International Journal for Research in Engineering Application & Management (IJREAM)
ISSN : 2454-9150 Vol-06, Issue-07, OCT 2020

Potato Contract Farming in Hooghly District of West Bengal

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ABSTRACT - Globalization led to a radical change in agri-business industry. The taste and preference of consumers which ever since remained divergent in nature, started converging. Mom and pop stores started conceding ground to the big retail chains. The homogeneity of demand and dominance of structured retails called for re-configuration of agri-business value chain. Since, corporates are at the focal point in the agro-business industry, they for their own interest, re-designed agri-business value chain to reduce transaction cost. For this purpose, they have introduced contract farming. Starting its journey in developed countries, contract farming got diffused across the globe, particularly in developing countries having market in efficiency. In most of the developing countries, agriculture provides livelihood to millions of people. Therefore, it is important to understand the process of contract farming.

Since the inception of contract farming in India, Potato has always been one among the crops cultivated under contract. How is it managed in one of the highest potato cultivating districts in West Bengal in terms? Do the farmers accept on their own volition?

KEY WORDS: ***Literature, Contract farming, productivity, economy, value chain, participation***

I. INTRODUCTION

India started its journey as an independent country when large chunk of it, rural India, was characterized by abject poverty and extreme inequality. So, at the very onset, as an independent country, Government of India put all its might on self-sufficiency of food. Consequently, major portion of its budget of first five-year plan (1951-56) was directed to agriculture development and irrigation projects [1]. These measures were accompanied by land reform where redistribution of land to the tiller was initiated.

In spite of the fact that initial efforts were fructified to a great extent in terms of driving a country to a new dawn of agriculture, the subsequent five years plan started diverting the agriculture budget for urban development and import substitution [2]. Consequently, the country had to rely on food aid, and signed an accord with United States, under PL 480 program. It opened the floodgate of American subsidized wheat and other staples. By mid of sixties, India witnessed another famine with failed monsoon. In between, US India relationship became contentious over Vietnam issue. So, India did not have any other option but to go for a new path of agriculture which is called Green Revolution [3]. The main purpose of green revolution was to ensure quantum leap in Agriculture production in the developing countries. Green revolution policies included seed technology transfer with a proper back up by irrigation projects, extensive distribution of fertilizers, pesticides and other required materials. It ensured that farmers could access to required credit along with proper crop knowledge as an extension service. From the very beginning, the impact of green revolution was contentious. But one cannot deny the fact that it changed the socio-economic landscape of large part of India. During 1960 to 1990, over a period of just thirty years, food grain production doubled in India. Backed by tremendous productivity gain, India not only became self-sufficient in food, it started the coveted journey of becoming net exporter in food, but definitely at the cost of excluding the small and marginal farmers [4] This divide resulted into changing dynamics of socio-economic structure in rural India.

Other than the changed socio-economic dynamics, green revolution has left with another type of legacy, institutional legacy. Since independence, agriculture policies remained interventionist but it has reached an unprecedented high during green revolution. The role of state which was already controlling in nature became almost pervasive. With the purpose of stimulating the use of high yielding varieties by farmers, increasing production and ensuring a complete food security across the country, government of India came out with policies for controlling pricing, marketing as well as distribution, in nutshell the entire gamut of agriculture food chain [5]. These policies primarily included promulgation of MSP for food grains along with compulsory procurement by state, formation of regulated market and establishment of distribution system namely PDS (public distribution system)

 DOI : 10.35291/2454-9150.2020.0659

to reach out to the masses with required food grains at feasible price [6]. These regulations impacted Indian Agriculture immensely. The genesis and diffusion of contract farming in India could be attributed to these regulations.

OBJECTIVES

The objective of this paper is to study

- ✓ Sequential policy measures leading to Contract farming in general
- ✓ Process of contract farming in Hooghly district of West Bengal

II. METHODOLOGY

The paper is based both on secondary research and secondary data from numerous studies along with primary data based on discussion with farmers, middleman, bank officials, and company officials. Research papers were searched using different keywords from contract farming including contract farming, value chain, impact of contract farming on economy, income, productivity, etc. in science direct, EBSCO, Scopus, etc. Data has been taken from Government sources. Primary data encompasses structured interviews and informal discussion with potato farmers under contract and on contract potato farmers. 23 villages from 6 blocks have been included as study area depending on their contribution to potato contract farming.

STATEMENT OF THE PROBLEM

Majority of Indian farmers belong to the marginal and small category. Over the years, the number of small and marginal farmers has been growing at a steady rate. As on date, together they constitute 80 percent of all holding. Moreover, agriculture is a state subject and therefore land ceiling rules and regulations varied. As a consequence, some states have higher percentage of small and marginal farmers compared to others. In west Bengal land redistribution happened during 70s, consequently the state remained overwhelmingly dominated by small and marginal farmers. Therefore, it is important to understand the process of contract farming in a state dominated overwhelmingly by small and marginal farmers.

MOTIVATION AND PRACTICAL UTILITY OF THE STUDY

This paper is purported to discuss the policies and context leading to contract farming. Moreover, it details the process of contract farming in the context of Hooghly district in West Bengal, which is considered to be one of the highest potato producing districts in India. This could be helpful for the researchers to understand historical prelude of contract farming in India along with the process adopted by Pepsi in Hooghly district.

RESEARCH GAP

There are very few papers which discussed the entire end to end process of contract farming in a context where the majority of the farmers are small and marginal farmers. Moreover, there are very few studies in the area of contract farming involving the contract farmers in West Bengal.

III. LITERATURE REVIEW

The first pillar of the regulations namely minimum support price was purported for wheat and Rice and gradually rolled on to include 25 other crops which covered a significant portion of Gross Cropped Area.

FCI remained instrumental in distributing food grains which was stored under MSP system. Though MSP has been perceived as a significant contributor for providing farmers the much-required cushion against price shock, its implementation raised questions. Researchers found MSP as uneven in implementation geographically and with respect to crop variety [6]. This had huge impact in cropping pattern. Farmers started patronizing those commodities which had strong MSP backup jeopardizing production of other crops like oilseeds, pulses, etc. MSP has also been skewed towards states which had already established infrastructure to produce and store MSP supported commodities. Therefore, the dominance of states like Punjab and Haryana in FCI was very much conspicuous.

Government regulated markets happened to be another institutional legacy of green revolution. These markets have been dominating agrarian commerce since its inception. The markets set up by state governments were purported to ensure fair competitive trading environment for farmers, dealing with agriculture commodities. During green revolutions most of the states introduced agricultural produce marketing committee (APMC) acts based on central guideline. Till date, agriculture wholesale markets have been regulated by this act. The precept of the act is to ensure that commercial activity of any agriculture commodity notified in this act has to be confined within a specified market area. The markets must be properly equipped and conducive enough to carry out the transaction involving farmers. Prices ought to be fixed by transparent open auction in the presence of market officials. Charges pertaining to various agents have been clearly specified. Regulated markets called as Mandis played a crucial role from the time of green revolution for liberating the farmers from the exploitative relationship with the traders. As infrastructure for agriculture trading ever since independence remained underdeveloped, farmers had to depend on whims and fancies of traders. Thousands of mandis across India were purported to provide much needed support to farmers. But the role of mandis' and the APMC act remained controversial. Researchers argued that APMC act resulted into inefficiencies and high costs, hindered innovation and growth. Instead of curtailing, it has fostered the rise of middlemen. Because of the act, private

 DOI : 10.35291/2454-9150.2020.0659

sector investment in agriculture has been limited [7]. Cohen (2013), observed that APMC regulation contributed to corruption, inefficiencies and high level of imbalance in power [8]. It has been argued, over last two decades, in favor of amending the act and allow corporate to directly interact with the farmers. Conceding to the pressure in favor of reforms, many states implemented reforms which paved the way of getting contract farming diffused across the country.

LIBERALIZATION IN INDIAN AGRICULTURE

1991 onwards, Indian agricultural policy has witnessed a huge change. Instead of protectionist and interventionist policies, policy makers to a great extent liberated the agriculture space and created a conducive environment for private sector investment. Policy documents of five-year plans over 2002 to 2017 could corroborate the tectonic change of the thought process. Rising urban income, changing taste and preferences pertaining to consumption of foods had driven agriculture production from solely dependent on grains and pulses to export oriented high value addition product mix of vegetables and fruits [9]. The central government determined priority areas and encouraged diversification and modernization of agriculture sector. These reforms were purported to modernize value chain of these value-added commodities. Thus, modernization of production, storage, transportation was initiated so that those value-added commodities could be marketed. Three areas of reform were instrumental in modernizing Indian agriculture namely FDI reform, APMC act reform and state's initiatives to allow contract farming by private sector companies.

Inspite of the fact that India allowed 100 percent foreign ownership in food wholesaling in 1997, by and large it was still considered as a hostile environment for multinational food retailers who happened to be instrumental in driving modernization in food value chain. However, Government started taking initiatives to remove all the hindrance and started encouraging multinationals to modernize food value chain. But during congress led UPA government, situations again changed when government rolled back its position and allowed FDI up 51 percent subject certain stipulations devised by individual state. Multiple states started adopting the changes. Meanwhile, BJP led NDA came into power in 2014 and it has again revised previous government's decision. Government has declared its intention of changing the decision of previous government indicating job protection of family owned retailers as its prime concern.

Another important area for reform was APMC act. APMC act has been an area of contention since early 2000. It was considered to be the sole reason for begetting inefficiencies in Indian agriculture. Researchers argued that APMC held back any effort aiming modernization of agriculture value chain [5]. Acharya (2006) categorized APMC mandis as "government sponsored monopoly" [6]. Other researchers criticized APMC by saying that the very purpose of the act was defeated. The act was purported to cleave off inefficiencies and ensure transparency but in reality, it ended up as a major hindrance for farmers to get better price by preventing competition at the demand side, safeguarding interests of the middlemen [5]. Singh (2012) observed that most of the reforms had remained almost as good intention, never being realized and not a single private primary wholesale market could be set up [7]. Nevertheless, the amendment to the APMC act and other reforms over the years, have attracted domestic and multinational investment in agriculture value chain. Companies like Wal-Mart, a global giant established its footprint in food wholesaling sector in India. Pepsi and Unilever have invested heavily in different activities of food value chain. Because of the entry of multinationals and the investment they brought in, domestic food supply chain has changed a lot. Referring this change as quiet revolution Reardon and Minten et al (2013) noted a cascading effect of multinational investment on domestic players [10]. These investments jointly displaced traditional food value chain by modernizing, processing, storing and marketing facilities.

But inspite of these reforms, Growth in agrarian sector remained slow [11]. The proportion of total workforce employed in agriculture has not been reduced substantially, for example according to World Bank data, percentage of people employed in agriculture has declined from 61% in 1994 to 47% in 2014 which is considered to be much slower compared to transition in other emerging economy. Venkatesh (2013) compared contribution of agriculture to GDP against employment in agriculture sector and found a paradox [12]. While contribution of agriculture to GDP has been constantly diminishing and stood at 14% during the time of study, 60 percent of male and 80 percent of female worker's main source livelihood was agriculture. The study indicated that most of the workers in India had to depend on agriculture as a source of employment. Thus, the paradox demonstrated the failure of rapid growth of urban India to absorb the population from rural India. This failure inevitably resulted in widespread disparity between rural and urban India and agricultural and non-agricultural income. 800 million people from rural India which constituted 70 percent of India's population live in abject poverty while close to 30 percent of Indians live below official poverty line while millions more remain in close vicinity.

Given this backdrop, when modernizing forces in agriculture started becoming pervading across India, it has become imperative for small farmers to join the bandwagon of modern farming. The most conspicuous and probably most debatable path through which modern agriculture practices are getting diffused in rural India, is contract farming. Under the modified APMC act, it is allowed for the corporate to directly get in touch with the farmers. Consequently, many states allowed contract farming. Even those states which did not implement APMC fully, allowed some form of contract farming. Among the crops which are on the top list of contracting companies, Potato is one of them.

 DOI : 10.35291/2454-9150.2020.0659

IV. POTATO PRODUCTION IN INDIA

First domestication of Potato dates back to 8000 BCE in Latin America. Following the Spanish Conquest over Inca Empire, the Spanish introduced Potato in Europe in the second half of sixteenth Century. Potato was first introduced to India in the 17th century by Portuguese traders in western India and British traders and missionaries in West Bengal. But initially potato's acceptance as a reliable crop was problematic because the European variety could not match the hot and dry climate of India. It could gain high acceptance only in Punjab and West Bengal where it was considered as an important staple crop [13]. In 1949, central government established the Central Potato Research Institute (CPRI) purported to develop Potato varieties suited for Indian climates.

This effort consequently resulted in dramatically increased potato production. Potato is now ubiquitous in Indian diets. [14]. The temperature required for raising potato hovers between 20oC and 35°C with ideal tuberization temperature between 16-22oC. Potato is grown across India in varieties of soil types like hills, alluvial, red and under different climatic conditions. Therefore, over the years it has witnessed a sharp rise in production. From 1970 to 2008, the crop area under potato increased by 150%, while the output value of potato doubled [15]. With a rising trend ever since potato has become a significant cash crop across many states. The production of potato in India is primarily determined by climate. Gangetic plains of north and east India witness highest concentration of potato production (Table1)

TABLE 1: TOP TEN STATES IN TERMS OF POTATO PRODUCTION (PRODUCTION IN 000 TONNES)

	Five-year average 2014-15 to 2018-19		2018-19		2019-20	
State	Production	Percentage	Production	Percentage	Production	Percentage
Uttar Pradesh	15030.64	31.12	15323.55	30.53	15000	28.88
West Bengal	11057.82	22.589	11000.00	21.92	13300.00	25.60
Bihar	6992.70	14.48	8153.91	16.25	8153.39	15.70
Gujrat	3564.85	7.38	3706.00	7.38	3509.00	6.75
Madhya Pradesh	3225.95	6.68	3315.00	6.60	3420.00	6.58
Punjab	2473.23	5.12	2724.44	5.43	2800.00	5.39
Assam	1003.12	2.08	773.48	1.54	1139.84	2.19
Chhattisgarh	638.27	1.41	797.42	1.59	711.07	1.37
Jharkhand	668.20	1.38	695.46	1.39	709.40	1.37
Haryana	853.75	1.77	897.85	1.79	486.00	0.94

Source: http://agmarknet.gov.in/PriceTrends/SA_Pri_Month.aspx

Three states namely Uttar Pradesh, West Bengal and Bihar contribute almost 70 percent of the potato produced in the country.

POTATO PRODUCTION IN WEST BENGAL

77% of farmers in West Bengal are marginal farmers followed by 17% small farmers. The net cultivation area is 56.00 (app.) lakh hectares. 52% of the Gross cropped area is being cultivated. Rainfall, temperature, soil varieties have been parameters based on which Planning commission classified agro climate zones. West Bengal has six agricultural zones within three agro climate regions. The three major potato-growing districts namely Hooghly, Midnapore (W) and Burdwan are covered under Gangetic Alluvial, Vindhyan Alluvial and Coastal Saline agro climate zones. These three districts contribute almost 70 percent to the total potato production in West Bengal. Over the years the area and production of potato in the state of West Bengal has been gradually increasing sans certain fluctuation in yield due to recurring attacks of Late blight and other diseases. As on 2019, West Bengal is the 2nd highest potato producing state in India.

POTATO PRODUCTION AND MARKETING IN HOOGHLY DISTRICT

Hooghly is one of the central districts of West Bengal extending between 20°30′32″and 23°1′20″ of North latitude and between 87°30′20″ and 88°30′15″ East longitude, spanning over an area of 3149 sq. km. The district is bounded by Bardhaman, Bankura in the north-west, East Midnapore and Howrah district in the south, Nadia and North 24Parganas in the east. It has got four subdivisions namely Chinsura Sadar, Chandannagar, Serampore and Arambag. These sub-divisions are further sub-divided into 18 Development blocks. Agriculture remained principal contributor to the economy of Hooghly district. The agriculture produce constitutes of paddy, potato, jute, vegetable, etc. Drenched by two rivers namely Hooghly and Damodar, district Hooghly is one of the fertile regions in the world and thus called 'The Green Delta'. Close to 70% of the population is dependent on agriculture for their livelihoods.

Potato is grown well when the temperature is relatively cool; humidity is low with less windy and sunny days. Though potato is cultivated in all the blocks of this district, Dhaniakhali, Arambagh, Goghat, Pursurah, Haripal, Polba-Dadpur, Tarakeswar, Punduah and Singur contributed much of its production. Dhaniakhali, Haripal, Punduah, Tarakeswar and Pursurah are endowed with many potato cold storages but the capacity falls short during bumper crop production. Consequently, small farmers have to sell their produce to local merchants at below the production cost, which has made it difficult for the poor farmers to sustain their livelihood. Over the past decades, potato production has increased significantly by the usage of chemical fertilizers. It caused exhaustion of soil fertility.

 DOI : 10.35291/2454-9150.2020.0659

TRADITIONAL POTATO VALUE CHAINS IN HOOGHLY DISTRICT

District Hooghly enjoys strong history of localized potato production. West Midnapore, Hooghly, Burdwan have historically dominated potato production in West Bengal, and in Hooghly potato is an important cash crop. The traditional value chain of potato is built around the APMC system. Potato farmers using this value chain do not sell directly to consumers or retailers barring few exceptions when they sell it in local market. Farmers normally manage to source seed, loan and other required inputs on their own through their informal sources. Once the harvest is done, a local trader who plays the role of grader and aggregator collect the produce and get it transported to local mandi. The produce then pass through a number of intermediaries including APMC commission agents, trader, wholesales before it actually reach to the end consumers. Because of scarcity of cold storage infrastructure in Hooghly, small farmers often do not have any other option but to sell soon after the harvest. Because of this compulsion they cannot take advantage of price movement or take measures against price volatility. Small farmers across India follow more or less similar kind of value chain. However, traditional value chain is often criticized to beget inefficiencies because of its unnecessary complex structure lacking transparency.

Therefore, it is detrimental both for farmers and consumers [16]. Neoliberal economists criticize the traditional value chain because of its high transaction and marketing cost [17]. Farmers face problem in sourcing seeds, credits and other inputs. They often do not have any other option but to depend on APMC commission agent to get inputs and credit which many a times result into exploitation.

Moreover, traditional value chain failed to provide small farmers the skill, knowledge and extension services required to grow a new crop in a situation when states started withdrawing its intervention from agriculture [17]. Further, farmers are forced to sell their crops to middlemen because of their inability to access remote market. Asymmetry of information regarding price always acts against farmers and therefore they can't fend off against vagaries of price [18].

From the perspective of consumers, traditional value chain failed to meet the changing demand of consumers. A sizeable portion of the growth in demand of potato could be attributed to rise in income and urbanization coupled with changing dietary pattern of consumers' proclivity more towards fast food products like potato chips [19].

This resulted into increasing demand for processed salted snacks like potato up to 20% per year (Pepsi Co) in India. In order to cater to the demand, agribusiness firms need to procure a particular variety of potato with specific attributes and quality suitable for chips. Because of complex, opaque value chain, agribusiness companies could neither get things done by the farmers nor procure the specified quality and quantity at the spot market. Companies face problems in even communicating with small farmers. Further, farmers also remain so much skeptical about new varieties because of lack of information and direct contact from the company, they don't want to change to new variety. Without assurance of quality and quantity of the produce agribusiness companies refrain from investment. Things started changing with the advent of contract farming.

POTATO CONTRACT FARMING IN HOOGHLY DISTRICT

In Hooghly, PepsiCo (manufacturers Frito Lay branded potato chips) controls the contract scheme. PepsiCo was one of the first multinationals to enter into Indian agriculture, and is considered to be pioneering company in Potato contract farming in India. Pepsi initiated contract farming with a purpose to ensure standardization in procurement of chipping potato. Potato chip processors require potatoes with low reducing sugar levels (<0.2%), high dry matter content (>20%), and standardized shape and size. The presence of high sugar content in potato makes brown colored chips due to reaction between amino acid and sugar during frying process, which is called Maillard reaction. These chips are poor in taste with high cost. High cost is a result of low product recovery rate, usage of cooking oil in higher quantity and higher processing time [20]. Table potato purported for domestic consumption possesses higher sugar content and therefore not suitable for chips. Because of unavailability of chip grade potato in APMC markets, firms face high transaction cost in terms of procuring right quality and quantity of chip grade potato.

Contract farming let the firms interact with farmers directly and could intervene at some important stages of potato production to ensure the desired quantity and quality

Pepsi provides the farmers with new chipping potato variety, specially bred for low sugar content and other prerequisite suitable for chipping grade potato. In order to enhance acceptance among farmers Pepsi offers fixed price contract. In this contract, Pepsi provides schedules for the produce, advice from company's agronomists and required inputs tailored for chip grade potatoes. Pepsi has put in place grading system according to standard of the produce so that the farmers can be incentivized and encouraged to follow the schedule designed by their agronomists. Potatoes with high sugar content, undersized or partially damaged are scheduled to be rejected. Pepsi also intervenes in transportation of potato as soon as the produce is harvested so as to minimize the rotting and other damages.

Other than crop specific micro level motivation, contract farming in true sense is a governance issue, more specifically an issue related to value chain configuration. Corporate farming particularly for multinational companies is not possible in India because foreign farms are not allowed to own or lease large scale agricultural land. Moreover, post-

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independence India has witnessed major land reforms. As a consequence, different states have different land ceiling for ownership. Some states have stringent ceiling, limiting the amount of land owned by an entity with a purpose of redistributing lands to the poor people. Therefore, corporate farming has remained politically most sensitive issue. Contract farming helps firms bypassing the highly restrictive laws.

In Hooghly district, under contract farming potato passes through far fewer hands than in traditional value chains. PepsiCo uses potatoes from Hooghly to supply to its processing plants in Howrah. Potatoes processed in Hooghly by PepsiCo are distributed to supermarkets and other retailers through the east and north of India. The location decision depends solely on recruitment of local agents. Local agents in turn take care of farmers' recruitment. So, local agents enjoy significant power in determining the villages for farmers' recruitment. Agents many a times are politically and socially well connected. The proximity of a village to agent's home village is a significant criterion for selection. For Pepsi, agent is extremely important because through the agent contract farming as a concept gets acceptance among farmers. Agents understand local context therefore contract farming gets embedded with the local realities. For Pepsi, agents help company to reduce transaction cost of interacting and coordinating hundreds of small farmers. Many a times, local agents also provide legitimacy to the project and company leverages agent's reputation and knowledge. Initially when Pepsi started contract farming in Hooghly, it started with direct contract model where Pepsi employees were first point of contact but over the years with rising number it has become extremely cumbersome to ensure proper services.

Consequently, PepsiCo had to introduce the agent model to overcome these difficulties. The role of the agent is extremely important to make contract farming success. Agents normally perform lot of activities and roles including

- ✓ Market Development role: organizing meetings at the village level, persuading farmers for cultivation under contract
- ✓ Diffusion of modern agricultural practices: With the help of company officials, advise farmers on nuances of chip grade potato cultivation. Ensuring field visits with experts. Diffusion of information, by organizing hands on training to with new technology like potato planter, harvester, etc
- ✓ One stop shop for all queries: A place where all the questions of the farmer can be addressed. A meeting place of farmers with extension service team from company
- ✓ Aggregation: Aggregator for seeds, chemical kit, fertilizers, helping in weighing of produce, procuring harvest, managing transport, also helping in documentation for contracting and availing loan for farmer

Cultivating chip grade potato is cost intensive. Small farmers on their own cannot afford it, so they need credit facility. For majority of farmers, the invested capital comes from credit. Credit plays the role of lubricant for capital starved farmers. The contract farming mechanism itself plays role of collateral because of fixed price and guaranteed market. Pepsi helps farmers to get crop loan from State Bank of India or respective commercial banks, by which farmers manage working capital requirement. PepsiCo made a MOU with the State Bank of India where the bank agrees to provide loans to PepsiCo contract farmers under certain stipulations mutually discussed and agreed. The agreement ensures that PepsiCo pays directly to the crop loan account following procurement of the harvest given that the concerned farmer has taken loan from the bank. This makes the bank recover any loans made to PepsiCo contract farmers almost automatic, till the contract farmers honors the contract and sells to PepsiCo. Pepsi roped in the chemical companies to ensure that the farmers get the plant protection chemical kit. This is an essential input to stave off pest and other diseases and produce a good quality crop. The purpose of this kind of partnership is to provide the farmers with sophisticated tool for integrated potato crop management. The PepsiCo employs a field team to supervise the production process at farmers' level. This team comprising of experts from PepsiCo and other chemical companies visit farmers and provide them all the necessary advices for free. The experts from PepsiCo and the chemical company visit the contract farmer normally once in crop cycle, and also as and when needed. The agriculture toolkit prepared in collaboration with agronomists from PepsiCo along with the experts from the chemical company is given to farmers at discounted price. The contract itself is sometimes written and sometimes unwritten accepted norms between PepsiCo and the contracting farmers wherein farmers agree to produce a specific type of potato in specific quantity using specific growing schedules and inputs and PepsiCo in turn agrees supply inputs and extension services and to pay a guaranteed stipulated price on harvest. The contract farming does not encompass only the two parties but several parties are involved in a contract including input supplier, who supplies required input at below market price, local banks, which extends credit so that farmers can meet their planting and harvesting costs. Contract normally comprises of the details of purchase price of potato along with purchase price of seeds, other inputs, loan facility, payment process and other required extension services.

The accepted quality for harvested potato is also specified in the contract, with the condition that the firm may reject the material that does not meet these standards. Normally contract is designed for one growing season. At the beginning of the contract season, contract price gets

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announced which is determined by combination of prevailing market price and production cost [21].

According to PepsiCo the fixed price offered at the beginning of the season will be on average around 10% less than the current national market price for chipping potato varieties. However, market price remains volatile, making the contract attractive. (Table 2 wholesale price in last 3 years).

TABLE 2: ALL INDIA MONTHLY AVERAGE WHOLESALE PRICES OF POTATO

	2016	2017	2018	2019
January	912.1	1150.65	985.3	1024.62
February	949.8	861.99	995.1	974.97
March	962.2	906.2	1045.8	1050.7
April	1391.6	1040.1	1234.1	1210.6
May	1427.9	1390.0	1465.1	1234.1
June	1559.9	1410.3	1600.0	1316.3
July	1668.7	1219.5	1560.8	1254.4
August	1696.6	972.5	1523.9	1276.3
September	1806.5	979.4	2064.8	1249.9
October	1484.9	802.4	1557.1	1337.6
November	1611.9	866.4	1522.2	1561.5
December	944.9	971.0	1057.8	1690.4

Source: http://agmarknet.gov.in/PriceTrends/SA_Pri_Month.aspx

Sometimes, PepsiCo increases the contract price if the market price for chipping potato increases at the time of harvest. The legal status of contract always remains skewed in favour of the company because of the prolonged legal process which a marginal farmer cannot endure. Therefore, in true sense, farmers have no legal protection or redress mechanism if the firm dishonors any clause in the contract. Therefore, trust and reputation play most important role in ensure the proper enforcement of the contract. Though the contract is informal in nature, both the parties in order to safeguard their reputation have to honor the contract. Any default might jeopardize not only the reputation but also the future access to the market.

V. FINDINGS & SUGGESTIONS

PepsiCo's contract demands that farmers must exclusively sell all of their potato to the firm at the agreed price. If during the harvest time a farmer gets an opportunity to have better price, he often eludes the stipulations and sells the produce to the highest bidder. This practice is called side selling and considered to be a risk for firms involved in contract farming [22].

In Hooghly district, few farmers sometime go for side selling of their potato crop if the market price increases. In order to prevent side-selling, Pepsi has initiated a seed to crop conversion scheme. For e.g., conversion ratio1:3 implies that if 7 quintal seeds were bought and 21 quintals of output was delivered to the firm. Incentives were designed based on this conversion ratio. Higher conversion ratio helps farmers to get rebate on seeds price. This rebate could only be available during next year. The purpose of the scheme is to use positive reinforcement so that the farmers grow their crops well, as higher productivity implies higher seed rebate next year. Secondly, the scheme creates a switching cost for the farmers and ensures that the farmers continue with the company.

Besides, PepsiCo arranges crop insurance for the farmers. It has roped in AIC, a national agricultural insurance company for providing cover for crop damage caused by unforeseen events. The insurance policy covers the loan each farmer takes out. Normally, it is extremely cumbersome in India for the Small farmers to secure crop insurance at an affordable premium. Insurance firms remain reluctant to negotiate with large number of small farmers due to high transaction cost [23]. The contract scheme allows insurance companies to reduce transaction costs by dealing with the firm or agent, instead of multiple individual farmers. So, this is a win-win proposition for both the parties.

But, notwithstanding the benefits, there remains lot of uncertainty and risks in potato contract farming [23]. Several types of risk are involved in the operation of the scheme, and distributed according to the terms of the contract. First is price risk. Farmers always remain skeptical on possible future price for their harvest. The fixed price determined by the firm could eliminate this risk substantially. This encourages production in the same way that the Indian government minimum support price does.

Second is production risk. Firms could eradicate the risk by outsourcing the production . The farmer must bear the income loss that result from disease, adverse weather and pests, as well as labor or other social issues. Third is geographical risk. Firms could reduce this risk through its spatial mobility, ensuring problems in supply from farmers in one area can be buffered by supply from other areas.

VI. CONCLUSION

This chapter traces the origin of policy framework and the inflection points of Indian Agriculture. It discusses about the structure and operational dynamics of Potato farming in Hooghly district of West Bengal. The potato farming scheme that operates in Hooghly anchor modern potato value chain that has emerged as a consequence of inefficiency of traditional value chain. The purpose of contract farming was to ensure uninterrupted supply of potato which could be converted as chips for the urban consumers. In doing so, process standardization was necessary. The paper discusses in details process standardization by the principal company. In order to ensure standardized output, input standardization is necessary, therefore, the principal company controls that specific activity in the value chain. The company incentivizes the farmers who opt for contract farming by reducing the price risk, market access risk, etc. The paper talks about the role of local contract agent which remains as the crux for making contract farming a success.

 DOI : 10.35291/2454-9150.2020.0659

ACKNOWLEDGMENT

Authors acknowledge to every contributor, whose works could assist the authors to understand the subject and the context of the research

REFERENCE

[1] S. Fan, A Gulati. & S. Dalafi. "Overview of Reforms and Development in China and India. In A.Gulati & S. Fan, eds. The Dragon and the Elephant: Agricultural and Rural Reforms in China and India. Washington DC: International Food Policy Research Institute (IFPRI), 2007. pp. 10–44.

[2] B Dorin. & F Landy, "Agriculture and Food in India: A Half-century Review, from Independence to Globalization, New Delhi: Manohar, 2009, PP. 44-49

[3] C.P Timmer. "Reflections on food crises past. Food Policy",2010, 35(1), pp.1–11.

[4] H.S. Sidhu "Crisis in agrarian economy in Punjab: Some urgent steps", Economic and Political Weekly,2002, 37(30), pp.3132–3138.

[5] R Chand "Development Policies and Agricultural Markets", Economic and Political Weekly, 2012. 47(52), pp.53–63.

[6] S.S. Acharya "Agricultural Marketing and Rural Credit for Strengthening Indian Agriculture", 2006, Asian Development Bank.

[7] S. Singh "New Markets for Smallholders in India: Exclusion, Policy and Mechanisms", Economic and Political Weekly,2012, 47(52), pp.95–105

[8] A. Cohen "Supermarkets in India: Struggles over the Organization of Agricultural Markets and Food Supply Chains" University of Miami Law Review, 68(19), 2013, pp.19–86.

[9] P. K. Joshi, & A. Gulati "From Plate to Plow: Agricultural Diversification in India. In A. Gulati & S.Fan, eds. The Dragon and the Elephant: Agricultural and Rural Reforms in China and India. Washington DC: International Food Policy Research Institute (IFPRI), 2007, pp. 384–402

[10] B. Minten, T. Reardon, & A. Vandeplas "Linking Urban Consumers and Rural Farmers in India" Discussion Paper, International Food Policy Research Institute (IFPRI), 2009

[11] J. Lerche, "Agrarian crisis and agrarian questions in India", Journal of Agrarian Change,2011, 11(1), pp.104–118.

[12] P. Venkatesh "Recent Trends in Rural Employment and Wages in India: Has the Growth Benefitted the Agricultural Labors?" Agricultural Economics Research Review,2013, 26, pp.13–20.

[13] Smith, A "Potato: A Global History", London: Reaktion Books, 2011.

[14] T. Reardon, K Chen, B Minten, & L Adriano "The Quiet Revolution in Staple Food Value Chains: Enter the Dragon, the Elephant, and the Tiger, Mandaluyong City, Philippines: Asian Development Bank,2012

[15] E Kannan, & S Sundaram, "Analysis of Trends in India's Agriculture Growth. Working Paper 276, Institute for Social and Economic Change Bangalore" 2011

[16] A. Pachouri "Economic Inefficiencies in Farm-Market Linkages in Agriculture Value Chain in India: Problems and Solutions" ISAS Working Paper No. 163, Insitute of South Asian Studies, National University of Singapore,2013

[17] P.S. Birthal, "Making Contract Farming Work in Smallholder Agriculture" In A. Gulati, P. K. Joshi, & M. Landes, eds. Contract Farming in India: A Resource Book. Indian Council of Agricultural Research, 2008

[18] P. S. Birthal, A.K. Jha, & H. Singh "Linking farmers to markets for high-value agricultural Commodities" Agricultural Economics Research Review,2007, vol 20, pp.425–439.

[19] A. Misra, Singhal, N., Sivakumar, B., Bhagat, N., Jaiswal, A. & Khurana, L. "Nutrition transition in India: Secular trends in dietary intake and their relationship to diet-related non communicable diseases" Journal of Diabetes, 2011, 3(4), pp.278–292.

[20] S.K Pandey, R. S. Marwaha, D. Kumar, & S. V. Singh "Indian potato processing story: Industrial limitations, challenges ahead and vision for the future" Potato Journal, 2009, 36(1-2), pp.1–13

[21] B. Pritchard. & J., Connell "Contract farming and the remaking of agrarian landscapes: Insights from South India's chilli belt" Singapore Journal of Tropical Geography, 2011, 32(2), pp.236–252.

[22] C.B Barrett, M. E Bachke, M. F Bellemare, H. C Michelson, S., Narayanan, & T. F., Walker (2012) "Smallholder Participation in Contract Farming", Comparative Evidence from Five Countries. World Development, 40(4), pp.715–730.

[23] M Punjabi, "Supply Chain Analysis of Potato Chips: Case Study of PepsiCo's Frito Lay in India"Working Paper, Food and Agriculture Organization (FAO), 2008

[24] C Oya "Contract Farming in Sub Saharan Africa: A survey of approaches, debates and issues" Journal of Agrarian Change, 2012. 12(1), pp 1-33

 DOI : 10.35291/2454-9150.2020.0659