"THE SUPPLY CHAIN PERFORMANCE FACTORS IN AGRICULTURAL SUPPLY CHAIN MANAGEMENT: A CASE STUDY OF DRY CHILLYFARMERS"

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ABSTRACT

Emerging trends in agribusiness sector present new challenges and opportunities that require thorough deliberations by various stakeholders in food and agribusiness sector to identify these challenges and opportunities and also to suggest innovative and effective management solutions as well as appropriate policies and institutional arrangements. Improving supply chain performance has become one of the critical issues for gaining competitive advantages for companies.

Dry chilli is one of an indispensable ingredient in any kitchen and commercial crop. Though it is produced throughoutthe world. Chilli supply chain management integrates various functional areas to enhance the flow of dry chilly from farm gate to ultimate end users either in the raw form or in the finished form like masala or food products through commission agent, purchasers and processing units.Success of the supply chain depends on identifying the factor affecting performance of the channel members. The wise selection and utilization of these factors in time, helps to improve the supply chain performance. This research focuses on identifying the factors affecting the performance of the farmers as a channel member in dry chilly supply chain management. This research is based on a combination of qualitative and quantitative methods of data collection. Primary data were collected through personal interviews and astructured questionnaire used for exploratory survey. Factors affecting performance of the dry chilli supply chain management were identified through factor analysis.

Key words: AgriculturalSupply Chain, Dry Chilly Farmers, Supply Chain Performance, Factor Analysis.

1. INTRODUCTION

The agriculture sector plays a vital role in many developed and developing countries economics. It has been a major income source especially for many Asian Countries where a larger portion of population depends mainly on the agricultural industry (Nee 2008)[1].Supply chain management is a rapidly evolving area of interest to academics and business management practitioner's alike (Jill E. Hobbs, 1996)[2]. Agribusiness is defined as practice of activities relating to production, processing, marketing, distribution and trade of food, feed and fibre' (Acharya, 2006)[3]. Agricultural Products Supply Chain is a branch of Supply Chain and specific for agricultural products, referring to the collection, aggregation, storage and transport of agricultural products from the farm to the consumer and to all intermediate levels such as the processing facility (factory), market and retailers (john Franklin Crowell)[4].

Dry Chilli is one of the most valuable, largely grown and traded commercial crop all over India. Evaluation of Agribusiness supply chain performance of dry chilli depends on how best the different dimensions of cross functional drivers and logistic drivers are practiced. (Somashekhar I. C.,Dr. J. K. Raju, 2016)[5].India's Agro climatic conditions provide scope for cultivation of 63 different spices, making India the 'Landof spices'. Indiais the largest producer (76 lakh MT), consumer (73 lakh MT) andexporter (3.8 lakh MT) of spices in the world. India's share inworld trade of spices is 3.8 lakhs MT i.e. 48%. The area underspices is 57 lakh hectares(Y Prabhavathi, N.T Krishna kishore, Dr. Seema, 2013)[6].

LITERATURE REVIEW
Dry Chilli

Chilli is considered as one of the commercial spice crops. Named as wonder spice, it is the most widely used universal spice. Different varieties of chilli are cultivated for varied uses like vegetables, pickles, spices and condiments.India 'Land of spices' is the major producer and exporter of chillies. An efficient supply chain ensuring remunerative prices to the producers for their products and to deliver maximum satisfaction to the end consumers for the price they pay(Y Prabhavathi, N.T Krishna kishore, Dr. Seema, 2013)[6].

Chilli is one of the important vegetable spices grown all over the world except in colder parts. It is also known as red pepper or hot pepper and it constitutes an important well-known commercial crop used as a condiment,culinary supplement or as a vegetable. Chilli is mainly

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used as culinary supplement to add flavour, colour, vitamin and pungency (Somashekhar I. C., Dr.J.K.Raju 2016)[7]

Supply chain management

Traditional supply chains in developing countries typically involve many players and are tightly linked with long-standing social structures (Coleman, 1990; Burt, 1997)[8].The development and evolution of supply chain management owes much to the purchasing and supply management, and transportation and logistics literature. As such, the term &supply chain management' is used in many ways, but three distinct descriptions dominate prior literature (KeahChoon Tan, 2001)[9]. Scott and Westbrook (1991)[10]and New and Payne (1995) describe supply chain management as the chain linking each element of the manufacturing and supply process from raw materials through to the end user, encompassing several organizational boundaries. Supply chain management (SCM) may be defined as:a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses,and stores, so that merchandise is produced and distributed at the right quantities, to theright locations, and at the right time, in order to minimize system-wide costs while satisfyingservice level requirements (Simchi-Levi et al., 2008)[11]. Over the years, the definitions have changed and broadened the scope of SCM (Manish Shukla and Sanjay Jharkharia, 2010)[12]. Supply chain management is the integration of the various functional areas within an organization to enhance the flow of goods from immediate strategic suppliers through manufacturing and distribution chain to the end user (Houlihan, 1987, 1988)[13, 14].

Supply Chain Management (SCM) is an integral approach of management where lots of beneficiaries work together with their professional interest(P. K. Sarmaetal., 2012)[15]. Supply chain managementaddresses the supply process throughout the value chain, a practical approach to supply chain managementis to consider only strategically important suppliersin the value chain (Tan et al., 1998a, b)[16]. SCM provides an integrated approach to plan the improvements required in the management of their agricultural production and marketing systems to meet future challenges (UNCTAD, 2004; Woods, 2004)[17].

Agricultural Supply Chain

Traditionally, the agriculture sector has typically been focused on "growing and harvesting", however, these trends have changed recently. Agriculture is currently considered as a tradable product, the sector now focuses on a wider area consisting of activities such as obtaining farming inputs, value added activities, packaging and distribution etc., which normally occur after harvesting the crops (France 2009)[18]. Over the years, while the agricultural marketing and trade scenario hasundergone tremendous changes, it has not changed enough to meet

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theemerging demand for such services (Acharya, 2006)[3]. To improve income and provide gainful employment, diversification from grain crops to high-value crops like vegetables has emerged as an important strategy for agricultural growth (Sekhon& Kaur, 2004)[19].Commercial interest in supply chain management (SCM) in agribusiness is increasing in India due to greater urbanization, changes in consumer lifestyles, and increased competition among producer cooperatives, traders, and newly formed food and agricultural commodity business companies, which are now becoming involved in procurement and distribution channel management (Eisenhardt, 1989; Cooper et al., 1997; Thompson, 2001; Oods, 2004)[20].

The supply chain of agricultural products has received a great deal of attention lately due to issues related to public health. Something that has become apparent is that in the near future the design and operation of agricultural supply chains will be subject to more stringent regulations and closer monitoring, in particular those for products destined for human consumption (agri-foods)(Omar Ahumada, J. Rene Villalobos, 2008)[21].

SCM in agribusiness implies managing the relationships between the businesses responsible for the efficient production and supply of agricultural products from the farm gate to consumers with the broad objective of meeting consumers' requirements in terms of quantity, quality, and price (Jaffee, 1994; Lambert and Cooper, 2000; Handfield and Nichols, 1999; ITC Ltd., 2007)[22,23,24]. Meeting customers' requirements involves integrated management of the transactions and relationships between firms, as well as processes within firms (Thompson, 2001; Woods, 2004; Hanf and Pall, 2009)[25,26,27]. Managing these relationships provides an opportunity for negotiating the share of the value produced within the chain among chain members (Burt, 1997; Trienekens et al., 2003)[28,29]. Moreover, joint planning of collaborative strategies aims to improve the shared value (Eisenhardt, 1989; Woods, 2004)[20,26].

The agri- supply chain can also be described as a value creation process. This also includes other activities such as research & development, logistics activities from farm to the consumer. (Stammetal. 2006; Ahumada& Villalobos 2009)[30,31]

The supply chain practices of agricultural food products are currently under public scrutiny. This is the result of several factors, such as the national attention given to recent cases of fresh produce contamination (van der Vors2006)[32]Supply chain management (SCM)is therefore highly relevant both to successfully competing intoday's market and in addressing responsible behaviour at allstages of the supply chain. It represents a potentiallyimportant

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discipline for establishing how to integrateenvironmental and social considerations and practices, toachieve the goal of sustainability.Implementing supply chain management practices have essentially become an important element in the agricultural sector (Christien, Jo H.M. Wijnanda, Ruud B.M. Huirne&Olaf Van Kooten 2006)[33].

As developing countries enter into World Trade Organization (WTO) arrangements, their agricultural industries will be subjected to increased competition in their home markets, and at the same time, they will have better opportunities to meet global standards in export markets (Woods, 2004)[26]. Globalization, as evident through the establishment of several retail networks with specialized horticultural produce departments in different regions of India, has resulted in the requirement for efficient and smooth backward linkages with upstream suppliers (Anil K. Chojar, 2009)[34]. This greatly improves the timely delivery of farm products that meet the requirements of downstream customers. Factors responsible for the development of supply chains from farm gate to retail include the following: (1) the availability of a greater variety of food grains, oilseeds, and horticultural products; (2) improvements in product quality, both in the fresh and processed forms; (3) the availability of improved rail, road, and air networks; (4) the ability to transport products in a more cost-effective manner; (5) overcoming the seasonality of supply by linking geographic regions that have different agro-climatic conditions and seasons; (6) the development of cold chains; (7) giving greater freedom for consumers to choose fresh, frozen, or processed products; and (8) providing innovations in packaging that offer consumers more convenience (Van Roekel et al., 2002; Hanf and Pall, 2009)[35].

Supply chain performance

The strategic fit requires that a company's supply chain achieve the balance between responsiveness and efficiency that best supports the company's competitive strategy. To understand how a company can improve supply chain performance in terms of responsiveness and efficiency, we must examine the logistical and cross-functional drivers of supply chain performance: facilities, inventory, transportation, information, sourcing, and pricing. These drivers interact with each other to determine the supply chain's performance in termsof responsiveness and efficiency. The goal is to structure the drivers to achieve the desired level of responsiveness at the lowest possible cost.(Part I Building a Strategic Framework to AnalyseSupply Chains)

Supply chain management (SCM) has been a major component of competitive strategy to enhance organizational productivity and profitability. The literature on SCM that deals with strategies and technologies for effectively managing a supply chain is quite vast. In recent

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years, organizational performance measurement and metrics have received much attention from researchers and practitioners. The role of these measures and metrics in the success of an organization cannot be overstated because they affect strategic, tactical and operational planning and control. Performance measurement and metrics have an important role to play in setting objectives, evaluating performance, and determining future courses of actions. (A Gunasekaran[a], C Patel, Ronald E McGaughey, 2004)[36].

Supply chain performance should be measured by environmental, economic and socialImpacts integrating the triple bottom line approach into the culture, strategy and operations of the different agents (McDonough W., Braungart M., 2000)[37]. In order to address the impacts of production and consumption within the wider sets ofperformance objectives, sustainable supply chain management presents greater challenges for the integration of the actors along the supply chain (Teuscher P. et al., 2006; Linton J.D. et al., 2007; Seuring S., and Müller M., 2008)[38,39,40].

2. NEED OF THE STUDY

The process of choosing appropriate supply chain performance measures is difficult due to the complexity of the systems(Benita M. Beamon, 1999)[41]. Measurement of the performance of entire supply chains is an important issue because it allows for "tracking andtracing" of efficacy and efficiency failures and leads to more informed decision making with regard to chain design. However, the choice of appropriate supply chain performance indicators is rather complicated due to the presence of multiple inputs and multiple outputsin the system (Lusine H. Aramyan,etal,2007)[42].

Performance measurement have not received adequate attention from researchers or practitioners(A Gunasekaran[a], C Patel, Ronald E McGaughey, 2004)[36]. Supply chain performance execute by the farmers based on how best he take decisions with respect to activities of transportation, selling for right price, inventory management, sourcing of required sources, information gathering and facilities management. Hence it is necessary to understand the factors affecting agricultural supply chain performance of the farmers.Main objective of the study is to identify the factors influencing dry chilly supply chain performance of farmers.

3. RESEARCH METHODOLOGY

In this research for the clarity of research problem exploratory and descriptive research design was used. The sample size determined was 596 dry chilly farmers who are the actual

respondents, growing and selling dry chillies in Byadagi, Hubballi and Gadag APMC's in Karnataka state representing highest ranking in terms of trading. Judgmental and convenience sampling under non-probability sampling techniques were used while identifying the dry chilly farmers as respondents for the study. The secondary data for the literature was collected from APMC website, Horticulture department, and Meteorological department, Spice Board of Karnataka, agricultural and supply chain management related Journals and Magazines. The primary data means first-hand information and was gathered with the help of a structured questionnaire in Kannada regional language from the farmers visiting three APMC's for selling dry chilly during January to May 2016. Farmers from different villages of Karnataka were contacted and aptly filled questionnaires were obtained. Personal interview, Group discussion and Delphi technique were used while conducting pilot study with the farmers. The pilot study helped in identifying the dimensions of farmer need towards *Supply chain performance* for decision making at various stages. Here both schedule and survey method were used to gather the data using questionnaire. The respondents were given a list of statements that measured their extent of agreement towards the variables. The items were measured on a 5 point Likert scale with 1 representing low score (Strongly dis agree) and 5 representing a high score (strongly agree). These statements were selected after four rounds of pilot testing with the factor loadings above 0.70. Also different dimensions of *Supply chain performance*from Farmer's point of view were identified using *Factor Analysis* technique.

4. DATA ANALYSIS AND INTERPRETATION

Reliability

Reliability was assessed using reliability coefficient Cronbach alpha value. Cronbach alpha assesses the consistency of the entire scale. In exploratory studies, the suggested Cronbach alpha is a minimum of 0.60 (Kaizer, 1974, Hair et al, 2012)[43,44].For the reliability of the research tool **Cronbach's Alpha test** was performed, and obtained the alpha value of 0.871, this shows the tool is reliable and the factors obtained based on these items are reliable, and can be used for further analysis.

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Table 1 : Case Processing Summary

		N	%
Cases	Valid	596	100.0
	Excluded[a]	0	0.0
	Total	596	100.0
a. List wise deletion based on all variables in the procedure.			

Table 2 : Reliability Statistics

Cronbach's Alpha	N of Items
0.871	26

5.1 Exploratory Factor Analysis

The factor analysis was performed on the data collected with respect to *supply chain performance.* Factor analysis is a data reduction statistical technique that allows simplifying the correlational relationships between a numbers of continuous variables. Exploratory factor analysis is used in order to identify constructs and investigate relationships among key interval scaled questions regarding preferences given by farmers to make right decisions.

The factor analysis carried out by this study was focusing on identifying the hidden dimensions of supply chain driver *supply chain performance* from the farmer's point of view, for making efficient decisions. Several views of supply chain performance of farmer were taken to identify the hidden dimensions. The factors obtained through major component analysis, for extracting factor with eigenvalue over 1 as standard, then selected appropriate numbers in accordance with the requirement of the study, followed by orthogonal rotation with the maximum variation, in order to make structure of each factor to be more explicit.

5.2 Empirical Analysis and Interpretation

The factor analysis was carried out for the items: KMO and Bartlett's test, Communalities, Total variance explained and Factors developed matrix table based on Rotated component matrix, are obtained as a result of factor analysis. The details of the analysis are presented below**.**

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Table 3:

(F-SCP)KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.815
Bartlett's Test of Sphericity	Approx. Chi-Square	4456.603
	df	253
	Sig.	0.00

The suitability of data can be checked from the above KMO and Bartlett's Test table. Principal component analysis was used as a measure to find the factorability of twenty-six items using the Kaiser criterion with Eigen value as 1. Kaise- Meyer-Olkin measure of sampling adequacy was .815 which is above the recommended value of 0.5, and Bartlett's test of Sphericity was significant ($\chi^2 = 4456.603$, p<.05), indicating the existence correlation among the variables.. The results from both the test showed the presence of sample adequacy and relation among the selected variables respectively.

5.4 Communalities, Total variance explained & Rotated Component Matrix

5.4.1 Communalities

Communalities explains the variance of each of the variables explained by the extracted factors. Principal component analysis works on the initial assumption that all variance is common; therefore, before extracted communalities are all 1. Communalities are in terms of the proportion of variance explained by the underlying factors. After extraction some of the factors are discarded and some information is lost. So, the amount of variance in each variable that can be explained by the retained factors is represented by the communalities in the table number 4

5.4.2 Total Variance Explained

The eigenvalues above 1 have generated seven factors (5.69, 2.05, 1.67, 1.57, 1.49, 1.26, and 1.08) which obtained after rotation. Rotation has the effect of optimizing the factor structure and one consequence for these data is that the relative importance of the data items generate equalized factors. Total Variance explains the % of extraction by each factor representing common interest of items belongs to the factor. Total variance of 7 factors abstracts the % of variance explained by each factor (10.45%, 10.43%, 9.22%, 9.06%, 9.02%, 8.71% and 7.53%) respectively shown in the table number.

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5.4.3 Rotated Component Matrix

The rotated component matrix (also called as rotated factor matrix in factor analysis) which is a matrix of the Factor loading for each variables onto each factor. This matrix contains the same information as the component Matrix except that it is calculated after rotation. Before rotation, most variables loaded highly onto the first factor and the remaining factors didn't really get a look in, however rotation of the factor structure has clarified things considerably.

Table 4: Communalities, Total Variance Explained, Rotated Component Matrix

	Rotated Component Matrix[a]							Communalities
	Component							
	1	2	3	4	5	6	7	
Choice of mode of transportation helps me to reduce damage of dry chilly	**0.801**	0.03	0.108	0.126	0.07	-0.041	0.075	0.682
Choice of mode of transportation reduces duration of transportation of dry chilly.	**0.767**	-0.07	0.115	0.105	0.093	0.162	0.009	0.652
I could able to reduce the transportation cost, by pooling with other farmers	**0.66**	0.089	0.1	-0.056	0.098	0.24	0.138	0.543
Choice of mode of transportation helps me to reduce cost of transportation of dry chilly.	**0.646**	0.198	0.064	0.324	-0.002	-0.086	0.092	0.582
E-tender trading practice of dry chilly in market helps me to estimate the market demand for dry chilly.	0.003	**0.892**	0.065	0.055	0.051	0.073	0.041	0.813
E-tender trading practice of dry chilly in market helps me to get better price.	0.038	**0.841**	0.153	0.095	0.127	0.124	0.062	0.777
E-tender trading practice helps me to select good market among alternatives to sell dry chilly quickly.	0.14	**0.781**	0.037	0.073	0.121	0.181	0.089	0.691
4 to 5 years of historical pricing data analysis, helps me to predict the dry chilly market price.	0.066	0.021	**0.836**	0.098	-0.018	0.206	0.048	0.759
4 to 5 years of historical market demand data analysis, helps me to predict the market demand to get more profit.	0.24	0.141	**0.671**	0.123	0.23	-0.212	0.196	0.679
4 to 5 years of historical market arrival data analysis, helps me to estimate the future market	0.032	0.12	**0.638**	0.021	0.156	0.37	0.022	0.585

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Arrival.							
I prefer to use information of weather condition to decide cultivation of dry chilly.	0.299	0.107	**0.551**	0.068	0.098	-0.065	0.358	0.551
Information provided by banks, helps me to arrange financial requirement.	0.032	-0.051	0.054	**0.777**	0.243	0.11	0.04	0.684
My analysis of crops grown nearby my field by other farmers, helps me to arrange labor in advance	0.172	0.175	0.097	**0.696**	0.084	0.144	0.059	0.585
Knowledge of market plays important role while selecting best market for dry chilly.	0.173	0.091	0.077	**0.669**	0.172	0.063	0.188	0.561
Cold storage facility helps to trade dry chilly easily.	0.077	0.128	0.052	0.119	**0.742**	0.149	-0.018	0.613
Cold storage facility guarantees safety of my dry chilly.	0.143	0.111	-0.028	0.189	**0.742**	-0.119	0.25	0.697
I could able to assess the future price of dry chilly through mobile phone SMS information of the market.	0.042	0.031	0.214	0.206	**0.673**	-0.026	-0.061	0.549
Easily available market information helps me to decide, whether to take or not to take dry chilly to the market.	0.117	0.096	-0.013	0.325	-0.083	**0.684**	0.19	0.639
Market information of dry chilly, prices helps me to decide good price.	0.107	0.154	0.108	0.009	0.114	**0.677**	0.32	0.62
Gathering information through online, helps me to negotiate price of dry chilly	0.034	0.123	0.206	-0.08	0.494	**0.552**	0.039	0.615
Pradhan Manthri Gram SadakYojana helped us to minimize the time to reach market.	0.057	0.196	0.11	0.243	-0.095	**0.539**	-0.279	0.491
I could able to grade dry chilly, based on requirement in the market.	0.119	0.028	0.228	0.036	0.062	0.145	**0.799**	0.731
Grading of dry chilly helps to get better price in market.	0.128	0.167	0.083	0.317	0.014	0.115	**0.743**	0.717
Eigen Value	**5.69**	**2.05**	**1.67**	**1.57**	**1.49**	**1.26**	**1.08**	
TVE	**10.45**	**10.43**	**9.22**	**9.06**	**9.02**	**8.71**	**7.53**	

	Extraction Method: Principal Component Analysis.	
	Rotation Method: Varimax with Kaiser Normalization.	

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Communalities showing the degree of variance captured from each item and should be above 0.50 i.e. 50%. Here 23 items are retaining as they are eligible for explaining the meaning of factor. Each item respective communality value explains respective % as shown in above table.

Seven factors extracted using Eigen value, accounted together for 64.418% of total variance. Four items namely Choice of mode of transportation helps me to reduce damage of dry chilly, Choice of mode of transportation reduces duration of transportation of dry chilly, I could able to reduce the transportation cost, by pooling with other farmers, Choice of mode of transportation helps me to reduce cost of transportation of dry chilly with factor loadings as 0.801, 0.767, 0.660 and 0.646 got loaded as Factor 1. This factor explains about 10.45% of variance and the factor is termed as *"Choice of mode of transportation"*.

Three of items namely E-tender trading practice of dry chilly in market helps me to estimate the market demand for dry chilly, E-tender trading practice of dry chilly in market helps me to get better price and E-tender trading practice helps me to select good market among alternatives to sell dry chilly quickly had loadings as 0.892, 0.841 and 0.781were loaded as Factor2 and were stated as *"E-tender trading Practices"*. This factor explains about 10.43% of variance.

Factor analysis indicated that, four items 4 to 5 years of historical pricing data analysis, helps me to predict the dry chilly market price, 4 to 5 years of historical market demand data analysis, helps me to predict the market demand to get more profit, 4 to 5 years of historical market arrival data analysis, helps me to estimate the future market Arrival and I prefer to use information of weather condition to decide cultivation of dry chilly were loaded as Factor3 with loadings as 0.836, 0.671, 0.638 and 0.551. This factor is represented as *"Historical data analysis"*. This factor explains about 9.22% of variance.

Factor4 is derived with three items namely Information provided by banks, helps me to arrange financial requirement, My analysis of crops grown nearby my field by other farmers, helps me to arrange labor in advance and Knowledge of market plays important role while selecting best market for dry chilly with loadings as 0.777, 0.696 and 0.669. The factor is termed as *"Information about arrangement of requirements"*. This factor explains about 9.06% of variance.

Items like Cold storage facility helps to trade dry chilly easily, Cold storage facility guarantees safety of my dry chilly and I could able to assess the future price of dry chilly

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through mobile phone SMS information of the market with loadings as 0.742, 0.742 and 0.673 constituted Factor5 and is termed as *"Cold storage facilities"*. This factor explains about 9.02% of variance.

From the exploratory factor analysis table, four items namely Easily available market information helps me to decide, whether to take or not to take dry chilly to the market, Market information of dry chilly, prices helps me to decide good price, Gathering information through online, helps me to negotiate price of dry chilly and Pradhan Manthri Gram SadakYojana helped us to minimize the time to reach market became one factor with loadings as 0.684, 0.677, 0.552 and 0.539. The factor is termed as *"Help of Market information"*. This factor explains about 8.71% of variance.

The final factor had two items as I could able to grade dry chilly, based on requirement in the market and Grading of dry chilly helps to get better price in market with loadings as 0.799 and 0.743 and were termed as *"Dry chilly grading"*. This factor explains about 7.53% of variance.

Consolidated Factor Analysis

The summarized factor analysis is shown in below table. The factor loading was drawn by Checking the potentiality (high loadings) from rotated component matrix, which help to identify key items showing common behavior of farmers towards development of factors of supply chain performance, they are as shown in below table.

Table 7: Consolidated factor analysis of driver supply chain performance

Factor	Factor variance	Loading	Variables included in the factors
Choice of mode of transportation	Factor explains 10.45% of variance	0.801	Choice of mode of transportation helps me to reduce damage of dry chilly
		0.767	Choice of mode of transportation reduces duration of transportation of dry chilly.
		0.66	I could able to reduce the transportation cost, by pooling with other farmers
		0.646	Choice of mode of transportation helps me to reduce cost of transportation of dry chilly.
E-tender trading Practices	Factor explains 10.43% of	0.892	E-tender trading practice of dry chilly in market helps me to estimate the market demand for dry chilly.
		0.841	E-tender trading practice of dry chilly in market helps me to get better price.

	variance	0.781	E-tender trading practice helps me to select good market among alternatives to sell dry chilly quickly.
Historical data analysis	This factor explains 9.22% of variance	0.836	4 to 5 years of historical pricing data analysis, helps me to predict the dry chilly market price.
		0.671	4 to 5 years of historical market demand data analysis, helps me to predict the market demand to get more profit.
		0.638	4 to 5 years of historical market arrival data analysis, helps me to estimate the future market Arrival.
		0.551	I prefer to use information of weather condition to decide cultivation of dry chilly.
Information about arrangement of requirements	This factor explains 9.06% of variance	0.777	Information provided by banks, helps me to arrange financial requirement.
		0.696	My analysis of crops grown nearby my field by other farmers, helps me to arrange labor in advance
		0.669	Knowledge of market plays important role while selecting best market for dry chilly.
		0.673	I could able to assess the future price of dry chilly through mobile phone SMS information of the market.
Cold storage facilities	This factor explains 9.02% of	0.742	Cold storage facility helps to trade dry chilly easily.
		0.742	Cold storage facility guarantees safety of my dry chilly.
Help of Market information	This factor explains 8.71% of variance	0.684	Easily available market information helps me to decide, whether to take or not to take dry chilly to the market.
		0.677	Market information of dry chilly, prices helps me to decide good
		0.552	Gathering information through online, helps me to negotiate price of dry chilly
		0.539	Pradhan Manthri Gram SadakYojana helped us to minimize the time to reach market.
Dry chilly grading	This factor explains 7.53 % of variance	0.799	I could able to grade dry chilly, based on requirement in the market.
		0.743	Grading of dry chilly helps to get better price in market.

The most liked supply chain performance elements by farmers are located with the help of factor analysis; the questions loaded highly (>0.7) on each factor shows common interest for which we need to give new name. Hence, seven factors are obtained from factor analysis, which explains the behavior of farmers towards the need of *supply chain performance* for decision making.

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5. FINDINGS

Farmers could able to reduce the transportation cost by pooling with other farmers. Choice of mode of transportation helps farmers to reduce cost, damage, duration of transportation of dry chili.E-tender trading practice of dry chili in market helps the farmers to get better practices and to estimate the market demand for dry chili. It also helps the farmers to select good market among alternatives to sell dry chili quickly

The analysis of 4-5 years of historical data related with-

- Pricing helps farmers to predict the dry chili market price;
- Market demand helps farmers to predict the market demand to get more profit;
- Market arrival helps farmers to estimate the future market Arrival;

Based on the historical data farmers prefer to use information of weather condition to decide cultivation of dry chili.Farmers could able to grade dry chili, based on requirement in the market and grading helps them to get better prices in the market. Cold storage facility guarantees safety of farmers dry chili and helps to trade dry chili easily.

Easily available market information helps farmers to decide, whether to take or not to take dry chili to the market. Market information of dry chili, prices helps farmers to decide good price. Gathering information through online, helps them to negotiate price of dry chili. They could able to assess the future price of dry chilli through mobile phone SMS information of the market. Pradhan Manthri Gram SadakYojana helped us to minimize the time to reach market.

6. CONCLUSIONS

According to Rohita Kumar Mishra, (2010), Performance is measured according to desired result. It is determined taking into consideration several inputs and its outputs. Supply chain in a timely and cost effective manner that meet customers 'required service levels. In order to meet this challenge, a supply chain wide logistics strategy is required which will be the primary driver for the specific logistics strategy with in each supply chain member organizations. Distribution networks, transportation modes, carrier management, inventory management, warehouse. The scope of the logistic strategies is now the entire supply chain. Similarly from this research it can be concluded that farmers performance for the production of dry chilli is affected by, Choice of mode of transportation, E-tender trading Practices, Historical data analysis,Information about arrangement of requirement, Cold storage facilities, Help of Market information, Dry chili grading.

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7. SCOPE FOR FURTHER RESEARCH

Further research can be conducted on Logistics and cross functional drivers to know the behavior of farmers towards these drivers and also the influence of drivers on the Agribusiness supply chain management.

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