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Supply Chain Management: Application in Agriculture Marketing

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Abstract – In this paper author highlighted Supply Chain Management in agriculture marketing and implemented throughout the chain to guarantee optimal chain performance. This paper author compares traditional marketing of Indian Agriculture marketing and proposed methodology of Agriculture marketing using supply chain Management.

Keywords – *Agriculture Marketing, Supply Chain Management.*

I. INTRODUCTION

Industrial engineering is concerned with the design improvement and installation of integrated system of man, material, equipment and energy. Agriculture sector is very important for the food and nutritional security of the nation. The sector remains the principal source of income for more than 58% of the population. Compared to other countries, India faces a greater challenge, since with only 2.3% share in world's total land area; it has to ensure food security of its population which is about 17.5% of world population. This leads to excessive pressure on land and fragmentation of land holdings. Formation in agriculture and allied sectors has been going up in recent years. To fill up country requirement farmers in rural areas require good transportation system with their communication, Supply chain management are the powerful tools to achieve this collaboration.

II. SUPPLY CHAIN MANAGEMENT

Supply chain management is defined as the design and operation of physical, management information and financial systems needed to transfer goods and services from point of production to point of consumption in an efficient and effective manner. An efficient supply chain can contribute to an increase in the marketable surplus by lowering down the inefficiencies in production, processing, storage and transportation. It ensures better prices to the farmers suggest them to advance more in marketing so they get good price of produce. It widens market opportunities for products and thus helps in maintaining an ever increasing demand for the same. An organized retailing acts as a stimulator to promote growth of agro based industries, helping the farmers in production planning in advance, based on demand forecast.

Major drivers supply chain management: Production, Inventory, Location, Transportation and Information.

III. METHODOLOGY

A. Description of the study area

Mandsaur district is located on northwest part of Madhya Pradesh state. It is one of the important district of Malwa regions of Madhya Pradesh. The district is bounded by Neemuch district in the north, Ratlam district in the south, Banswara district of Rajasthan state in the west and Jhalawar district of Rajasthan state in the east. The district area extends between the parallels of latitude 23°46' and 24° 45' North and between the meridians of longitude 74° 44' and 75°54' east. The total geographical area of the district is 5,517 Sq.Km, with a population of 13, 39,832 according to census 2011. The major crops are Soyabean, Maize, Wheat, Mustard and Gram etc.

In past one decade industries had rapidly grown up in the district. Mandsaur is mainly agriculture-based district and its cropping pattern is diversified. Mandsaur district is well connected by roads and rail. Primary data regarding the marketing efficiency of the Supply chain for the year 2011-12 was collected from the farmers with respect to marketing cost, other expenses and price received by them.

B. Tools and Technique used

There are three methods of Agriculture produce marketing, traditional, Co-operative and modern (contract farming). Marketing is process to sell of produce and it is depend on which method is used by farmer.

Channel-I Traditional Marketing

Individual farmers come in Agriculture Market (Mandi) with their produce and Traders are bidding that produce and pay amount direct to farmer.

Channel-II Proposed Channel in Traditional Marketing through Agriculture Produce Supply Chain Management.

In the study Traditional marketing method are to be implemented through Agriculture Produce Supply Chain Management using Internet Communication Technology. In proposed method AGRICULTURE PRODUCE SUPPLY CHAIN MANAGER takes this important role to provide transportation, Loading-unloading facility to farmer. In this method farmer does not need to come in market and farmer get amount at Home by cheque. APSCM will use internet facility to check where price high to sell farmer's produce. APSCM will get marketing cost for providing his services.

IV. DATA ANALYSIS AND IMPLEMENTATION

The study is based on primary data collected from the farmers and vehicle owners of various Village of Mandsaur district, related to the year 2011-2012 as shown in Table given below.

TABLE I : DESCRIPTION OF DATA RECORDED

S.N.	Name of Village	Tehsil	Distance from village to Mandsaur Mandi in Km	No. of Farmers	No. of Vehicle owner
1	Nagar Pipliya	Mahlargarh	25	09	02
2	Karnakhedi	Dalouda	28	10	03
3	Karju	Dalouda	35	09	02
4	Sagtali	Sitamau	40	07	03
5	Kajuri	Manasa	50	07	02

Assumption for study

- ❖ APSCM are providing right information to farmer through using ICT.
- ❖ We were selected only Major Crops which is not required special handling.
- ❖ APSC Manager it is authorized Person by APMC.
- ❖ APSC Manager is educated person and he knows about internet, computer etc.
- ❖ Farmers have bank account for clear his cheque.
- ❖ Farmers are selling 10 quintal soyabean in one time.

- ❖ Transportation cost does not depend on quality and types of produces.

A. Marketing cost calculation through channel II

Marketing costs are the costs incurred as goods change ownership and location along the marketing channel. They include costs of storage, transportation, local and national government taxes, market levies, broker charges and the high transaction costs that arise from the very nature of produce.

TABLE II : MARKETING COST THROUGH CHANNEL I

S.N.	Name of Village	Transportation cost /Qtl	Loading-unloading Charges /Qtl	Time required for marketing(Hrs)	Wage lost of former of one day (Rs)	Total expenses (marketing cost) (Rs/Qtl)
1	Nagar Pipliya	35	6	12	200	61
2	Karnakhedi	25	6	12	200	60
3	Karju	30	6	13	200	65
4	Sagtali	35	6	14	200	61
5	Kajuri	40	6	15	200	66

B. Marketing cost calculation through channel II

On the basis of survey conducted, we make one hypothesis to calculate marketing cost for Mandsaur. It is very state to state, country to country and time to time due to price of fuel, tax and policy of nation. Marketing cost is total cost occurred to sell produce, it is depend on weight and distance travel.

TABLE III: HYPOTHESIS FOR CALCULATION OF MARKETING COST

S. N.	Distance from village to market yard (X)	Marketing Cost	Remarks
01	$0 < X < 05$	Rs.10	Minimum cost paid by Farmer
02	$06 < X < 15$	Rs.20	Minimum cost paid by Farmer
03	$16 < X < 30$	Rs.30	Minimum cost paid by Farmer
04	$31 < X < 100$	Rs.1 /qtl-Km	
05	$100 < X < 300$	Rs.0.70/qtl-Km	

Illumination:

If distance traveled by APSC manager from Village to Market yard is 245 Km.

Then Marketing cost= $100*1+145*.70 = \text{Rs.}202/\text{qtl-Km}$

On the basis above hypothesis I am calculating Marketing Cost for various villages.

On the basis of above Hypothesis we calculate marketing cost.

TABLE IV : MARKETING COST THROUGH CHANNEL II

SN	Name of Village	Distance from Village to Mandsaur Mandi in Km	Marketing cost Rs./qtl
1	Nagar Pipliya	25	30
2	Karnakhedi	28	30
3	Karju	35	35
4	Sagtali	40	40
5	Kajuri	50	50

C. Expenses occur for agriculture marketing through different channel

When farmer are going Agriculture market for sell their produce they hire or self vehicle use for transportation of produce in that process expenses occur are calculating on the basis of survey.

TABLE V : EXPANSES OCCUR IN ONE TRIP FOR AGRICULTURE MARKETING THROUGH VEHICLE OWNER (CHENNEL I)

SN	Name of Village	Distance from Village to Mandsaur Mandi in Km	Loaded quantity	Fuel cost	Other expenses	Total expenses
1	Nagar Pipliya	25	40	500	200	700
2	Karnakhedi	28	45	560	200	760
3	Karju	35	45	600	200	800
4	Sagtali	40	40	700	200	900
5	Kajuri	50	45	1000	250	1250

TABLE VI : PROFIT ANALYSIS IN ONE TRIP FOR AGRICULTURE MARKETING OF VEHICLE OWNER THROUGH CHENNEL I

SN	Name of village	Forward loaded	Earning	Return loaded	Earning	Total earning	Total expenses	Profit (Market Margin)
1	Nagar Pipliya	40	1400	2	70	1470	700	770
2	Karnakhedi	45	1350	3	90	1440	740	700
3	Karju	45	1350	4	120	1470	800	670
4	Sagtali	40	1400	3	105	1505	900	605
5	Kajuri	45	2000	3	120	2120	1250	870

Internet Communication Technology (ICT)

Information communication technologies is a term which is currently used to denote a wide range of services, applications, and technologies, using various types of equipment and software, often running over telecommunication network. The importance of ICTs is not the technology as such, but it's enabling function in access to knowledge, information and communications, increasingly important elements in today's economic and social interactions.

TABLE VII : EXPANSES OCCUR IN ONE TRIP FOR AGRICULTURE MARKETING THROUGH APSCM (CHENNEL II)

S. N.	Name of village	Loaded quantity	Fuel cost	Loaded-unloaded charges	Other expenses	Total expenses
01	Nagar Pipliya	50	500	250	100	850
02	Karnakhedi	50	560	250	100	910
03	Karju	50	700	250	100	1050
04	Sagtali	50	800	250	100	1150
05	Kajuri	50	1000	300	150	1450

TABLE VIII : PROFIT ANALYSIS IN ONE TRIP FOR AGRICULTURE MARKETING OF APSCM TROGHT CHENNEL II

S.N.	Name of village	Forward loaded	Earning	Return loaded	Earning	Total earning	Total expenses	Profit
1	Nagar Pipliya	50	1500	3	90	1590	850	740
2	Karnakhedi	50	1500	4	120	1620	910	710
3	Karju	50	1750	4	140	1890	1050	840
4	Sagtali	50	2000	3	120	2120	1150	970
5	Kajuri	50	2500	3	150	2650	1450	1200

V. RESULT AND CONCLUSION

TABLE IX : COMPARISON OF MARKETING COST OF CHANNEL I AND CHANNEL II AND PROFIT EARN BY VEHICLE OWNER AND APSCM

S. N.	Name of Village	Total Marketing Cost			Profit earned in one trip by	
		Channel I	Channel II	Profit to farmer	Vehicle owner	APSC manager
01	Nagar Pipliya	61	30	31	770	740
02	Karnakhedi	60	30	30	700	710
03	Karju	65	35	30	670	840
04	Sagtali	61	40	21	605	970
05	Kajuri	66	50	16	870	1200

Above comparison shows marketing cost through different channels of different villages, by adoption of proposed method by farmer can save funds. Strengthening of agriculture will help in upliftment of the farmers but also benefit the larger section of the rural poor who are directly engaged in agriculture or indirectly linked with agriculture as consumers. Efficient way of production, stabilized prices, higher income from agriculture would create a more conjugative environment in the country for the development of the economy as a whole and of rural population in particular. Empowerment of the small and marginal farmers through education, reforms and development will ensure a better, efficient and strengthened Indian agriculture. Motivation new models in marketing along with creating awareness and imparting education will help in development of the sector and more importantly improving job in agriculture sector.



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