

## **Spotlight on the role of the Government in Doubling of farmer's income- An Empirical Framework**

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### **Abstract**

Our Honorable Prime minister Shri. Narendra modi's vision is Doubling of farmer's income by 2022 which was emphasized by Honorable Finance minister St. Nirmala Seetharaman in the announcement of Union Budget 2020-21. In this paper we shall discuss in detail about the perception of economic experts with regard to the seven point agenda discussed in the committee report on doubling of farmers income which will definitely give shape to the dream vision of Honorable Prime minister of the nation. In this paper we will analyze in detail about the factors that contributes to doubling farmer's income by 2022. Factor analysis by principal component method is found suitable to reduce variables pertaining to factors that brings the necessity for doubling the farmer's income by 2022. Results reveal that eight predominant factors are derived namely agri logistic factor, Risk management factor, Knowledge dissemination factor, agricultural marketing factor, sustainability factor, resource efficiency factor, governance and structural reforms based factor. The researcher concludes that agriculture can be made viable when it is practiced as an agri business.

**Key words: Doubling income. Farmer, Agriculture, Logistics, Governance, Risk management**

## 1.1 Introduction

Our Honorable Prime minister Shri. Narendra modi's vision is Doubling of farmer's income by 2022 which was emphasized by Honorable Finance minister St. Nirmala Seetharaman in the announcement of Union Budget 2020-21. India is agrarian based economy. The Committee on doubling farmers Income was formulated by Government of India which comprises of members drawn from Indian Civil services working on the interest of farmers taking into consideration the complexities and challenges faced by agricultural sector. The Doubling of Farmers Income committee comprises of more than 100 resource persons across the country from the various field such as academics, consultancy, farmers enterprises, commerce, professional bodies and trade. These expertise tends to extend their knowledge, gather more information to draft the report on Doubling of Farmer's income in order to make the vision of Prime minister of the nation to come true. In this paper we shall discuss in detail about the perception of economic experts with regard to the seven point agenda discussed in the committee report on doubling of farmers income which will definitely give shape to the dream vision of Honorable Prime minister of the nation. This Inter ministerial committee constituted to draft the report also focused on revamping the challenges faced by the agricultural sector by expanding the irrigated area, easy accessibility of credit facilities to the farmers to buy inputs such as seeds and chemicals and fertilizers and threw light on allied activities such as animal husbandry, horticulture, floriculture, livestock, piggery, fisheries, forestry. Price is the important variable which is to be highlighted when we discuss about doubling of farmers income. Price is determined as the income earned by farmers through conducting agriculture activity. Price determines the welfare of the farmers and influences the welfare cycle of the farmers to the great extent. Whole sale price index fixed for agricultural commodities produced by the farmers may be declared as the representative for the prices received by the farmers to their produce.

According to the committee report agriculture and allied sector contributes to the great extend to the country GDP on the production based approach in terms of Gross value added which includes crop sector, livestock, fisheries and forestry. Price policy acts as a pioneering mechanism which tends to motivate the farmers to procure more output and contributes to the economic growth of the nation. Indian agricultural price policy deals with support price, issue price and procurement price. The support price is otherwise called as administrative prices which is the combination of agricultural

costs and prices notified by the government as minimum support price. The minimum support price is based on certain profit margin to the farmers taking into consideration the cost of crop production. Procurement price is the price where the government itself procure the food grains. The price at which the agricultural commodities like rice and wheat are issued at the concessional rate through public distribution system is called issue price. Farmers Income is the sum of the income earned through crop cultivation, wages paid to the farmers, income earned by farming of animals and non farm business income like poultry, livestock etc. The wages of agricultural inputs Such as fertilizers, seeds, chemicals, insecticides and pesticides and credit granted by the banks to buy these inputs, technology adopted by the farmers to undertake agricultural cultivation plays a predominant role in considering the enhancement of income earned by the farmers. The irrigation pattern adopted by the farmers and crop yield pattern impacts the income earned by the farmers. The committee report emphasized that rural infrastructure plays a vital role in doubling the farmers income where the rural infrastructure which includes roads, irrigation, markets and electricity. Public and private investment is mandatory in the agriculture and allied sector in order to strengthen the rural infrastructure like roads and electricity. Taking into consideration the interest and farmer's welfare, our government has formulated various schemes such as National food security mission, Rashtriya Krishi Vikas Yojana, Pradhan mantri Krishi Sinchai yojana, National agricultural market for electronic trading, National livestock mission, Pradhan mandri Fasal Bima Yojana, Soil health card scheme, pulses development programme for enhancing the agricultural growth and income of the farmers across the country. The income approach tends to be more beneficial to the farmers as it takes into consideration the quantum and output price, input quantum and its price. This approach emphasis that increase in the net income of the farmers enhances efficient monetization of production without which ther is not good efforts to the farmers. With the enhancement in the size of landholding the farm cultivation tends to increase boosting the farmer's income. This committee also estimated the projected investment need to be made in the agricultural sector both under public and private sector wise which paves the great way in enhancing the farmer's income for next seven years taking into consideration incremental capital ratio. Institutional credit facilities must be provided to the farmers to improve the capital use efficiency in public sector projects maximizing the dividends. The committee emphasized in order to promote agricultural growth and double crop diversification can be undertaken. Here High value crop includes fruits and vegetables. Adoption of micro irrigation enhances the agricultural production doubling the farmer's income . The committee

emphasized on the private trade denomination in the markets for fruits and vegetables. In order to augment the farmer's income the farmer's must engage in post harvest logistics through Farmer's producer organization and village producer organization. Increase in the cost of agricultural inputs declines the farmer's income. In order to double the income of the farmer's income by 2022-23, effective strategy need to be implemented which focus on the reducing the cost and increasing the production, enhancing the farmer's skilling through diversification of non- farm income enhancement and effective risk management. Effective post production logistics is mandatory to establish the physical connectivity with the markets. In this paper we will analyze in detail about the factors that contributes to doubling farmer's income by 2022.

## 1.2 Review of Literature

**Raphael Lencucha, Nichole and Anne Marie (2020)** highlights unhealthy foods causes communicable diseases. The author analyses about government agricultural policy and production. The author reveal that inform dialogue between the health and agricultural sector and evaluative research on policy for alternatives to tobacco production and unhealthy food supply. **Rajendra Gurung and Brad (2008)** emphasis that with the growth in urban population and increase in the global affairs , India policies have become more important implications for the global agricultural trade and global markets. **Gulati and Narayanan (2003)** calculate the implicit fertilizer subsidy accruing to farmers via an import parity price method. **Nilesh (2015)** highlights that agriculture is the primary occupation in India and this paper analyze about the wheat production in India. **Raka Saxena (2017)** examined the sources of agricultural growth and emphasized on effective policy options technologically to enhance the agricultural growth by increasing farmer's income yielding good dividends. The authors emphasizing the effective co-ordination of centre and state is mandatory for the successful implementation of doubling of farmer's income by 2022. **Akbar (2020)** emphasized that climatic conditions, rainfall reduction, humidity, increasing temperature tend to decline the water quality and increases the salinity in water in Iran which tend to have negative effect on crop yield.

## 1.3 Objectives of the study

To analyze the factors that brings the necessity for doubling the farmer's income by 2022

#### **1.4 Statement of Problem**

Indian Agricultural sector has several bottlenecks such as limited usage of technically advanced equipments, lack of adequate knowledge on the farmers to adopt to the modern technology, Non availability of agricultural credit supply for the farmers to buy seeds and to conduct the agricultural activities, Low productive plant and live stock varieties with less fertilizers and chemicals supply to nourish the crops, Lack of good irrigation system, Frequent changes in the climatic conditions, Lack of study of the soil, No proper insurance schemes for protecting the welfare of the farmers and the agricultural land is not legalized.

#### **2. Research methodology**

The primary data is collected through well framed and structured questionnaire to elicit the perception of economic experts. secondary data was obtained available through published reports and data bases available in printed and online media. Simple random sampling technique was adopted to cover a wide variety of economic experts with different demographical profile. Since the population is definite, but fluctuating based on simple random criteria, the researcher intended to cover the prime respondents who are economic experts who are academicians specialized in the subject of commerce and economics which comprises of professors from the reputed universities and colleges and retired civil service officers in Chennai, one of the four metropolitan cities in India. Factor analysis by principal component method is found suitable to reduce variables pertaining to factors that brings the necessity for doubling the farmer's income by 2022.

#### **3. Empirical analysis and discussion**

In this section, the researcher attempts to present the empirical results obtained from statistical analysis such as Factor Analysis by principal component method.

The questionnaire responses exhibited Cronbach-Alpha value of 0.876 for items relating to factors that brings the necessity to study with regard to doubling of farmer's income among the economic experts as shown in Table 1(Appendix). The alpha values are statistically significant to ensure a smooth normal distribution and to justify the sample statistics for the representation of population parameters.

**Factor Analysis for factors that brings the necessity to study doubling of farmer's income**

Grouping the variables gives more clarity on the subject and also on the decision mechanism design. In view of this, the researcher grouped the items using Principal Component Analysis with Varimax and Kaiser Normalization. In this part of the analysis, the researcher attempts to identify the factors that brings the necessity to study doubling of farmer's income by 2022. There are 31 variables quoted in the questionnaire therefore the data reduction is done through the application of factor analysis by principal component method and the following results are obtained.

From Table 2(Appendix) it is found that **KMO measure of sampling adequacy is 0.753, Bartlett's Test of Sphericity with approximate chi square value 1647.837,  $p = .000$**  are statistically significant at 5 percent level. Therefore, it can be concluded that the variables considered for factor analysis form the normal distribution less than 5% admissible error to represent the factors emerged. This implies that the sample size is adequate for data reduction process and creates a conducive situation to ascertain the latent factors that brings necessity to study doubling of farmer's income by 2022.

It is found that the thirty three variables exhibit the variances from 0.588 to 0.892. This implies that the **range of variations defined "between" 59 percent to 89 percent**, which is statistically significant to go ahead for the meaningful data reduction process. This leads to variable loading of each factor that brings necessity to study doubling of farmer's income by 2022. This leads to factor segmentation through grouping of variables as shown in the rotated component matrix.

The rotated component matrix in the factor analysis grouped the variables as follows. The factor I named as **Agri-logistics related factor** consists of five variables (Table 3 (Appendix) having the towering variance of **49.689% which represents that agriculture logistics is the backbone for the agriculture business**. In order to enhance the farmers income, there exist a need to empower the farmer to develop both horizontal and vertical diversification. Monetisation of agricultural produce boost the farmer's income. Intervention in farmer's value chain must aim to capture value from output. The brain behind value realisation is the agricultural marketing.

The factor II is deemed to be considered as **Governance based structural reforms factor** consists of four variables (Table 4 (Appendix) having the high variance of **43.599%** which represents several variables such as effective structural reforms in the agricultural sector brings higher efficiency. The policy also discusses that the exports may not be considered as a price control measures, commodity specific price or production parameters may be determined so that the importers of agricultural commodities can independently monitor the triggers accordingly. The seed chain from production to supply including development of new varieties can be liberalised. Public expenditure can co-ordinated into originally linked investment heads so as to make the environment attractive to private corporate investment

The factor III is entitled **Secondary agricultural based factor** consists of six variables having the high variance of **35.429%** which represents several variables (Table 5 (Appendix) such as the secondary agriculture can help to drive the growth of primary agriculture to replicate start up India at village level. This factor also discusses various variables such as bee keeping promotes sustainable and eco friendly agriculture increases the crop yield. Lac cultivation gains high economic returns and generate employment opportunities and support cottage industries. Agro farming provides climatic changes mitigation and adaptation of benefits to the farmers. There is a need to recognize the role of bamboo in landscape restoration by creating livelihood opportunities. Agritourism is complimentary to traditional agri activities.

The factor IV which is known as **Resource usage efficiency factor** consists of three variables (Table 6 (Appendix) having the high variance of **41.212%** which represents several variables such as the use of information and communication technologies to enhance the efficiency that ensures the accurate documentation of databases and enables proper monitoring. Introduction of community level waste to wealth model of composing that promotes the effective usage of resources.

The factor V which is known as **Knowledge dissemination factor** consists of four variables (Table 7 (Appendix) having the high variance of **29.212%** which represents several variables such as the agricultural extension plays a crucial role in providing real time information on weather and market situation which impacts the profitability of the farmers. Agricultural extension tries to enhances the agricultural production by providing the knowledge necessary to make improvements in

agricultural practices. Information knowledge and skill doubles the farmer's income. Agriculture demand added role from the extension man power.

The factor VI is entitled **Risk Management factor** consists of three variables having the high variance of **36.429%** which represents several variables (Table 8 (Appendix) such there is a need for efficient marketing system which is backed by robust agri logistics, price and demand forecasting not only to mitigate the risk but also the ability to take certain market risks. Managing risks to crop helps to stabilise the income of the farmers and encourages the resilience and capacity to adopt the innovative practices. Weather information plays an important role in the entire crop cycle right from selecting suitable crop upto post harvest operations and marketing.

The factor VII which is known as **Sustainability factor** consists of three variables (Table 9 (Appendix) having the high variance of **29.244%** which represents several variables such as the conditions for sustainable agriculture has become more favourable and agricultural technology needs to move from the production oriented to profit oriented sustainable farming. The practice of sustainable agriculture is important it enhances productivity, efficiency and employment. Knowledge about biologically diverse farming practice in different agro ecology is necessary to enhance farm profitability and sustainability.

The factor VIII is deemed to be considered as **Agricultural marketing factor** consists of five variables (Table 10 (Appendix) having the high variance of **24.599%** which represents several variables such as monetisation of agricultural produce is very important as it integrates agricultural with national economy and contributes to the GDP. An effective marketing system will aim to persuade that there is more equitable sharing of net revenue generated in the value chain system. Nutrition led marketing is highly appreciated for doubling the farmer's income. Creating the true national agricultural marketing is mandatory to boost the farmer's income. marketing system function through policies to build competitiveness with inbuilt mechanism to reduce monopolistic and oligopolistic practices.

#### **4. Conclusion**

The agricultural sector needs an overhaul and not just a transformation if farmers income is to be enhanced substantively and consistently. This makes a case for a change in the narrative, that the time has come to transcend from "green revolution to "Income Revolution" to give meaning to a

comprehensive change. Green revolution with its major emphasis on production attempts is only a partial treatment of the agricultural sector. Income revolution impresses upon production through productivity, sustainability, marketability and an orientation shift towards farmer's income as outcome. Agriculture can be made viable and income centric, only if it is practiced as an agri business. The transformation warrants restructuring of schemes of ministry of agriculture and farmer's welfare. Digital technology applications are envisaged for sustainable development of villages, as these are intrinsically associated with agricultural activities. Agricultural sector will remain an engine of broad based growth. The transformation of agriculture and allied sector is imminent by way of appropriate policy interventions related to prices, trade, adoption of climate smart agriculture, increased focus on small, marginal and women farmers.

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## Appendix

**Table 1**

**Reliability Statistics for factors that bring the urge to study doubling of farmer's income related variables**

factors that brings an urge to study doubling of farmer's income	Cronbach's Alpha	No. of variables
Doubling of farmer's income related variables	0.876	33

**Source: Computed Data**

**Table 2**

**KMO and Bartlett's Test for factors that brings need to study doubling of farmer's income related variables**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.753
Bartlett's Test of Sphericity	Approx Chi square	1647.837
	Sig	.000

**Source: Computed Data**

Table 3

**Factor I – Agri logistics factor**

Variables	Factor Loading
Agri logistics is the backbone of agricultural business	.882
There is need to empower the farmers to develop horizontal integration with multiple market channel	.837
Monetisation of agricultural produce boost the farmer's income	.734
Intervention in farmer's value chain must aim to capture value from the output	.792
The Brain behind the value realization is agricultural marketing	.724

Source: Computed

Table 4

**Factor II – Governance based structural reforms factor**

Variables	Factor loading
Effective structural reforms in the agricultural sector brings higher efficiency	.720
Exports may not be considered as a price control measures, commodity specific price or production parameters may be determined so that the importers of agricultural commodities can independently monitor triggers accordingly.	.777
The seed chain from production to supply including the development of new varieties can be liberalised	.710
Public expenditure can be co-ordinate into organically linked investment heads so as to make the environmental attractive to private corporate investment	.797

Source: Computed

**Table 5****Factor III- Productivity factor**

Variables	Factor loading
Secondary agriculture can help to drive the growth of primary agriculture to replicate start up India at village level	.872
Bee keeping promotes sustainable and eco friendly agriculture increasing crop yield	.820
Lac cultivation gains high economic returns and generate employment opportunities supporting the cottage industries	.744
Agro forestry provides both climatic changes mitigation and adaption benefits to the farmers	.650
There is an need to recognize the role of bamboo in landscape restoration and creating livelihood opportunities	.698
Agri tourism is complimentary to traditional agricultural activities	.662

Source: computed

**Table 6****Factor IV – Resource usage efficiency factor**

Variables	Factor loading
Use of Information and communication technologies (ICTs) enhance efficiency ensures accurate documentation of databases and enables proper monitoring	.623
Introduction of community level waste to wealth model of composing promotes effective usage of resources	.613.

Source: Computed

**Table 7****Factor V- Knowledge dissemination factor**

Variables	Factor loading
Agricultural extension plays a crucial role in providing real time information on weather and market situation which impacts the profitability of the farmers	.598
Agricultural extension tries to enhance agricultural production by providing the knowledge necessary to make improvements in agricultural practices	.586
Information Knowledge and skills doubles the income of the farmers	.574
Agriculture demands added role from extension manpower	.566

**Table 8****Factor VI – Risk management Factor**

Variables	Factor loading
There is a need for efficient marketing system which is backed by robust agri logistics, price and demand forecasting not only to mitigate the risk but also the ability to take certain market risks	.568
Managing risk to crop helps to stabilise the income of the farmers and encourages the resilience and capacity to adopt innovative practices	.560
Weather information plays a major role in the entire crop cycle right from selecting suitable crop upto post harvest operations and marketing	.558

Source: Computed

**Table 9****Factor VII - Sustainability Factor**

Variables	Factor loading
The conditions for sustainable agriculture are becoming more favourable and agricultural technology needs to move from production oriented to profit oriented sustainable farming	.534
The practice of sustainable agriculture is important as it enhances production, efficiency and employment	.524
Knowledge about diverse farming practice in different ecology is necessary to enhance farm profitability and sustainability	.514

Source: Computed

**Table 10****Factor VIII- Agricultural marketing factor**

Variables	Factor Loading
Monetisation of agricultural produce is very important as it integrates agriculture with national economy and contributes to the GDP	.502
An effective marketing system will aim to persuade that there is more equitable sharing of net revenue generated in the value chain system	.498
Marketing system functions through policies to build competitiveness with inbuilt mechanism to reduce monopolistic and oligopolistic operations	.467
Creating a true national agricultural marketing is mandatory to boost farmer's income	.477
Warehousing is the key to providing post harvest pledge loans to farmers and for participating in electronic trading	.488
Nutrition led marketing is highly appreciated for doubling farmer's income	.455

Source: Computed