how to the Boost marketing efficiency and effectiveness.

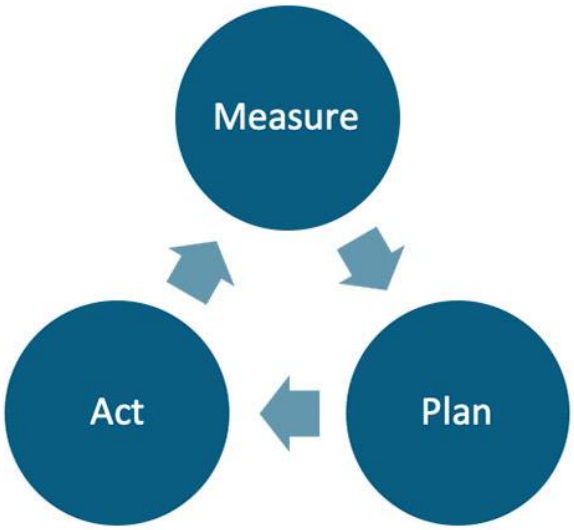

Figure 1: Illustrate theIncrease in marketing effectiveness and efficiency.

After you're strategic and tactical Measures That Matter have been established, it's time to:

a. **Measure:** Create a baseline, then track changes over time by measuring.

b. **Plan:** Specify and order the steps you will need to do to increase your effectiveness and efficiency.

c. **Act:** Act by carrying out the action plan.

How marketing effectiveness and efficiency interact with one another. Suppose that a strategy you've employed to great effect in the past is starting to lose some of its effectiveness. You've tried everything to increase productivity, but it's had little to no impact. Imagine that you've added a new strategy to your marketing strategy. Early data show that the strategy is working successfully. Think about marketing effectiveness. What steps can you take to improve the strategy's return on investment?

To increase agriculture's competitiveness and farmers' income, the federal government and the states adopt a variety of support systems and other measures. Support is given in a variety of ways, including price intervention, market intervention, the supply of infrastructure for the

market and other infrastructure, the purchase of certain commodities, etc. The government's involvement in the procurement process turns it into a market channel for the farmers. The government thereby affects the dynamics of the market. The government may also skew demand measurements by artificially supporting crop output when procurement is carried out without objective planning on the eventual end use and without any discernible strategic goal. In order to match strategic reserves and superfluous purchasing with consumer demand and farmers' future development, a detailed examination of the procurement system is necessary.

How much local food is exchanged directly by farmers with markets outside of the producing area may be used to gauge the effectiveness of government policies. Nowadays, a farmer will often offload her goods in the first instance, into the hands of agencies or local markets, resulting in a layering of players in the delivery chain that is more than required. Due to previous limitations in logistics connection, attempts were made to simplify the farmers' first mile transaction. As a result, this occurred. This technique is essential because it gives farmers direct access to the main level of revenue generation from their product. But, as farmers' capacities increase, regulations to facilitate direct market linkage are also required. In order to promote connection to cross-regional markets, the idea of market infrastructure should also include village level assembly, pooling, and packaging, with the activities being managed by the primary producer or first mile aggregator.Expanding the market system to provide more income streams and competitiveness is a measure of marketing success. Efficiency of market channels relies on the Costs associated with marketing, the use of technology in grading, packing, shipping, and storage, value addition, wholesale and retail sales, and the investigation of aggregate economies of scale [10], [11].

CONCLUSION

The inclusion of agricultural marketing on the Concurrent List may be advantageous for the one-India market idea. Since agricultural enterprises' land and surrounding areas are the only limits for production, marketing must function on a pan-Indian scale to fulfill demand inside India and beyond. The perishable crops, such as potatoes, onions, and groundnuts, are the ones with the largest price wedges among the shown crops. For rice and wheat, two commodities that are produced by the vast majority of farmers and where government buying follows MSP declaration, the wedges are smaller. For farmers to get better farm-gate prices, there has to be more market integration. Although the GST bill is a start in the right direction, there is still much that has to be done at the State level, including bettering physical infrastructure, enhancing campaigns for disseminating pricing information, and changing laws that require farmers to sell to regional monopolies

Continuously enhance marketing effectiveness and efficiency to provide long-term strategic value. You will get the results you want if you concentrate on doing the right things in the right ways doing more of the right things even better. Future marketing initiatives by the State governments need to be in line with the One-nation, One-market idea by placing more focus on agricultural products' long-term connectedness among states and regions.

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CHAPTER 15

THE NEW MARKET BUILDING

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ABSTRACT:

Infrastructure for the markets and other direct government assistance for the betterment of farmers. The market design must encourage market connectedness and create a smooth flow of goods with various properties. The marketing system should ideally operate in hub-and-spoke mode, permit skip level selling, and expand the number of marketplaces that farmers may access.An interconnected network of market centers is first necessary for an effective marketing strategy. The sort of produce handled at the market networks will need to be associated with the interconnectivity of the market centers.

KEYWORDS:

Agribusiness, Agriculture, Fertilizer, Marginal Farmers, Marketplaces.

INTRODUCTION

The prosperity of farmers in particular and the nation at large is favorably impacted by growth in agriculture and related industries. By increasing agricultural production, the farmers have done the country a wonderful service. Now it's time to assist them with a strong and comprehensive market system that will enable them to better monetize the variety and size of their marketable surpluses. As a result, the government should concentrate more on marketing and other post-production initiatives. Although crucial, government-led market interventions such as those made by the Food Corporation of India (FCI), the Price Support Programme (PSS), and the Market Intervention Scheme (MIS) for perishables cannot completely replace an effective marketplace system. Small and marginal farmers make up around 85% of all landholdings in India's agricultural sector, and they account for about 40% of all marketable surpluses. Similar to livestock farming, fisheries too have tiny, scattered production levels that must depend on the marketing system to connect with wholesalers that deal in larger quantities.

By the year 2000, the National Commission on Agriculture, which was founded in 1970, expected the nation to have 30,000 assembly markets. According to the Commission, markets should be established within a 5 km radius around settlements. It was advised that existing neighborhood shandies be converted into full-fledged assembly markets or sub-market yards, placed under regulation, and made to function on a daily timetable for this purpose. 13 The National Committee on Farmers issued a similar suggestion in 2004. In 1970, there were only 19 States in the nation, and there were only 356 districts. Now, there are 30 States and over 700 districts. There were 70 million land holdings in 1970; now, there are over 120 million. More than one billion tonnes of agricultural products, including foodgrains, horticulture, spices, oilseeds, plantation crops, and milk, are produced annually. Nonetheless, because of the country's extensive network of rural roads and highways, a farmer may go much farther than 5 km in an hour. There are now around 2,284 regulated markets, with 4276 sub-market yards and 2339 primary markets. The market yards typically enclose an area of 463 square kilometers, or a 12-kilometer radius. Regionally, there is a significant disparity. In Punjab, a market spans an area of 116 sq. km, compared to Assam's wholesale market's 6442 sq. km

(45 km radius) (6 km radius). Farmers may access 22,932 rural periodic marketplaces around the nation. These markets are open for business at least once a week, however sometimes they are open every day. The regular markets have a 7 km radius and cover an average area of 146 sq km. Moreover, a few private marketplaces have emerged in several states. The demands as initially envisioned by the Commission of 1970 are often not being met by these rural periodical markets. They serve as places of sale and do not help farmers connect with other wholesale agricultural markets, such as the APMCs. Each market type has transformed into a point of sale where buyers or aggregators give farmers their money for the value they have collected; the prior thought-out concepts of assembly and subsequent linking have not been implemented.

Market architecture already in place APMC marketplaces

Now, there are around 2,284 APMCs operating 2339 major marketplaces in the market system. Via sub-market yards, which number 4,276 in total, these major marketplaces have increased their geographic reach. Nonetheless, it is anticipated that these sub-market yards would function as an integral component of the main market yard under the related APMC. In comparison to their primary market yards, sub-market yards often have worse operations, labor, and infrastructure. Basically, out of 6,615 sites, there are only 2339 primary marketplaces operating (principal market yards plus their sub-market yards). Depending on where they are located and the amount being handled, these 2339 key markets are further divided into primary, secondary, and terminal markets[1], [2].

Each major market has a defined territory that is covered by it. Rules mandated that only these controlled yards would be used to transact the region's notified products. As a result, a farmer is prohibited by law from engaging in a free exchange with a buyer from beyond the APMC control region. This has tended to impose a monopoly system for the exchange of agricultural goods. The farmers also lack a structure that would enable them to avoid the local market and connect with a bigger or higher paying market. They need a modern organized facility or assembly center that would collect and transport their product in order to do business at other market centers. Many farmers find it challenging to even make direct sales at APMC marketplaces, which are primarily wholesale markets. It is challenging for small and marginal farmers to combine their product and bring it to these APMCs where they may participate in the auction system for appropriate price discovery since their marketable lots are of an uneconomical size. They consequently turn to local agents and dealers who serve as first mile aggregators and transport to do business in the APMC marketplaces, relieving the small farmer of their goods at locally set rates. Naturally, this middleman has prevented the farmer-producers from pursuing optimum or market-linked price realization. So, the present market structure restricts farmers' selling alternatives rather than offering them a choice of marketplaces. According to reports, the government procurement agencies mostly use the sub-market yards as a site and don't provide the chance for an open auction. Nowadays, the sub-market yards operate erratically and handle less than 5% of the amount handled in the main yards[3].

Rural Newspaper Markets

The majority of rural monthly marketplaces (RPMs), which are situated at the village level, are found across the nation. Little haats or shandies like these draw vendors and customers from the countryside and take place every week or two. In these locations, a variety of everyday necessities are exchanged, including agricultural products (grains, fruits, & vegetables). Around 22,932 RPMs (as of March 31, 2017) were owned and operated by various organizations, including people, panchayats, municipalities, and State Agricultural

Marketing Boards (SAMBs)/Agricultural Produce Market Committee (APMCs). These RPMs operate in accordance with customary unofficial practices to provide small farmers the chance to directly sell to neighborhood shoppers. Aggregators and agents furthermore visit these haats to covertly advance the selling objectives of small farmers. The small farmers, however, do not have the chance to link with bigger marketplaces that provide more value. These RPMs work as a stopgap fix, allowing farmers to quickly deal with nearby retail customers. Lack of infrastructure for small farmers to combine their goods into manageable volumes to connect with other markets is the main obstacle. The lack of infrastructure for pooling and moving the food further discourages farmers from engaging in collaborative farming since their direct selling opportunities are limited to the needs of nearby customers. A website that primarily facilitates the exchange of perishable products including fruits, vegetables, and flowers. The small local need is met by the products sold at these marketplaces.

The volume of markets

The architecture of the market is heavily influenced by the accessibility and availability of marketplaces to all farmers in general, and small and marginal farmers in particular. The National Commission on Agriculture's recommendations are often related to the market density goals (1976). The Commission had suggested that a market be established 5 km away from farms, which is manageable by foot or cart in an hour. The National Commission on Farmers later repeated this opinion (2004). Following this advice, the best market coverage is understood to aim an 80 sq km (5 km radius) catchment region for each agricultural market. Yet, the initial suggestion was made when there was little access to roads and farmers had to manually transport their crops using camel or bullock carts or head loads. This Committee believes that rather than the actual distance, the key consideration in determining market density should be the trip time, which typically takes between one and two hours from farm to market. In the modern era of rural road networks, when farmers typically use motorized conveyance or tractor-trolleys, creating marketplaces within a 5 km radius would be irrelevant.

In regions with significant production surpluses, market catchment would also not have to take into account the larger national demand and would not be limited to the local consumer population of the area. The number of farmers in the area, the kind of commodity, production with cropping pattern and intensity, and access through road and rail to the single national market would all be taken into account when calculating market density. While developing district and state level plans, these local and regional elements should be taken into consideration since they are unique to each producing area. Also, it is important to consider the size of each market, the topography in the area, and the arrangement of the farms. Generally speaking, a time radius of one to two hours may be employed as the guiding factor, instead of a radius based on kilometers, to determine the necessary market density for farmers to negotiate the distance from fields to markets.

A cost-effective action may not be to mindlessly saturate the agricultural landscape with several market centers. It would be preferable to address the demand for aggregation and improve farmers' access to state and national centers via collecting centers. By establishing assembly/collection centers, a hub and spoke network will be launched, with the wholesale markets or end user acting as the spokes. This will provide access to wholesale markets in addition to supporting neighborhood retail trade. The next part, however, explains a general need assessment[4], [5].

New Market Approach

The majority of small and marginal farmers are constrained in their capacity to transfer all of their surpluses into markets. The current market structure does not support such facilitation, and rural market yards are essentially places for people to congregate and do business since they do not provide any systemic connections to the single national market. As a result, the design lacks a value linked system approach and is restricted to locally generate pricing mechanisms, which delinks the farmer from the larger demand. Most marketing law changes to date have been made in respect to wholesale markets with the assumption that farmers have direct access to such markets. In reality, this is untrue. Additionally, regulated product flows must be associated with market access, which cannot be achieved by people acting alone. There hasn't been much done to set up the organized flow of products from the village level and provide the farmer and his or her goods access to markets both domestically and abroad. The farmer has been prevented from connecting with markets of choice and losing his or her ideal share of the consumer rupee as a result of both restrictive regulatory policies and the lack of an appropriate market structure that can organize the wildly distributed small amounts of product.

The market architecture and the data necessary for such analysis were reviewed by the DFI Committee. It is emphasized that the information is fragmented and that a thorough redesign that is tailored to each area is advised. On the whole, nevertheless, certain significant adjustments must happen quickly to help farmers experience sustainable market-linked prosperity. The current assets and resources already accessible in the shape of distinct market kinds are taken into consideration when recommending these adjustments.

Aggregator Websites

It is crucial for farmers to aggregate their small quantities of nonperishable (grains) and perishable (fruits and vegetables) products in order to achieve marketing efficiency. Building aggregation platforms adjacent to farm gates would assist to allow a formal and transparent aggregation system, replacing the village-trader based intermediation that now occurs in rural regions. By establishing the necessary infrastructure and procedures, the existing rural periodical markets (RPMs) may be used to create aggregation platforms. Farmers will bring a modest amount of marketable surpluses to these markets, where they may be cleaned, sorted, graded, and packed for later transit and auction sale at controlled markets (APMCs, etc.). Instead, it may be exchanged electronically using electronic systems like e-NAM by assaying the combined lot at the same place. By organizing the farmers and interested retailing organizations into "Farm-Produce Marketing Organizations (FPMOs)" in the form of a business or a cooperative for the exclusive purpose of marketing, this process may be made practical. The role of the village trader as an intermediary may be replaced by FPMOs, which can also open up pathways to networks of organized retail establishments[6].

Funding Needed

Rashtriya Krishi Vikas Yojana (RKVY), Integrated Scheme for Agricultural Marketing (ISAM), Mission for Integrated Development of Horticulture, and MGNREGA are a few examples of current programs that might provide the funding needed to build these marketplaces. It is possible to implement the sharing standards that apply to the Center and the State. Moreover, the markets might be created via PPP in the private sector by establishing SPVs between current owners of RPMs and submarket yards and partner partners. Agro-processors and food processors might take part in such organized sourcing via the rural primary agri-markets if they seek to develop a continuous backwards integration to secure their raw materials.

Additional Agricultural Marketing Facilitators

The handling size of farm product or the marketable lot size is the factor that hinders produce selling the most, according to a scenario study. The following handling to connect with markets is inefficient unless the postproduction volume is of a shared nature and of adequate amount at the initial stage of handling. The limited land holding forces farms to produce in modest volumes. If the produce is combined for marketing, small holdings are handled more carefully and achieve better productivity.

Producer Organizations for Farmers

The idea behind creating farmer producer organizations is to cluster farms together to work together as a huge cluster. The nodal organization for the development of FPOs at the federal level is the Small Farmers' Agribusiness Consortium (SFAC). In order to achieve the essential economies of scale at the farm gate which will allow for improved management of farm inputs, centralized care for the crop, and a size that will allow for contemporary post-production handling a cluster strategy is required. Nevertheless, in order for these advantages to materialize, the process of forming farmer groups must place more emphasis on combining adjacent parcels of land than merely a collection of people, if at all possible. The ultimate goal is collaborative farming, in which every member of the organization cultivates a similar set of crops in farms that are close to one another.

Now, in its first stages of growth, FPO creation has mostly concentrated on organizing the interested farmers into groups and clubbing these people to take advantage of alternatives for equity and loan assistance. It is advised that this be followed up in the second phase with coordinated efforts to compel FPO members to engage in cooperative farming via the pooling of farmland and to carry out higher-level tasks like aggregation and transport to markets. It is advised that moving forward, the FPO development mechanism should concentrate on the pooling of farmland, allowing for the deployment of soil health assessments, and inputs (planting material, fertilizer, and irrigation), farm labor and mechanization, and extension work at incrementally reduced and optimized costs. Similar to this, farming may be organized around a shared set of crops, and the combined production would be of a size that improves viability and changes the supply chain.

The joining together of land tracts or the intended economies of scale in terms of inputs and outputs will not occur if individual farmers with non-contiguous holdings are grouped together. It must be remembered that collective negotiating strength is only worthwhile when the result is a common product type, in sizable marketable quantities, and for interregional markets. It is insufficient for farmers to work together to grow and harvest a shared crop. The next step is to intensify efforts to link the product with markets located farther away. In the absence of adequate market connection, the produce from such collaborative farming will only be sold in local markets, which will result in a localized glut and related pricing effects. To take full advantage of market potential, the produce from collaborative farming will thus need to be connected to several demand centers.

While financial aid is sufficiently emphasized, there is little support provided when a farmer producer firm or organization is established. This indicates that there is very little assistance in marketing, value-added logistics, or B2B interactions after the organization of farmers into a group. Support for incubation is required for FPOs so that they may better address their problems and understand how they fit into the value chain. FPOs are not engaging effectively or continuously with the government, donors, or markets; instead, they are doing it piecemeal and not in a systematic way. Due to dispersed land holdings or a lack of further security, banks often decline to provide loans to FPOs. More than half of the world's land is owned by

small and marginal farmers, many of whom lack legal land titles. These farmers are unable to get institutionalized credit. In contrast to cooperatives, producer businesses do not get the same incentives or subsidies and must pay taxes on their revenue. One obstacle to FPOs and VPOs ramping their operations is the lack of experts with the necessary skills to fulfill producer firm statutory compliance requirements.

They consist of board member registration and bookkeeping (who may be marginal farmers and illiterate). Agriculture produces more than just food; in fact, much of it helps sustain craftspeople like weavers and craftsmen. Several internet venues currently provide such production the chance to connect with a larger consumer. It is possible to encourage non-producer businesses to form partnerships with local businesses and export their distinctive goods throughout the world. Government may thus encourage non-producer marketing businesses to form joint ventures with FPOs, or the following measures are advised in order to continue developing FPOs to be market-linked.

a. Locate FPOs that have adjacent land or the potential for scaled production. Moreover, this might be done at the village level to support local producer organizations (VPOs).

b. Determine the target markets and connect crop-wise consumption with volumetric demand.

c. Determine the minimum and maximum length of the produce selling cycle and the distance from the FPO site to the target markets. Provide a list of the additional support systems required to access the markets for selling cycles longer than 48 hours.

d. Assist FPOs in creating appropriate market infrastructure and links by helping them improve their capability, conducting value chain analyses, and forming alliances with other value chains.

e. For each FPC, expedited soil health mapping and crop planning. Give three-year crop plans that are based on science and detail for FPC.

f. Preferably, all government entities should do their procurement via FPOs. g. A special incentive for FPCs prepared to build infrastructure in massive food parks.

g. Wholesale purchasers that establish long-term business relationships with FPOs will get a freight subsidy based on the throughput that the FPO has disclosed or validated.

h. A 5-year income tax exemption for FPOs, comparable to the one offered for cold-chain and food processing infrastructure projects.

i. During the first three years, provide FPOs regular training and business-level assistance; this may include incubation support in the early stages of growth, providing the FPOs engage in cooperative farming on a contiguous land holding.

j. In addition to SFAC, private sector businesses may be permitted to promote FPOs to meet their unique market demands while holding an interest in the FPO. Up to a maximum of 26%, a non-producing entity may be permitted to invest in a producer company. This will enable the development of financial stability and the recruitment of outside, qualified management. The Companies Act, which now only permits farmers to be producer members of an FPC, will need to be amended in order to accommodate this[7], [8].

This focused strategy for connecting FPOs with target markets is anticipated to have an immediate impact on farm production. Farmers are cautious to embrace high productivity

methods without adequate market connectivity out of concern that they would suffer losses owing to inadequate market access. All states might adopt the central government's recommendation to place Farmer Producer Companies on a level with cooperatives.

Trade policy is utilized as an internal price control mechanism for exports as well, adjusting tariffs on an as-needed basis to stop any rise in consumer costs. In response to increasing prices on the local market, the Minimum Export Price (MEP) is a widely used instrument to limit or prohibit the export of a product. In each scenario, the goal is to limit the supply of a product to the domestic market. This supervision is only in place for a brief period of time and is inconsistent in nature since it is a manufactured response to temporarily altered conditions. The strategy primarily serves to manage prices on the domestic market rather than promoting agricultural commerce. Opportunities for marketing are interrupted as a consequence. Without rules that allow for expansion into markets outside of one's country, the export potential for Indian goods cannot be properly tapped. From a long-term perspective, a stable trade system will benefit both farmers and other stakeholders in developing market linkages.

DISCUSSION

Trade policies for agriculture to aid farmers

The irony of the current situation can be seen in the inverse connection between agricultural output and revenue, which is a clear indication that local surpluses are not being effectively communicated to the best markets. The lack of adequate selling opportunities in the face of excess production is the key factor contributing to economic misery. The market for Indian agricultural products must go beyond national borders. In order to support goals for productivity growth, the government must reevaluate its agricultural trade policy and restructure the system to provide the agricultural industry greater flexibility to develop foreign markets. Producers are prevented from setting long-term goals for foreign commerce while export windows are closed. Export restrictions have both short- and long-term negative effects on developing export markets. Exports must be vigorously encouraged and, ideally, should not be a tool for price control. Exports may increase consumer demand for local goods and raise market prices, which is good for farmers. It is stated that the agricultural trade strategy should be determined by striking a balance between the interests of both producers and consumers, as well as the nation's long-term concerns for food and nutritional security. A trading perspective over the next five to ten years is offered. Another significant proposal is a scheduled midterm assessment of farm trade policy, similar to the midterm review carried out for foreign trade policy. Every export plan must include cluster-based development in order for FPOs or VPOs to provide a sizable amount of high-quality goods that the importing markets want. Large amounts of the targeted output will become accessible via the creation of clusters focused on export-oriented manufacturing, which will aid in meeting these needs. Also, it is vital to designate certain seaports as the entry points for the export and import of agricultural products, particularly those that are perishable, in order to expedite the required phytosanitary clearances and prevent movement from being slowed down[9], [10].

Future Potential

Encourage participation in regulated exchange that is efficient and transparent. Exchange-traded forwards provide farmers with direct access to national purchasers with less counter-party risk, overcoming the limits of futures (time, location, amount, and quality of output). As a consequence, by using the infrastructure for storage and financing provided by the Exchange, farmers may ensure higher revenue realisation and prevent distress sales. Due of the price volatility that Indian farmers must contend with, options might be the best tool for

securing their profit margins. The use of alternatives to control economic risk in the production, processing, and sale of agricultural goods may be supported by farmer producer firms and cooperatives. Farmers may use forwards and options as a suitable instrument to maximize the price they get for their goods and effectively manage price risk.

Lower obstacles to involvement for farmers in exchanges. Due to entrance restrictions in the form of membership requirements, strict KYC regulations, margin requirements, etc., farmer involvement in futures is restricted. Farmers may be enticed to formal, regulated, cashless marketplaces by making it quicker and simpler for farmer producer businesses to join exchanges. More of these businesses may be persuaded to link to exchanges in order to lock in pricing and cover their risks by reducing the bar for membership for FPCs via a specific membership category, making KYC easier, and allowing margin financing for farmers.

Increase commodities financing and warehouse-based sales. With the 450 exchange-approved warehouses being free from the Stock Control Order under the Essential Commodities Act, the promotion of crop inflow into a transparent and controlled warehouse network may begin. Moreover, the new WDRA-regulated repository may promote the usage of licensed warehouses throughout all of India and provide the legal and regulatory framework necessary for inventory finance and warehouse receipt lending. Any financing for farmers that is based on e-Negotiable Warehouse Receipts (eNWR) should be regarded as priority sector lending, and banks should be required to give credit to the agri-sector via eNWR compulsorily. A WDRA default guarantee framework may increase bank trust and encourage agri-financing.

Boost small and marginal farmers' competitiveness via group buying. The benefits of joining a collective for small farmers include direct and indirect access to markets (local, regional, and global), a transparent pricing mechanism linked to demand, the opportunity to switch from monocropping low-value to high-volume crops, avoiding overdependence on credit to buy inputs, leveraging a competitive advantage in production, quality certifications, as well as credibility of the buyer and trust among farmers through regular direct interaction. Moreover, resources must be allocated to strengthening management and financial capability and enhancing corporate governance combining the input, derivatives, and physical markets.

Throughout the ecosystem, a farmer must deal with three different kinds of marketplaces. One of the main obstacles for smallholders is the absence of access to physical or spot markets, which he requires in order to sell his goods. Trading in far-off marketplaces is unprofitable due to high shipping and transaction costs, while local rural markets are small and controlled by agents. In addition, farmers struggle to get loans, high-quality inputs, updated technology, information, and services. The input market is the second factor. The fundamental needs of the agriculture industry are agricultural inputs and associated services. The caliber of agricultural supplies and services determines how productive a farm may be increased. The wellbeing of the farming community and increased agricultural development both heavily rely on the consistent and prompt provision of farm supplies and services.

The market for agricultural derivatives comes in third. Both directly and indirectly, farmers do take part in the futures market. They make use of price indications from the futures market to assist them decide on cropping patterns and the level of investment in cultivation. The farmers also gain from the release of the Exchange traded product futures pricing since it strengthens their negotiating position. Smallholders continue to have difficulties participating directly due to the increased lot sizes of futures contracts. But, things are slowly but surely improving. They are now able to hedge their pricing risk well before the start of harvest seasons thanks to the introduction of FPOs and their growing awareness. Soon, farmers will have access to a new, cheaper, and more effective tool for hedging their risk: commodity

options. The advantages of options for farmers include price protection in the event that the price falls below their cost of production as well as the advantages of any price increase. In comparison to futures, this would be a greater tool for farmers. As smallholder farmers depend heavily on all of these marketplaces, they must be integrated in order to provide comprehensive support for the farmers. In order to successfully combine all three markets and ensure the sustainability of agriculture for farmers, there has to be a formal institutional system.

As the derivatives market expands and is fully linked with the physical market, the advantages accrue to the farmers and ultimately to the physical market, leading to true farmer empowerment. By risk hedging and greater price capture, it is anticipated that the integration of the spot market with the exchange would increase value. To make such integration truly successful for smooth trading across platforms, a standardized set of criteria and quality ratings would need to be developed[11].

CONCLUSION

Market-to-market rivalry is not supported by the marketing network's former design. Farmers who fall within the market's captive catchment are forced to trade goods at prices dictated by supply and the regionally determined demand. According to the previously accepted definition of optimum market density, there should be a market every 5 kilometers. The interpretation, however, was based on a one-hour maximum transit time between fields and markets. Farmers may travel anywhere from 20 to 40 kilometers in an hour thanks to the network of rural roads that exist today, depending on the terrain. When referring to direct marketing by a cultivator while delivering by own cart, the Royal Commission on Agriculture (1926) held the opinion that a twelve mile (19 km) radius constituted the limitations within which agricultural products may readily flow to a market center. The urgent need for road improvements was emphasized in order to enhance cart transportation and to greatly expand the use of motor vehicles. It is suggested that the present market network transition to an architecture that enables produce assembly and aggregation and connects to the one-nation, one-market system. Harmonized standards and quality ratings are a need for easing online commerce and improving connection with local and international markets.

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CHAPTER 16

WAREHOUSING USE FOR AGRICULTURE

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ABSTRACT:

Safe storing is a crucial technique to combat the time spread between production and demand for the majority of agricultural goods. Moreover, by acting as a secure keeper of product, warehousing enables farmers to access prompt exchange or loans to satisfy their cash flow needs.Storage is essential for supporting agricultural finance and funding, farm selling, and assuring the county's food stability. With a continuous supply of farm products during the off-season, it enables marketplaces to alleviate stress during the harvest.

KEYWORDS:

Agribusiness, Agriculture, Fertilizer, Negotiable Warehouse Receipt, Warehousing.

INTRODUCTION

An effective marketing mechanism by itself is insufficient and cannot ensure that farmers will get the required rewards. By offering a mechanism that would enable them to trade at their discretion, when they choose, the sufficiency criterion is satisfied, making an efficient system successful in terms of utilisation, especially for small and marginal farmers. This possibility is made possible by warehousing, which is a crucial instrument that enhances time efficiency and helps farmers to avoid a rapid sale in the excess environment that develops during each harvest season for certain commodities. In the post-harvest period, there is an excess of supply relative to demand, which leads to a decline in commodity prices. Hence, warehousing helps farmers to manage their supply to markets while also allowing them to access pledge financing to satisfy their urgent financial needs.

The availability of appropriate kind and quality warehousing makes it a crucial part of the agricultural marketing system. After India gained its independence, the RBI appointed the All India Rural Credit Survey Committee, which issued its report in 1954 and recommended the construction of scientific storage facilities for the farmers close to their homes in order to prevent storage losses of agricultural produce as well as to make it easier for the farmers to access institutional credit. As a result of these suggestions, the "Agricultural Product (Development & Warehousing) Companies Act, 1956," which established a three-tiered system of warehousing in the nation with a Central Warehousing Corporation, State Warehousing Corporations, and Cooperatives, was passed into law. The National Cooperative Development Corporation Act, 1962, and the Warehousing Corporations Act, 1962, which were passed by the Indian government in 1962, respectively, gave rise to the country's current Central and State warehousing companies.

While significant advancements in storage followed, the situation of farmers did not significantly improve. An Expert Committee that was established by the Ministry of Agriculture, Government of India, on December 19, 2000, investigated the issue and suggested that a negotiable warehouse receipt system be implemented across the nation. The predicted benefits of the negotiable warehouse receipts were lower transaction costs, better price-risk management, and increased appeal for banks to lend to the agricultural industry. In order to inspire confidence in financial institutions, it was also thought that there was a need

for a trustworthy regulating agency to provide a unified and transparent environment for the use of warehouse receipts. In its report, which was delivered in May 2002, an Inter-ministerial Task Group on Agricultural Marketing of the Government of India recommended the creation of a Regulatory Body for Warehousing.

The country's expanding network of agricultural warehouses has been useful in enhancing the agricultural marketing infrastructure already in place and in maintaining supplies for public distribution and strategic buffer standards. Due to the projects' shortcomings in terms of efficacy, farmers, in particular small and marginal farmers, have not always been able to profit from these improvements. According to studies, small agricultural holdings account for around 54% of marketable excess. Many farmers are forced to sell their crops right away after harvest because they lack the means to hold onto them.

These sales account for around 50% of the marketable excess. Their failure to keep harvested stocks is mostly the result of budgetary constraints. Another factor considered is that farmers lack direct access to warehouses due to low initial levels of produce aggregation at the village level, a dearth of accredited warehouses for the issuance of NWR, and a dearth of post-warehousing market connections for farmers, who have limited ability to divert attention for later sales of small lots. Yet, warehousing is a significant hub and spoke model component and a significant site of aggregation. Warehouses are the next step in consolidating the product after the first aggregation at main rural agricultural markets (PRAMs) or at pack-houses, which is done to generate a feasible load to transport to markets. Such consolidation may offer higher capacity transport connections to larger markets through rail or sea. On the other side, warehouses also serve as a center for distribution to a nearby market[1].

A quick evaluation of Warehouse Capacity Needs

Relevant data on the present and anticipated cropping patterns of the storable produce, seasonality in output, and local consumption demand are all necessary for a good evaluation of the need for warehouse capacity. Moreover, the storage network might be anticipated to change towards locations and sizes that favor bulk handling logistics connections as the nation opens up as a single agricultural market. In addition to taking into account the agricultural produce's shelf life, market accessibility, including export-import regulations, consumption patterns, etc., the storage need must be evaluated. As demand-linked data is not readily accessible across all locations of consumption, the Marketed Surplus is utilized to determine capacity requirements.

Although if harvests for different crops don't happen all at once, they are restricted to certain times of the year, but consumption is ongoing all year round. Each crop type's holding duration has to be assessed, and the stocking period shouldn't go beyond the next harvest season. As the marketed excess is produced throughout the year, it is important to consider the seasonality of production and post-storage distribution when estimating the storage needs. Before to the following harvest, storage space will often be freed up by a planned liquidation of stockpiles via distribution channels.

There is a distribution imbalance in the warehouses as well, and it's possible that they weren't always built to accommodate current agricultural trends or anticipated future changes in cropping patterns. The capacity built could not be appropriate for adequate scientific storage, which is required for farmers to entrust a third party with the care of their harvest. States are urged to construct a district-level storage plan to analyze their capacity needs, determine the sort of capacity they already have, and determine if they need to upgrade their godowns and warehouses or build new ones[2], [3].

Planning at the District Level

Cereals, pulses, oilseeds, tea, coffee, sugarcane, rubber, fruits, vegetables, cotton, milk, and other produce under the livestock sector are only a few of the several categories used to classify agricultural products. Some crop varieties may also be held for shorter or longer periods of time. Many of the items in these categories may be kept in dry warehouses, while others must first undergo specialized post-harvest pre-conditioning before being placed in refrigerators. For these criteria broken down by category, see Volume-III of this study. Every product has to be sorted or assessed by quality before to storage to fully benefit from future market connection. It is advised that these many factors be assessed at the decentralized level as part of district-level planning. Every state must base its planning for storage and any related infrastructure on the distinct agricultural methods that are specific to each region. A uniform approach to district development may not be the best course of action. Any such planning will be based on the area's seasonal consumption patterns, production, and connecting choices to the wider national market. The MSR for each crop will provide the handling capacity needed throughout harvest season to evaluate a district plan. Consider the capacity required for the shorter time period if a produce's storage life is less than the harvest period. At the end of each inventory cycle, the same capacity will be made available. The space left vacant by the previous crop might be used for crops of a similar sort that have a separate harvest season. By using cross-storage planning and inventory cycling, capacity and expense overruns are avoided. Without considering harvest time differential and distribution patterns, adding up the whole capacity of marketable excess is not an effective planning strategy.

System for Warehouse Receipts (WRS)

The warehouse receipt (WR), which can be in hard copy or electronic format, is a document that the warehouse operator issues to the owner of the goods. It certifies ownership of the commodities that have been deposited, as well as their type, quantity, and grade (grades), and it makes storage, credit access, and futures trading easier.

A warehouse receipt's (WR) fundamental tenet is to verify the number and kind of products kept there. The amount kept may be put up as security for a loan. The commodities must be interchangeable and the warehouse receipt must be reliable for such a financing method to work. By enabling the trading of the goods at a time of choosing, a well-organized warehouse system may assist increase the effectiveness of agricultural marketing via greater price discovery. The agricultural products may also be exchanged at a place or with a customer of choice with the use of an internet marketing platform. Nevertheless, the efficiency is related to the services provided by the warehouses in terms of their assaying facility, operational excellence in goods storage, and system integration for online auction and sale of the warehoused items[4], [5].

DISCUSSION

Warehouse Receipt System Components

Farmers may deposit storable items in return for a warehouse receipt using a warehouse receipt system (WRS) (WR). An enabling legislative and regulatory framework with the support of a regulatory and supervisory body is put in place to guarantee that the WRS is capable of generating the intended economic gains. To protect the farmers as the owners of the commodities, warehouses would need to be licensed, and this is reinforced by insurance and financial performance guarantees, as shown in Figure 1. Involving the banking system closely is also necessary since it is a stakeholder that must honor warehouse receipts.

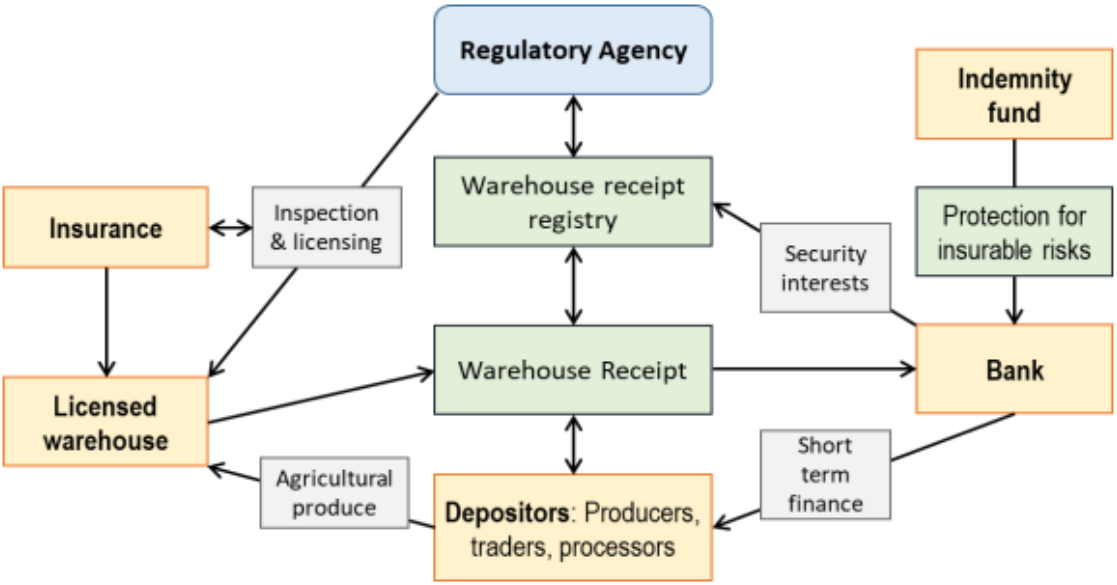

Figure 1: Illustrate the Warehouse receipt system components.

By knocking on the doors of the informal lending sector which charges high interest rates, banks/financial institutions, insurance companies, commodity exchanges, and ultimately the rural economy, a well-developed negotiable warehouse receipt finance system benefits farmers by preventing distress sales. When products are kept under the supervision of a warehouse operator, warehouse receipts are often provided. Nonetheless, the loan offered against such often issued WR is at the appropriate typical commercial bank rates. The owner of the goods may be eligible for a pledge loan at rates with interest subvention when the WR is in the form of a negotiable warehouse receipt (NWR). While in the custody of the warehouse operator, the NWR is a fungible instrument and may be exchanged or sold in order to transfer ownership of the products.

The warehouse must be registered with the Warehousing Development and Regulation Authority in order to get a NWR (WDRA). The Negotiable Warehouse Receipt (NWR) System is put into place nationwide by the WDRA. After being approved and registered with the WDRA, a warehouse may start issuing NWR. A assurance that the quality and amount indicated in the Negotiable Warehouse Receipt (NWR), which is provided as a sign of acceptance of goods, would be delivered to the NWR holder after the storage time, which is also mentioned in the NWR's terms and conditions. Moreover, the NWR guarantees that the products will be secure until the end of the first storage term. This is obviously only conceivable if the commodities' quality and quantity can be maintained throughout storage using scientific preservation processes in warehouse facilities that satisfy the required requirements and have strong monitoring and security measures[6]–[8].

The items are insured against theft/burglary, misappropriation, fidelity guarantee, etc., as well as fire, flood, cyclones, strikes, riots, and other risks in order to cover the risk element. Almost all risks are covered by the warehouses, excluding changes in pricing. Thus, warehousing ensures the safe return of goods or their value to the depositor, adding value to the goods' quality and making them acceptable to lending institutions as a reliable item of exchange for pledge financing because they can be sure to recover their money by selling the underlying goods in the event that the depositor defaults. Finance against NWR is tied to the agriculture sector in addition to banking and warehousing. The market-integrated agencies, such as warehousing companies, APMCs, and suppliers of collateral management services,

are found to be more suited to distribute pledge funding. Although governmental organizations that facilitate marketing, like APMC, seem to place a greater emphasis on small-scale farmers, the agencies that provide collateral management services appear to favor traders over farmers. This more accurately reflects the underlying business concepts. Most APMC marketplaces do not yet have integrated warehousing or cold storage facilities. From a storage perspective, foodgrain and oilseed crops have been discovered to be popular, and optimum storage advantages have also been noted in these crops.

Strengthening the system for negotiating warehouse receipts (NWRS)

Agricultural loan program with post-harvest on NWRs interest subvention the current program offers pledge financing with a focus on small and marginal farmers as well as all farmers who have KCCs issued by all registered warehouses, including cold storages, against NWRs. The KCC maximum is now Rs. 3 lakh, immediately increased to 75% of the cost of the agricultural items.

Promotion of the Plan

Many organizations, including CWC, SWCs, NABARD, cooperative departments of the states, banks, etc., must make enough exposure in print and electronic media in order to assist farmers in using the NWR system. Banks may publicize the interest subsidy program for pledge loans secured by NWRs while emphasizing the value of NWRs, the necessity for scientific storage, and the significance of keeping products in cold storage facilities that have been approved by the WDRA. Funds should be set aside for this publicizing by various agricultural and related departments' extension organizations[9].

Requirement for storage structures to have infrastructure status it is advised that agricultural warehouses be given full-fledged infrastructure status in order to benefit from advantages such as income tax exemptions, reduced rates of interest on loans, etc. Included in this would be cold stores and packhouses that are integrated at the village level. Unfortunately, not all farmers could use the facility since the godowns of the State and Central Warehousing Companies were few in number and situated at the divisional or district level, requiring transportation fees. Afterwards, via their APMCs, the Agricultural Marketing Departments/Boards of several States began to execute the pledge loan program. Unfortunately, the engagement of the Agricultural Marketing Departments/Boards did not sufficiently alter the situation owing to the inadequate storage facilities available with APMCs and their reliance on SWC/CWC godowns.

A quality evaluation of the agricultural output that was being kept and the security of the goods that could be promised even at farmers' locations were issues that the banks providing post-harvest loans under pledge financing were dealing with. A group of banks and other relevant organizations are promoting companies that provide collateral management services, such as National Collateral Management Services Ltd. (NCMSL), National Bulk Handling Company Ltd. (NBHC), etc., as a result of this.

On behalf of the farmers who keep the product, these Collateral Management Service Providers assess the quality of the produce, maintain and manage the produce, issue warehousing receipts, and give collateral security of the goods stored to the banks. They then want their margin in return for the services rendered. In exchange for these issued warehouse receipts, the banks provide farmers with pledge financing. The States of Bihar, Jharkhand, Himachal Pradesh, Uttar Pradesh, West Bengal, Orissa, Assam, Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Nagaland, Sikkim, Tripura, and Delhi do not have a pledge funding program in place.

Interest Subsidy Plan

For short-term crop loans issued to farmers at a reduced interest rate of 7% per year, the government offers interest subsidy to various banks and cooperatives. Farmers who pay back the loan on or before the due date get an extra incentive of a 3% interest rate decrease. As a result, farmers who repay their loans on time will pay an annual interest rate of 4% on their crop loans. The crop loan is provided in order to mainly meet the need for finance during the cultivation stage of operations. An interest subvention of 2% is made available to banks for the first year of restructured amount of agricultural loans in order to better assist farmers impacted by natural disasters. Achieving high productivity and total output in the agriculture industry is important, but preventing ill-timed or distressed sales is just as important. Also, there is a provision for small and marginal farmers to get a concessional post-harvest loan in exchange for negotiable warehouse receipts for this purpose (NWRs).

The post-harvest loan is eligible for interest subsidy of 2% (the same as for crop loans) for a maximum of six months on the value of agricultural products retained in storage under pledge conditions. Only small and marginal farmers who have a Kisan Credit Card are eligible for this (KCC). Small and marginal farmers are ineligible for the post-harvest loan's reduced interest rate if they haven't gotten crop loans via the banking system. The Committee suggests granting these farmers access to a post-harvest loan at a discounted rate secured by NWR. It is believed that even if a small and marginal farmer would not have used the banking system to get a crop loan because there was no need or because they had previously defaulted on loans, things might have changed. After harvest, the market conditions might change, necessitating the need for a post-harvest loan with favorable terms[10], [11].

CONCLUSION

The Committee believes that warehousing should be promoted and made more widely known as the foundation for the pledge lending system and electronic trading. This by itself will satisfy the sufficiency requirement and create a successful agricultural selling system. It has been discovered that a significant portion of the storage infrastructure installed under the ISAM has been redirected for use in non-agricultural commercial endeavors. The condition of the current infrastructure may be looked at while creating the district storage plan. Further, emphasis should be bringing adherence to the standards of WDRA, so that the storage godowns can be certified as warehouses. This necessitates, restructuring of the existing godowns to meet the desired WDRA standards and ensuring, that new constructions are in strict conformity with the standard.The modernization of warehousing capacity in compliance with WDRA standards is deemed necessary, and new requirements are to be suitably assessed in District Storage Plans. The seasonal nature of storage demand and commodity-specific requirements need to be delineated when preparing District Storage Plans. Warehousing is essential for offering post-harvest pledge loans to farmers and for participating in electronic trading.

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CHAPTER 17

PLATFORM FOR VALUE SYSTEM PARTNERSHIP

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ABSTRACT:

Linking different economic operations to those that determine the output's market value is known as market linkage. The value is made available via a "farm-to-fork" supply, which is only effective when it is driven by the "fork-to-farm" flow of demand and the corresponding value. The "fork-to-farm" path is preferred above the often recommended "farm-to-fork" alternative when using the farm revenue based strategy to agricultural marketing. The farmer would thus need to cultivate what can be sold, reach the point of end-use without losing quantity, and compromise on quality if the goal is to make optimum financial gains on his output. As a result, the transition from production-led agriculture to market-driven agriculture was necessary.

KEYWORDS:

Agribusiness, Agriculture, farm-to-fork, Fertilizer, Management.

INTRODUCTION

A permutation of organically connected value chains that are incorporated into a supply chain make up a value system. The value system platform would be one that aids in integrating the sub-systems of many stakeholders from the public, commercial, and nonprofit sectors as collaborative partners to achieve the intended goal. The main goal is to improve farmers' connections to the market, along with the growth of market yards, alternative marketplaces, cold chains, and food processing facilities. There is a need to lower risk, promote investment, and develop the supply chain in order to increase farmer income. This presents a chance for collaboration between the farmer groups autonomous value chains and market participants, input suppliers, financial institutions, and research organizations. By combining various value chains, from village-level coordination to national level, a significant revolution is accomplished.

The framework for supporting the Public Private Partnership for Integrated Agriculture Development (PPPIAD), run under the Rashtriya Krishi Vikas Yojna, was released by the Indian government in recognition of the significance of fostering the integration of value chains into comprehensive value systems (RKVY). By attaining system-wide value chain integration and luring in more private investment in agriculture, PPPIAD is envisioned as an alternate method of implementation that permits bringing in the technical and managerial skills of the private sector in conjunction with public finance. State governments directly oversee the program's implementation. The annexures list the primary characteristics and goals at the time of inception. In coordination with the PPPIAD program, several state-level initiatives to integrate agro value chains are supported.

The World Economic Forum is collaborating with Andhra Pradesh, Karnataka, and Maharashtra under its global initiative "New Vision for Agriculture" (NVA) to use the PPIAD program to spark partnerships with private professional agencies for the integration of disjointed value-chains into a value system that benefits farmers. In Maharashtra, the cooperation expanded from 11 projects in 2012–2013 to 33 projects with more than 60

collaborating enterprises. During three years, the initiative might reach five lakh farmers and increase their income by 10% to 30%. For instance, in the case of maize, farmers witnessed greater yields (on average, a 35% increase in yield), reduced input costs (3-5% of total cultivation expenses owing to direct delivery of fertilizer from the corporate partner), and obtained higher pricing via direct sale to customer minimum of 3-5 per cent higher effective sales price.

There are several localized projects underway to alleviate the inefficiencies in the agricultural value chains. NGOs, foundations, foreign donor agencies, and commercial firms themselves all make comparable interventions in the agricultural value chain system. Strong leadership and co-creation by the government, the private sector, and important stakeholders like farmer organizations, civil society, and international organizations have all contributed to the success of such models. The government sets the vision and the enabling policy framework, while the private sector helps to realize that vision through scalable and inclusive market-based activity. Agricultural marketing must manage supply and demand at the level of the whole market as it becomes more and more cross-geographical. A national level platform would help farmers in combination with other recent efforts that enable the one-nation market to thrive in order to assist the transformation of the Indian food system in cooperation with private sector businesses[1], [2].

DISCUSSION

Agri-Value National System

Platform for Partnership It is advised that a National Agri-Value System Partnership Platform be established at the national level in order to combine the collective power of all the stakeholders in the agricultural ecosystem, including the government, private businesses, educational institutions, non-governmental organizations (NGOs), and researchers and developers, in order to transform the industry on many different levels. The cooperation platform will prioritize initiatives that increase farmers' incomes while also ensuring food and nutritional security by offering wholesome and reasonably priced options across the agricultural value chain. The agricultural sector may continue to be a key driver of rural development and poverty reduction in India by supplying and co-financing the back end of the value chain and leaving the rest to the private sector and farmer contributions[3], [4].

The goal of such a platform would be to assist the federal government and state governments in facilitating investments and collaborations on projects involving multiple value chain partners, in removing obstacles to their implementation and scaling, and in providing enabling policy support to improve the environment for agricultural marketing. Brokering of new value chain partnerships at the national and state levels for integration into a system-wide value chain is one of the planned actions at both the national and state levels.

a. Launching new cross-sectoral programs at the national level that are focused on particular products.

b. The consolidation and expansion of state-level collaborations already in place, as well as cross-state cooperation.

c. Provide an enabling policy environment by fusing and coordinating numerous activities and plans.

d. Encourage the exchange of best practices across governments and nations while sharing lessons learned and building capacity.

e. Create and implement a results-based system to track the overall effect on markets and trade development and implement any required corrective measures.

The platform would operate according to the public-private partnership model, but it would not be directly involved in how the government runs its daily operations. The PPP form of operation has the ability to provide the much-needed knowledge, expertise, and financial synergy for spurring higher competitiveness in agriculture. As was already indicated, a national level platform may provide scope and momentum to localized models via the World Economic Forum, GIZ, and other organizations.

A steering committee made up of representatives from the government, farmer organizations, NGOs, research and academic institutions, national and international development bodies, the private sector, and think tanks may be established at the level of the central government to direct and mentor this partnership. The steering committee will be led by a chairman and managed by a managing director who will oversee a secretariat. At the state level, there should once again be a local coordination committee run by a chairman and CEO who are in charge of a state level executing organization. In order to further the idea of one country, one market, the initiatives undertaken under this platform will strategically expand the commercial base for certain crops and other commodities. Depending on the surplus in these areas, projects will be chosen at the District and Block levels with a focus on the nation's major cities. As an example, consider the selling of fruits from the North East into South India, the expansion of apple commerce and migration from the Himalayan states to other areas, the opening of the northern Indian market to fish and other marine products from coastal regions, etc.

Governance Framework

An advisory council would serve as the platform's guiding force, while an executive committee at the national level would implement the value system partnership program. The Advisory Council may be a high-level organization that offers strategic direction and advisory support for the National and State Level Platforms' activities, as well as input into the strategy, makes decisions on issues referred to it by the Steering Committee, and champions and supports the National Platform's initiatives. The Advisory Council could consist of:

a. Government under the leadership of the Secretary of Agriculture and Farmers Welfare, the Secretary of Rural Development, the Secretary of Commerce, the Secretary of Food Processing, and other Secretaries serve on this committee.

b. Members of the private sector, including those working for companies that offer manufacturing, processing, cold-chain, retail, financial services, and technology.

c. National think tanks like NITI Aayog and institutions / centers of excellence.

d. Foundations with ties to international donor organizations and agriculture.

e. Members of NGOs and Farmer Producer Organizations (FPOs).

National Executive Committee:

An inter-ministerial steering body to help the government's policies converge, led by a senior representative from agriculture, rural development, commerce, food processing, and other fields. The Multi-Stakeholder Advisory Council would serve as the steering committee's

mentor. The Committee will exercise strategic leadership, interact with domestic and international organizations, and provide recommendations for new projects and joint ventures for programs that might result in higher returns for farmers. The Committee will also create financial arrangements for the activities and provide them to the national Secretariat for implementation[5], [6].

Secretariat for the National Agri-Value System (NAVS):

The primary executive body will be the NAVS Secretariat, which will assist in organizing and carrying out the planned operations. The Secretariat would take the helm in putting the Steering Committee's directive into action via collaboration with the different States of the nation. It will monitor value chain collaborations, participate in knowledge management activities, and provide input to the steering committee for any mid-course adjustments. The secretariat will serve as a repository for research, papers, and case studies of integrated value chains. With the Department of Agriculture & Farmers' Welfare's assistance, the Secretariat will be housed.

The executive head would be a qualified expert with at least 20 years of private sector expertise in fields such agriculture marketing, project management, logistics, and market analytics. There will be a support team of at least five people with relevant professional expertise from the business sector in knowledge management activities. The NAVS must provide suggestions to the Steering Committee for individual projects in order to minimize delays and make the most of current government support mechanisms in order to bring about convergence and dovetailing of Central programs.

Program Support Unit (PSU) at the state level:

The Directorate of Agricultural Marketing houses the State level coordinating executive, which supports the cooperation efforts in each State. The chief secretary of the state would serve as the head of a state-level advisory board that would direct the executive. The PSU would have a Chief Executive that was proposed by the Advisory Board.

The PSU will be a free-standing, independent professional organization with a Chief Executive Officer leading a group of experts and support personnel in a range of fields, including agricultural marketing, production technologies, capacity development, private sector development, project management, etc. It will manage initiatives, broker and codify partnerships agreements, analyze possible value chain partnerships supplied by district level coordinators, and provide a framework for execution and impact research documentation. The State coordinators will assist district level coordinators with implementation in addition to overseeing project management operations and connecting to the National Value System Secretariat.

One-nation, one-market will essentially be put into practice by the State level coordinators thanks to the collaboration. In order to establish a commodity-based value chain, big or small, cross-regional or local, the PSU may request Expressions of Interest (EoI) from corporates, SME and agri-startups, as well as from individuals and FPO, along with the integration of current government interventions in the fields of production, postproduction, marketing, and finance taken collectively. Via this executive body, the continuous State-level assistance for initiatives, including the PPPIAD/PPPIHD program under RKVY, may be managed. Each state may choose to make a variety of interventions in commercial ventures, depending on its particular goals and local conditions. Animal husbandry, fishery, horticulture, agriculture, and agro-forestry would all fall under these categories[7], [8].

DTF (District Task Force):

Experts from KVK, ATMA, and NABARD (or other lead banks) may work on the district-level Task Force for Project Coordination to conduct consultations with stakeholders, entrepreneurs, community members, and local government officials. The Task Force would find value chain deficiencies, report them to the state PSU, and then carry out actions with partners. The DTF would serve as a project incubation unit under the direction of the District Collector/Deputy Commissioner as its head. It is advised that DTF choose producers-specific specialists to serve as specialized coordinators and to act as partners in day-to-day interactions with private corporations. PPP projects may be given a preliminary assessment by DTF, which it may then submit to the State Level Approval Committee for further coordination by the State PSU. The DTF should also schedule the timely transfer of money from plans to authorized projects and keep an eye on the delivery schedules, deliverables, and assessment of finished projects.

Finance for the Platforms

In addition to covering the costs of actual deployment, funds will be needed to set up, run, and administer the platforms at the federal, state, and local levels. To cover the necessary costs, it would be able to integrate several current projects of various Ministries/Departments. RKVY may serve as the main financial source depending on the level. Moreover, the Corporate/Trade groups that want to volunteer may be permitted to develop business plans for the initiatives they designate as priority in the monitoring district in order to encourage supply chain integration of value chains[9], [10].

Value Chain Integration Results

Agricultural projects are said to have inevitably progressed from a stage of intense cultivation and output to one that necessitates closer alignment with consumer demand. The government has a number of support plans, incentives, and initiatives to encourage the establishment of an integrated agricultural marketing system, but integration must really occur within specific projects. In order to ensure that the entire value chain system has opportunities across sectors and is developed at a national level, fostering cross-regional links, it is crucial to establish a mechanism that distributes such funding to particular initiatives in a sector-neutral way. The National Agri-Value System (NAVS) platform under consideration is intended to integrate several value chains using a systems approach to achieve the following benefits:

a. Replace fragmented sectoral schemes and programs in agriculture with well-designed, integrated value chains based on commodities that link all farmers, regardless of size, to their customers wholesalers, retailers, processors, and exporters.
b. To ensure that the planned reforms in agricultural marketing, land leasing, contract farming, and farmer producer organizations have a foundation in commercial enterprises, create an ecosystem of value chain systems that seamlessly integrate market demand with production, post-production, and finance.
c. Encourage more private investment by implementing a Public Private Partnership framework throughout the whole value chain of the industry, which will more effectively and efficiently connect farmers with consumers.
d. To strengthen current extension and agricultural advisory services for each value chain, promote pertinent best practices such as soil management, raised bed planting, the ridge and furrow method of sowing, sub-surface irrigation, precision farming, post-harvest handling, commercial negotiations, market linkages, as well as the facilitation of credit and insurance.

e. To increase farmers' income, diversify the portfolio of integrated value chain systems from crops to dairy, fisheries, horticulture, pisciculture, sericulture, aquaculture, and mushroom farming[11].

CONCLUSION

The participants may choose one or more districts to serve as mentors at their discretion. The mentors will then have a full range of responsibilities, including raising awareness, developing capacities, designing specialized training programs, selecting products for priority integration into value and supply chain systems, outlining the entire pathway, identifying manpower and infrastructure gaps and filling them, assisting farmers with production decisions and "production specifications," and so on. FPOs, VPOs, cooperatives, SHGs, JLGs, trusts, and NGOs should be promoted in order to strengthen the institutions of farmers and integrate them into bigger supply chains. Farmers should also be federated with regional or commodity-based market connected firms.

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CHAPTER 18

FORECASTING OF SUPPLY, DEMAND, AND PRICES

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ABSTRACT:

It is addressed how to forecast agricultural commodity prices to improve the predictability and stability of farmers' income. Price dynamics may result from evaluating demand and modifying supply as necessary. For farmers, dealers, and consumers alike, price forecasting of perishable crops like vegetables is crucial. A timely and accurate price prediction enables farmers to migrate between local marketplaces to sell their products and earn fair prices.

KEYWORDS:

Agricultural Commodity, Agribusiness, Businesses Demand and Supply, Market Place.

INTRODUCTION

Farmers' ability to predictably and steadily make an income has been deteriorating owing to output instability brought on by an overreliance on rainfall and climatic conditions and significant pricing volatility. There is a natural price fluctuation in farm food by default due to seasonality of production, derived nature of the supply, and relatively inelastic demand for farm items. Produce prices are impacted by external and global socio-political issues as well as local supply and demand dynamics, which adds to the volatility in agriculture. Government involvement supports the free functioning of market forces (i.e., supply and demand) in agricultural commodity price discovery processes; no nation is an exception. As governmental interventions are a common feature of agricultural marketing, it is essential that these interventions are as cost-effective as possible to reduce the load on the public coffers. Maintaining agriculture and enhancing farmers' income-generating potential, especially risk-taking capability in the aftermath of climate change on the one hand and market volatility on the other, are crucial.

Relevant data on anticipated changes in demand, price, and production scenarios is important for both the government and farmers, who may utilize it as part of a decision support system to reduce risk and increase profitability. Demand from agribusiness businesses is taken into account when forecasting agricultural demand, pricing, and output. These sectors also develop the systems that help farmers make decisions, which in turn increases demand for the corresponding agricultural goods. Demand and supply matching also aids in maximizing the use of natural resources, the amount of energy and logistics used, as well as input prices. As a consequence, agriculture becomes more sustainable, efficient, and lucrative. As a result, academics and policy officials in India are working hard to create a framework for accurately predicting agricultural pricing, supply, and demand by creating adequate systems for data collection, compilation, analysis, and dissemination.

Theoretical Foundations

Using econometric techniques and models, forecasting is the art of estimating the probability of future occurrences based on information from the past and present. Predictions, which are quantitative estimates, are commonly used to drive the creation of public policy and the process of making individual decisions. Forecasting the price of agricultural commodities is

essential for empowering farmers and decision-makers to manage numerous risks, including price risk, and to make better-informed choices. Usually, time series analysis is done to predict future values. At regular intervals, time series data keeps track of factors such as pricing, rainfall, sales, etc. Understanding the four time series components Trend, Seasonality, Cyclical, and Random variation is the first step in analysing time series data. The trend determines whether the series' secular movements will be rising, decreasing, or stable over time. The cyclical variation is the long-term movement of a series akin to economic cycles, whereas the seasonal variation captures the influence of the seasons. The unpredictability of farm prices is caused by strains and shocks external to the system[1]–[3].

Models from the Auto Regressive Integrated Moving Average (ARIMA) class are often employed to predict complicated data series. This model predicts the anticipated mean price and the volatility (range or standard deviation) for a period in the future using prior time series data of price. The widely used Box-Jenkins approach and the statistical characteristics of the ARIMA model contribute to its popularity. The annexe contains the technical information. There are other more methods for predicting agricultural price trends. Here is a quick description of two of these typical techniques:

Demand and Supply Analysis:

In this case, the end stock for the forecasting period is forecasted using an analysis of supply and demand for a commodity. The predicted changes in pricing over the forecasting period are then correlated with changes in end stock. The end-stock for each commodity is calculated by dividing the entire supply (opening stock + production + import) by the total demand (domestic consumption + export). The same information is updated once every three months or even every month. Based on the area and output, state-by-state production estimates are made for each crop. Based on historical patterns seen in the National Sample Survey Organization, consumption is approximated (NSSO). Changes in end-stock and changes in future pricing are strongly correlated. The expected change in price for the future period is based on the change in end-stock and is estimated from the historical connections between the two variables. The approach is intricate and ongoing, so it can catch significant variations in production and acreage (caused by weather or other factors) at the national and state levels. As a result, the approach has the potential to provide data that may be utilized to start corrective measures on the fly[4], [5].

Using Commodity Futures:

This approach uses the futures market for commodities to comprehend the forward price curve and discontinuities in the price structure and to interpret them in light of the cash or ready-delivery market. In a sense, this involves interpreting futures prices and forming an opinion on the markets. The Indian commodity derivatives market has been operating for thirteen years. A number of agricultural products are actively traded on the commodity markets, including maize, soybeans, soy oil, turmeric, potatoes, cotton, rapeseed, wheat, channa, and cardamom. Currently, these markets handle futures contracts for the commodities indicated above. On the day of expiration, futures contracts provide the most probable future spot prices. Futures contracts with a high level of participation and liquidity are strong predictors of the most probable future price. Such contracts reveal distinct tendencies as well as breaks in the current trends. The different techniques are most suited for products that can be stored securely for long periods of time and would not be equally applicable to commodities with limited shelf lives, such as milk, tomatoes, mangos, etc. For taking up a directed supply versus a predicted demand for optimum price discovery, these commodity types will depend more on planned output than on stock in hand.

DISCUSSION

Predicting Prices: Current Situation

The Government of India has throughout the years created a sophisticated system for estimating crop sown area, yield, and output of various crops, but the quality and timeliness of the data provide a significant obstacle for accurate and error-free forecasts and predictions. At the moment, no department is officially engaged in projecting prices or demand at the national level, despite the fact that several organizations are involved in the collection, monitoring, and publishing of prices and price indices. 'Project mode' is being used for a handful of the efforts. As follows:

Food security forecast and scenario analysis for agriculture

This study was carried out by National Council of Applied Economic Research (NCAER), under the direction of the Ministry of Agriculture & Farmers' Welfare. The NCAER makes short- and long-term price predictions for important commodities. Based on historical data series obtained from the Office of Economic Adviser, NCAER has been utilizing the ARIMA approach to estimate the monthly Wholesale Price Index (WPI). Rice, wheat, jowar, bajra, maize, pulses, gram, tur, onion, potato, groundnut seeds, rapeseed & mustard, soyabean, edible oil, and food items are among the 17 commodities and subgroups included by the price projection. The NCAER also predicts medium-term prices for 12 important agricultural commodities using the harmonic method. In the lack of wholesale pricing, retail prices are utilized for milk, soybean oil, and palm oil. Wheat, rice, tur, chana, urad, masoor, mung, potato, onion, sugar, soy oil, and milk are all included in the medium-term projection. The research makes use of indicative Delhi wholesale pricing data[6], [7].

Project Network on Market Intelligence

The National Agricultural Innovation Initiative, started by the Indian Council of Agriculture Research (ICAR), sought to build and network agricultural market intelligence centers across India. The project was active from 2013 to 2017 for a total of five years. The project's goal was to assist farmers in making informed choices about marketing and seeding in order to eventually increase the price of their crop. For agricultural commodities, two different kinds of price projections were created and released. Pre-sowing predictions are published to assist farmers in making choices about sowing and area allocation, and pre-harvest forecasts are given to assist in making decisions regarding whether to sell the crop right away or to hold onto it for a future price advantage.

The main outcomes of the research were that farmers' cropping patterns did not significantly alter over the study period. Yet, a labor scarcity, institutional changes, inadequate irrigation, and the expectation of higher prices have given 35% of farmers the opportunity to change their cropping strategy. The single most important element that affected the farmer's choice to plant or sow was a better price, which was followed by the appropriateness of the soil and the land, the availability of inputs, and the input dealers' incentives. The farmers' primary sources for market and pricing information were newspapers and individual dealers; they did not utilize online searches. Friends, family, radio, television, and regulated marketplaces were sporadic sources of market knowledge.

As none of the farmers had any experience obtaining market information, they all needed training in it. The majority of farmers sold their goods directly to wholesalers and nearby farm markets at the farm gate. Most people transported small lots of goods to the place of sale utilizing individual micro trucks or vans. Due to a lack of further market connection, farmers

generally sell their goods via brokers and commission agents when they are in trouble. The farmers' marketing expenses varied according to the crops they produced, with transportation being the largest expense. Just 3% of farmers engaged in any kind of post-production operation on the food, such as grading, polishing, or drying. They were able to get more money for their goods because to these actions.

With financial support from the Bangalore-based Karnataka State Agricultural Marketing Board, this network initiative was started in Karnataka during the 2015–16 academic year. Three agriculture universities in Bangalore, Dharwad, and Raichur were given the task. Paddy, sorghum, maize, and ragi were the selected commodities under the cereals category. Bengal gram, red gram, green gram, and black gram were chosen under the pulses category. Groundnut, sunflower, and soybean were chosen under the oilseeds category. Extensive time series econometric models were employed, including Moving Averages, Single and Double Exponential Smoothing Functions, Halt-Winters Model, Auto Regressive Integrated Moving Averages (ARIMA), and Artificial Neural Network (ANN) models. The most appropriate models for predicting price were chosen based on the lowest Mean Absolute Percent Error (MAPE) values. The models' outputs served as the foundation for further post-analysis diagnostics. In addition to forecasting, the Post-analysis diagnosis took into account traders' surveys, future market prices, changes in government policies, weather variations, the import and export situation, the prices of competitive commodities, and a change in the cropland at the district, state, and national levels. The approach was subsequently refined in this manner to account for various markets for different crops[8], [9].

Cooperation with professionals currently, predicting commodity prices is mostly reliant on previous price information for the same product. Yet, it is now necessary to use dynamic models that take into account all potential explanatory elements to predict the anticipated output as well as forecast the price of an agricultural item. In addition to previous pricing, a variety of variables that affect future price and output of a commodity must be taken into account while developing multivariate models, including yield, rainfall, temperature, stockpiles, trade (imports and exports), political unpredictability, strikes, etc. In this respect, the Indian Institute of Management-Bengaluru (IIM-B) intends to create the groundwork for a long-term partnership with the Karnataka Agricultural Pricing Commission (KAPC). The main goals that are anticipated are:

a. The creation of a supply projection model employing all pertinent factors as a vital planning tool for governmental organizations to implement futures contracts for agricultural prices, crop imports, and crop exports at the state level.

b. Price Forecasting Model to assist farmers in making the best crop choices and to help them make adjustments mid-season if the chosen crops don't work out.

c. Area Estimation Model, which is used in price forecasting models as well as supply estimates. The methods currently in use to calculate the area under cultivation are manual and imprecise.

d. Demand projection using historical data on production and pricing of various agricultural commodities as well as the advance forecasts of output of agricultural commodities that the Directorate of Economics & Statistics provides on a regular basis.

After separating the independent factors that significantly affect the variable under study, these models must be constructed. The fundamental issue with the exogenous variable is that

its impact can be stochastic rather than deterministic, in which case the model is unable to adequately account for it. The independent variables should have the same frequency since the data is of a high velocity, or else a proxy variable or dummy variable should be used to represent its influence. The majority of multivariate models within the ARIMA framework employ the errors of the ARIMA model as the dependent variable and also include exogenous variables to account for variation. This serves as the framework for a multivariate model. Yet, the following issues arise when using multivariate models to predict prices: i. Compared to univariate models, they need more data.

Any new variable that introduces a source of error owing to sample variance must be estimated. Model selection is thus more difficult, time-consuming, and error-prone, which might have an impact on future projections. iii. Using nonlinear techniques to the multivariate scenario is challenging. In general, multivariate models need to be less complicated structurally than univariate ones to be able to handle the extra complexity that being multidimensional imposes. Thus, multivariate models won't capture the nonlinearities that the univariate models effectively manage. iv. Outliers may affect multivariate predictions more severely than they do single-variate forecasts. Also, in a univariate environment, outliers are simpler to detect and manage. v. Sometimes it might be difficult to determine the lag structure of leading variables. vi. The data must have extremely high quality, and data on causative factors must move at the same rate as price changes.

Implementation strategies for market intelligence

Strengthening the framework for data collection and collation for crop forecasts would be necessary for market intelligence as well. The Mahalanobis Institute and other relevant federal and state level institutions must develop the contemporary scientific instruments and processes at the production level. Complete mapping, updating, and management of water resource will all be required at the same time. On the front of output marketing, it is necessary to develop a specialized agency for analyzing supply, demand, and associated price discovery. The following, across diverse agricultural industries, will need to be evaluated using the necessary analytical tools:

a) Seasonal trends in the number of harvested crops, fish, and animal products

b) Demand trends for each industry, including food and non-food products like crops, seafood, and animal production

c) Demand forecasts for all key markets.

d) Examine demand vs market pricing based on differences in supply.

e) Predicting pricing and examining global price patterns in comparison to Indian tendencies.

f) Implement online auctions gradually across all Indian markets, including APMCs.

g) Provide a unified system of market information for all wholesale marketplaces.

h) In the first five years, aim for monthly, semi-annual, and yearly demand and price projection bulletins.

Release of decadal predictions and projections is progressing. The information may be shared with farmers and the agri-logistics industry through the online, mobile, and mass media communication channels that are already in place. Use the knowledge already possessed by

state-level organizations, such as the Karnataka Agricultural Prices Commission, to carry out pilot projects in order to create a nationwide network of price analysis. It is possible to arrange for the commercial IT industry and civic society to actively participate in the "Generation and Distribution of Forecasts and Projections". It is possible to concurrently construct a national Value System Platform to benefit from market intelligence and create operations that utilize this data as examples[10].

Using Forecast Data

The main goal of a prediction made far in advance of the production season is to provide farmers the information they need to make an educated choice about their output that will yield the best profits. Other supply system participants (such as merchants, processors, exporters, importers, etc.), as well as the government concerned with consumer interests, might organize their operations and efforts with the aid of such a prediction. Nevertheless, the reliability and robustness of the data gathered will determine how accurate the prediction will be, especially when a univariate model is used. This committee believes it will be reasonable to commission a prediction system, but to first restrict its usage to government. Demand and supply analytics are necessary in order to arrive at the appropriate price estimate since trend analysis alone is insufficient. During a period of three to five years, the government may monitor the connection between the prediction and the actual price and make any required adjustments to the model before making it available to the general public[11].

CONCLUSION

While the Indian government has created a sophisticated system for estimating crop sown area, yield, and output of various crops, the quality and timeliness of the data provide a significant obstacle to accurate forecasts and predictions. At the moment, no department is officially engaged in projecting prices or demand at the national level, despite the fact that several organizations are involved in the collection, monitoring, and publishing of prices and price indices. At the national level, the Directorate of Marketing Intelligence's restructuring into the Directorate of Marketing Inspection will provide a lasting solution for accurate and timely pricing forecasting. Monitoring supply and demand conditions is key to developing a pricing projection.

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CHAPTER 19

POLICY ON AGRICULTURAL TRADE

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ABSTRACT:

The monetization of farmers' product, with an effective marketing system at its foundation, occupies a vital role in the goal to double farmers' income. The current situation calls for a new market architecture that recognizes exports as a strategy for market development. Determining the several stakeholders, who are essential to this initiative's success, requires a dedicated effort. A comprehensive framework is required to support their functions and maximize the great output potential of Indian agriculture. In order for the advantages of increased export revenues to reach the final producer, there must be a focus on developing an effective agri-value system (AVS).

KEYWORDS:

Agricultural Commodity, Agribusiness, Businesses, Management, Market Place, Policy.

INTRODUCTION

A good condition of surpluses has been produced as a result of favorable governmental support, farmer adoption of new methods, increased productivity, and increased output across the agricultural sector. Market reforms are the result of the government's reaction. Attempts are being made to establish a united national agricultural market, which is a traditional strategy to assist farmers in transporting local surpluses to far-off consumption centers. Yet it is becoming more and more obvious that even India, with its large market, would not be able to absorb the marketable surpluses in a variety of crops and commodities. The market's scope must, by necessity, extend beyond national borders in order to access export markets. This will allow the farmers to extract more value as a member of the linked Global Value Chain and preserve demand supply balance in the home market (essential to prevent price decreases negatively impacting the farmers' income) (GVC).

The worldwide distribution of several related activities, including as manufacturing, marketing, and distribution, is on the rise as a result of globalization. The supply, distribution, and after-sales operations of an item or service at the worldwide level are all included in the concept of the "global value chain" (GVC) (also known as the supply chain). In a globalized environment, businesses can offshore and outsourcing activities to reorganize their operations abroad. The so-called global value chains (GVCs), in which the various phases of the industrial process are distributed across different countries15, are where production, commerce, and investments are increasingly organized. Farmers as producers will experience bigger sales volumes and sometimes more lucrative pricing when they choose to export their products, especially when the home market is saturated.

Farmers and those working along the agricultural supply chain depend heavily on trade for their income. Additionally, it increases customer option and aids in lowering food poverty all over the world. Over the past two decades, trade in agro-food goods has increased significantly, hitting almost 7% in real terms yearly between 2001 and 2019. Agro-food commerce is becoming "global," not just growing. Global value networks (GVCs), which are farming and food manufacturing value chains stretch across several nations and connect the

agro-food sectors and other economic sectors from around the globe, are where an increasing portion of agro-food commerce is taking place.

Trade problems brought on by the COVID-19 epidemic occurred all over the globe, but the farming and food industry proved to be more robust than other areas of the economy. Transparency in market circumstances and policies helped prevent price increases in basic commodities during the early stages of the epidemic. Policymakers and the private sector were able to avert major delays in the agri-food trade, including on the international seed marketplaces, by acting quickly. However, logistical and transportation constraints made it difficult to export and move farming and food goods internationally and raised their costs [DAT1]. To ensure a robust supply chain, policies that ensure the continuous creation and transportation of agro-food goods are essential.

Climate change and livestock disease epidemics will have an impact on farming commerce and output over the ensuing decades. For instance, the Chinese swine flu epidemic increased Chinese import demand, which in turn raised the price of pigmeat globally. Extreme weather events [DAT2] have the potential to interrupt farming markets and commerce, but they can also assist with issues related to the food supply and food security afterward.

Trade is still hampered by local and international support policies

Even though international agro-food markets have developed, the majority of nations still back them and erect obstacles to trade, which limits the advantages that customers can obtain from global agro-food markets. These actions lower agricultural and food commerce quantities while also having significant and detrimental impacts on customer and supplier wellbeing, resilience, and food security as well as agricultural viability. Trade and domestic support policies have a greater effect because of new and tighter links between the farming and food industries, as well as between these and other economic sectors. Around 24% of the worth of the world's agricultural and food exports are derived from foreign inputs, including industrial inputs (equipment and fertilizer) and services. Increased input costs caused by trade policies that function as import obstacles directly lower the viability of a nation's own agro-food products.

Trade expenses are typically increased by non-tariff measures (NTMs), which include laws, rules, and standards like sanitary and phytosanitary measures (SPS), technological obstacles to trade (TBT), and immigration processes. Certain TBT and SPS policies, however, can also increase commerce. Additionally, there is a lot of opportunity for digital instruments to improve the agro-food commerce. For instance, it has been demonstrated that electronic SPS accreditation has a beneficial impact on trade quantities, especially for plant-based, veggie, and prepared food goods. At the OECD, we examine the effects of trade and farming policies to help nations make wise choices that will promote agro-food trade that benefits all parties. By limiting the growth of the agro-food industry, countries' policies that limit trade or needlessly raise trade costs damage both their own internal economies and those of their trading partners.

Countries should lower their own trade barriers like taxes and government assistance that distorts the market in order to increase the benefits of trade for the agro-food industries. These policies decrease export viability by raising supply costs and may make it more difficult for a nation to take part in agro-food GVCs. Countries should also make sure that NTMs, including SPS and TBT measures, are suitable, open, and well-founded in science - all measures to ensure that they do not needlessly limit trade. Well-designed laws can help foster confidence and support trade. Last but not least, government policies play a significant role in creating an environment that can support increased agricultural productivity, improve

the competitiveness of agro-food exports, and increase participation in GVCs by making the necessary investments in crucial sectors like transportation infrastructure, education, and research & development.

In India, neither the macroeconomic (state and country) nor the microeconomic (farmers) spheres have been particularly strong in terms of agricultural export. Despite previous endeavors, it has at best been seen as a "add-on" potential. The DFI Committee believes that the Export Market should be viewed as the last evacuation window for domestic wholesale markets (APMCs/APLMCs) and retail agriculture markets (PRAM/GrAM). These three concepts serve as the foundation for the new market architecture proposed. Farmers may more easily be included into both the regional value chain (RVC) and the global value chain thanks to the new market design (GVC).

Therefore, it is crucial to focus more on changing the rules of trade in favor of Indian farmers at a time when India is working to integrate its agriculture with the global market under the WTO regime. This can be done by promoting exports of agricultural products with comparative advantages and banning imports of goods from sectors with significant production advantages. Improving marketed quantities and the price difference are two direct advantages that increased exports and good Supply Chain Management (SCM) would provide to farmers (if any). When market design reduces the number of intermediate players between farm gates and markets, the latter will be feasible.

A few approximations are made in an effort to mimic the actual world. Deterministic modeling is used. There aren't any other doubts or random events. It stays still. The execution of policy measures and the development of their economic consequences are not time-bound events. It is a partial equilibrium paradigm, to sum up. The model does not address the effects of barrier decreases on other sectors of the national economy, even though it attempts to estimate extensive aspects of the agrarian economy. Therefore, impacts on the labor market or the manufacturing and commercial sectors of the economy are not up for study.

By simplifying the model in these ways, the most pertinent farm trade policies with calculable economic impacts can be specified in great depth. Similar to that, the algorithm provides findings for numerous nations. It provides findings both worldwide and for different country categories, both geographically and politically. A wide range of farming goods are covered, and the model takes into account how supply and demand for those commodities interact (for example, when competing for land or consumer preferences). The model also takes into consideration the three economic factors that make up each economy: employers, buyers, and the government. Results can therefore be displayed by product and agency for each nation, each area, or the entire globe.

Quantifiable and intangible economic strategies

The ATPSM concentrates on common farm trade policies like duty reductions, support cuts, and limit adjustments. Other trade policies in the farming sector do exist, though, like sanitation and phytosanitary laws, periodic import quotas, and anti-dumping rules. Without a price counterpart, such measures cannot be replicated. Over and above market entry measures, the agricultural price support is another group of non-quantifiable policies. These include favorable interest rates and debt repayment schedules, financial support for research and development, rebates on farming supplies, etc. The main issue with modeling such policies is that the assistance they offer is universal and not tied to particular goods. These regulations help the overall capability of farming output. Although such assistance might be simulated in a model, the ATPSM does not presently enable it.

Exports versus Production

A Status Report It must be acknowledged that Indian agricultural products are in high demand across the world, but lack of competent management prevents them from being exported. While it ranks first or among the top producers of a variety of fruits and vegetables, milk, important spices, certain fresh meats, some fibrous crops like jute, and a number of staple foods including wheat, rice, millets, and castor oil seed, the production is not exported. This isn't always because there is a large local market and there are worries about quality; it might also be because the manufacturing isn't always geared for a global market. Since meaningful market links are not made possible by a lack of export market knowledge, crop planning and production are neither informed nor driven by the market. Many dry fruits, agriculturally based textile raw materials, roots and tuber crops, pulses, farmed fish, eggs, coconut, sugarcane, and a variety of vegetables are also produced in India at second or third-place positions worldwide. Almost 80% of agricultural products, including several cash crops like coffee and cotton, are produced in India, which is among the top five producers worldwide. With one of the quickest growth rates, India is also among the top five countries in the world for the production of meat from livestock and poultry[1]–[3].

Recent trends show that demand for fresh fruits and vegetables is increasing in both quantity and value while exports of grains and processed food items are plateauing in terms of volume and value. Surplus production, quality compliance with market requirements for pesticide residues, matching large viable quantities with uniform maturity index and quality for the purpose of aggregation, sturdy and appealing packaging, good multi-modal logistics connectivity to exit ports, etc., are prerequisites for exports.

Current global sanitary and phyto-sanitary requirements, a lack of suitable post-harvest infrastructure, poor logistical connection, and other issues are among the current problems facing Indian agriculture. The output from even a single hamlet varies greatly in terms of cultivars used, size and other physical characteristics, and stage of maturation at the time of harvest due to tiny land holdings. Due to this, it is difficult for exporters to find the necessary quantity of a certain fruit or vegetable. Farmer awareness of pre-harvest intervals (PHI) of various crops, prudent use of permitted and registered pesticides, harvesting at the proper maturity, and appropriate post-harvest infrastructure facilities, such as modern pack-houses, reefer transportation, processing facilities where needed, certified packaging, etc., are all necessary in order to meet all these requirements.

India's market share worldwide

According to a study of global market demand, India is not very present in several of the top importing nations. The following table illustrates the scenario for a few particular goods to support this. In order for Farmer Producer Organizations (FPOs) or Village Producer Organizations (VPOs) to efficiently generate a sizable amount of high-quality product as required by the importing markets, an aggressive export strategy would need to incorporate cluster-based development. When a certain fruit or vegetable must undergo post-harvest pre-conditioning, such as vapour heat treatment or hot water treatment to meet the standards of the importing nation, its availability in substantial quantities with comparable physical characteristics and stage of maturity is crucial.

Large amounts of the targeted output will become accessible via the creation of clusters focused on export-oriented manufacturing, which will aid in meeting these needs. Initiating a cluster approach, the Department of Agriculture, Cooperation & Farmers' Welfare and the Agricultural and Processed Food Products Export Development Authority (APEDA) in the Ministry of Commerce have identified adjacent geographical farmlands and trained farmers

to address issues raised in cultivation (quality planting material, integrated pest and nutrient management, etc.), pre-harvest (maturity indices, permissible residue level, etc.). The assistance of central government agencies will help to overcome the issues with post-harvest processing and export connections. Also, it is vital to designate some seaports as gateways for the export and import of agricultural products, particularly those that are perishable, in order to expedite the required phytosanitary approvals and prevent traffic jams. Indian agro-exports are predominantly impacted at three levels, as shown in Figure 1.

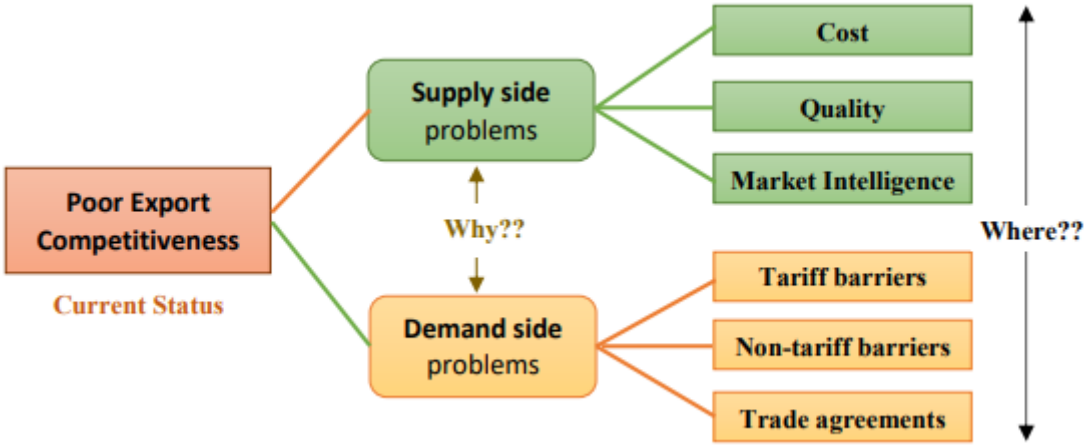

Figure 1:Illustrate the issues with supply and demand.

Supply-Side Limitations

a. More expensive landing fees in comparison to rival players.

b. Subpar quality that doesn't meet the requirements of the importing nations; and.

c. The lack of market data and connections to the world market. Mangoes in the USA, one of the top importers of mangoes and tea, have been known to have exceptionally high final landing prices compared to other competitive suppliers.

All other rival suppliers of mangoes in the US market, such as Thailand (5798 USD/ton), Brazil (1277 USD/ton), Peru (1255 USD/ton), and Mexico (840 USD/ton), are able to get their products to US ports for a lot less money than India (whose alphonso mango costs 6462 USD/ton). Similar circumstances apply to tea in the US, rice in the UK, refined sugar in Australia, and most other situations. While the differences sometimes result from the mode of transportation, the distance traveled, and the amount of time spent traveling, other times the cause is due to higher input costs, lower productivity, and factors like the additional cost of losses brought on by subpar post-harvest management at the source. India thus misses out on export opportunities to overseas markets. Indian agri-exports' low price competitiveness is a result of ineffective economies of scale brought on by a lack of early aggregation at the farm-gate or village level. In India, the average amount of a land holding is modest, and as a result, individual farmers' marketable surpluses are also limited. As a result, the first mile aggregation of food is crucial in order to combine the output from many farms into exportable container loads. Using a cluster strategy by FPOs or VPOs, farmers must cooperate in order to provide the same (uniform) quality and diversity of food[4], [5].

DISCUSSION

Apart than the large agricultural populations of the USA and EU, it's remarkable to see that smaller nations are surprise India in terms of output. Cape Verde (mango), Cyprus (okra),

Turkey (soybean), Jordan (eggs), and Nicaragua are a few of these nations (groundnuts). The World Bank estimates that India's rice yields are around half as high as those in Vietnam and Indonesia and just one-third as high as those in China. For the majority of other agricultural products, this is true with the exception of sugarcane, potatoes, and tea. Despite having more fragmented land than India, China outperforms it in terms of productivity because to a cluster approach to production and the use of effective supply chain management systems that begin at the farm gate. Most states have undeveloped roads connecting farms to major roadways, although improvements are being made as a result of funding provided by the Department of Rural Development for the MGNREGA and Prime Minister's Gram Sadak Yojana programs, two of its flagship programs (PMKSY). The government's crucial emphasis on rural electrification has not yet included providing consistent electricity to village-level post-harvest management purposes. Another significant problem is the congestion at the ports, which is caused by long shipping wait times. When exporting perishables, the problem of delayed connection becomes crucial. Under such circumstances, the timely supply of reefer containers becomes essential. Throughout the busy season, freight prices might be unpredictable for exporters, as shown in Figure 2. The situation is made worse by the insufficient quantity of trolleys at the airport hubs.

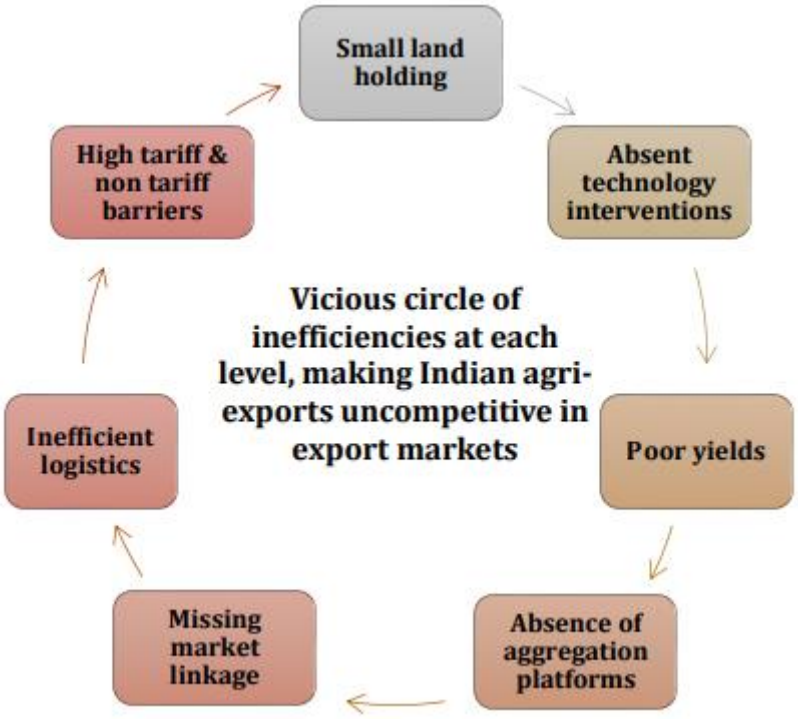

Figure 2: Circle of inefficiencies reducing possibilities for agricultural export.

By creating several intermediaries in the supply chain as a consequence of ineffective primary level aggregation, problems with small land holdings are made worse. Low yield levels are the consequence of farmers' inadequate knowledge levels and the lack of pertinent technological initiatives. Poor supply chain management and a lack of market information increase problems. -Low level logistical connection between port terminals and hinterland producing locations increases overall difficulties[6], [7]. A relatively little amount of primary aggregation of output at the village level that supports evacuation results in poor economies of scale. Since there is a gap in the produce collecting and evacuation system, farmers are left to sell their excess crops on their own, and collaborative or cluster farming is not encouraged. Little export consignments caused by a lack of aggregation facilities leave Indian exporters

with limited bargaining strength to get appropriate Incoterms (International Commercial Terms) and international freight prices. The sum of all these inefficiencies results in a much higher landing cost for Indian exports at the final port. A further barrier is a lack of market knowledge about customer preferences, dynamic market share monitoring, qualitative feedback, growing opportunities, etc. in the target export market.

Demand-side restrictions (Trade Barriers) The employment of protection methods, such as modest but widely scattered ad valorem tariffs, particular levies, seasonal tariffs, tariff escalation, privileged access together with tariff-rate quotas, varies across destination markets, including the European Union (EU), Japan, and the United States (US). They raise costs and lessen the competitiveness of Indian exports by adding to the already existent supply side limitations. Non-tariff measures (NTMs), which are policy actions other than standard customs tariffs, are another tool that may be used to influence international commerce in products by altering prices or quantities exchanged, or both. 2010 (UNCTAD).

Trade Restrictions

The amount of processing (escalation phenomena), the timing of entrance (seasonality factor), and the connections with exporting nations are only a few of the many variables that affect tariffs for a particular range of goods (preferential agreements and regional and bilateral free trade agreements - FTAs). The very intricate import tariff system in the EU is designed to safeguard local production of fruits and vegetables throughout the growing season. Thus, the following are the main characteristics of the regime:

a. I comparatively low tariffs on imports of tropical fruits, such as 5.8% on pineapples and 0% on papayas and mangoes;

b. Differentiated tariffs for temperate and semi-tropical fruits, whereby tariffs are higher for European producers during the season and lower out-of-season; and

c. Generally higher overall tariffs for vegetables, with no seasonal differentiation[8], [9].

Non-Tariff Sanctions

Beyond the worldwide campaign for tariff liberalization, it can be seen that policy priorities have been shifting in favor of non-tariff measures. Apart than customs taxes, there are tools available for limiting access to importing markets. Quality control (QC) measures, parataríff measures including anti-dumping and safeguards measures, technical trade barriers (TBTs) for manufactured goods, and sanitary and phytosanitary (SPS) measures for food items, plants, and animals are a few examples of such policy measures. NTM coverage across all commodity groupings is 100% in key importing nations. NTMs are thought to apply to more than 50% of Indian exports to the EU, less than 33% of exports to the US, and 45% of exports to Japan. Non-tariff measures are often used in the cases of food, drink, and tobacco items in Argentina, Brazil, Chile, and Romania. In these nations, non-tariff measures are mostly used to preserve the health of people, animals, and plants, but in China, import inspection is one of the most often used non-tariff measures.

It is commonly accepted that sanitary and phyto-sanitary controls, when they seem to be implemented in an arbitrary or opaque way, are implemented to limit exports. Basmati and non-basmati rice imports to the US have often been refused due to lax sanitary requirements. The hand sorting of rice and weevil treatment are mandated by US rules. The European Union and Japan routinely bring up the subject of pesticide residues. Concerns about pesticide residues also apply to tea shipments to the EU. These issues must be appropriately handled via appropriate production and postproduction interventions, particularly if focus

clusters are being formed. TBT and SPS requirements are often revised in rich nations, a phenomenon known as "goalpost change syndrome," which makes compliance more challenging for the exporting partner, typically a developing nation. By defining the labeling criteria, registration processes, certifications and tests, quarantined requirements, and measures for food goods, India has engaged in the non-tariff measure regime. Around 14% of Indian agricultural exports are subject to simply NTMs, while 79% are subject to both NTMs and tariff restrictions.

Accords on International Trade

International trade agreements provide cooperating countries the opportunity to come to mutually beneficial conditions to advance commerce in a free and equitable way. When used comprehensively, they provide numerous options for the participating nations to attain greater gross domestic products and encourage specialization based on comparative advantage. They are intended to promote the increasing flow of commodities. But, if used indiscriminately, it may result in one-sided market capture.

Bilateral, multilateral, regional, and cross-regional trade agreements are all possible. The phrase "Regional Trade Agreement" (RTA) is a general designation for an agreement between two or more nations to treat imports of goods and services from the members more favorably than from other nations. Contemporary RTAs incorporate measures on investment, environment, labor, and competition in addition to tariff reductions and conventional trade policy administration. Preferential Trade Arrangements (PTAs), which are either unilateral concessions or reciprocal agreements, are another kind of international trade agreement (Preferential Trade Area). In a PTA known as a free trade area (FTA), trade restrictions between members are often decreased or removed. Common tariffs and other policy measures, such as loosened customs procedures, are frequently included in an FTA. Beyond FTAs, countries or regions might work together for further economic integration, culminating in complete economic partnerships or agreements for cooperative action. They include the Regional Comprehensive Economic Partnership (RCEP), the Comprehensive Economic Partnership Agreement (CEPA), and the Comprehensive Economic Cooperation Agreement (CECA) (RECP). A common market is a trading area with unrestricted movement of people, money, and other resources.

Trade agreements provide opportunities to join new markets or increase market share, but they also provide the potential for a boom in imports of agricultural goods for which India agrees to lower its tariff rates. The price of agro-commodities in local markets drastically declines as a result of the spike in imports brought on by import duty reductions combined with the large domestic output of the relevant crop. The farmers' anticipated revenue takes a blow, which is the unpleasant side. A protective safeguard against import tariff reductions of crops that pose a threat to the country's way of life as a trading partner in RTAs is the announcement of a specific, sensitive list. For instance, India has created a lengthy "Negative and Exclusion16" list of 489 items, including 303 items related to the agricultural sector, in order to protect the interests of both its business and its farmers. On the one hand, this would safeguard Indian farmers against an increase in imports from ASEAN, but on the other side, a comparable list from ASEAN would imply no opportunities for Indian agro-exports.

Framework for Export Promotion

It is advised to develop a comprehensive and effective structure for promoting agricultural exports. Whenever it is environmentally possible, Indian agriculture rises up to match the expansion in demand, even if shifts and increases in consumer demand during a given time may need supplies via imports. The fact that the farmers are also able to meet linked demand

via exporting makes this rise in output more relevant. The export supply chain must be actively managed, as shown in figure 3. If those markets are researched and customer preferences are more accurately mapped, any connection to those markets is made more relevant. Nowadays, it seems that the majority of export promotion initiatives aim to expand into international markets. The government encourages participation in exhibits, however these events primarily serve as a showcase for Indian products.

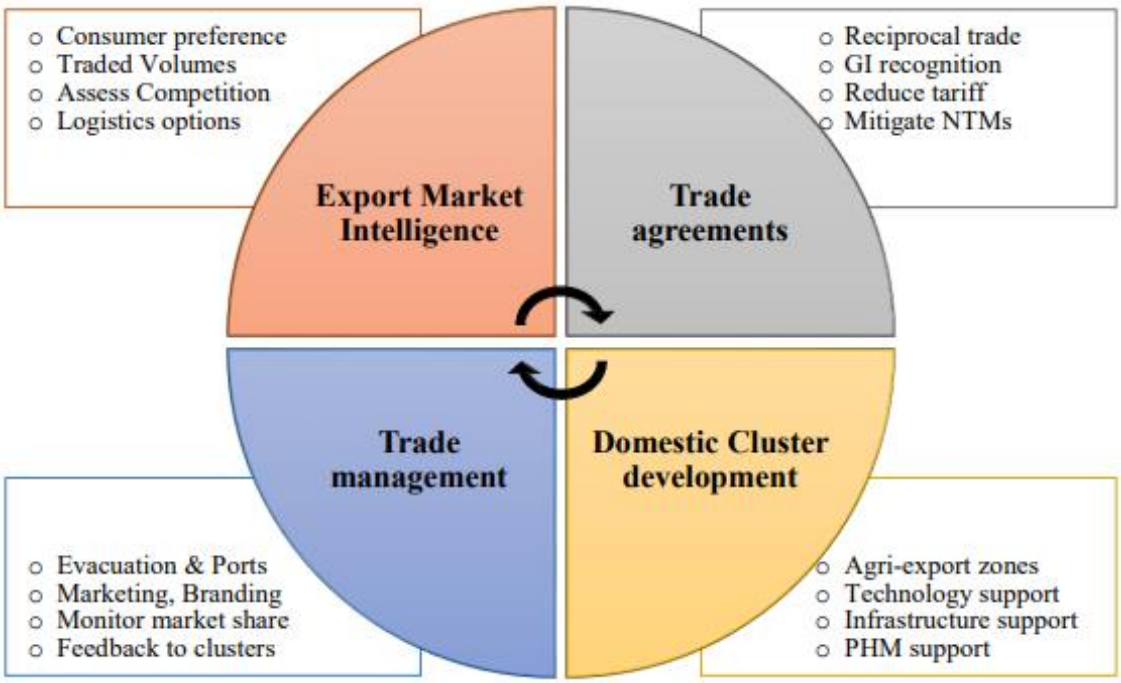

Figure 3: Illustrate the Managing the export supply chain.

There is a need to provide assistance via market intelligence, which would entail monitoring changes in market dynamics at each importing partner countries, to make export promotion operations targeted and result oriented. The DFI Committee suggests changing export promotion from a push mode to one that responds to market pull.

Market Knowledge

Lack of understanding of the differences in home customer desire (taste and quality) may be blamed for the inadequate representation of Indian agricultural produce and agricultural goods on international retail shelves. What is popular in India could not be what global customers want. For instance, even though the AIFTA helped lower the tariff on Indian rice, exports did not increase proportionately since ASEAN citizens favored sticky small-grained rice rather than the long-grained kind manufactured for Indian customers. Similar to this, in many nations where consumers prefer green, unripe mango, the greater degree of sweetness in mangoes advertised from India may not necessarily be in demand. Export growth goals must be achieved by developing goods that are in demand worldwide rather than just promoting Indian production. Exports must increase with the goal of increasing market share in already-existing import markets and by snatching up new markets.

India may grow its market share in its current trading partners by either diversifying into the supply of additional produce or product categories, or by matching the price and quality requirements of a certain produce or commodity. By driving early supply, commerce may be grabbed in new areas that India has yet to explore. Situational study of the demand and preferences of the international market improves the likelihood of success in both situations.

The exercise in trade intelligence would also need surveillance of other trade agreements, changes in purchasing habits, rules, and certification criteria (pesticides, MRLs, labelling, additives, etc.) Regular evaluations of the competition from other exporters, the convenience of doing business, the attractiveness of the market, and the cost-benefit analysis of export promotion in the target nation should all be part of the study.

Management of Trade

Once trade has started, it must be carefully watched to ensure effective management. Domestic obstacles will be crucial for facilitating evacuation from ports. It will also create a favorable environment for agricultural commerce to set aside portions of ports or whole port zones for agri-export and -import. Regular monitoring of India's market share in a target nation would be crucial for trade management. Any decrease in trade volume must be assessed. If a rival variety or product is to blame, manufacturers should be informed so they may make adjustments. When another exporting nation interferes with commerce that India has already completed, the situation has to be reported and looked into. Individual exporting businesses would typically handle marketing and branding outside, but the government may provide guidance for an India brand image structure. It would also be watched and advised on how manufacturers and exporters should react to altered dynamics in the importing nation. State departments, agricultural institutions, and other support organizations would be able to target specific outcomes in their activities.

Grouping of Production

Ten clusters for export-based production have already been identified by APEDA and the Ministry of Agriculture, Cooperation, and Farmers' Welfare. Ten more can be found and developed. Yet, in order to deliver kinds and quality in accordance with the aforementioned demand assessment, these clusters or producing zones will need priority technical assistance. A cluster strategy offers farmers a number of benefits. They benefit from economies of scale, superior post-harvest logistical assistance, and more certain market acceptability since they are producers of common quality and variety. Support for the manufacturing clusters would naturally come from market-linked SPS compliance, which would deliver appropriate traceability, quality, diversity, packaging, and labeling. There will be two different kinds of consumers of the product from these clusters.

Both the national producer of export goods and the global buyer of fresh food. As a result, these clusters will provide preconditioned product for export markets as well as raw materials for processors. Hence, both completed items and fresh entire food would need to be equally promoted under the export promotion strategy. The final commodities include things like processed meats, cotton textiles, leather goods, milled foods, mango pulp, jams, pickles, processed food items, and more. Items like potato, mango, litchi, different veggies, fresh meats, flowers, raw spices, etc. are among the full food products from India. There is a propensity to overlook farmer exports in favor of manufactured agro-products, despite the fact that both outputs are in demand and the first really offers greater direct advantages via market capture and scale at the farm gate. To prepare and package the exported product for shipping to other lands, the export would need the necessary post-harvest management assistance[10].

Agreements for Trade

The direction of agricultural commerce may be significantly influenced by international trade agreements. On the other hand, they must be influenced by market data and coordinated with existing agricultural development initiatives. It is clear that commerce cannot take place in a

one-sided manner. One-way traffic only has a negative financial impact on the full sequence of events. Planning is thus required for cross-product, buy-back, or reciprocal traffic agreements. It might be advantageous to reevaluate a contract that was initially formed to guarantee the supply of a certain item in light of recent advancements in agricultural productivity. Recognizing geographic indications (GI) and abolishing trade restrictions (price and non-price) can also assist increase the competitiveness of Indian agriculture.

Effects of WTO

For the management of economic interactions among its members, the World Trade Organization (WTO) offers a standard institutional structure. Governments are permitted under the agreement to help their rural economies, but ideally using measures that create the least amount of trade distortion. Member nations agree, among other things, to lower and "bind" the rates of respective custom duties on imports of products. A handful of items have tariff rates that are "bound" (committed and hard to raise), making this rate essentially a ceiling rate. In order to modernize trade in the industry and make regulations more market-oriented, the WTO Agreement on Agriculture (AoA) was enacted. AoA's guidelines and obligations pertain to:

- Market access different trade barriers that imports must overcome.
- Domestic assistance, which includes subsidies and other initiatives that boost or ensure farmgate prices and farmers' earnings.
- Export subsidies are expenditure and quantity restrictions as well as other strategies used to artificially boost export competitiveness.

The tariffs on all agricultural products are now "bound," and "tariffs alone" is the norm for market access for those goods. A process known as "tariffication" has transformed almost all import restrictions that previously existed as quotas or other non-tariff measures into tariffs. As a result, agricultural markets are now far more predictable. Formerly, quotas or import restrictions applied to more than 30% of agricultural products (cotton is a typical case, for example). In order to "tarifficate," limitations like these were first replaced with tariffs that provided about the same degree of protection.

Agriculture Trade Development Restructuring

A robust Trade Analytics Cell must be a part of the government's efforts to strengthen the agri-trade sector. This analytics cell would direct the promotion and development operations based on routine examinations of export markets, provisions for trade facilitation, and the responsiveness of production clusters. Promotional efforts will continue to be a stab in the dark without such information and feedback. Government should stop sponsoring exhibitor items and instead concentrate on setting up and enabling frequent business meetings, partnerships. And the establishment of delivery mechanisms. The study will be a crucial tool for decision-makers and in trade. It is important to provide a unified set of standards and evaluation tools so that nodal users are not forced to interpret metrics that were developed randomly and individually.

The export promotion organizations should concentrate their efforts on production clusters and ideally educate consumers about regulatory compliance, traceability, packaging, and labeling as well as serve as a focal point for producer input. Local SAUs/KVKs may provide technical guidance, and the state government can provide infrastructural assistance. Using geographic indication and producing superfoods with a focus are major areas of emphasis (see Annexure A10). It is necessary for Indian embassies and high commissions to actively promote agribusiness. A professional agricultural trade officer with a clear mission to boost

agri-trade helps improve embassies. Also, the officer would actively watch and guide any new Indian competitors that entered that sector. To solve problems, facilitation with host authorities would be necessary. Any bottlenecks encountered should, wherever feasible, be reported back to India for appropriate corrective action.

A Trade Aggressiveness Strategy

With the aim of boosting agricultural exports and incorporating Indian farmers and agricultural goods into global value chains, the Government of India is now announcing its first Agricultural Export Policy (AEP). It is important to keep in mind that there is a growing emphasis on productivity improvements across subsectors, which will lead to greater production and need connections to new markets both within and beyond the nation. So, it's crucial to have an aggressive export strategy for agriculture. By 2022–2023, agricultural exports should increase by around three times in order to achieve the objective of US$100 billion in exports. Moreover, the range of goods exported should go beyond only meat and wheat, which now make up the majority of exports. As previously stated, as part of an aggressive agriculture trade strategy, export promotion should include inputs on the regulatory changes in potential foreign markets and the resolution of market access issues by taking them up with relevant bodies in host countries. This is in addition to market intelligence on the potentials that exist in foreign markets.

So that commerce may be appropriately planned for the long term, import restriction requirements can be constructed on pre-determined supply signals, particular to crops and for times of the year. For instance, it may be stated that an import tariff reduction of 5% would be taken into account if the production of a certain commodity is predicted to be 5–10% lower than the moving average of the previous three years at the time of initial production estimates. Likewise to the opposite, imports will be restricted if output is anticipated to be greater than 5–10% of average. Unless the supply situation changes by another 5% to the contrary, the status would last for at least six months. It is possible to identify several parameter combinations that are particular to commodities. Such pre-determined triggers will increase transparency, provide the trade the ability to prepare planned modifications to supply dynamics, and so enhance their connections with international trading partners. For this aim, the pricing and demand forecasting method will also provide pertinent demand-supply knowledge. In order to support goals for productivity growth, the government must reevaluate its agricultural trade policy and restructure the system to provide the agricultural industry greater flexibility to develop foreign markets. Producers are prevented from setting long-term goals for foreign commerce while export windows are closed. Export restrictions have both short- and long-term negative effects on developing export markets. Exports must be vigorously encouraged and, ideally, should not be a tool for price control. Exports may increase consumer demand for local goods and raise market prices, which is good for farmers[11], [12].

The Uruguay Round deal culminated in the establishment of a two-tier tariff system with import quotas, which gave rise to a novel class of economic impacts known as tariff quota rentals. You can choose a nation and a product from the options to specify the take rate of these fees. In ATPSM, the makers from the selling nation receive 100% of these fees by default. There is a lot of room for the assessment of trade policy ideas by analyzing outcomes from various situations because the model generates numbers for all these projections, by nation, by area, by product, and by policy scenario. Users can investigate the impacts on the nation or product that most interests them. As an alternative, it is possible to focus on the general impacts of the proposed trade policies and form suggestions using a comprehensive study.

Interpretation of the impact on the economy

The paradigm lacks a temporal component, as was already mentioned. Therefore, it is impossible to draw any conclusions about how long it would take for the economic impacts to become completely apparent. According to the common understanding, the execution will take place over a number of years, with the economic impacts being long-term in character. On the premise of a 10-year time frame, the elasticities that control supply and demand reactions to price shifts have been calculated. Demand and supply both respond to changes in price in a timely manner, but at noticeably different rates. The former's answer is comparatively swift, with a complete response taking one to two years. However, based on the product, the latter's complete reaction could take anywhere between one and more than ten years. If trade obstacles were immediately lowered, the mismatch in the timeliness of reactions might lead to a brief state of instability. Due to the longer gap in supply reaction than in demand, there may be an exorbitant price rise or a significant decrease in stock levels. However, because agreed trade barrier reductions are typically spaced out over several years, the possible inequity brought on by varying reaction periods is probably not going to have much of an effect.

Specification of trade policies

In ATPSM, the percentage variations in local rates are used to determine changes in supply and demand. All taxes must be stated as a proportion of the price on the global market in order to calculate the percentage change in local costs resulting from changes in trade policy. Ad-valorem counterparts of specified and blended rates are created using ATPSM price reductions are represented in ATPSM as a proportion of the original price. The model's baseline strategy for enacting tariff reductions is to cut each duty by the same amount. Alternative approaches, though, have been proposed and used in prior sessions of negotiations. The Swiss formula, which converts increasingly higher proportionate tax savings into gradually higher duties, is one of these techniques. This technique can be used to model both general and targeted duty reductions in ATPSM. The Harbinson bands strategy and a predetermined Cancun or mixed recipe are some additional trims. Additionally, final taxes may be established at a maximum or a predetermined goal amount.

The approach quantifies export assistance and additional agricultural support as tariff ad-valorem counterparts. As a result, decreases in these provisions are calculated as percentages of their ad-valorem counterparts. The model has the ability to analyze changes in world trade policy, changes in particular country and commodity trade policies, or some mix of these. In any scenario, all nations and goods not given particular tariff reductions are subject to the worldwide tariff reductions. Volumes are used to convey tariff limits. A policy shift is described as a difference in limit stated as a number. More goods are now eligible for entry under reduced within-quota tariffs thanks to positive adjustments to tariff quotas.

Prices and tariffs

In the model, local prices are established as a result of support policies such as taxes, rebates, and limits as well as global market prices. Domestic rates do not behave independently. Margin for local commerce is also not taken into consideration. The nature of domestic rates is that of frontier trade costs. The farm (supply) price is an exception, as it may be impacted by additional farm price support over and above market entry support (such as deficit compensation).

A nation frequently imports and exports the same (aggregated) product in the ATPSM databases. Composite duties for calculating the domestic consumer and output price are

projected in order to account for this characteristic of trade statistics. Contrast this with other trade models that use layered import demand structures to decide domestic demand, which ask for an understanding of import elasticities also known as Armington elasticities between all foreign products. Although these elasticities are well known for their significance in deciding the results of trade models, little in-depth mathematical analysis of them has been done. The calculation of a levy on locally utilized output is the first stage in estimating this price.

This fee is thought to be the equal of the import duty and export tariff weighted by commerce. After weighing the tax for locally consumed output by domestic consumption and the import duty by imports, the domestic market price is then calculated as the average of the two. The producer (farm price) is calculated as the average of the export support and the domestic output tax, weighted by exports and domestic consumption, plus the tariff counterpart of additional farm support.

CONCLUSION

India is regarded as a developing country and as such depends on the specific exceptions made for developing nations in many international institutions, such as the WTO. The circumstances will, however, change, and in order to be prepared for the future, the different programs should gradually transform their strategy from input subsidy to investment assistance. Agriculture production has to have a more significant connection to international markets in order to accelerate the process of becoming a developed country. Limiting isolated activities like arbitrary opening and shutting of export and import windows is advised. It is necessary to have a more open trade policy that supports and promotes both exports and reciprocal imports. To coordinate the creation of policies, an institutional structure to align the priorities of the departments in charge of the consumer, business, and foreign affairs sectors may be formed. If foreign markets are not actively expanded, India's agriculture's enormous and expanding production base would stagnate. Reforming the structure of the agricultural market requires special attention, as do encouraging clusters that produce varieties with high export potential, facilitating evacuation from ports to foreign locations, and developing agri-trade relationships with complementary needs in cooperating nations. It is important to balance a singular emphasis on marketing Indian finished goods with an equal amount of attention paid to meeting global demand for Indian agricultural products. There is a sizable foundation of raw material production in agriculture and related industries, but it cannot expand further unless it is connected to international demand. Indian high commissions or embassies are in a good position to be a key player in promoting an ambitious agricultural trade strategy. Yet they will need the assistance of officers and personnel with relevant experience who are placed in the embassies and high commissions at the proper levels of seniority.

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CHAPTER 20

FISHERIES AND LIVESTOCK MARKETING

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ABSTRACT:

The primary agricultural exports of the nation are livestock and fisheries, which also provide a significant portion of farmers' income. As a result, farmers stand to benefit from the rising demand for animal food items. In contrast, the domestic marketing in these subsectors is quite lacking. Cattle-fish systems, pig-fish systems, poultry-fish systems, duck-fish systems, goat-fish systems, and rabbit-fish systems are examples of livestock-fish systems. In this method, the excrement of chickens, ducks, pigs, and cows is either recycled for use by fish or used as fish food directly.

KEYWORDS:

Agriculture, Business, Domestic Marketing, Fisheries, Livestock Marketing.

INTRODUCTION

For the total security of food and nutrition, crop-based agriculture and livestock production are inextricably intertwined and mutually reliant. Livestock ownership is more fairly divided, with landless laborers and small farmers holding the majority of the animals. The majority of the activities related to feeding, breeding, managing, and caring for the animals are carried out by rural women, who play a vital role in animal husbandry. According to the dictionaries, livestock includes cows, sheep, fowl, and pigs, among other agricultural animals that are farmed for profit and are considered assets. Livestock is defined by the FAO/WHO Food Standards Programme as "any domestic or domesticated animal, including but not limited to bovine (including buffalo and bison), ovine, porcine, caprine, equine, poultry, and bees reared for food or in the production of food. Wild animal goods obtained via hunting or fishing are not included in this definition.

Large and tiny quadrupeds, birds including poultry like partridge, pheasant, and ostrich), insects (bees), and insect larvae are the creatures that are being discussed (silkworms). Yet in the modern day, even scorpions and snakes are raised for their venom. Fish farms, which are farmed for commercial output and have become more common as inland fisheries have expanded, may also be regarded as farm animals. The DFI Committee views livestock generically as living stock or assets, of animals that are raised in an agricultural context, to provide products (such as meat, milk, eggs, wool, skin, feather, honey, etc.) and/or to create labor to support agricultural operations. Livestock marketing entails facilitating the exchange of the products and services derived from animals. Livestock marketing is distinct from the marketing of agricultural goods since agriculturally processed agricultural products may be sold by related sectors.

Produce and goods from livestock

The production of livestock may be roughly divided into the production of the animals themselves as well as the secondary products like milk, eggs, wool, hide, meat, etc. In addition to live animal trading, various livestock goods that are traded may be divided into three categories: by-products of livestock production, output from living animals, and products from killed animals. Whole milk (from cows, buffaloes, camels, sheep, and goats),

eggs (from hens, ducks, partridges, and ostriches, among other animals), wool, honey, beeswax, ahimsa silk, germplasm, and other products from living animals are examples of such products. Meat, offal, fat, skin (sheepskin, buffalo hide, pig skin, rabbit skin, etc.), fur, and other items made from slain animals are among the products available. Both dairy-based and non-dairy-based by-products of cattle production need additional work beyond initial gathering.

The major product (milk) from cattle husbandry is intimately connected with the dairy-based products, which also include butter, ghee, curds, cheese, whey, casein, rennet, ice cream, powdered milk, dried eggs, egg albumin, etc. The other by-products are connected to items made from slaughtered animals, such as meat preparations (dried, salted, canned, homogenized, cured, etc.), animal oils, gelatin (food and non-food), bio-extracts (cosmetics, life sciences, medicine, etc.), clothing (items made from leather, fur, or feather), composites (bone, feather, etc.), and much more. Several secondary sector products, including some processed foods, wax paper, crayons, margarine, paints, brushes, cleaners, adhesives, lubricants, candles, soaps, lipsticks, shaving cream, water filters, insulation, antifreeze, specific plastics and rubber, upholstery, vaccines, pharmacological proteins, floor waxes, sporting goods, etc., contain livestock by-products as an essential component. Livestock farming is a broad topic, much like other types of agriculture, and the products it produces have an impact on all facets of human existence[1].

Marketing Status of Livestock Products

It is expected that markets would promote development and facilitate commerce. Adding value to the product optimizes and aligns the output with customer demand and supports growth even further. It is becoming more widely acknowledged that the livestock subsector can support agricultural expansion. Such anticipated expansion might be hindered by manufacturers' inability to reach markets. Livestock marketing entails the exchange of a wide variety of goods derived from the husbandry of quadrupeds, birds, insects, and fish. Generally speaking, this relates to the marketing of the following: Living animals (cattle, buffalo, goats, sheep, and poultry) and livestock products are the first two (meat and dairy products) Live animal products (Milk, Egg, Wool). A different topic is the marketing of fisheries. Beekeeping and silkworm production (sericulture), which are mentioned in Volume VIII of this Report, are not included in this section since they are covered elsewhere. It is necessary to acknowledge the value of their marketing as well[2], [3].

The sale of Live Animals

Livestock markets in India have remained undeveloped, far less so than markets for crops-based commodities. This is similar to other agricultural markets in India. There are roughly 2,000 marketplaces for live animals, which are controlled by local organizations like Municipal Corporations and Gram Panchayats and are under the purview of state governments. The majority of these marketplaces are unreliable, lacking in fundamental infrastructure and marketing tools, and having opaque transactions. The infrastructure that is readily accessible plays a crucial role in handling live animals in a way that complies with animal welfare standards and preserves the animal's health. After being traded, animals must be transported between marketplaces as well as to the end consumer. The live animals must not be treated like other "freight" while trading at such market centers, hence great care must be given. Nonetheless, the cost of transportation and the transaction will increase. A significant number of live animals, mostly small ruminants (sheep and goats), are traded between livestock producers and between farmers and middlemen. For onward sale to bigger dealers, slaughterhouses, and butchers, intermediaries gather animals from farmers. Small

ruminant producers and intermediate dealers do the majority of their business together. In general, large livestock producers have direct access to organized marketplaces for selling. Small farmers may sometimes bundle their products together to sell to big consumers. Small communities also have butchers and shopkeepers that buy live animals straight from farmers. Direct sales to end customers are uncommon, except in the case of growers of fruits and vegetables. Several factors contribute to cattle farmers' poor market engagement. The excess that is sold is often tiny, and markets for live animals are few, erratic, and frequently located distant from the production centers. They raise the price of transportation and related costs, such as housing for animals, as well as the opportunity cost of time. A further factor discouraging farmers from bringing their animals to marketplaces is the absence of basic amenities for both humans and animals. The majority of livestock raised by smallholder farmers is marketed by non-farming entrepreneurs who act as a marketing chain, gathering, pooling, and distributing the livestock products to wholesale purchasers and the food processing sector.

Livestock marketplaces are anticipated to make it simple to transfer cattle, notably by facilitating the paperwork needed to assure safe travel. Buyers and sellers bargain over the prices of live animals, particularly ruminants, taking into account the qualities of the animals, including age, body shape, attractiveness, breed, yield, and health. There isn't, however, a unified standard that applies to all of the specified criteria. Similar, albeit more organized, marketing is used for poultry live birds when the producers have incorporated their product into the supply chain of the poultry processing business. The majority of live broiler and egg commerce occurs between farmers and merchants, either directly or indirectly via commission agents, at specific marketplaces or at the farm gates. Broilers are bought by retail merchants either through wholesalers or directly from producers. The amount of direct sales between manufacturers and consumers or retail merchants is rather small. Poultry cooperatives assist with marketing as well, although to a lesser extent, in certain states. Local markets at the community or district level that operate irregularly and may only sell a few dozen live birds per day may be compared to huge wholesale markets with a daily throughput of thousands of poultry, where hundreds of birds are sold, killed, and butchered every day. In the main producing areas, poultry marketing has seen a dramatic transition. Poultry contract farming has become quite popular, moving poultry toward industrial farming[4]–[6].

DISCUSSION

India now leads the world in beef exports, albeit carabeef (buffalo meat), which shows a strong network of supply and marketing channels. The domestic marketing system, nevertheless, does not show that these items are of the same quality or standardization. India exports a variety of animal meat products, including processed meat (USD 2.1 million), sheep/goat meat (USD 130 million), chicken goods (USD 79.5 million), and buffalo meat (USD 3.9 billion) (USD 0.69 million). India's top export destinations for buffalo meat and other animal products include Vietnam, Malaysia, Iraq, Algeria, Egypt, Indonesia, and the United Arab Emirates. The Maldives, Indonesia, Oman, Saudi Arabia, and Russia all import poultry. The current state of meat exports suggests that more work may be done to get a bigger market share globally, giving local farmers additional opportunities to earn money. Large export presence has shown the country's capacity to maintain standards; thus, an improvement in domestic marketing is also possible and is primarily attributed to one of the lowest per capita meat consumption rates in the world. Health concerns about meat consumption have an impact on exports, and the indiscriminate use of antibiotics, particularly in chicken, is a significant problem. 3% of the world's use of agricultural antibiotics is consumed in India, making it one of the major consumers. The unchecked use of antibiotics

on farms raises concerns even if they help with intensive food production. Standards for the tolerance of antibiotic residues in chicken have not yet been set in India, despite the fact that there are similar guidelines for seafood.

Beginning in Delhi, hatcheries sold day-old chicks to farmers, who then nurtured them and sold them to dealers. Live broilers provide meat that is tender, are more productive, and within ten years were recognized as a food product. The broiler industry began to spread globally and eventually concentrate in South India due to the movement of parent stock, hatching eggs, and day-old chicks. Usually, live broilers are not transported over great distances. Demand will drive future domestic meat market growth from a farmer's revenue viewpoint. The organization of the meat processing sector and its marketing, however, is anticipated to be impacted by the health ministry's food safety actions. The bulk of domestic meat consumption now occurs in the fresh format, through retailers/butchers. The majority of the meat is offered in fresh cut style, with the meat being dressed by the neighborhood butcher as needed.

The bulk of customers, including both infrequent purchases and frequent diners, have not adopted precut and packed meat as they have in western nations. Domestic customers prefer freshly cut meat from corner shops over processed and pre-cut meats for a number of reasons, among them the distinct cooking methods that historically entail several steps in contrast to grilling or roasting meat. In the Indian meat sector, fresh meat sales are anticipated to remain dominant. The market share of processed and unprocessed meat consumption in India was examined in a 2012 report on Indian Agribusiness18 by the Boston Consulting Group. It shows that the majority of the demand for meat was satisfied by the fresh or wet markets. Nothing has altered since then, and market ratios of processed to unprocessed meats have stayed quite constant despite consumption rise. In the case of bovine meats, the majority of the processed volume is for export markets[7], [8].

It is important to remember that the supply does not need a complex cold-chain with all of its expenses and risks if the live chicken is kept disease-free and carefully cared for until the point of consumption. Moreover, the meat is safe for ingestion. However if the byproducts and unusable offal are not effectively caught, such a procedure might produce waste. The expense of transporting live birds, together with the costs associated with shrinkage and death, also places restrictions on interregional transfers. So, rather of having a nationwide reach, poultry markets are localized. Interventions by the industrial sector have hindered the ability of low-cost manufacturers to sell their goods in more expensive marketplaces. Consumer demand may be further increased by cutting expenses and advertised pricing. Farmers would benefit because they could raise output in a safe manner as a result of the rise in demand. The poultry sector, however, is one of the most organized, and a recent analysis by ICRA in March 2018 shows that the rise of the broiler volume is purposefully controlled at lower levels by the organized participants in order to regulate the supply and assure fair broiler realisations. Given the widespread acceptance of chicken meat, this approach may be holding back quicker development in domestic consumption.

But, lower pricing would spur domestic demand, resulting in much higher sales volumes and a reduction in fixed costs throughout the whole supply chain. While numerous predictions state that Indian consumers may someday choose to switch from eating unprocessed to processed beef, the reality of the market's existing preferences cannot be ignored. Hence it is crucial to organize the supply chain into the fresh or unprocessed market, which will directly help farmers. Instead of waiting for a long-term change in consumer preferences and an increase in demand, farmers should be given the tools they need to increase their share of the market. The expense of sustaining cold chain temperatures is partly to blame for the existing

demand-supply imbalance in the meat processing sector. Meat processing and preservation also demand a lot of money, which drives up expenses and forces meat dealers to raise prices. Sometimes these choices are justified by worries about food safety. Yet, the fresh meat is secure for a short period of time as long as the living animal and harvested corpse are maintained sanitary. The meat is often collected and supplied every day because of fast selling cycles, which guarantee that stock is not stored for an extended period of time. Just around 1% of chicken meat is processed into value-added (ready-to-eat/ready-to-cook) items, making up the five to six percent of poultry meat marketed in processed form. The rising demand for chicken meat presents producers with a chance to increase volume in their current markets, however. Due to the low social stigma associated with eating chicken meat and the fact that it is generally more inexpensive than other meats, the poultry industry is growing[9], [10].

By connecting the source with local demand for fresh meat, start-up entrepreneurs may organize the consistent demand from urban centers to offer a service to both farmers and consumers instead of creating long-distance supply chains. This is seen by the expanding use of ICT platforms to organize the distribution of various perishable items. Small-scale farmers may produce broilers via contractual agreements with a business that will then deliver the chicken straight to the housewife, eliminating the need for intermediaries. Farmers currently use this system, which yields greater and more reliable returns than more reliant and unpredictable crops. Milk has significant marketing and transaction costs, but dairy cooperatives have done a good job of connecting farmers to markets, particularly in Gujarat, Maharashtra, Karnataka, Tamil Nadu, and Kerala. Unsurprisingly, these states have a substantial portion of rainfed farming. Less than 7% of the milk produced is reportedly purchased by cooperatives in the majority of other states. In Uttar Pradesh, Punjab, and Haryana, where more than 50% of the commercial dairy processing facilities are located, the private sector is more prevalent than cooperatives.

These were the states where the pre-reform period had not seen the development of dairy cooperatives. As economic liberalization began in the nation in 1991, the dairy industry was also made available to the private sector. It seems that the private sector expanded significantly in states without strong cooperatives. As milk is a homogeneous product, it is easily organized via the establishment of collecting or pooling stations, which then allows it to be distributed to customers and enterprises that prepare food in the most cost-effective manner. This aggregation and supply strategy has been adopted by dairy cooperatives as well as processors in the business sector, leading to the creation of several hubspoke sourcing and delivery networks. Growing has been sped up by connecting milk farmers to domestic markets. A strong supply chain and rising demand help shield Indian farmers from price collapses on a global scale, as was seen in 2015–16. In India, where a significant section of the population is lactovegetarian, milk and dairy products have cultural importance in the diet. The demand for milk and dairy products is income-dependent, and it is anticipated that rising per capita income would result in higher demand for these items.

By supporting village-level capital products such bulk milk coolers, milk cans, etc., the pooling points are enhanced. This method has improved milk quality and increased openness and fairness in the milk procurement process. Private businesses also operate in this industry and compete with farmers. Also, the rivalry has given farmers financial advantages and increased openness. Only in 1991, when the nation began its economic liberalization process, did the private sector find a way into this market. Up until that point, the dairy industry was a cooperative, shielded from foreign competition by import limitations and from internal rivalry by excluding private participants. By ensuring that the milk can safely travel over

greater distances to processors, marketplaces, and consumers via the use of proper technology, producers are now able to offer their products to a wider audience. Increased selling volumes, output, and earnings were all made possible by the wider marketing reach. The pooling and cooling of milk is handled by farmers' cooperatives, and in certain circumstances, they also handle the processing, packaging, and selling. The milk is offered in a variety of forms, including liquid milk, ghee, butter, beverages, desserts, etc. The market is nationwide in India, and the supply chain is dynamic, sometimes replenishing the fresh milk supply twice daily. There are obstacles and concerns that prevent smallholder farmers from participating more fully in the marketing system. There is concern that as the private sector expands in the milk production and selling sectors, small-scale farmers would become marginalized. Even if there is evidence that smallholders are not entirely excluded from these systems, finding and supporting appropriate institutional frameworks that will not disadvantage smallholders remains a problem. One such alternative is contract farming, which enables smallholders to incorporate their products into the distribution network of processing companies. Farmers' cooperatives would benefit from focusing on revitalizing and reproducing the best practices, particularly those that prioritize selling farmers' produce over those that prioritize channeling agricultural inputs[11].

Marketing Livestock Interventions

Marketing is often linked to livestock production and productivity, the latter of which has an impact on the economics or cost of production. Several factors, such as providing grazing pastures, improving breed and feed, bettering raising procedures, etc. are covered in Volume VIII-D of this Report. In order to advance livestock farming at this level, it is critical to address issues like standardized market criteria, streamlined access to markets, livestock health and safety, human and animal biosecurity, and general postproduction cycle business ease. Livestock marketing encompasses both the trading of live animals and the commodities derived from live animals. As much as sanitation and the safety of vegetables and livestock products, maintaining living animals should also prioritize their wellbeing. Farmers exchange live animals, mostly for breeding, agricultural labor, or to expand on already-existing livestock assets. Live animal commerce also takes place between farmers and the companies that prepare their meat, which focus on the meat as their main product and provide leather, blood, and other byproducts to other businesses.

Local butchers and shopkeepers that shop at the wet market also purchase live animals. As the majority of livestock owners are small-scale farmers, one of the main interventions will be to make it easier for them to gather and convey their assets to retail consumers. Via the Gramin Agri-Markets (GrAMs), which are covered in Volume IV of this Report and referred to as Main Retail Agricultural Markets, such organization is also planned for crops (PRAMs). Production-improving strategies have pushed feed and production economies of scale, but the output marketing mechanisms have not received the proper attention. The markets have remained unregulated and sometimes take advantage of small producers. This discourages them from implementing contemporary methods and cutting-edge technology. The high number of small livestock owners will profit from easier market access and communication.

State governments give the growth of the wool industry little emphasis.

a. A lack of available grazing land forces breeders to move their herd throughout the country throughout the year.

b. The sheep breeders' piecemeal value capture, including the selling of raw wool, live sheep, dung, milk, mutton, skin, etc., without maximizing the value of value capture across all potential outputs.

c. Low productivity per animal and insufficient production of speciality fibers like angora rabbit wool and pashmina goat wool.

d. Absence of contract farming and the corresponding drive to adopt contemporary techniques for animal management, such as machine-shearing sheep and washing and grading raw wool (a Model Contract & Servicing Act, can be expected to support contracts in this area).

e. Insufficient infrastructure and facilities for the selling of raw wool.

f. State organizations responsible for marketing wool in states that produce it perform ineffectively.

Marketing for Fisheries

With 995.1 thousand tonnes in total and a value of 5.4 million US dollars, fish and fish products are now India's biggest category of agricultural exports. Around 20% of the agricultural exports and 10% of the nation's overall exports are accounted for by this. Products made from more than 50 distinct varieties of fish and shellfish are shipped to 75 different nations. On the domestic front, the fish marketing system follows conventional and informal patterns, is mostly controlled by individual dealers, lacks modern facilities, and involves several middlemen between producer and customer. All of this lowers the effectiveness of marketing and the proportion of fishers in consumer rupees. Although having a lot of promise, domestic fish marketing is still very disorganized and uncontrolled. The majority of the time, fish markets of all varieties lack enough physical infrastructure and amenities.

Present state of the fish Processing Sector

India's fish processing sector looks to be well-developed and export-oriented. 380 of the 625 exporters that have registered are manufacturers, and 240 are merchant exporters. There are 481 shrimp peeling facilities, 371 freezing plants, 495 cold storage units, 7 canning plants, 16 fish meal plants, 11 surumi plants, and 1 agar-agar manufacturing unit in the seafood processing sector. Around 95% of the marine food processing facilities are located in 20 large clusters across 9 states. All marine food processing facilities must be certified as HACCP compliant (Hazard Analysis and Critical Control Points). Around 15% of all fish landed is utilized to export fisheries products. From the landing center or fish farms to the customer, the fish often travels via a network of wholesale, large, small retail, roadside markets, etc. The middlemen provide various services, including head loading, icing, packaging, shipping, processing, and preservation. The main level of value added activity is the sorting, grading, cleaning, icing, and packaging of fish. Fish are often graded and sorted by hand.

CONCLUSION

The subsectors of livestock and fisheries play a significant role in the expansion of Indian agriculture and farmer income. It would be desired to make a number of modifications, notably to increase small farmers' opportunities for revenue from raising poultry, fish, and small ruminants. Even while dairy products have attained enviable size and economies, the ongoing rise in demand for fresh milk necessitates additional optimization of milk marketing. Huge surpluses of milk powder are not as popular on the home market. The broiler component of the poultry industry is highly organized, but backyard poultry raised by small and marginal farmers needs more marketing assistance. By encouraging marketing start-ups or entrepreneurs to collect demand and connect it with supply from backyard farmers, the government may play a significant role. The sheep and goat industries may gain by

modernizing their supply chains and easing the sale of diverse byproducts. Modernizing market infrastructure is necessary across all sectors, especially for live animals to comply with animal welfare. The same is true for fisheries marketing. Livestock goods, especially fisheries, have excelled on the export front, taking a significant portion of the world market and placing India among the top exporting nations. A comparable degree of effectiveness, nevertheless, is not seen in the domestic marketing network. Focusing on food processing in the livestock and fishing industries is essential since the output cannot be sold to a larger customer base without the assistance of the processing sector.

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CHAPTER 21

MARKETING DRIVEN BY NUTRITION

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ABSTRACT:

Many crop varieties with great nutritional value and ecological affinity for India are not well promoted to indigenous customers. The population is increasingly dealing with nutrition-related health issues at both ends of the spectrum, obesity and undernutrition. This raises worries about long-term health decline, and this chapter discusses the necessity for nutrient-led marketing.Many promoted meals and beverages may contain excessive amounts of salt, sugar, or fatty fat.The best method for interacting with your community and clients is content marketing. With the right content, you can forge a genuine, enduring connection with your clients, solidly establish your brand as a market leader, and produce significant business outcomes.

KEYWORDS:

Agriculture, Business, Domestic Marketing, Marketing, Nutrition.

INTRODUCTION

For many years, there has been a nutrition crisis in India. Not only is the country self-sufficient in food, but it also produces surpluses that may be exported. Ironically, attaining adequate nourishment is still a goal. According to contemporary estimates, 37% of children under the age of five are underweight, 39% are stunted, 21% are wasted, and 8% are very acutely malnourished19. Undernutrition in childhood has long-term, generational, and irreversible effects. Malnutrition is a twofold problem for the nation. On the opposite end of the scale, overnutrition-related health issues are also present in India. After the US and China, India is the third-most obese country in the world, and 69.2 million Indians have diabetes, according to statistics from 2015. Nevertheless many people who have overeating symptoms nonetheless need micronutrients as a result of their unbalanced diets.

All of these data indicate that a significant portion of India continues to eat unbalanced, unnutritious diet, which may lead to undernutrition, overnutrition, or deficiencies in certain micronutrients. In addition, a lot of high-nutrition foods are produced in the nation, including grains, legumes, fruits, vegetables, milk, meat, and eggs. This predicament is the consequence of a number of things, including the inadequate promotion of high-nutrition foods made in India. Several of these food products may be produced economically and flourish in less favorable growing environments. They provide chances to advance both farmer income and excellent health. This shows that, in order to benefit farmers as producers and consumers alike, there is a need for creative and extensive marketing of high-nutrition food products made in India.

Indian cuisine saw a noticeable shift throughout the early stages of economic development, with a rise in the per capita consumption of fatty foods, salt, sugar, and artificial nutrients as well as calorie intake overall. They reflect the early rise in population relative prosperity. Demand for imports was also fueled by a penchant for professionally advertised goods,

notably vegetable oils. The next phase in consumer taste, however, turns towards more nutrient-rich and natural foods as wealth and education levels rise, according to worldwide experience and current local trends. This is already apparent in India, where the diet is becoming more varied and includes more fruits, vegetables, and meat-based foods. Nevertheless, this is due to a decreased per capita consumption of grain and pulses. The next stage of growth is when consumers start to prioritize organic or "green" foods as they become more environmentally and health-conscious. Food consumption changes have an impact on agriculture and its commerce. The population of the nation is also considerably undernourished, and given the wide socioeconomic disparities, the per capita consumption of calories, protein, and fat continues to be much below the ICMR's recommended guidelines. The consequence is that India's need for a variety of high-quality food items would increase noticeably in the years to come as a result of rising per capita income and urbanization. Such a desire for high-nutrient food kinds may be satisfied by Indian products rather than just those that are sold outside.

The DFI Committee believes that there are many nutrient-dense food products in India that are presently improperly promoted and that public knowledge of these products is sporadic at best. Hardy crops like millets, organically produced products, native animal breeds, and other traditional crops that are native to certain geographical areas of India and over which farmers have a right would all be included in a cafeteria of such goods and commodities. Even though market signals may not be in their favor, certain crops become unavoidable given established ecological circumstances. In this case, developing a demand for the farmers' products might start the monetisation process. It is important to support these kinds of crops and commodities by analyzing and verifying their intrinsic nutritional worth and distinctive qualities, spreading awareness via strong marketing promotion, and connecting them to organized retail, particularly portal-based retail. A substantial portion of customers often do not include nutrient-dense foods that are extensively manufactured in India on their plates, sometimes as a consequence of misconceptions. The food preferences of consumers are a reflection of their cultural preferences, eating habits, accessibility, cost, political views, and religious beliefs, not to mention their awareness or lack thereof of socially influenced judgments. For instance, the majority thought millets were only for the impoverished. Consumers' health and general physical well-being are also affected by the foods they choose to eat. It is important to increase public awareness of product that is both environmentally sound and rich in nutrients. This may be done by creating and actively executing pro-nutrition marketing[1].

The effects of consumer behavior on health

Consumption of nutrition is correlated with both the availability of food and the understanding of what foods to consume. The populace is impacted by a shortage of basic food and a lack of knowledge about the nutritional worth of food. To encourage a healthy nutrition-behavior among the populace, it is crucial to educate all residents on the value of a balanced and varied diet.

Examples of Underutilized Food

Consumer misunderstandings are often caused by a lack of accurate information, which must be addressed by promoting nutrition-based knowledge and trying behavioral adjustments. Urban customers, who are cut off from agricultural traditions, might sometimes be swayed by the names given to certain grains and pulses. For instance, some of the more nutritious cereals are unkindly and disparagingly referred to as coarse grains, which might give the impression that they are simple meals. The term "poor man's food" refers to pulses, despite

the fact that they are nutrient-dense, powerful foods. The "International Year of Pulses" was declared by the UN General Assembly in 2016. The UNECE and the Food and Agriculture Organization (FAO) had organized an event in Geneva to celebrate the extraordinary nutritional properties of pulses and to raise consumer awareness of the super food status of these wonder foods. The event was co-organized by Pakistan and Turkey, the initiating nations, as well as Brazil, Italy, and Namibia. Both domestically and internationally, there has to be a more concerted effort to spread and retain consumer awareness. One such example of a high-nutrition meal is horse gram, whose name may evoke an incorrect impression of it. The legume has been eaten since it was domesticated at least 5000 years ago in South India. It has a superb nutritional profile and is drought-resistant.

Also, they are said to be used to cure and even prevent infectious disorders. But, it is only because of a widespread bias against saturated fats that information regarding coconut oil has been kept secret in medical journals. When given priority and assistance, the coconut oil sector will not only supply raw materials, food, and cash, but also productive employment for people involved in the harvesting and processing of coconuts. Another superfood that the majority of Indian consumers mostly neglect is camel milk. Similarly, despite the fact that these goods are well within the means of a sizeable portion of the population, honey consumption is also extremely low among Indians. Many of the high-nutrient foods that are readily accessible nearby are eaten out of habit, even if nothing is known about their health advantages. Nonetheless, the populace eating these meals is being well-served by default. Although while foods like "sattu," a flour made from a combination of pulverized grains and pulses, have excellent nutritional value, their "cheap cost" reputation makes them seem unimportant.

The true worth of these foods has not been widely publicized in order to generate the necessary demand from the broader consumer population, particularly from cities. There are additional untapped options outside food, such as bamboo that has been mechanically processed for clothes and intimate apparel. Some of the plant's anti-microbial traits are carried over into these fabrics. Bamboo is said to be twice as efficient at using water as trees, and it can withstand extreme weather conditions including drought, flooding, and high temperatures. Contrarily, cotton is a thirsty crop that may use up to 20,000 liters of water to yield only one kilogram of product. Originally, bamboo was utilized for raw structural components, but contemporary technology enables the use of bio-polymers and very durable composite materials for a variety of industrial applications[2]–[4].

DISCUSSION

Changing customer demand from farm to Plate

Commercial food manufacturers often engage in food marketing with the goal of gaining a bigger market share as a regular practice for company development, while competing with other goods, or when releasing a new product. Commercial marketing, which inherently focuses on capturing value for the specific firm, is a value-adding activity in the commercial entity's value chain. By building brands and sales for commercially particular food products, both local and foreign, marketing is intended to captivate consumers. Its content may not always be pertinent.

The latest ATNI report20 on India, among other surveys and research, paints a bleak picture of the nutritional profile and marketing priorities of the leading food marketing corporations in India. The research advised that many packaged goods urgently need to have their sugar, salt, and saturated fat content reduced. Another suggestion was to refocus marketing on healthier food items and to encourage consumers to consume unhealthy, "indulgent," goods

in moderation on a limited number of times. Customers are susceptible to being persuaded by marketing messages while making purchases, and they often overlook alternative, better possibilities. From this perspective, there is a justification for brand-neutral advertising as an objective public good to promote the benefits of locally produced food products. The goal of such marketing should be to raise public knowledge of the nutritional worth of traditionally grown food in India. To accelerate the already well-established movement toward healthier meals, the message should be based on reliable information that is disseminated in an accessible way. A creative marketing strategy, a steep discount, or a convenient package of pre-cut, ready-to-cook veggies shouldn't be the only things that go into such marketing. In the area of nutrition, marketing will include many and extensive initiatives aimed at motivating and facilitating individuals to eat more healthfully. In addition, finding and disseminating confirmed scientific information on the high-nutrition food that is easily produced and environmentally compatible with sustainable production techniques would be required as part of the process to double farmers' income. Marketing as a public service would instead focus on teaching consumers about their options and assisting them in making informed decisions about why and what they should buy. The consideration of factors such as the ecological impact of the produce, the inherent nutritional value of the food, the effect on the farmers, and the various options to improve their experience, such as traditional recipes that are suitable for domestic palates, can all be considered when making these choices. As a public service, this can also take the form of knowledge-based mass media programs and is envisioned in the form of knowledge marketing. Its goal is to disseminate information that will persuade consumers to include a variety of locally produced foods with high nutritional value on a daily basis[5], [6].

In a few instances, a range of traditional meals of outstanding quality are also disregarded because of sophistry that links them to historical injustices. Societal assumptions that categorize it as a poor man's diet disregard its king-sized advantages. Such misguided and distorted notions will need to be addressed by active consumer education, backed by opinion leaders and public personalities as an essential component of marketing campaigns. Government marketing initiatives should also include campaigns to highlight the difficulties and expenses associated with food production, in addition to educating the public on the nutritional worth of vegetables. Customers often express excessive worry when fresh food costs increase during documented seasonal surges. Yet, the price of produced food items like ice cream, drinks, canned meals, juices, etc. is often proportional to the luxury or service received.

As a result, there will be a distinct demand from each state's food system for the nutritious foods that are now off consumers' plates. For instance, depending on regional production and demand, millets might be included to the PDS. Similarly, many well chosen crops may be included on the menus of different food-based welfare programs that are put in place at the state level. As an example, the Brazilian midday meal program permits the neighborhood schools to purchase any locally produced food. There are local versions as well, such as in Odisha where egg is added to the school's MDM and milk in Karnataka. It comprises grains, fruit, vegetables, meat, and eggs. Such developments increase demand for regionally distinct and manufactured food products. For nutritional promotion to have an impact on changes in eating behavior, the message must be reliable and aspirational. It is necessary to change how the general public views food according to its cost[7]–[9].

It's not necessary to understand the idea of "health food" as bland food. Food's intrinsic values and health advantages, rather than price, should be considered when determining food quality. Mass media may affect behavioral changes and boost demand for certain dietary

products. To raise consumer aspirations and understanding of nutrient-dense food options, a range of interventions may be devised. The decision-making for the health of their house rests with the homemakers, who are also the dietary gatekeepers. Hence, campaigns should focus on raising awareness of the homemaker demographic via chef promotions, internet marketing, including food blogging networks, and media outreach, among other strategies. Most people are aware that veggies are healthier than salty chips, that fruit is healthier than sugary confections, and that artificial preservatives and flavors are bad for you. Despite this understanding, people choose to engage in convenient and unhealthy eating habits. Moreover, the government may modify food and nutrient profile models to fit dietary guidelines and utilize the system to direct and monitor the nutritional content of packaged food firms' product portfolios[10].

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Despite this understanding, people choose to engage in convenient and unhealthy eating habits. Moreover, the government may modify food and nutrient profile models to fit dietary guidelines and utilize the system to direct and monitor the nutritional content of packaged food firms' product portfolios. Natural produce and foods with high nutritional value are already becoming more popular among consumers, with the pace of change varying according to their access to reliable information. By implementing a marketing strategy centered on functional foods, the government may hasten this shift toward better health via increased dietary consumption. The plan may make use of conventional wisdom, simplicity of production, sustainability of production, and value to farmers in addition to scientific food profiling. Richard Thaller, the most recent recipient of the Nobel Prize in Economics, has captured the attention of the whole globe with his support of behavioral economics. The important factors are not laws and regulations. Individuals make decisions based on what appeals to their minds and other sensibilities, regardless of the financial impact of such choices. In order for the nutrition-focused marketing to be successful, Thaller's "nudge" must be implemented in full.

CONCLUSION

As a result, there will be a distinct demand from each state's food system for the nutritious foods that are now off consumers' plates. For instance, depending on regional production and demand, millets might be included to the PDS. Similarly, many well-chosen crops may be included on the menus of different food-based welfare programs that are put in place at the state level. As an example, the Brazilian midday meal program permits the neighborhood schools to purchase any locally produced food. There are local versions as well, such as in Odisha where egg is added to the school's MDM and milk in Karnataka. It comprises grains, fruit, vegetables, meat, and eggs. Such developments increase demand for regionally distinct and manufactured food products. For nutritional promotion to have an impact on changes in eating behavior, the message must be reliable and aspirational. It is necessary to change how the general public views food according to its cost. It's not necessary to understand the idea of "health food" as bland food. Food's intrinsic values and health advantages, rather than price, should be considered when determining food quality. Mass media may affect behavioral changes and boost demand for certain dietary products. To raise consumer aspirations and understanding of nutrient-dense food options, a range of interventions may be devised.

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CHAPTER 22

MANAGEMENT OF AGRICULTURAL MARKETING

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ABSTRACT:

A better revenue for the producer is therefore assured by the market's expansion, which contributes to ongoing demand growth. A more effective and enhanced agricultural marketing system promotes the expansion of agro-based companies and the economy's general process of development. To increase the variety of products. To aid in the development of effective operations that improve product quality and customer satisfaction. To implement effective marketing strategies that can adapt to environmental changes

KEYWORDS:

Agricultural Marketing, Business, Domestic Marketing, Livestock Marketing, Management.

INTRODUCTION

The complexity of agricultural marketing systems has increased as a result of the expansion in production specialization. Due to the distance between the majority of agricultural product producers and consumers nowadays, a lot of intermediaries are required to provide essential services to get the commodity from the producer to the ultimate consumer. Hence, the goal of this module is to improve your knowledge of and abilities in managing the marketing of agricultural goods and commodities in a constantly changing, global economy. This introduction will help you comprehend:

a. The significance of marketing in the food and agriculture industries in emerging nations
b. What marketing is and how it works.
c. Why it's important to integrate marketing into all aspects of agriculture and food marketing systems.

Marketing concepts

Market strategy and marketing

What do the phrases "marketing" and "marketing system" mean to you? Marketing is described as a management philosophy that directs all organizational operations toward meeting consumer requirements and desires, hence assisting in the accomplishment of the organization's long-term goals. The agricultural and food marketing system includes the operations and the organizations that carry them out that are required to take advantage of market possibilities economically. Input, production, distribution, consumption, and regulatory subsystems make up the agricultural and food marketing system.

Marketing's purposes

Trade off duties

Buying and selling: These activities are directly related to negotiating the passage of title between a seller and a potential buyer. The actions involved in purchasing include looking

for, learning more about, assessing potential items and providers, and negotiating a purchase agreement. Finding and pursuing possible buyers, setting an asking price, negotiating the conditions of the sale, and other related tasks are all part of the selling function. The ultimate goal of every vendor is to satisfy the wants of its customer (buyer). So, when output is specifically designed to fulfill certain needs or market prospects, a farmer may be called to be market-oriented. For instance, a contract farmer who wants to supply a food processor that makes malted beverages with sorghum will only plant enhanced sorghum seed. It will steer clear of any inputs that might harm the sorghum's storage and/or processing qualities and will continuously look for new and improved inputs that will raise the perceived value of its product in the eyes of the consumer (food processor).

Physical processes

a. **Storage:** Maintains a balance between agricultural and food product supply and demand. In underdeveloped nations, agricultural output is often seasonal whereas consumption is typically year-round. Thus, storage is required to provide a smooth and, as far as is practical, continual flow of goods into the market.

b. **Transportation:** Getting the product to the desired location while keeping the cost of the production as a whole reasonable. In order to achieve timeliness, maintain output quality, and reduce shipping costs, adequate execution of this duty necessitates examination of various routes and forms of transportation.

c. **Processing:** When agricultural food is initially harvested, it is often not in a state that allows for direct distribution to the customer. Instead, it has to be altered before being put to use. The action of modifying the shape provides value to the final result. Green coffee beans are transformed into roasted beans, cassava is transformed into "gari" or animal feed, and whole fruit bunches are transformed into palm oil, all of which raise the commodity's value since the transformed product is more useful to the consumer.

Supporting actions

Standardization: the process of creating and maintaining consistent measures of the amount and/or quality of product. By allowing customers to be very specific about what they want and suppliers to convey what they are able and willing to give in terms of both quantity and quality of goods, this feature simplifies buying and selling and lowers marketing expenses. Without consistent weights and measurements, trading either becomes prohibitively costly or impossible. Agricultural product quality variations may result from manufacturing processes or from the caliber of the inputs utilized. Quality disparities may also result from technological progress. A buyer's evaluation of a product's quality is moreover often an indication of personal preference. So, white sugar is seen as "superior" to yellow sugar; long stemmed flowers are of "higher quality" than short stemmed carnations; and white maize is "easier to digest" than yellow maize. As an example, in certain markets, a tiny banana is believed to be somewhat "better" than a huge banana[1]–[3].

Financing: In practically every production system, there are delays between buying the essential raw materials (such as equipment, seeds, fertilizer, packaging, flavorings, stocks, etc.) and being paid for the sale of the products. Someone or some organization must fund the investment during these lag times. Taking on risk: Losses are always a possibility in both the manufacturing and sale of products. The destruction or degradation of the product due to fire, extreme heat or cold, pests, floods, earthquakes, etc. is considered a physical risk. Market hazards are those that result from unfavorable changes in the produce's value between the production and consuming stages. A danger is also a shift in customer preferences since it

might make product less alluring. All of these organizations, businesses, and people are responsible for assuming these risks.

Market intelligence is the procedure for gathering, analyzing, and sharing data pertinent to marketing choices. Market intelligence has the responsibility of lowering decision-making risk. The vendor learns what the client wants and needs via market information. A other way to learn is through observing sales or a lack thereof. Marketing research is useful in determining which items are suitable for the market, which distribution routes are best, how to advertise them most effectively, and what pricing the market would accept. Intelligence collection may be done by the seller or a third party, such as a government agency, the ministry of agriculture and food, or another specialized entity, much like other marketing tasks. Each of these tasks adds value to the final product and costs money since it takes resources to do them. The majority of businesses or entrepreneurs will find it lucrative to compete to offer the service as long as the value added to the product is positive.

Advertising Mix

The marketing mix, sometimes known as the "4 P's," consists of choices about the product, price, location (distribution), and promotion. The mix is the ideal admixture of marketing initiatives to guarantee client happiness. Consider your own exposure to business marketing strategies. Which marketing strategies entice or dissuade you to want to purchase a product from that company? The firm's marketing mix has the solution to the aforementioned query. The marketing mix's components are described here, however they will be discussed independently and in more depth in the following subjects. As follows:

a. **Product:** At three separate levels the core product, the physical product, and the enhanced product the product offering may be changed to have various market impacts. A product's primary constituents are not its physical components, but rather the advantages it provides to users. These advantages might have a physical or psychological component. In a developing nation, eating imported food might sometimes be more about status being perceived to purchase high-end, sometimes costly products than about having better physical attributes than local alternatives. The physical product is defined by its characteristics, standards, appearance, packaging, branding, and labeling. A third level is the augmented product, which is a product with extra service components linked to it? Examples include product trials, technical assistance, extended guarantees, and financing options[4], [5].

b. **Price:** Pricing should be determined in accordance with clear price goals. Payments, terms, discounts, contracts, and price structures are all factors in pricing choices. Packaging, labeling, and advertising might all be forms of non-price competition. Pricing must account for intended profit margins, manufacturing and marketing expenses. Pricing may be done in a number of ways, such as cost-based, demand-based, competitor-based, and market-based. Advertising, public relations, selling, trade shows, brochures, data sheets, and freebies all fall under the category of promotion. The choice of message to convey during promotion may be the most crucial. The message(s) must set the product and/or source apart. In order to do this, a company will look for a unique selling proposition, which is an element of the company's offering that others can't or won't advertise to clients but which is seen to be significant or alluring by those customers.

c. **Place:** Physical distribution, such as storage handling, transportation, and warehousing, both on and off farm, as well as functional distribution, such as wholesaling and retailing, are all parts of the produce distribution process. While

choosing a distribution channel comes within the purview of strategic marketing, actual activities inside the selected channels are operational in nature. Manufacturers, farmers, processors, and input stockists must promote directly to consumers rather than via channel participants. Channel members are more likely to perceive themselves as their customers' agents than as product suppliers' agents if they consider themselves to be anyone's agent at all.

DISCUSSION

Marketing for agriculture and food is Crucial

For the following reasons, developing nations must prioritize effective marketing of their food and agricultural products:

a. The largest industry in emerging nations is agriculture.

b. The biggest employer, a supplier of raw resources, and a consumer of produced products.

c. The expansion of the economy in emerging nations.

d. More urbanization, higher earnings, and more women working than ever before.

e. Increasing rural incomes in emerging nations.

f. The disparity in income between rural and urban locations.

g. Rural-urban migration.

h. Implementation of initiatives for market liberalization and privatization.

i. A decline in the public sector's involvement in marketing.

j. Increasing private sector involvement in marketing.

The relationship between agriculture and food is always changing. Farmers and consumers bartered goods and services in prehistoric cultures when they were from the same family or near neighbors, but as society advanced, new connections were added. Between the producer and the consumer, among others, were inserted commodity merchants, processors who turned products into food items, and retailers. The scientist is a relatively recent addition to the chain. During the last 50 years, scientists in the fields of breeding, biology, nutrition, and chemistry have significantly advanced agricultural productivity and food processing. It would seem that we have moved beyond the era of agricultural equipment, the era of pesticides, and now the era of biotechnology. We are seeing the birth of an agribusiness where agriculture and food have grown intertwined as the relationship between food and agriculture continues to change. Multinational corporations, for instance, are vertically integrated businesses with connections from agricultural production to retailing.The quality and variety of items produced by the food business will rise as disposable incomes rise and customers grow more affluent. What demands will thereafter be placed on suppliers by food processors? While looking for a raw material provider, food processors will have the following expectations of agriculture:

a. **Product quality:**In order to construct a lucrative company, food processors try to differentiate their goods in a manner that appeals to customers. Processors brand the distinct product after that to help customers identify it. Then, food producers may focus on increasing brand loyalty among consumers. Brand loyalty is often

only achieved by constantly providing good quality. The market often develops more complex wants as disposable incomes grow, making the quality of the raw materials even more crucial. Agriculture may anticipate that there will be a greater focus on quality where it is trying to supply the food business, which is trying to satisfy these more sophisticated demands and desires. Agriculture may also anticipate benefiting from higher returns from quality innovations[6]–[8].

b. **Cost:** The food sector is able to identify the lowest cost source for any given level of quality thanks to an expanded capacity to source raw materials internationally. This has been made feasible by advancements in communications and transportation, as well as by liberalized international trade regulations. Farmers in developing nations need to be aware of this recent and major shift in the competitive landscape of agriculture if they want to avoid being displaced by international competitors.

c. **Lack of seasonality:** Agricultural goods are typically produced and distributed in accordance with the seasons. Yet because to advancements in technology and animal husbandry, food manufacturers no longer need to base their production schedules on the changing of the seasons. Food enterprises that need a lot of capital cannot afford to pay hefty expenses for underutilizing their resources. As a result, farmers will have to compete by lowering the seasonality of their output.

d. **Reliability:** A food processor that has extensively invested in establishing its brand will be particularly eager to get suppliers that are trustworthy in terms of quality, timeliness, and price. Producers of agricultural goods will be scrutinized more and more for their dependability in each of these areas.

e. **Processing:** The food business will be expected to process food with growing ease. Cost reductions for capital equipment, labor, and inventory are essential goals across all businesses. For instance, farmers who can adhere to the "just-in-time" approach will help to lower the amount of operating capital and physical space needed by a processor. Farmers that are able to execute duties like post-harvest crop treatment or transportation, as well as a portion of the secondary processing, will have an edge. The food business may also benefit from crops and animals that are specifically developed or created to make processing easier, such as seedless fruits, featherless poultry, caffeine-free coffee, and low-cholesterol meats. In summary, those who can provide the greatest value and distinguish their offerings from those of other suppliers will have a competitive edge.

f. **Product Differentiation:** In competitive brand marketing, the food business must continually innovate to develop new goods that are superior to and distinct from ones already offered by rivals or themselves. Innovation has often been focused on the processing step. Despite the fact that this will still be a crucial area for innovation, food processors will increasingly have a tendency to search for modifications that are inventive in the agricultural product itself. This might be in the form of new flavors, a better texture, more appealing forms, etc.

g. **Aspects of health:** As food markets become more sophisticated, farmers will need to think carefully about the health effects of the crops they choose to raise. Nowadays, there are two components of health that must be considered. First, customers are becoming more and more concerned with the food's nutritional value, low fat/cholesterol, sugar, salt, and sugar content. Consumers are also worried about the techniques used to produce food, including the avoidance of

chemicals like pesticides, herbicides, and veterinary medications. This might result in a modification to the farmer's husbandry techniques, which would affect the price of the produce.

Agriculture and marketing come together to form the phrase agricultural marketing. Marketing refers to a set of actions involved in transporting the commodities from the point of production to the point of consumption. Agricultural, in its widest meaning, refers to activities aimed at using natural resources for human happiness. Details on the topic of agricultural marketing include producer surplus, price spread, market integration, agencies, channels, efficiency, and cost. The agricultural marketing system serves as a bridge between the agricultural and non-agricultural sectors. In the past, subsistence agriculture was practiced in India; the communities were self-sufficient, and residents traded products and services on a barter system inside the community.

Agriculture has taken on a more commercial nature as a result of the growth of transportation and storage infrastructure; farmers now plant commodities that sell for more money. As marketing encourages an agriculturist to boost investment and productivity, it is thought of as a crucial component of agriculture. As a result, there is a growing understanding that producing a crop or animal product is not enough; it also has to be marketed, and the simplest definition of agricultural marketing is the buying and selling of agricultural products. In the past, when the village economy was more or less self-sufficient and the marketing of agricultural produce didn't present any challenges because the farmer sold his produce directly to the consumer for cash or in exchange for goods, this definition of agricultural marketing might have been acceptable.

Yet, marketing of agricultural products now differs from what it was in the past. Agricultural output must go through a number of transfers or exchanges in modern marketing before it can be delivered to the customer. According to the National Commission on Agriculture, agricultural marketing is a process that begins with the decision to produce a marketable farm product. It involves all institutional and functional aspects of the market structure and includes pre- and post-harvest operations, assembly, grading, storage, transportation, and distribution. Three crucial roles were identified by the Indian Council of Agricultural Research as being involved: distribution, processing, and assembly (concentration).

Agricultural Marketing's Functions

There are many and diverse agricultural marketing activities. Regarding the precise commodities and services, the roles each function plays vary greatly. Moreover, it should be underlined that these tasks are necessary regardless of the organization, agency, or product they are done in conjunction with. These activities cannot be separated from one another because of their strong connections. As a result, there are three major categories into which agricultural marketing functions may be divided: Exchange, physical, and facilitative roles are listed in that order. Swap out duties the exchange functions of agricultural marketing are seen to be the most significant. They mostly consist of activities associated to purchasing and selling. Selling and buying are complimentary activities, and none can happen without the other. The buying function primarily include looking for sources of supply, putting items together, and doing tasks related to buying products, raw materials, etc. Selling is the procedure that increases demand or desire, locates the buyer, offers him advice, and negotiates a title transfer with him. Physical Capabilities these activities have to do with transferring agricultural product physically from one location to another or storing it for a while. Produce for agriculture must be transported from threshing floors to consumption

locations since it is not eaten where it is produced. Secondly, agricultural output cannot be done at will due to seasonal activities.

Only at a certain season and under a specific set of circumstances is this possible. On the other hand, there is year-round demand for agricultural products. There must thus be a technique through which the produce from the previous year may be utilised all year long. Large-scale storage and transportation facilities are needed for this. Nevertheless, storage procedures may be carried out by the producer, processor, distributor, or even the consumer, and they may occur anywhere along the distribution channel from production to consumption. (3) Supportive actions As implied by their names, these tasks do not entail the handling of the product or the transfer of ownership of products, but rather they aid in the efficient performance of the aforementioned tasks. Classification and grading functions aid in classifying and sorting out goods based on factors like size, quality, color, weight, and other factors. Because of how simple it is to determine pricing, both the producer and the buyer are guaranteed a fair profit while still receiving high-quality food with no hassle. Then, there is always a delay between the production of goods and their sale in the marketplaces for consumer goods.

Someone's funds are still invested in equities throughout this time. The result is the financial issue. The role of market intelligence has become even more significant due to the rising distance between the place of production and the place of consumption. This job requires gathering, analyzing, and distributing market news to other agencies, including producers who live in the country's interior. This aids the government in developing plans and programs for the manufacture and promotion of goods. Last but not least, no firm can exist without taking on the inherent risk that may result from a drop in price, bad debts, or the degradation of the product itself due to fire, flood, etc. Someone in the channel must take these risks. Insurance may be used to address physical hazards, while hedging operations are used to manage price-related risks.

Market Organization for Agriculture

Let's talk about how agricultural marketing operations are structured so that we may learn more about it. This necessitates having a thorough awareness of the many kinds, structures, and actors in agricultural markets.

Market classification: The following are some of the different criteria used to categorize agricultural markets:

1. Recurrence the markets may be categorized as daily, weekly, fortnightly, etc. based on how often they are held.
2. The categories of goods exchanged several marketplaces deal with various items. A few marketplaces may specialize on certain items, while others may deal with all products. These may be categorized as grain markets, cotton markets, fruit and vegetable markets, etc. based on the products that are exchanged there. In Ludhiana and Amritsar, references to "gur mandi, noon mandi, etc." are pertinent. While now also dealing with other items, they solely specialize on one particular commodity.
3. Transaction types: The agricultural markets may be divided into spot and forward markets based on their transactions. Only exchanges involving current prices are conducted on the spot markets, while commodities are exchanged for delivery at a future date on the forward markets. The futures markets mimic the stock market's futures trading mechanism.

Service Area: The agricultural markets may be categorized as Local, Central, etc. depending on the kind of region they serve. The central markets are situated in the city center and serve the requirements of the whole city or area, while the local markets solely serve the needs of the local people. The latter are substantially larger in both size and scope. Additional classification methods Nevertheless, it should be emphasized that these classifications are not rigorous, and some categories overlap with one another. Let's divide agricultural markets into primary, secondary, and terminal markets for the sake of this article.

First-tier Markets these are what the locals term "Haats," or monthly marketplaces. These often take place once or twice every week. These marketplaces convene on set days so that merchants may travel to the region. They are often held in public and by the side of the road in prominent or strategically located areas. These marketplaces are located in the production regions, and they mostly sell goods made in the nearby tracts. Small shops buy a portion of the product and then sell it to non-farming rural residents. A portion of the harvest may be sold back to the farmers themselves during the lean season. The remainder of the crop is bought by middlemen and transported to the wholesale market.

Together with agricultural goods, these markets also sell a variety of other items that rural residents need, including salt, tobacco, oils, gur, fruits, vegetables, spices, fabric, hosiery items, and decorations made of inexpensive metals. These markets typically service an area of 10 km, although it may be larger, ranging from 10 to 50 km, depending on the accessibility of communication and transportation infrastructure, the types of goods handled, and the market's position in relation to neighboring markets. These markets' primary purpose is to act as hubs for the assembly of regional products, but they also serve as hubs for distribution of goods for regional consumption. While these marketplaces are unstructured, they do provide the beneficial function of giving buyers and sellers a common location to gather. While these marketplaces are located in rural locations, the prices that govern them are impacted by the prices that govern the wholesale markets.

Supplemental markets these wholesale markets, also referred to as "Mandis," offer a consistent location for daily transactions. The work begins early in the morning and lasts until all transactions are complete. These markets are typically found in major trade centers, districts, and towns. They often have locations close to railroad terminals. In these marketplaces, shops called "Arhats" are constructed. These locations provide telephone, banking, and postal services. Terminal Markets, third at a terminal market, the produce is either eventually distributed to consumers, processors, or is assembled for export. These marketplaces are often found in large cities like Delhi, Bombay, Madras, and Calcutta, among others. These marketplaces have well-organized vendors that use cutting-edge promotional strategies.

Components of the Market

One may discover a lengthy chain of various functionaries starting with the farmers and going all the way down to the customer. Let's talk about these officials under two headings, namely. Local government employees Employees at the Mandi level. Local government employees large cultivators, village merchants, and itinerant traders are a few key players working at the village level.

(a) **Large Farmers:** The first category of market functionaries functioning at the village level consists of large-scale growers with sizable holdings and significant marketable surplus. They also have a tractor, carts, and other vehicles. Both their own extensive farming and the seasonal purchases made at the village level contributed to the enormous amount of marketable excess at their disposal. In

actuality, they build up buffer stock by acquiring grain throughout the season and reselling it in neighbouring "Mandis" thereafter. Small farmers either sell to them directly or via them whatever extra grain they have.

(b) **Village Shopkeepers:** In various regions of India, they are referred to as "Beopari," "Baniya," "Sahukar," "Paikars," and "Farias," among other names. At the village level, they represent one of the most significant assembling organizations. While they may operate with their own funding, in most instances they are supported by "Arhatias" or "Arhatdars" or other sizable wholesale dealers at centers for assembling and distributing goods. It is the responsibility of village merchants to gather marketable excess from villages and village markets and transport it to the nearby cities or wholesale mandis, so bringing the surplus to the secondary and terminal market.

India has made significant progress in terms of output, but the country is woefully inadequate in terms of agricultural marketing. The ability of the nation to develop effective and efficient agricultural marketing is becoming increasingly important for the country to achieve competitiveness as these deficiencies become more acute due to the significant changes occurring in agri-food systems in domestic and international markets.

At the moment, India's agricultural marketing system faces a number of challenges, including infrastructure-related issues, issues with government regulations and technology, lack of knowledge about domestic and international markets and opportunities, unstable and uncertain produce price movements, late and delayed payments to producers, and low producer realization.

Examining the various marketing channels that are widely used in the nation, their capacity to handle the marketed surplus, and the rapidly developing value chain management models and new marketing management practices that are emerging are essential while taking the infrastructure requirements into account.

The most recent worries about food quality and safety should be taken into account while designing the optimum infrastructure. The whole supply chain should be included in the infrastructure. Rural primary markets, wholesale and assembling markets, grading and quality control systems, retail markets, storage facilities, including cold chain facilities, perishable cargo centers, rural farm roads, market information facilities, infrastructure for livestock markets, poultry and livestock meat markets, and slaughter house facilities are examples of the existing marketing infrastructure[9], [10].

CONCLUSION

On the other hand, the enabling legal environment for promoting the private investment is just beginning to evolve with the proactive facilitation by the Central Government and the willingness of the majority of states. This infrastructure is also insufficient to realize the potential competitiveness of numerous commodities for taking them to the global markets. While promoting improved marketing practices in the early years of its inception, state government supervision of the marketing system has outlived its usefulness in light of evolving conditions and the requirement for new marketing methods. The weak infrastructure and disjointed marketing system provide significant obstacles to our commodities' ability to competeAccording to the marketing notion, directing all of an organization's activities toward the goal of continually providing customer pleasure will help it accomplish its long-term goals. To achieve this, the company must first determine what it will take to satisfy the consumer.

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CHAPTER 23

FOOD AND AGRICULTURAL MARKETING

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ABSTRACT:

Individuals in a society grow increasingly dependent on others to provide them with at least part of the goods and services they need as they become more specialized in their economic pursuits. A process of transaction between buyers and sellers then starts. For a time, buyers and sellers are in constant communication and are able to ascertain one another's requirements and values and, therefore, their willingness to deal. There is a corresponding demand for more specialized marketing services, such as physical distribution, storage, grading, market intelligence collection, and so forth, as the economy grows and the quantity and kinds of trades increase. The fact that many of the specialized services are offered by middlemen between the seller and the final customer further increases the number of players. Few buyers and sellers interact directly with one another; instead, most of their communication is routed via a sophisticated marketing system. An examination of the nature of marketing and marketing systems is the focus of this introduction chapter.

KEYWORDS:

Agricultural Marketing,Business, Domestic Marketing, Management.

INTRODUCTION

This concept encourages a focus on the needs of the consumer and recognizes the necessity for sustainability since the organization's long-term goals will involve ensuring its own survival. Moreover, this definition of marketing does not exclude out non-profit organizations. Development initiatives, humanitarian organizations, extension service providers, and other similar entities all need marketing just as much as for-profit businesses do. Hence, the marketing notion holds that a company accomplishes its objectives through offering consumer happiness. In other words, marketing serves as the unifying factor that links production to client demands and satisfaction. After the end of the manufacturing phase of activities, an organization does not focus on marketing. Instead, marketing should be using clear signals from the market to determine how to best meet client demands.

The marketing idea must be implemented across the whole marketing system as well as the entire organization. A system is a collection of connected component pieces or subsystems that work together to achieve a certain shared objective. An agriculture and food marketing system thus consists of all the actions and organizations that carry them out that are required to take advantage of market possibilities in a profitable manner. While each of the parts, or sub-systems, operates independently of the others, changes to one of them have an effect on the others as well as the system as a whole. There is a chance that certain components of the system won't accept the marketing idea. Therefore, for instance, a food producer may be making a lot of effort to put the marketing idea into practice and sell items that precisely fit the wants of a target market.

Yet, the overall marketing goals may be compromised if the company is forced to depend on an agricultural community that is still mostly focused on production for raw material supply.

The system as a whole may not attain market orientation if just specific functions are carried out in accordance with the marketing philosophy. For instance, if transportation is handled using the same open-topped bulk carrying wagons used to ship grain and other aggregates, then it is unlikely that the enterprise will deliver the product in the right condition for the target market. The marketing department may set out to serve the market for high quality fruits and vegetables, for which it can obtain premium prices.

Marketing Performs

A marketing system is believed to have two unique aspects, as was mentioned before. The institutions, organizations, and businesses that engage in a market make up one of those dimensions, and the roles that those participants play make up the second. The three sets of marketing system functions that Kohls and Uhl6 have identified are the functions engaged in agriculture and food marketing processes. Each of these activities adds value to the final product and costs money since it takes resources to do them. The majority of businesses or entrepreneurs will find it lucrative to compete to offer the service as long as the value added to the product is positive[1], [2].

Interchange of Services Buying:

The customer's demands are seen as being of the utmost significance in the marketing philosophy. When production is specifically designed to satisfy certain needs or market prospects, a producer is said to have adopted a market orientation. As a result, a contract farmer who wants to supply a food processor that makes malted beverages using sorghum will only buy enhanced sorghum seed. He or she will steer clear of any inputs that might harm the sorghum's storage and/or processing qualities and will continuously look for new and improved inputs that will raise the perceived value of the final product in the eyes of the consumer. The influence on the appeal of his or her products to the markets he or she is trying to service will be the main factor in his or her purchasing selections. The chance to retain or even expand earnings is the buyer's driving force, not necessarily to provide, say, the highest quality. Costs are always raised when quality is improved. Sometimes the market is indifferent to quality advances; anything over a certain point does not command a premium price. In these conditions, the grower who persists and creates a "better product" is not market-oriented because they are oblivious to the actual demands of the customer. The agricultural enterprise with the greatest profit margin between prices realized and expenses spent is considered to be the most successful.

Selling:

This is perhaps the one of the nine identified functions that people most readily associate with marketing. Indeed, many people equate the phrases marketing with selling. "Most organizations implement the selling idea when they have excess capacity," claims Kotler. Instead of making what they can sell, their immediate goal is to sell what they can manufacture. It is undeniable that "high pressure selling" is used, when the interests of the customer are distant from the seller's top priorities. It's not marketing, however. Businesses embrace the marketing strategy after realizing that continual client pleasure is the only way to achieve their own long-term goals. Marketing aims to develop customers, as opposed to selling, which may create consumers. The distinction is that long-term connections with clients are what marketing is all about. Similar to how promotion, advertising, and merchandising are elements or sub-elements of the marketing mix, selling is an aspect of marketing. One of the four components of the marketing mix, marketing communications is the term for all of these persuasion-focused activities[3].

Physical processes

Storage:

The seasonality of agricultural output, in contrast to the year-round consistency of demand, is an intrinsic feature. Thus, storage is required to provide a smooth and, as far as is practical, continual flow of goods into the market. The grower does not have the same flexibility as his industrial counterpart in being able to change the timing of supply to fit demand since he is working with a biological product. To say that a factory can switch output on and off to suit demand would be exaggerating. They also have limits, but they have more options than an agricultural producer. For instance, a factory may put in more hours, outsource labor, and, over a longer period of time, adjust their output capacity to meet the intensity of the demand. In the immediate post-harvest period, supply in agriculture and particularly in LDCs often outpaces demand. Because to the oversupply, producer prices are reduced, and waste rates may be quite high. The commodity might be in low supply for a significant portion of the time until the next harvest, forcing merchants and consumers to pay higher prices to get whatever limited amounts are available. The storage system's job is to keep supply and demand in check. A marketing strategy that can make product accessible when it is required benefits producers and customers alike. A service is offered by a farmer, business owner, cooperative, marketing board, or retailer who stores a product. The supplier of storage is entitled to compensation in the form of profit since the service is costly and there are risks associated with waste, drops in market demand, and price increases[4], [5].

Transportation:

The primary purpose of transportation is to deliver the good where it is required while keeping the cost of the production as a whole reasonable. In order to achieve timeliness, maintain output quality, and reduce shipping costs, adequate execution of this duty necessitates examination of various routes and forms of transportation. Successful marketing depends on effective transport management. Transportation must be properly controlled, whether using a single vehicle or a fleet of vehicles. This includes cost monitoring, operations on various kinds of roads, fuel and lube consumption, and planned and corrective maintenance and repair. Optimal routing, scheduling, loading, and off-loading; maximization of shift hours; maintenance of the vehicle fleet at an ideal size; consideration of time constraints for delivery, and collection times; and prudent management of vehicle replacement and depreciation are all areas where skillful management of all aspects of vehicle operations can also significantly contribute to efficient marketing. Managers of transportation must also assess the benefits and drawbacks of owning, leasing, or renting transportation.

Processing:

When originally harvested, the majority of agricultural products are not in a state that allows for direct delivery to the customer. Instead, it has to be altered before being put to use. Since processing is primarily a form-changing action, Kohls and Uhl6 note that it "is frequently not included in a list of marketing tasks." Yet, processing should be considered a marketing function precisely because of this.

One action that enhances the value of the product is shape altering. Green coffee beans are transformed into roasted coffee beans, cassava is transformed into gari or animal feed, complete fruit bunches are transformed into palm oil, and sugarcane is transformed into gur, increasing the value of the original commodity. Marketing choices determine how modifications to produce's shape will be made and how they will be made. For instance, a

prototype production facility was created a number of years ago when Ethiopia wanted to increase its tea industry. The facility included the ability to dry the tea and put it into individual tea bags. At that time, testing were conducted to compare the product to others previously available on the market. The outcomes were positive. Yet, it was also shown during the marketing study that 90% of the black tea eaten is blended rather than the pure kind that the Ethiopians put in tea bags. The Ethiopians were entering a great market until they went passed the point of converting green leaf into premium black tea, which was not at all what they wanted.

A timely marketing analysis would have advised Ethiopia to halt the form-changing operation before bagging since, at the time, Ethiopia lacked the tea-growing land and financial means to establish a tea blending factory of its own. Similar to this, a fresh fruit producer may have canning and/or pulping facilities, but if prospective customers desire the freedom to use the fruits in a number of ways, these processing processes actually work to decrease usefulness and value rather than increase it.

Processing is not the only technique to improve a product, of course. Products that are stored until they are required provide usefulness and hence value. Similarly, delivering goods to locations where consumers may purchase them easily increases value. In other words, every action that makes an item or service more valuable to potential customers likewise raises the value of that commodity or service[6], [7].

Standardization:

Establishing and maintaining consistent measurements of product quality and/or quantity is the focus of standardization. By allowing customers to be very specific about what they want and suppliers to convey what they are able and willing to give in terms of both quantity and quality of goods, this feature simplifies buying and selling and lowers marketing expenses. Without consistent weights and measurements, trading either becomes prohibitively costly or impossible. Because to the wide range of weights and measurements for grains used in Nepal, certain districts found it simpler to do business with neighboring states in India than it did with other districts inside the nation. The following are a few of the most salient benefits of consistent standards:

1. Price quotations have more significance.
2. It is now able to sell goods using samples or descriptions.
3. If the little amounts of goods generated by several small producers are of a comparable grade or caliber, they may be combined into profitable loads.
4. When presented with a variety of graded products, the buyer has the option of selecting the level of product quality that he or she is able and willing to buy.

A variety of factors might cause quality discrepancies in agricultural goods. Differences in quality may result from manufacturing processes or from the caliber of the inputs utilised. Quality disparities may also result from technological progress. A buyer's evaluation of a product's quality is moreover often an indication of personal preference. So, white sugar is seen as "superior" to yellow sugar; long stemmed flowers are of "higher quality" than short stemmed carnations; and white maize is "easier to digest" than yellow maize. As an example, in certain markets, a tiny banana is believed to be somewhat "better" than a huge banana. It makes no difference whether the standards used to make these evaluations are objective or subjective since they all have the same impact on the market. Understanding the buyer's perception of "quality" is important in marketing[8].

Financing:

There are always delays between purchasing the required raw materials (such as equipment, seeds, fertilizer, packaging, flavorings, stocks, etc.) and getting cash for the sale of the produced goods in practically every manufacturing system. Someone or some organization must fund the investment during these lag times. Marketing has to address the issue of where the money for the investment is going to come from at every stage between manufacturing and consumption. Think about the challenge faced by a food company that wants to introduce a line of chilled items in a developing nation where few retail stores have the required refrigeration equipment. It's a marketing issue. The food company may acquire refrigerators and provide them to stores to resolve the issue (or arriving a hire-purchase arrangement with retailers). The low levels of effective demand for many items caused by low levels of incomes are a typical marketing issue in developing nations. Creating effective demand out of the available revenue is marketing's biggest issue. When selling agricultural equipment, this may include presenting hire-purchase plans in which the potential customer pays in manageable instalments. He or she is considered to have rented the machine at this period.

Although the machine's ownership remains with the vendor up until the last payment is completed, at which point the farmer is seen to have acquired the equipment, it may be reclaimed if payments are not paid on time. As an alternative, the vendor may devise leasing plans rather of buying ones, in which case the farmer would continue to make payments on time but would never own the equipment. If a food product is being sold to a low income market, the seller may want to think about lowering the purchase price by decreasing the pack or lot size. Making the product more inexpensive by utilizing less expensive ingredients and/or packaging is another strategy. Chicory may be used to replace some of the coffee in instant coffee, and the price of meat products can be decreased by increasing the proportion of cereals in these goods, reducing the amount of meat, and/or using less-expensive animal parts such the guts, offal, feet, and skull.

DISCUSSION

Losses are always a risk in the produce manufacturing and selling processes. The destruction or degradation of the product due to fire, extreme heat or cold, pests, floods, earthquakes, etc. is considered a physical risk. Market hazards are those that result from unfavorable changes in the produce's value between the production and consuming stages. A danger is also a shift in customer preferences since it might make product less alluring. All of these risks are assumed by the organizations, businesses, and people mentioned above. One facet of marketing that is sometimes underappreciated is risk taking. For example, when making assessments as to whether a specific price is a 'fair price' the standard reference point is the manufacturer or supplier's expenses. The risks taken are, however, seldom taken into consideration by those making judgments, and yet there will surely be times when the risk-taker suffers losses. Markets will decline, imports at lower prices will enter the nation, stocks will rot, customer preferences will shift, and so on. Only if sufficient surpluses were accumulated in earlier times could these losses be seen. As the timing of events is more unclear than whether they will occur, risk taking must be seen as a cost.

Business Intelligence

Marketing choices should, to the greatest extent feasible, be supported by reliable information. Market intelligence is the procedure of gathering, analyzing, and distributing data pertinent to marketing choices. Market intelligence has the responsibility of lowering decision-making risk. The vendor learns what the client wants and needs via market information. An other way to learn is through observing sales or a lack thereof. Marketing

research is useful in determining which items are suitable for the market, which distribution routes are best, how to advertise them most effectively, and what pricing the market would accept. The seller, as with other marketing tasks, may carry out intelligence gathering, or a third party, such as a government agency, the ministry of agriculture and food, or another specialized organization, may do it. The execution is what counts, not the idea[9], [10].

Agriculture and the food business are connected

The relationship between agriculture and food is always changing. Farmers and consumers in prehistoric cultures were often members of the same family or close neighbors who traded goods and services. But, new connections are made as cultures advance. The intermediaries between the producer and the consumer include commodity merchants, processors, food makers, retailers, and others.

The scientist is a relatively recent addition to the chain. During the last 50 years, scientists in the fields of breeding, plant biology, nutrition, and chemistry have significantly advanced agricultural output and the production of food. It would seem that we have moved beyond the era of agricultural equipment, the era of pesticides, and now the era of biotechnology. As biotechnology is expected to be less capital costly and more research- and know-how-intensive, it offers significant promise for developing nations.

As a result, the poorer nations that lack the necessary money may profit from it more quickly. Consequently, it may have a quicker, wider, and more profound effect. Agribusiness, or the integration of agriculture and food as a continuum, is emerging as the relationship between food and agriculture continues to change. Transnational corporations with linkages from agricultural production to retailing, such as Cargill, Brooke Bond Liebig, and Del Monte, are examples of vertically integrated organizations. According to one school of thought, it makes sense for people who are closest to the customer to evaluate his or her requirements and relay them to the main producer. The food business will create more goods of higher quality and more variety as disposable incomes rise. While looking for a source of their raw materials, food producers will have certain requirements for agriculture, including

Quality:

Food producers aim to create a preference for their goods by distinguishing them in a manner that matters to customers in order to construct a successful company. Then, producers brand the distinct product so that customers can recognize it. Manufacturers may then focus on increasing brand loyalty among consumers. Brand loyalty is often only achieved by constantly providing good quality. The market often develops more complex wants as disposable incomes grow, making the quality of the raw materials even more crucial. Agriculture may anticipate that there will be a greater focus on quality where it is trying to supply the food business, which is trying to satisfy these more sophisticated demands and desires. Agriculture may also anticipate benefiting from higher returns from quality innovations.

Cost:

Quality will be followed by price. The food business may now discover the lowest cost source for any given level of quality thanks to improved global raw material search capabilities. For the food maker, the source of agricultural products need not be the nation in which he or she makes or markets. Due to advancements in communications and transportation, the whole planet may now be used as a supply source. The agricultural community must see this as a fundamental shift in the competitive landscape of agriculture since they have historically concentrated heavily on their separate home markets.

Non-Seasonality:

Traditionally, the production and delivery of agricultural goods were seasonal. Food producers no longer need to base their production timetables on the changing seasons because to advancements in technology and animal husbandry. In fact, the capital-intensive food business cannot afford to pay the significant expenses associated with using less of its available capacity. As a result, farmers will have to succeed in lowering seasonality or assimilating into a societal competition pattern.

Reliability:

A manufacturer that has made significant investments in establishing his brand will be eager to get suppliers that are trustworthy in terms of quality, timeliness, and cost. Producers of agricultural goods will be scrutinized more and more for their dependability in each of these areas.

Processing:

Processing simplicity will be expected more and more from the food business. Cost reductions for capital equipment, labor, and inventory are essential goals across all businesses. For instance, farmers who can adhere to the "just-in-time" approach can help a manufacturing use less working capital and space. Farmers that are able to execute duties like post-harvest crop treatment or transportation, as well as a portion of the secondary processing, will have an edge. Another benefit that the food industry could anticipate from agriculture is the development of crops that are specifically bred or created to make processing easier (for example, seedless fruits, featherless poultry, caffeine-free coffee, and low-cholesterol meats). In summary, those who can provide the greatest value and distinguish their offerings from those of other suppliers will have a competitive edge.

Differentiation of Products:

The food sector must continually innovate in order to develop new goods that are superior to and distinct from those already on the market from rivals or themselves. Innovation has often been focused on the processing step. While manufacturers will increasingly search for new modifications in the agricultural output itself, this will still be a significant area for innovation. This might be in the form of new flavors, a better texture, more appealing forms, etc.

Elements of Health:

As we've previously said, customers' priorities may shift toward healthier eating in more upscale food shops. Farmers will thus need to think about the implications for their chosen crops' health. There are two components of health to consider. Initially, customers can be drawn to foods that are low in fat, sugar, or salt. To believe that health problems are exclusive to upscale food stores or to the more affluent sections of the population would be erroneous. In every market category, nutrition matters.

Even when the hungry have enough food to prevent famine, they often suffer from malnutrition. Thus, it is important for farmers to consider the nutritional content of the products they raise. Second, the avoidance of chemicals like pesticides and herbicides by the food production techniques may worry the customer more or equally. This might result in a modification to the farmer's husbandry techniques, which would affect the price of the produce. The farmer will be expected to produce without possibly harmful chemicals at no additional expense to the customer or the food business. This will provide another another difficulty for agriculture.

Food and Agricultural Marketing Businesses

The institutions and businesses that make up a marketing system are its main constituents. This section discusses three of the main business models that may be found in developing nations. They include co-operatives, marketing boards, and private businesses.

Boards of marketing in Developing Nations

In most cases, marketing boards are government agencies and/or statutory organizations with the responsibility of interfering in the marketing process in order to advance the cause of effective and organized marketing. They are rarely nonprofit organizations founded by farmers or other producers. In other words, rather than emerging from an agreement among business partners, marketing boards often result from governmental policy. This is particularly true with marketing boards in tropical regions where their main goal is to increase smallholder, grower, and/or livestock farmer income. Large estates or plantations often do not get marketing assistance from marketing boards. Almost all Marketing boards acted as "price stabilizing boards" prior to the implementation of structural adjustment and market liberalization. The emphasis that marketing boards place on long-lasting goods is another trait. Marketing boards often have the power to approve "managed" or "scheduled" crops. Less than five crops are regulated in many nations. They often include "traditional" crops like cocoa, cotton, coffee, tea, tobacco, and rubber as well as "colonial" crops like millet, sorghum, rice, maize, groundnuts, and palm oil. Boards that manage many crops are the choice of certain governments. The marketing board sometimes handles every aspect of marketing on its own, but more often than not, it works in tandem with private industry by, for instance, contracting with storage facilities or choosing regional buyers.

Policymakers often characterize the function of marketing boards in achieving more effective marketing in terms of altering the market structure. That is, making what is seen to be a flawed market system more favorable to producers. Naturally, while doing so, consideration should be given to the impact on both customers and other participants in the marketing system. This is not always the case, and it is debatable whether a market structure that is built up primarily for one group of participants is anything other than flawed to the other participants. Conversely, when the marketing system is characterized by a large number of basically weak producers and a relatively small number of dominant intermediaries, the case for granting producers significant countervailing capabilities is greatest. The intermediaries in this situation set the prices, and both the producers and the customers are price takers. A marketing board may improve an existing market structure in one specific aspect by rationalizing the system in an effort to lessen inefficiencies seen to be brought on by unnecessary rivalry and duplication of effort among intermediaries. For instance, there may be so much overlap between transports, storage, and processing facilities that capacity utilisation cannot reach profitable levels without prohibitively expensive compensation costs. Marketing boards could strive to make the system more logical by implementing a system of licensing, for instance[11].

Purchases made by marketing boards:

Typically, marketing boards would make fixed-price purchases. The government determines the price for scheduled crops each season or year. This price is disclosed before to harvest for tree crops and prior to planting or sowing for annual crops. After then, it is maintained there for a while, usually about six months. Producers are given some security by these methods. Purchasing happens at authorized purchasing locations where there are either suitable storage facilities for the product or transportation so that it may be relocated without suffering a material loss in quality. Farmers are obviously concerned that purchasing locations should be

accessible. The two parties' interests often clash since upkeep of a vast network of purchase locations significantly raises a marketing board's operational expenses. One workaround is for the marketing board to run temporary purchasing points in addition to mobile buying teams.

Merchandising activities of marketing boards:

Certain marketing organizations, such as grain boards, are only focused on domestic consumer markets. They often deal with managing staple crops like rice, millet, and maize. Some boards only work with export markets, and as a result, industrial customers. The activities of the boards that serve the two main kinds of markets are quite different from one another as well. Often a difference between these two kinds of boards is made by using the terms Food Marketing Boards (FMBs) and Export Marketing Boards (EMBs). The attitude of governments toward them is one of the key contrasts. Secondly, although they may and do exercise control over home market demand, governments cannot influence demand in export markets. Second, since governments must consider the needs of domestic consumers of basic commodities, they sometimes give FMBs instructions to modify their marketing plans in order to achieve social and/or political goals rather than business ones. The government of the exporting country has no direct interest in the needs of customers in export markets.

EMBs' Sales Operations:

Although certain export markets are controlled by commodity agreements, such as the International Coffee, Sugar, and Cocoa Agreement, in most instances they must function within free or open markets with active competition. EMBs often prefer early sales. In other words, they strive to reduce the time between imports and exports. This is sometimes referred to as a "quick evacuation" strategy. As the receiver of the product is responsible for keeping and financing stockpiles, it reduces the need for storage and capital expenditure. The majority of EMBs engage in "forward selling," which, as the name indicates, entails concluding sales agreements far in advance of delivery. Selling the crops may entail doing so well before they are ready for harvest or even before they are sown. Export parity pricing is a common practice among EMBs. The producer price is then determined as a residual of the export price less marketing expenses. As the volatility of prices in the open global markets has always been a significant source of uncertainty for EMBs, there is no special incentive to reduce those marketing expenses in such a system. EMBs often advocate for low producer pricing since they are unable to change these costs. They do this in an effort to prevent a trade imbalance when global prices decline.

FMBs' Sales Operations:

The selling price of the FMB is regulated by the government in many developing nations. Governments are often prompted to establish low pricing out of concern for consumer welfare. As a result, an FMB's gross trading margin is often low. Conflict between FMBs and the government always stems from the periphery. Government often stifles the profit margin and demands that the FMB cut its expenses in an effort to appease both customers and farmers. Usually, the government wins, but because it must pay any deficit, it is a hollow triumph. When stocks are released into the market is determined by consumer demand. Although the demand for staple commodities is often pretty steady throughout the year, FMBs must fill the customary and sizeable gap between buying after harvest and staggered selling throughout the year. As there is often not enough storage room for the arriving food right after harvest, stockholding is a crucial but costly function of FMBs. In contrast, FMB shops are often overcrowded throughout the year as the inventories are gradually released. In times of scarcity, fundamental "food security" is a typical goal of FMBs. While this approach

has strong political justification, it is problematic from a business perspective. In the event that there is no shortage, working capital will be needed for a longer length of time, leaving the FMB with depreciating goods. There is a "dual marketing system" almost everywhere, which includes a parallel market that enables farmers, merchants, and consumers to avoid the FMB. The government in several nations has approved the parallel market. When FMBs are granted a monopoly, parallel markets turn into black markets that are difficult to prohibit. Moreover, the FMBs must take into account its competitors regardless of whether the parallel market is legal or illegal. Some boards do not simply fall into either of the two groups we've just spoken about. Groundnuts, sunflower seed oil, and palm oil are examples of products with both local and international markets. Marketing councils for these goods have mostly been created in nations with an export surplus. Often, these boards fall under the category of export boards. It is always possible, however, that domestic demand may rise to the point where it absorbs the export excess, in which case the board transforms into a domestic marketing board.

Cooperatives in the food and Agricultural Industries

One of the most common instances of a commercial or economic activity, the co-operative firm has its roots in the 19th century. There are cooperatives in every nation on earth, and they run under a variety of political structures, from communism to capitalism. Via their national apex organizations, the majority of these cooperatives eventually become members of the International Co-operative Alliance (ICA), the global organization that represents cooperatives of all kinds.

Co-operative formation is driven by three distinct factors:

The desire to better oneself by making the best use of frequently scarce resources. The concern to secure the best return from whatever form of economic activity an individual engages in, whether as a producer, intermediary, or consumer. The need for protection against exploitation by economic forces too strong for the individual to withstand alone. The motivation for cooperative action comes from the conviction that each of these goals is best pursued and achieved in collaboration with like-minded others. Self-help, voluntary engagement, equality, democracy, and a shared link of need and goal are the guiding concepts of this. By making sure that no one member may acquire authority or benefit at the cost of the others, the group's cohesiveness is preserved. Instead of awarding money, cooperatives reward participation in the cooperative business. In cooperative companies, self-interest serves as the main driver and economic gain serves as the main goal. Cooperatives and capitalist businesses are similar in these ways; in the former, self-interest is just pursued in a different manner. As a result, the rate of interest paid on share capital is set and constrained and does not change in accordance with the amount of profit generated.

Management and governance of secondary cooperatives

Secondary cooperatives are controlled and run in a manner similar to primary cooperatives. During the General Meeting, the share-holding members the core co-operatives exercise policy control and choose a management committee to represent them. A chief officer is chosen by the management committee to lead the operation under its control. Similar to primary cooperatives, subsidiary cooperatives' byelaws specify organizational policies and are approved by the relevant municipal authorities. A secondary co-operative uses and distributes its operational surplus in accordance with the same rules as a main co-operative. The federal cooperative may have a tendency to treat its member cooperatives more like slaves than masters. Two things might lead to this circumstance. Secondary cooperatives that participate in manufacturing and trading may often only function well in conditions of

substantial operational integration with those of their members. This calls for an equivalently strict degree of discipline or some kind of contractual requirement. Second, secondary's may have a significant predisposition to act as the dominating party in a partnership due to their operational scale and volume of trade relative to individual primary. This is a propensity that should be watched and, if necessary, checked. The primary responsibility of the secondary cooperative is to provide services to its membership of cooperatives.

The Cooperatives' Shortcomings

Regrettably, cooperatives' potential and degree of growth have often fallen short of expectations. Cooperative business has often been characterized by low performance standards, poor management, financial failure, corruption and money abuse, and the exploitation of cooperatives for political purposes. As a result, the co-operative system has received a considerable lot of reasonable criticism, and many people, including some members, have lost faith in its potential to contribute significantly to progress. The major significant issues that prevent cooperative growth and have a negative impact on performance are covered below. Realism in the goals two essential components of motivation are dedication and purpose. The accomplishment of the goal is equally crucial.

Goals are manifestations of intention and anticipation. They must be reachable in order to function as catalysts for action and motivators. The resources at hand must be sufficient for achieving the goals, and desires must line up with capabilities. Co-operatives shouldn't be expected to do too much or to grow too rapidly by members or outsiders. The majority of agricultural cooperatives in underdeveloped nations operate in commercial settings that would be challenging for any kind of economic firm. Co-operatives must function in very precarious circumstances, much like its farmer members. Its members are mostly subsistence farmers who live in poverty. Aspects of trading under such conditions that are well-known include high operational expenses, poor profits, relatively low turns, limited stock inventories, seasonal trading patterns, exposure to the effects of crop failure, significant credit risk, and changing demand. In fact, if that weren't the case, it's reasonable to assume that private industry would have entered to take advantage of a lucrative market.

Cooperatives are often established to provide necessary services when other organizations are unable or unwilling to do so. One mistake is expecting too much of cooperatives, and another is anticipating too much too soon. There is a common misconception that after a cooperative seems to be fairly well established, adding loan financing from an outside source would allow it to quickly expand its services. Such a fast infusion of loan cash may tax managerial capabilities, stimulate risky behavior, impair financial judgment, cause inventory to be overstocked, and encourage loss-making businesses. Cooperatives should be permitted to grow at a rate consistent with its members' capacity to direct, oversee, and fund the growth. They should be allowed to grow slowly, just like any other successful corporate company, using only the profits from their own trading activities to fund their expansion. For instance, the goals of a government development program should not be achieved at the expense of business capability. The co-capacity operative's to survive and the achievement of the policy goals will both suffer from revolution rather than development.

It seems sense that agriculture and food businesses in emerging nations should focus more on their customers. The marketing mechanisms that distribute agricultural and food goods must be effective in order to offer food and other items at reasonable costs since average wages in developing nations are low. In addition, when a nation does experience economic development, the pace of urbanization often picks up as well. Farmers are ultimately subjected to higher pressures. The demands of both consumers and industrial users of

agricultural commodities must be communicated to farmers via marketing channels. The marketing system must also encourage and recognize all the partners whose involvement is crucial to the supply of goods in the quantities and according to the standards requested. The movement toward market liberalization as part of economic structural adjustment in many developing nations is yet another phenomenon that has recently heightened interest in marketing strategies.

According to the marketing notion, directing all of an organization's activities toward the goal of continually providing customer pleasure will help it accomplish its long-term goals. In order to accomplish so, the organisation needs begin by getting to know what it is that would please the consumer. The whole marketing system must be customer-focused. A marketing system consists of the organizations that carry out the marketing operations (purchasing and selling, storing, transporting, and processing, as well as standardizing weights and measurements, financing, taking on risk, and market intelligence). At least four subsystems make up marketing systems: production, distribution, consumption, and regulation. If the system as a whole is to be efficient and successful, these sub-systems often have competing interests that must be reconciled. A significant consumer of agricultural goods and commodities is the food sector. The food business will need to address new and diverse requirements from its increasingly affluent clients as disposable incomes rise in emerging nations. In order for the food sector to address the new challenges and possibilities, agriculture will need to support those efforts. In particular, the food industry will put pressure on agriculture to produce a wider range of qualities in its products and commodities with a greater percentage of the total supply in the top grades; agriculture will also be required to supply all year round rather than just during certain seasons; reliability in the quantity, quality, and timing of supplies will become a key factor in supplier selection; and innovative products will also be required.

A marketing system's institutions and businesses are essential elements of the system. Private business, marketing boards, and cooperatives are the three different forms of marketing organizations that have been covered in this chapter. They were selected because they have traditionally been essential parts of the food and agricultural marketing systems of so many developing nations. In both technological and financial terms, private enterprise has been shown to be more effective than other types of business, particularly those that act as agents of the state. Additionally, compared to other types of agribusiness enterprise, private enterprise has shown higher levels of capacity utilisation, quicker decision-making, greater adaptability to changing market circumstances, higher levels of motivation and personal initiative, and superior experience and expertise. Marketing boards, including export marketing boards and food marketing boards, often have the role of acting in the market to support effective and systematic marketing. A marketing board's main objective is often to increase smallholders' revenue. Durable goods are often handled by marketing boards.

A marketing board might anticipate being evaluated based on its contribution to effective and organized marketing, the degree to which it combats the monopolistic behaviors of market intermediaries, and the shift in the distribution channel's power balance in favor of producers. It has been determined, generally speaking, that agricultural and food marketing boards have not produced the desired outcomes in developing nations. This appears to be the result of social goals conflicting with business goals, the government using the boards as tools for fiscal policy, the marketing board manipulating prices to promote increased production and control retail prices for staple foods, and the appointment of political appointees to the board management. The ability of co-operatives to: safeguard smallholders and small-scale businesses against economic exploitation; promote self-reliance; and enhance the return on

investment of economically underprivileged people or groups are often the driving forces for their establishment.

CONCLUSION

The General Meeting of Members, the management committee, and the manager/secretary make up the three levels of the management structure of cooperatives, whether they are main or secondary. In primary cooperatives, all members have an equal say in decisions and are compensated based on the volume of business they do with or through the cooperative rather than the quantity of money they have contributed. Voting power may sometimes be allocated by secondary cooperatives, whose members are primary cooperatives, based on the proportionate size of those primary cooperatives. The main weaknesses of co-operatives are: that they operate in marginal economic conditions; that their social and economic goals occasionally conflict with one another; that they are occasionally used for political ends that deviate from their legitimate mission; and that they have difficulty attracting people of high caliber to management positions due to their very limited resources and low status.

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CHAPTER 24

MARKETING OF MANUFACTURED VERSUS AGRICULTURAL GOODS DIFFERS

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ABSTRACT:

In order to provide effective services in the transfer of farm goods and inputs from farmers to consumers, it is important to comprehend the complexity involved in the agricultural marketing system and identify bottlenecks. A successful marketing strategy reduces expenses and helps every sector of society. The system's expectations differ from group to group, and the goals are often at odds with one another. How well these opposing goals are resolved will determine the system's effectiveness and success.

KEYWORDS:

Agricultural Marketing, Business, Domestic Marketing, Fertilizers, Management.

INTRODUCTION

Agriculture and marketing come together to form the phrase agricultural marketing. In its widest meaning, agriculture refers to all primary production activities that are intended to employ natural resources for the wellbeing of humans. Yet often, it refers to cultivating and/or rearing cattle and crops. Moving products from the point of production to the point of consumption involves a number of actions, which are together referred to as marketing. It covers all the processes that go into producing time, location, form, and function of possession. The transportation of farm-produced foods, raw materials, and their derivatives, such as textiles, from the fields to the ultimate customers, as well as the impacts of such activities on farmers, intermediaries, and consumers, are all included in the study of agricultural marketing, according to Thomsen. The input portion of agriculture is excluded from this definition.

Agricultural marketing is the study of all the procedures, organizations, and laws related to farmers' purchases of agricultural inputs and the transportation of those goods to consumers. The agricultural marketing system serves as a bridge between the agricultural and non-agricultural sectors.

It entails planning the distribution of agricultural raw materials to processing businesses, gauging the level of demand for farm inputs and raw materials, and formulating marketing rules for farm inputs and outputs. A decision to produce a marketable farm product is the first step in the agricultural marketing process, according to the National Commission on Agriculture's which also includes pre- and post-harvest operations, assembly, grading, storage, transportation, and distribution. This process also involves all institutional and functional aspects of the market structure or system.

Producers:

Producer-farmers want the marketing system to buy their goods quickly and to give them the largest possible proportion of the consumer's money. They want to get the highest price for the system's excess production. They also want the system to provide them with inputs at the most affordable price.

Consumers:

A marketing strategy that can provide food and other goods in the quantities and of the quality they demand at the lowest cost is appealing to agricultural product customers. The goal of marketing to consumers, however, is at odds with the goal of marketing to farmers and producers.

Market intermediaries and Traders

Market intermediaries and dealers are looking for a marketing system that will enable them to buy and sell agricultural commodities for a consistent and growing profit. It is possible for market intermediaries to accomplish this goal by paying farmers low prices for agricultural goods and charging consumers exorbitant rates for them.

Government:

All three social groups producers, consumers, and market intermediaries have competing goals and expectations. Each of the three categories is essential to society. To protect the interests of all the parties involved in marketing, the government has to play the role of a watchdog. It aims to provide the producer the largest possible portion of the consumer's rupee, food of the necessary quality at the lowest price, and enough margin to the marketing intermediaries so that they may continue in the trade and not consider quitting and endangering the whole marketing process. Hence, the government desires that the marketing system should be such that it may result in the general welfare of all societal sectors[1], [2].

Dimensions and Content of Agricultural Marketing:

In a wider sense, agricultural marketing refers to the sale of farm goods made by farmers as well as the farm inputs such farmers need to make those items. As a result, both product marketing and input marketing fall under the umbrella of agricultural marketing. Output marketing is a topic that has existed for as long as civilisation. With the rising marketable excess of the crops as a result of the technical advance, the significance of output marketing has recently been more apparent. For the marketplace, farmers generate their goods. Farming starts to focus on the market. The topic of input marketing is quite recent. Agricultural inputs like local seeds and farmyard waste were formerly employed by farmers. These inputs were already in their possession; farmers seldom ever bought inputs for crop cultivation from the market.

Farm inputs, such as better seeds, fertilizers, insecticides, and pesticides, as well as farm equipment, tools, and finance, are now more crucial than ever in the production of agricultural goods. The most recent agricultural technology responds to input. As a result, both product marketing and input marketing must be included in agricultural marketing. The topic of agricultural marketing has been covered in this book from both academic and practical angles. It discusses the nature of the system, how it works, and how the suggested approach or procedures could be adjusted to get the best results. Specifically, the topic of agricultural marketing covers marketing roles, organizations, channels, effectiveness, and costs, along with price spread and market integration, producer surplus, public policy, academic research, training, and statistics[3], [4].

DISCUSSION

Agriculture and manufacturing product marketing:

Due to the unique features of the agricultural sector (demand and supply) that affect marketing, the marketing of agricultural commodities differs from the marketing of

manufactured commodities. Agricultural marketing has been recognized as a distinct field as a result of these qualities, which makes the topic a little more challenging. In contrast to the rules guiding the supply and demand of manufactured goods, the agricultural sector's unique features have an impact on the supply and demand of agricultural products. The agricultural industry has unique qualities that set it apart from the manufactured sector. These specific qualities include:

Product perishability ranges from a few hours to a few months, however the majority of agricultural goods are perishable by nature. Farm product marketing is really a race against rot and death to some degree.

It is very hard for producers to set a reserve price for their farm-grown goods due to their perishability. Farm products' degree of perishability may be reduced by the processing process, but they cannot be rendered non-perishable like manufactured goods. Their supply cannot be made consistent either.

1. **The production cycle:** Agricultural goods are only made during a certain season; they cannot be made all year round. Prices decrease during harvest time. Yet, the availability of produced goods may be altered or made consistent throughout the year. As a result, their prices are rather constant throughout the year.
2. **Bulk of the Products:** Most agricultural goods are bulky, which makes transportation and storage difficult and costly. This fact further limits the placement of manufacturing to a location close to where consuming or processing takes place. Bulky goods have a wider price range since storage and shipping are more expensive.
3. **Variance in Product Quality:** Agricultural goods come in a wide range of quality, which makes grading and standards fairly challenging. As produced things are uniformly high-quality goods, there is no such issue.
4. **Unreliable Agricultural Product Supply:** Due to the dependency of agricultural output on natural circumstances, the supply of agricultural goods is unpredictable and erratic. A result of the fluctuating supply and almost continuous demand for agricultural goods, prices vary widely.
5. **Small Holding Size and Dispersed Production:** Agricultural goods are produced all throughout the nation, and the majority of the manufacturers are small businesses. This complicates supply prediction and causes issues with marketing.

Processing:

The majority of agricultural goods must be processed before being consumed by final consumers. The price gap of agricultural commodities widens as a result of this processing function. Processing companies benefit from market monopsony, oligopsony, or duopsony. The producers are faced with disincentives in this position, which might negatively impact output over the next year[5].

Importance of the Agricultural Marketing

In addition to encouraging production and consumption, agricultural marketing is crucial for boosting economic growth. Its dynamic capabilities are crucial for advancing economic progress. It has been referred to as the most significant multiplier of agricultural progress for this reason. The lines that follow make mention of how crucial agricultural marketing is to the growth of the economy.

Resource Management and Output Optimization

Resource usage and production management are optimized through an effective agricultural marketing system. By reducing the losses brought on by inefficient processing, storage, and transportation, an effective marketing strategy may also help to enhance the marketable surplus. A well-planned marketing strategy may efficiently disperse the stock of current inputs and support a higher pace of development in the agricultural industry[6], [7].

Growing Farm Income

By limiting the number of intermediaries, their commission on marketing services, and the unethical actions they engage in while selling agricultural goods, an effective marketing system provides better levels of revenue for the farmers. An effective system ensures farmers higher pricing for their produce and encourages them to utilize their excess funds to buy cutting-edge inputs that will boost productivity and output. The excess that is sold and the farmers' revenue both rise as a consequence of this. The producer has no motivation to create more if there is no readily available market outlet where he may sell his excess product. So, it is crucial to provide sufficient incentives for higher output, and this can only be done by simplifying the marketing system[8].

Expanding Markets

A well-organized marketing strategy expands the market for the goods by bringing them to places distant from the sites of production, both within and beyond the nation. A better revenue for the producer is therefore assured by the market's expansion, which contributes to ongoing demand growth.

Agro-based Industries' Growth

A more effective and enhanced agricultural marketing system promotes the expansion of agro-based companies and the economy's general process of development. Agriculture is a significant source of raw materials for many businesses.

The uptake and dissemination of new technology

Farmers are assisted in implementing new scientific and technological information via the marketing system. Farmers would only invest in new technology if they were certain of market clearance, which involves larger expenditure[9], [10].

Employment:

Millions of people working in industries including packing, shipping, storage, and processing benefit from the marketing system. Direct employees in the marketing system include commission agents, brokers, traders, merchants, weighmen, baggage handlers, packagers, and regulatory officials. Apart from this, many other people work in the provision of the products and services needed by the marketing system. Increase in National Income: Marketing operations increase the product's value, which raises the country's gross and net national products.

A Better Life:

The marketing system is crucial to the success of development initiatives that aim to improve society as a whole. Any economic growth strategy that aspires to reduce food costs for consumers, increase foreign currency earnings, or reduce economic waste must thus pay particular attention to the creation of an effective marketing strategy for food and agricultural goods.

Development of Utility:

Marketing is fruitful and essential to agricultural output. In actuality, it is a component of the manufacturing process itself since the product is only considered to have reached its destination in the form and at the time that the customer has specified. Although marketing increases the price of the goods, it also gives it more benefits. Marketing creates the following four categories of product utilities:

Formatting Tool:

By transforming the raw material into a completed form, the processing function increases the form utility of the final product. The product is now more useful than it was when it was being produced by the farmer as a result of this transformation. For instance, oil seeds are transformed into oil, sugarcane into sugar, cotton into fabric, and wheat into flour and bread by processing. The refined versions are more beneficial than the raw ingredients themselves.

Location Utility:

By moving goods from an area of plenty to a place of need, the transportation function increases the place usefulness of items. Due to the enhanced usefulness of the product, prices are higher where there is a need than they are at the point of production.

Time Usefulness

By making the items accessible when they are required, the storage function gives them more time usefulness.

Possession Usefulness

Transferring ownership from one person to another is made easier by the marketing function of buying and selling. By marketing, goods are distributed from those with low utility to people with greater utility[11].

CONCLUSION

Farm items can only be produced within a certain season, and prices rise throughout the harvesting season. Yet, because the supply of produced goods can be altered or kept consistent throughout the year, prices essentially stay the same. For the area, the agriculture industry is crucial. Like to all other economic sectors, it is transitioning to a market economy and experiencing significant changes to its social, legal, structural, productive, and supply setups.

Agriculture produces its products organically, while manufacturing produces its products artificially. This is the main difference between the two. In order to distribute agricultural products to clients in an efficient manner, agricultural marketing is essential.

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CHAPTER 25

IMPORTANT ELEMENTS OF THE MODEL AGRICULTURE MARKETING ACT

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ABSTRACT:

The Act places a specific focus on defending farmers' interests since it views them as the weaker of the two parties to a contract. The marketing mix, sometimes known as the "4 P's, includes choices on the product, price, place (distribution), and promotion. Contracts for services have been incorporated throughout the whole value chain, in addition to contract farming, and encompass pre-production, production, and post-production. Markets for food and agriculture provide customer options and give producers incentives. Trade and well-functioning markets make it possible to allocate resources as efficiently as possible, spread knowledge and technology, and provide ways to connect agriculture with other economic sectors.

KEYWORDS:

Agricultural Marketing,Business, Fertilizers, Market Committee Management.

INTRODUCTION

The majority of the country's agricultural markets are created and governed by state APMC Acts. The whole state is split into market areas, each of which is run by market committees that were established by the respective state governments. No individual or organization is permitted to engage in wholesale marketing operations after a certain region is designated as a market area and comes under the control of a Market Committee. An effective agricultural marketing system is crucial for the growth of the agricultural industry since it gives producers outlets and incentives to produce more, and it substantially aids in the commercialization of subsistence farmers.

Governments from all around the world have realized the value of open agricultural markets. To encourage direct marketing and contract farming programs, facilitate industries and large trading companies to undertake procurement of agricultural commodities directly from the farmer's fields, and create effective links between farm production and retail chains, the Task Force on Agricultural Marketing Reforms, established by the Ministry, has recommended promotion of new and competitive agricultural markets in the private and cooperative sectors.

Farm production must be integrated with domestic and worldwide markets in order for farmers to implement market-driven production plans and embrace contemporary marketing strategies. The current architecture of State APMC Acts will need to alter if agricultural markets are to be established in the private and cooperative sectors and given a level competitive environment relative to regulated markets. To encourage investment and permit private investment in owning, developing, and managing markets, the State must support a variety of market ownership arrangements. It is also necessary to promote public-private partnerships in their administration in order to professionalize the operation of currently regulated markets by the government. To encourage direct marketing and contract farming agreements as alternative marketing mechanisms, an appropriate legislative framework is

also necessary. As a result, it is necessary to create a new model legislation for the agricultural market[1], [2].

Due to the liberalization of trade in agricultural commodities, agricultural marketing is going through significant changes all over the globe. The internal agricultural marketing system in the nation has to be integrated and reinforced in order to benefit the farming community for the new chances to reach the global market. In this regard, on December 19, 2000, the Government of India's Ministry of Agriculture appointed an Expert Committee, which was followed by an Inter-Ministerial Task Force, to review the nation's current agricultural marketing system and make recommendations for improving its effectiveness and competitiveness. In their separate reports from June 2001 and May 2002, the Committee and the Task Force made a number of recommendations for changes to the nation's agricultural marketing system as well as to its policies and programs. According to studies, the state's dominance over agricultural markets has to be lessened in order to encourage increased private sector involvement and to attract the significant investments needed to build up the necessary marketing infrastructure and auxiliary services.

The National Conference of State Ministers organized by the Ministry of Agriculture, Government of India, at Vigyan Bhavan, New Delhi, on September 27, 2002, and a Standing Committee of State Ministers formed for the purpose on January 29, 2003, under the leadership of Sri Hukumdeo Narayan Yadav, Union Minister of State for Agriculture, discussed the recommendations contained in these reports. State governments expressed their belief that reforms in the agricultural marketing sector were required in order to transition from a regime of controls to one of regulation and competition in both the Conference and the Standing Committee. It was necessary to encourage the development of a competitive marketing infrastructure in the nation and to introduce professionalism in the management of the current market yards and market fee structure in light of trade liberalization and the emergence of global markets.

However, the government must implement sufficient safeguards while promoting the alternative marketing structure to prevent any exploitation of farmers by the private trade and industries. To do this, model laws on agricultural marketing has to be created. · The State Agricultural Produce Marketing (Development and Regulation) Act, 2003, a draft model law, calls for the creation of private markets and yards, direct purchase centers, farmer and consumer markets for direct sales, and the promotion of public-private partnerships in the administration and growth of agricultural markets throughout the nation. Additionally, it stipulates separate governing structures for special markets for goods like onions, fruits, vegetables, flowers, etc. The legislation has a separate chapter devoted to policing and advancing contract farming practices across the nation. It forbids commission agencies from engaging in any transactions involving agricultural products with producers. In order to promote alternative marketing systems, contract farming, direct marketing, and farmers' and consumers' markets, it redefines the role of the current Agricultural Produce Market Committee.

Moreover, it redefines the purpose of State Agricultural Marketing Boards to support standardization, grading, quality certification, market-led extension, and the education of farmers and market functionaries in marketing-related fields. The Act also makes provision for the establishment of a State Agricultural Product Marketing Standards Bureau to support agricultural produce grading, standardization, and quality certification. This would make it easier to finance pledges, engage in electronic trading, make direct purchases, export, engage in forward/future trading, and implement a system of negotiable warehouse receipts for agricultural commodities. The Committee expects the model legislation to enable the

integration of agricultural markets across the country, facilitate the emergence of competitive agricultural markets in the private and cooperative sectors, foster an environment that will encourage significant investments in marketing-related infrastructure, and result in the modernization and strengthening of current markets[3]–[5].

DISCUSSION

Important Details

The Act's title has been modified to emphasize the growth of agricultural marketing as well as the Act's control of it. As a result, the Preamble of the Act has been revised to include provisions for the creation of an effective infrastructure for the marketing of agricultural output, the promotion of agri-processing and agricultural exports, and the construction of an efficient marketing system. Any legal person, producer, or local government may submit an application for the creation of a new agricultural product market. Markets can only be established on the initiative of State Governments under the current legal framework. As a result, customers, farmers, and private individuals may form many markets in a single region. Growers won't be forced to sell their goods via already established marketplaces run by the Agricultural Product Market Committee (APMC). A farmer will not be able to run for office in the APMC if they do not bring their goods to the market area for sale. A separate provision is created for the operation of certain agricultural commodities "Special Markets" or "Special Commodities Markets" in addition to already existing markets.

The APMC has been given explicit authority over:

1. Delivering market-led extension services to farmers.
2. Maintaining total transparency in the pricing system and transactions occurring in the market area.
3. Securing prompt payment for farmers' sales of agricultural products.
4. Publicizing information on arrivals and rates of agricultural product delivered into the market area for sale. Promoting agricultural processing, including activities for value addition in agricultural output.
5. Establish public-private partnerships for the administration of agricultural markets.

The Market Committee's tasks, responsibilities, and powers.

Subject to the provisions of this Act, the Market Committee shall have the following responsibilities: I to carry out the provisions of this Act, the rules, and the bye-laws made thereunder in the market area; to provide such facilities for the marketing of agricultural products therein as may from time to time be directed by the Director/Managing Director/Board or the State Government; and to perform such other acts as may be necessary in relation to the supervision, direction, and control of market; and to take all other necessary steps to ensure total transparency in the market's pricing structure and business dealings[6], [7].

Without limiting the applicability of the aforementioned clauses:

The Market Committee may: (i) maintain and manage the market yards and sub-market yards located within the market area; (ii) provide the facilities needed for the marketing of agricultural produce inside the market yards, outside the market yards, and inside the sub-market yards located within the market area; (iii) register or refuse registration to market functionaries and renew, suspend, or cancel such registration; and (iv) oversee the operation

of the market.Cooperative marketing organizations are groups of producers that band together to sell their products collectively and to get for themselves the benefits of large-scale commerce that an individual farmer is unable to obtain due to his or her little marketable surplus. In a cooperative marketing association, the farmers are in charge of running the business, and each member gets one vote, regardless of how many shares he has acquired. Depending on how much of the product he markets, the society divides the profit it makes among its members. In other words, cooperative marketing societies are created with the intention of selling the farmers who are members' goods jointly. The idea of commercialisation is emphasized. Its nature and economic motivations set it apart from other organizations. These societies operate similarly to private businesses in terms of structure, but they diverge significantly from the market economy in terms of goals and structures.

India's Cooperative Marketing System

While the aforementioned actions have helped the agricultural marketing system in certain ways, big farmers who have a sufficient amount of marketable surplus have reaped the majority of the rewards. Nonetheless, in order to satisfy their credit demands, small and marginal farmers continue to sell a large portion of their crops to moneylenders, who in turn pay them very poor prices. Hence, in order for small and marginal farmers to be able to sell their goods for reasonable rates, cooperatives must be formed.

A frequent characteristic of many countries where agriculture is a significant commercial sector is state trading. So, both rich nations with substantial agricultural trade interests as well as emerging nations with an agricultural economy have state trading firms. The fact that State trading activities place such a strong emphasis on agriculture would seem to indicate that governments believe State trading is a suitable method of achieving policy goals related to agriculture, such as supporting important agricultural products' prices or ensuring food security. State trade in the field of industrial goods may develop as a byproduct of the nationalization of a failing business or as a way for the government to pursue policies on items or industries seen to be of strategic significance[8], [9].

Government and private merchants coexist in partial state commerce. On the market, traders are free to purchase and sell. The government may impose various limitations on them, such as declaring stocks, putting a cap on the number of stocks that may be owned at one time, and submitting periodical financial reports.

In order to acquire goods directly from manufacturers at the set procurement price, the government enters the market. Via an extensive network of fair pricing stores, it handles the delivery of goods to consumers. This protects the interests of both producers and consumers while also keeping traders' bad behavior under control.

Finish all State Trading

When partial state trading fails to guarantee fair pricing for producers and make items accessible to consumers at reasonable costs, the government resorts to this extreme form of trade. The government or its agencies are solely responsible for the procurement and selling of commodities. Private traders are not permitted to make purchases or sales on the market. The only buyer and distributor of the product continues to be the government. Complete state trading requires a significant financial investment, the construction of storage facilities at key production and consumption hubs, and the appointment of capable individuals in order for the government to successfully take over the functions of professional traders' purchase and distribution. The government of India took control of the whole total sale of wheat in 1973, but it had to be abandoned very quickly[10].

CONCLUSION

All resources, including people, water, and soil, are extracted and used right away in traditional agriculture. Modern agriculture stresses resource conservation and renewable resource management strategies while using planned technologies. In conclusion, India's agricultural reforms are essential for both economic and farmer growth. Yet, the aforementioned changes only work when every element puts in their best effort. The state, the federal government, farmers, and mediators are among them. The only option to preserve balance between the future pressures of rising food demand and supply is via sustainable agriculture.

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CHAPTER 26

DEVELOPMENT OF AN AGRICULTURAL MARKETING AND MANAGEMENT SYSTEM FOR RURAL FARMERS

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ABSTRACT:

Through the use of ideas, rules, and technologies connected to electronic commerce in accordance with a complete and systematic approach, the strategic vision and efficacy of agromarketing may be realized. The website offers advice on optimum farming practices and enables farmers to sell their perishable produce online. It offers a bigger market and enables businesses to branch out beyond the local one. It enables distributors and merchants to purchase products from more farms. It makes it possible for wholesalers and retailers to grow their businesses. It offers online purchasing for agricultural supplies including insecticides, equipment, and tools. With features like a virtual calendar, forecasts, and other tools that assist farmers keep track of their productivity, it also makes it possible for them to recruit workers, which in turn makes it easier for farm laborers to obtain part-time jobs by having a work profile on the website.

KEYWORDS:

Agricultural Marketing, Businesses, Economic, Management, Rural Farmers.

INTRODUCTION

The initiative will help the government implement a significant reform in the agricultural marketing sector in an effort to improve rural markets and give smallholders in those markets more authority. To provide them a stronger bargaining position and greater power when deciding on policy, seeing marketing possibilities, and negotiating pricing, it is necessary to build roughly 1,000 producer organizations.

Help the government rationalize current regulations, taxes, and currency rates, among other things, to increase the effectiveness of the marketing system to upgrade market infrastructures, 700 km of rural roads, 200 km of access roads, 30 market centers, and post-harvest facilities must be built or repaired.In India, 86% of rural residents depend on agriculture for their income, and it generates 1.3 billion employment for small-scale cultivators and laborers. Before it gets the consumer, farm marketing in today's world must go through a number of trades or moves from one individual to another. Due to intermediaries who have no qualms about taking advantage of farmers' reliance on them, the output and revenue of the impoverished farmers have stalled.

Because farmers are not receiving adequate and prompt information about the newest agricultural technology, the majority of farmers are not achieving their maximum production potential. The Extension Systems of State Departments of Agriculture, State Agricultural Universities (SAUs), KVKs, KISAN, NGOs, and Private Extension Services have handled agricultural knowledge and information systems through different extension approaches in the transmission of technology. These Centers' primary goal is too continuously and immediately address concerns expressed by Farmers in the local tongue. By doing away with intermediaries, this system sets up facilities for farmers to offer their highly perishable

agricultural products (PAP) (such as fruits, veggies, plants, and flowers) directly to merchants at fair prices. The Farmers, Wholesalers, and Consumers benefit from this plan by receiving the goods at reasonable rates.

By comparing the available supply and demand, this method allows the surplus supply to be distributed to other marketplaces, preventing product waste. The centralized cloud storage system keeps databases for farmers, nodal centers, transportation, wholesalers, crops, weeds, soil, weather information, and domain experts' opinions. Similar issues are evident in the selling of agricultural goods with a brief shelf life, such as fruits, veggies, plants, and blossoms (extremely fragile agricultural products, or PAP). Inadequate delivery planning and lack of contact and collaboration among market players are the primary causes of difficulties. It causes delivery delays and quality declines. Therefore, innovation in agricultural business processes for PAP should concentrate on decreasing the amount of time needed to respond to customers, improving the quality of PAP provided to customers, accelerating the flow of trading information and services, and synchronizing the operations made by various trading partners involved in the supply chain, for example, resulting in making transport firms more efficient.

Cloud-based services

For better cultivation and better incomes, the Cloud can refresh the most current data on agriculture, product demand, and weather predictions from a variety of sources. Utilizing cloud platforms will lower the expense of maintaining solitary settings. Technologies are used cost-effectively and aid in the development of systems. The system's main contribution to agricultural marketing is that it ushers in a new breed of electronic farmers and wholesalers. It offers essentially conventional wholesale services, enhancing trading services with the power of computerized trade over the Internet and better market expertise.

IT technologies

Agriculture serves as these nations' main economic engine. ICT growth therefore primarily targets the farming industry. One of the major disadvantages is the lower funding cost for ICT equipment and upkeep. Thus, the idea of having an ICT tool that will keep a sizable but well-customized, updated, and protected database with immediate access but at an affordable investment cost is the focus of this project. Cloud computing is a novel ICT application. It enables users to access services like real-time calculation, data access, real-time analytics, and storing to end-users without needing to be aware of the precise position and system setup that the services are being delivered through. Therefore, the only way to better these emerging nations' farming industries and, by extension, their economies, is to do so. The effective adoption of the cutting-edge ICT utility known as cloud computing is one method by which this might be accomplished.

Help producer groups, grassroots organizations, traders, and processors access inventory and capital loans from commercial banks when necessary for promoting marketing activities by strengthening the capacity of the Ministry of Cooperatives and Marketing to gather, compile, and disseminate agricultural marketing information. Build and enhance links between producer groups, grassroots organizations, and processors, local marketing networks, and exporters the initiative will first be implemented in the marketing zone for the Northern and Southern Highlands, but corresponding policies will be created and implemented on a national level.The activities involved in getting an agricultural product from the farm to the customer are referred to as agricultural marketing. Planning, arranging, directing, and processing agricultural output in a manner that pleases farmers, middlemen, and consumers are all part of these services. This is accomplished through a variety of interconnected

processes, including production planning, planting, growing, harvesting, grading, packing, and packaging, transport, storage, and agro- and food processing. It also involves the provision of market information, distribution, advertising, and sales. Essentially, the phrase refers to the full spectrum of agricultural product supply chain activities, whether they are carried out via sporadic sales or through a more integrated network, such one incorporating contract farming.

In this suggested design, information sharing requirements between the engaging entities are provided. In addition to these information standards, it offers a guide for putting the necessary VAM features into practice. More specifically, separate TINA conforming software components to predetermined functionality and interactions, adhering to the object-oriented paradigm, represent the parts of the VAM design as necessary. The final design incorporates elements from the business, information, algorithmic, and technological perspectives. Implemented over a dispersed computing system is the VAM design. It is instructive to think of the suggested design as being divided into the three major levels listed below:

Applications for end users.

The execution of particular, designed trading counterparties, practices, and functions for dealing, buying, and selling PAP in local, regional, and global marketplaces is referred to as the end-user apps. These software programs, which are usually Web-based, are designed to simulate a range of business apps in the client, supplier, and transit company areas. Consumer Demand, Customer Advertiser, and Customer Forecaster components are examples of more specific consumer apps. Customers have the option to use the Customer Demand program. Consumer Demand, Customer Advertiser, and Customer Forecaster components are examples of more specific consumer apps. Customers have the option to communicate their long- or short-term purchasing choices for PAP through the Customer Demand program. Advertising consumer desire for perishables and publishing customer profiles are the responsibilities of the Customer Advertiser application. In order to estimate the demand for perishables and facilitate effective purchasing planning, the Customer Forecaster program provides a feature for dynamic forecasting.

Production Information, Provider Advertiser, and Production Forecaster components are examples of provider apps. It provides information on real production processes, including produce type and variation, farming technique or field photos, and product images. Through the supply of a comprehensive collection of themes and the publishing of provider profiles, the Provider Advertiser application is in charge of promoting the goods of farm providers. These forms include information about the supplier, such as the expected output amount, quality, access time, and cost.

A PAP metacatalogue is part of the wholesaler application program, which also has help from the client wholesaler agent, provider-wholesaler agent, and transportwholesaler agent. The PAP meta-catalogue serves as the wholesaler's knowledge basis and significantly fosters value-adding in the VAM by making it easier to describe demand, supply, and transit in terms of the relevant players. Each entry in the meta-catalogue is a composite object that contains data from the wholesaler's client, supplier, and delivery company databases.

The following data types make up the meta-catalogue: For each customer category, customer data contains organized information about the contact person, transportation location, product type and variation requested, expected amount needed, quality, demand period, and price of the requested products. For each provider type, provider data consists of organized information about the contact person, place of origin, production type and variation, form of

product packing, expected production amount, quality, availability period, and price. Transport firm data includes structured details for each transport firm's contact person, number of trucks and containers, characteristics of each vehicle (such as whether it is refrigerated or not), capacity to group loads, anticipated period of availability, and transportation costs. Workers can submit their profiles for farming labor through worker applications. This section may include a name, a hiring place, and a wage for agricultural labor. Employees can submit their profiles with one or more government agencies to receive pay and job evidence.

Growth of agricultural marketing

A typical African market

Agricultural marketing initiatives, particularly in developing nations, have aimed to focus on a number of areas, including infrastructure development, information provision, marketing and post-harvest issue training for farmers and traders, and support for the creation of an appropriate policy environment. Government-run marketing organizations have been developed in the past, although they have tended to gain less notoriety over time[1], [2].

Infrastructure for the Agricultural Market

Effective marketing infrastructure is necessary for cost-effective marketing, to limit post-harvest losses, and to lower health hazards. Examples of this infrastructure include wholesale, retail, and assembly markets as well as storage facilities. Markets are crucial for rural development, revenue creation, food security, and creating connections between rural and urban markets. Experience has taught planners that they must understand how to develop markets that satisfy the social and economic demands of a community and how to choose an appropriate location for a new market. In many situations, incorrect locations are picked, which leads to the construction of infrastructure being used insufficiently or not at all. However, creating a market alone is insufficient; care must be taken with how it will be run, maintained, and controlled.

Rural assembly markets are situated in regions of production and are mainly used as meeting locations for farmers and merchants to exchange goods. These marketplaces might be transient (perhaps weekly), like the hat bazaars in India and Nepal, or they could be permanent. Most urban regions are home to terminal wholesale marketplaces, where product is eventually distributed to customers via trade with merchants, caterers, etc. As retailing adapts to urbanization, supermarkets' expanding influence, and rising consumer buying power, wholesale marketplaces' features have undergone significant change. Traditional wholesale markets' management and organization may need to adapt to these developments.

Western nations have seen a significant evolution in retail marketing strategies, moving from old street markets to the contemporary hypermarket or out-of-town shopping mall. Despite the expansion of supermarkets, there is still room to enhance agricultural marketing in developing nations by building additional retail markets. Municipalities often consider markets more as money generators than as necessary infrastructure, though. Market regulation has to be done well. At a market, it's necessary to police both cleanliness regulations and tax collecting procedures. The upkeep of order outside of the market, though, is as crucial. If there is competition from unlicensed operators outside who do not contribute to the expenses of providing a decent service, licensed merchants in a market will not be prepared to collaborate in increasing standards[3], [4].

DISCUSSION

Assistance for Agricultural Marketing

Most governments have attempted to encourage better agricultural marketing at some point. In the US, the USDA's Agricultural Marketing Service (AMS) division offers programs that promote standards and grading, give market news services, and conduct tests. AMS monitors marketing agreements and places orders for promotion and research projects. Also, it makes purchases for government food programs. Moreover, USDA supports agriculture marketing research at several colleges. Before and during the Second World War, organizations like the Milk Marketing Board and the Egg Marketing Board supported the marketing of various commodities in the United Kingdom. The 1970s saw the closure of these boards. Britain created marketing boards as a colonial force in numerous nations, especially in Africa. Despite the fact that many were shuttered when structural adjustment measures were first implemented in the 1990s, others still exist today.

Government-sponsored marketing or agricultural business units have been developed in a number of developing nations. As a result of the deregulation of the agricultural sector and the closure of marketing boards nationwide, South Africa, for instance, established the National Agricultural Marketing Council (NAMC). The National Institute of Agricultural Marketing has been around for a while in India. These organizations focus largely on research and policy, but some of them also provide help for documentation, infrastructure supply, and other marketing channel-facilitating services. Examples from the Caribbean include the New Guyana Marketing Corporation in Guyana and the National Agricultural Marketing Development Corporation in Trinidad & Tobago

Newly Developed Events

Agribusiness, major retailers, and farmers are increasingly developing new marketing ties via methods including contract farming, group marketing, and other types of cooperative activity. In the framework of a value chain, donors and NGOs are becoming more interested in finding methods to encourage direct connections between farmers and consumers. The growth of regional markets (like those in East Africa) and the structured trading systems that should support these developments are now receiving more attention. Marketing channels for horticulture, dairy, and animal goods are being significantly impacted by the rise of supermarkets, notably in Latin America and East and South East Asia. Yet, "spot" markets will remain significant for a long time, calling for attention to the strengthening of infrastructure, such as those for retail and wholesale markets[5].

In India, 86% of rural residents depend on agriculture for their living, and it generates 1.3 billion employment for small-scale farmers and laborers. Before it reaches the client, agricultural marketing in today's world must go through a number of exchanges or transfers from one person to another. Due to intermediaries who have no qualms about taking advantage of farmers' dependency on them, the productivity and income of the impoverished farmers have stagnated. Since farmers are not receiving accurate and timely information on the newest agricultural technologies, the majority of farmers are not achieving their maximum output potential.

The Extension Systems of State Departments of Agriculture, State Agricultural Universities (SAUs), KVKs, KISAN, NGOs, and Private Extension Services have tackled agricultural knowledge and information systems via diverse extension approaches in the transmission of technology. These Centers' major goal is to continuously and immediately address concerns voiced by Farmers in the local language.

By doing away with intermediaries, this method sets up facilities for farmers to sell their highly perishable agricultural products (PAP) (such as fruits, vegetables, plants, and flowers) directly to wholesalers at fair prices. The Farmers, Wholesalers, and Consumers benefit from this system by receiving the goods at reasonable rates. By comparing the available supply and demand, this method allows the surplus supply to be sent to other markets, preventing product waste. The centralized cloud storage keeps a database of farmers, nodal centers, transportation, wholesalers, crops, weeds, soil, weather information, and domain experts' opinions. Similar issues are evident in the selling of agricultural goods with a short shelf life, such as fruits, vegetables, plants, and flowers (highly perishable agricultural products, or PAP). Inadequate distribution programming and lack of communication and collaboration among market players are the major causes of difficulties. It causes distribution delays and quality declines. Innovation in agricultural business processes for PAP should therefore concentrate on lowering the time needed to respond to customers, raising the quality of PAP offered to customers, accelerating the flow of trading information and services, and synchronizing the operations made by various trading partners involved in the supply chain, for example, resulting in making transport firms more efficient.

Cloud-Based Services

For better farming and better lifestyles, the Cloud can update the latest data on agriculture, product demand, and weather predictions from a variety of sources. The cost of maintenance in remote areas will decrease with the use of cloud platforms. Technologies are used cost-effectively and aid in the development of designs. The system's main contribution to agricultural marketing is that it ushers in a new generation of electronic farmers and wholesalers. It offers essentially conventional wholesale services, enhancing trade services with the power of electronic commerce through the Internet and better market information.

IT Technologies

Agriculture serves as these nations' main economic engine. ICT development thus primarily targets the agriculture industry. One of the biggest disadvantages is the lower investment cost for IT infrastructure and upkeep. So, the idea of constructing an ICT tool that would maintain a large but well-customized, updated, and protected database with immediate connection yet at a reasonable investment cost is the focus of this project. Cloud computing is a novel ICT application. It enables users to access services like real-time computing, data access, real-time statistics, and storage to end-users without needing to be aware of the precise location and system configuration that the services are delivered via. So, the only option to enhance these emerging nations' agricultural sectors and, by extension, their economies, is to do so. The effective adoption of the cutting-edge ICT technology known as cloud computing is one method by which this may be accomplished.

Current System:

The farming community lacks a computerized mechanism for selling their goods. Currently, a farmer visits the nearby market to sell their produce to a specific agent, who then instructs the farmer to return to the market later to receive the money from the sale. The product is sold by the agent to a dealer or another agent at a premium price for that market. The agent makes no effort to keep his commission from that. In order to deal with and the precise price at which their goods was sold, there is no other option. There is no transparency and no way for farmers to find out the prices of their crops at various marketplaces where they might sell them for huge profits. Despite all the chances that are knocking on their doors, farmers are unable to take use of them. The system does not provide farmers access to an e-learning platform that would enable them to learn about cutting-edge agricultural methods. He thus does not benefit to the fullest extent under the existing system.

The following limitations may make the PAP market a highly competitive market sector:

1. Variations in production and supply caused by the seasons.
2. The produce's perishable nature, which demands a quick market turnover.
3. The many manufacturing units' generally tiny sizes.
4. The consuming habits that are typical (usually frequent purchases of small quantities of produce).
5. The need for a wide variety of types and levels of certain goods.
6. A rising preference for wholesome, high-quality goods as well as prepackaged and less processed goods. Differentiating the market actors and their functions is crucial to get a clear perspective of the PAP supply chain. They include the following:
7. A producer can be a farmer who cultivates PAP and is eager to sell them as soon as feasible (after harvest).
8. The seller is interested in selling PAP that was obtained from producers. Sellers include agricultural cooperatives, agribusiness, food businesses, retailers, and exporters.
9. The wholesaler serves as a middleman for the provision of services that match supply and demand. Wholesalers are made up of exporters, importers, producers, sellers, and buyers as well as intermediaries, brokers, distributors, agricultural cooperatives, auctioneers, and commission merchants.
10. The buyer is interested in buying PAP from vendors, manufacturers, or wholesalers in order to resell them to customers. Retailers, agribusiness, food businesses, agricultural cooperatives, and importers are included in the participation.
11. Consumers buy PAP from sellers or manufacturers. This participant is often categorised as either solitary or group consumers (e.g., restaurants, hotels, hospitals).

The distinctions between sellers, distributors, and purchasers are hazy and may not always exclude one another. A wholesaler may also serve as a seller or a buyer, or an agricultural cooperative may be a seller, wholesaler, and buyer all at once. To differentiate between the two fundamental types of PAP markets decentralized and centralized we employ the level of centralization. Direct communication between buyers and sellers occurs in decentralized PAP marketplaces. These marketplaces include producer-to-consumer direct sales (sales at on-farm or outdoor markets) and producer-to-retailer marketing. In centralized PAP markets, one or more third parties (often wholesalers) serve as go-betweens between market participants to make it easier for items to be distributed and priced. Nowadays, peer-to-peer communication between market participants through telephone, telex, and fax, as well as related transportation and distribution operations, is the mainstay of commercial PAP trading procedures. There are several issues and defects, the most significant ones being:

1. Difficult and time-consuming processes for finding market participants, sometimes with questionable outcomes.
2. Product delivery delays, which might cause them to be less fresh when they reach the market.
3. A lack of coordination while exporting products.

4. High cost of transportation because haulage businesses often struggle to fulfill or optimize their loads and routes since transportation demands are not made public.
5. Lack of information exchange on new crop kinds, markets, market demands, and mobility within local and international markets.

Analyzing economic effects of Trade Policy Proposals

The purpose of ATPSM is to evaluate the economic effects of agricultural trade policy changes. These changes may be tariff cuts, introduction of or increases in market access preferences and/or modification of quotas. The model computes the associated changes in several variables, including trade revenue, welfare, tariff revenue and tariff quota rent. The principle of ATPSM is that trade policy modifications induce price changes that alter supply, demand, exports and imports. The model calculates a market clearing world price where the global sum of net import changes equals zero. The model estimates all effects in terms of changes from a reference period (calibrated to the year 2000). The model analyses the outcome of policy scenarios that specify cuts in out-of-quota tariffs, within-quota tariffs, farm support and export subsidies. Changes in tariff rate quotas may also be specified. When a country unilaterally cuts a tariff on a commodity this results in an increase in demand and reduction in supply of that commodity in that country that leads to an increase in the world price. Thus, for the country undertaking the tariff cut there are two effects on the domestic price. The first is a negative effect as a result of the reduction in the tariff and the second is a positive effect as a result of the increase in the world market price. The net effect is a fall in the domestic price (though this cannot be guaranteed when reforms are on more than one commodity in one region). The trade revenue change is the difference between the change in export and import values.

For a country that unilaterally cuts tariffs the export volume decreases while the export price change is unclear. The direction of the export value change is indeterminate (but usually negative). Both the volume and price of imports increase as a result of a unilateral tariff cut, resulting in an increase in import value for that country. The first, producer surplus, is the aggregate difference between price and marginal cost plus any quota rent received on exports. The second, consumer surplus, is the aggregate difference between marginal valuation and price. The third, net government revenue, only relates to revenue from import tariffs, including both within-quota and out-of-quota tariffs, and expenditure on export subsidies and domestic support. The fall in the domestic price resulting from a unilateral tariff cut reduces producer surplus and increases consumer surplus in that country. It also results in a reduction in government revenue if the initial tariff is small and there are no tariff rate quotas. These two conditions are not trivial and are worth discussing in more detail. The principle underlying the first condition is simple enough. Where tariffs are high enough a reduction in those tariffs will lead to an increase in imports that more than outweighs the fall in the tariff revenue per import. The most extreme example is where a prohibitive tariff is lowered to a non-prohibitive level, thereby increasing tariff revenue from nothing to some positive amount

System Suggested

In this suggested architecture, information exchange specifications between the interacting actors are provided. In addition to these information standards, it offers a guide for putting the necessary VAM capabilities into practice. More specifically, different TINA compliant software components with predetermined functionality and interactions, according to the object-oriented paradigm, model the pieces of the VAM architecture as necessary. The final architecture incorporates elements from the commercial, information, computational, and technological perspectives. Implemented across a distributed processing environment is the

VAM architecture (DPE). It is instructive to think of the suggested architecture as being divided into the three basic strata listed below:

Assistance Services

The installation of particular, programmed trade partners, methods, and functions for trading, importing, and exporting PAP in local, regional, and global markets is referred as as the end-user applications. These software programs, which are often Web-based, are designed to simulate a range of business applications in the client, provider, and transport company domains. Customer Demand, Customer Advertiser, and Customer Forecaster modules are examples of more specific customer applications. Customers have the ability to use the Consumer Demand application.

Customer Demand, Customer Advertiser, and Customer Forecaster modules are examples of more specific customer applications. Customers have the option to communicate their long- or short-term ordering preferences for PAP using the Consumer Demand application. Advertising consumer demand for perishables and uploading customer profiles are the responsibilities of the Customer Advertiser application. In order to estimate the demand for perishables and facilitate effective ordering planning, the Customer Forecaster program provides a module for dynamic forecasting [6]–[8].

Access, connection management, and service control are based on TINA architectural components for supporting services. Moreover, a variety of VAM-specific components are employed, including DPE services, demand management components, and resource management components. Components of demand management are in charge of managing demand from users (customers, providers, and transportation companies). A query plan generator, which is its primary part, is in charge of creating an execution plan for the user query. The handling of user-provided information is the responsibility of resource management components. They guarantee data integrity and the proper classification of the information provided.The method enables merchants and wholesalers to purchase products from more farms. It makes it possible for wholesalers and retailers to grow their businesses. It offers online purchasing for equipment and tools, herbicides, fertilizers, and more. With tools like a virtual calendar, weather forecasting, and other features that help farmers keep track of their agricultural output, it also makes it possible for them to hire laborers, who in turn will make it easier for farm laborers to find part-time jobs by having a work profile on the website[9], [10].

The suggested system's novelty is the introduction of a brand-new class of merchants, the VAM computerized wholesalers. In an online marketplace, the VAM computerized merchants control supply and demand and organize deals. They offer essentially the same trade services as in the past, and because of the Internet's computerized transaction skills and improved market expertise, they also add value to buying services.

In addition to farmers, agricultural development strategies must take into account those involved in marketing, trade, manufacturing, and agriculture who could either directly or tangentially aid producers in obtaining higher rates for their goods. Finally, effective marketing, efforts to update market yard facilities' infrastructure, open agricultural credit systems, increased capital investment, better technology, and management skills are all necessary for agribusiness to be a successful business. The task is web-based portal-based. Future creation of an Android and iOS software for producers who receive information from distant locations may be feasible. The majority of farmers in the state or nation are conscious that mobile phones can be used to transact business and receive information, giving them access to the most recent data on agriculture in their region.

CONCLUSION

The proposed system's novelty is the introduction of a brand-new class of wholesalers, the VAM electronic wholesalers. In an online marketplace, the VAM electronic wholesalers control supply and demand and organize transactions. They provide much the same wholesale services as in the past, and because of the Internet's electronic commerce capabilities and improved market information, they also add value to trade services. In addition to farmers, agricultural development strategies must take into account individuals involved in marketing, trading, processing, and agribusiness who might either directly or indirectly aid producers in obtaining higher prices for their goods. Lastly, for agriculture to be a successful business, effective marketing, attempts to update the infrastructure of the market yard facilities, transparent rural finance systems, greater capital investment, better technology, and managerial skills are all equally necessary. The work is web-based portal-based. Further development of an Android and iOS app for farmers who access information from faraway locations may be viable. The majority of farmers in the state or nation are aware that mobile phones may be used to conduct business and receive information, giving them access to the most recent data about agriculture in their region.

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