

## **An Empirical Study on Problems in Logistics in Rural Area for Fruits**

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### **Abstract**

Logistics is a multi-dimension professional service that offers consulting, assurance and enterprise risk services, Tax and financial advisory services. Logistics sector in India especially for fruits has today become an area of priority. One prime reason for the same stems from the reason that years of high growth in the Indian economy have resulted in a significant rise in the volume of freight traffic moved. As logistics management involves procuring the right inputs converting them efficiently into finished products and dispatching them to the final destinations; there is a need to study the problems in logistics Industry in the study area. In-depth personal interview is employed in this study with 430 respondents at Theni district of Tamil Nadu. The data thus collected are then processed using the Statistical Package of Social Science (SPSS) 20.0 computer software. Factor Analysis was used to analyse the problems faced in fruits logistics in the study area.

### **Introduction**

Logistics is a multi-dimension professional service that offers consulting, assurance and enterprise risk services, Tax and financial advisory services. Logistics sector in India especially for fruits has today become an area of priority. One prime reason for the same stems from the reason that years of high growth in the Indian economy have resulted in a significant rise in the volume of freight traffic moved. This large volume of traffic has provided for growth opportunities in all facets of logistics including transportation, warehouse, freight forwarding, express, cargo delivery, container services, shipping services, etc. Logistics industry for fruits in the study area has met various problems such as lack of storage, high transportation cost, high rate of commission charge, etc. As logistics management involves procuring the right inputs converting them efficiently into finished products and dispatching them to the final destinations; there is a need to study the problems in logistics Industry in the study area.

### **Review of Literature**

Dr.D.Venketramaraju and R.Suresh Babu in their study "Vegetable retailing in India", Kisan World, May 2011 find out that in country like India, with its poor transportation, handling and storage conditions en route, the retail chains have to develop their own supply, transport and storage system, including cold storage facilities, which add to the cost of operations. In that portion of the supply chain, where the traditional system is followed, there is high risk of spoilage and consequent losses. In essence, long-term survival and growth of these retail chains will depend largely upon two factors – infrastructure development and mind set of the people. Many were thrilled about shopping in air-conditioned environments for vegetables and fruits. However, some complained that initially the quality of vegetables was good, but gradually it is deteriorating. All these prove that the cold chain logistics system has to be efficiently developed to make sure that vegetables and fruits are stored without any spoilage. Irregular power supply can also be a major deterrent in keeping the vegetables fresh. Therefore, basic infrastructure has to be in the place first to ensure smooth running of these retail stores<sup>1</sup>.

Dr.N Mahalingam in his article "India's economy – poised for a leap forward", in *Kisan World*, November 2011 pointed out that the potentials of the agriculture sector in India which sustains over 60 percent of the population and feeds over 1.2 billion of our population remains un-understood and under-exploited. The productivity of agricultural crops in India remains around 30-40 percent harvested in developed economies. For the sustained growth of our economy there is an urgent need to stimulate higher growth in agriculture. The distribution channel has to be streamlined to ensure the produce reach the targeted customer. Over 30% of the agricultural produce is lost before it reaches the consumers dining table due to deficiencies in transport and storage system. When the loss of produce in the above system is arrested it will help contained food inflation to a large extent<sup>2</sup>.

Prof.SS.Johl in his cover story "Need is to rationalize the number of middlemen and their cost and margin" *Agricultural Spectrum*, October 2010, in an eminent economist pointed out that present agricultural marketing system, specially for perishable is suffering from serious shortcoming and distortions. Right from harvest losses, inefficient and crude bulking, transport grading, packaging, market clearance for primary produce, processing, cold chain etc. from the producer to the final consumer inside and outside of the country, the system is defective, wasteful and inefficient, whereby both the consumer through its retail outlets. Middle men are needed and at best market functionaries can be reduced or even eliminated. The number, cost and margins of the middlemen has to be rationalized for efficient market clearance in competitive wholesale and retail markets<sup>3</sup>.

### **Objective of the Study**

The primary objective of the study is to identify the problems faced in fruits logistics in rural area.

### **Research Methodology**

The study is empirical in nature based on survey method. The present study attempts to identify the problems faced in fruits logistics in rural area at Theni District at Tamil Nadu. Convenient Sampling Technique has been adopted for the study. The data was collected, from fruits cultivators, commission agents, wholesalers and retailers, the respondents involved in logistics function in the study area. To elicit information from the customers' interview schedule was designed and administered. The primary data have been collected by the researcher with 430 respondents for a period of 10 months from October 2014 to July 2015. The data thus collected are then processed using the Statistical Package of Social Science (SPSS) 20.0 computer software. The function of SPSS is to help researcher to analyze the result of the questionnaire and then to be interpreted the finding. Factor Analysis was used to analyse the problems faced in fruits logistics in the study area.

### **Factor Analysis**

The term factor analysis was first introduced by Thurstone in 1931. Trimming a large number of variables to reach at few factors to explain the original data more economically and efficiently factor analysis is a widely used multivariate technique in research reduces data complexity.

Factor analysis is a collection of method used to examine how underlying constructs, influence the responses on a number of measured variables. Factor analysis is a method for investing whether a number of variables of interest are linearly related to a smaller number of unobservable factors. Factor analysis is a statistical procedure used to uncover relationship among many variables. This allows numerous inter correlated variables to be condensed into fewer dimensions called factor<sup>4</sup>.

The main applications of factor analysis techniques are to reduce the number of variables and to detect structure in the relationship between variables that is to classify variables. Therefore, factor analysis is applied as a data reduction or structure detection methods

Factor analysis is performed by examining the pattern of correlation or co-variances between the observed measures. Measures that are highly correlated either positively or negatively are likely to be influenced by the same factors<sup>5</sup>.

The first stage is factor extraction process. The most popular method for this is called principle component analysis. There is a rule of thumb based on the computation an eigen value to determine

how many factors to extract. The concept of eigen value translates approximately to the variance explained in the concept of regression analysis. The higher the eigen value of a factor, the higher is the amount of variance explained by the factor. The least number of factors which will maximize the explained variance are extracted, before extraction it is assumed that each of the original variables has an eigen value to one. Factors with eigen value of one or more are retained<sup>6</sup>.

The second stage is called the rotation of principal components. This is done by the process of identifying with which factors are associated with which of the original variables. The factor matrix is used for this purpose. The rotated factor matrix comes about in stage two. The factor matrix whether unrotated or rotated gives the loading of each variable on each of the extracted factors.

This is similar to correlation matrix with loading having values between '0' and '1' values close '1' represent high loadings and those close to '0' represent low loadings.

The objective is to find variables which have a high loading on one factor, but low loading on other factors. If factor 1 is loaded highly by variables 3, 8 and 10, it is assumed that factor 1 is a linear combination of these three variables and it is given a suitable name representing the essence of original variables of which it is a combination. The popular method of orthogonal rotation is varimax was adopted under this study.

Communality is a measure of variables variance that is explained by the extracted factors and is obtained by adding the squares of factor loadings of the factors under consideration. The higher the variables communality, the more it is explained by the common factors rather than by any single factor.

For this study, perception of respondents on four variables viz problems in logistics, packing, transport and warehouse were taken into to consideration. Correlation techniques were used to understand their relationship and also to find out the common factors. To eliminate unique variances the results are further iterated and the communalities of the various variables after such iteration are given below.

**Table: 1**  
**Communalities of Problems**

Variables	Initial	Extraction
problems that you face in logistics	1.000	.937
problem you are facing in packing	1.000	.947
problem you are facing in transport	1.000	.939
problem you are facing in warehouse	1.000	.946

Extraction Method: Principal Component Analysis.

In the above table extracted communalities are acceptable and all variable are fit for the factor solution as their extraction values are above 0.5 as per recommendation of Hair et al., (2010). The table shows that problems in packing have the highest impact and problems in transport have lowest impact.

The commonly used Principal Component Analysis with Varimax Kaiser Normalization Rotation are used for extracting factors .Those factors having eigen values greater than 1.0 are considered significant all other factors are considered insignificant (Hair et al., 2010) .

The eigen value and the % of variance explained by the factors are shown in the table below.

**Table: 2**  
**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %

1	2.13 6	53.402	53.402	2.13 6	53.402	53.402	1.89 7	47.426	47.426
2	1.63 4	40.841	94.244	1.63 4	40.841	94.244	1.87 3	46.818	94.244
3	.130	3.251	97.494						
4	.100	2.506	100.000						

Extraction Method: Principal Component Analysis.

According to Kaiser criterion only first 2 factors should be used, because they have an eigen values greater than 1 and they account for maximum observed variation in the executives perception on excellent performance.

On summing the communalities the results show a value of 3.769 out of standarised variance of 4.00. Thus the variance now is reduced to 3.769 which equals to 94.22%. That means about 94% of the variance is common and 6% of the variance is unique. The factor analysis made using SPSS 20 helps to extract 2 factors from variables. The 2 factor solution explaining 94% cumulative variance which is higher than 50% as recommended by Nunnally and Bernstein (1994). Factor 1 explains maximum variance of 47.42% followed by factor 2 with variance of 46.81%. It means that factor analysis has extracted a good amount of variance in the items. The factors so generated have Eigen values range from 2.136 to 1.634.

**Table: 3**  
**Rotated Component Matrix<sup>a</sup>**

Variable	Component	
	Factor 1	Factor 2
problems that you face in logistics	.110	.962
problem you are facing in packing	.972	.057
problem you are facing in transport	.020	.969
problem you are facing in warehouse	.970	.072

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table reveals that the most important factor contains the variables like problems in logistics and packing which explain 47.42% of variance and the second most important factor which explains 26.73% of variance contains problems in transport and warehouse.

**Managerial Implication**

**Cold storage facility:** Lack of storage facilities at the production centre forced the growers to sell their produce within a short period of time. This actually created a glut in the market and ultimately the farmers were forced to accept the low price rather than go without it.

**Value added service :** Beside the prime logistics function provided by the logistics service provider in the study area they has to provide other value added services such as motivating the farmers for organic farming, cold storage facility, cold storage transportation, processing , packing and delivery as per the customized requirements.

**Market was dominated by few whole sale merchants:** In the study area nearly 70% of total fruits were procured by very few Wholesale Commission Agents. The remaining was shared by others. Thus the entire fruits market was dominated by these wholesale commission agents.

**Lack of role of government:** Though the market was dominated by the commission agents, in order to protect the interest of the farmers, the government has to announce supportive programs to the farmers. The government should also motivate the farmers and the merchants to export the fruits to the European countries.

**Non-availability of co-operative societies:** Due to the non availability of co-operative societies in the study area the marketing of fruits was in the hands of wholesalers and commission agents. High



market charges, unwanted deduction in the name of decayed fruits were followed by the commission agents resulting in lesser share of the consumer rupee.

**Conclusion:**

Though the study area occupies prime position in the production of fruits still the prevailing system of cultivation, harvesting and logistics have not developed. The logistics of fruits is still a problem. In this chapter an attempt has been made to highlight the problems faced by the fruits producers in managing logistics. The result shows that fruits are distributed through commission agents. In providing logistics function farmers problem is providing high middlemen commission and commission agents are facing problem in grading, transportation, storage and warehousing.

**References**

1. *Dr.D.Venketramaraju and R.Suresh Babu, "Vegetable retailing in India", Kisan World, May 2013.*
2. *Dr.N Mahalingam, "India's economy – poised for a leap forward", Kisan World, November 2011, PP-6.*
3. *Prof.SS.Johl, Cover story on " Need is to rationalize the number of middlemen and their cost and margins", Agricultural Spectrum, October 2010, PP-16-21.*
4. *S.L.Gupta,(2013), Business Research method, McGraw Hill Education, New Delhi*
5. *Robert H.carver, Jane Gardwohl Nash,(2012), Doing Data Analysis with SPSS, Cengage Learning India Private Limited, Delhi*
6. *Dipak Kumar bhattacharyya, (2006),Research Methodology, Excel books, New Delhi*