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*Keywords: peanut chikki, information sharing, supplier relationship, supplier performance, partnership quality, south india.*

*GJMBR-E Classification: JEL Code: M30*




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# Supply Chain Practices and its Impact on Supply Chain Performance of Peanut Chikki Industry in Kovilpatti

Manikanda Prabhu A [α] & Dr. J. Joshua Selvakumar [σ]

*Abstract-* This research concentrates on supply chain practices and its impact on supply chain performance of peanut chikki industry. The aim of this study to analyse the supply chain performance by using various constructs. By using the questionnaire survey the supply chain practices of peanut chikki industry in Kovilpatti was analysed. Survey was conducted directly in their consecutive firms in Kovilpatti. The respondents are the people who are suppliers of the peanut chikki industry in and around Kovilpatti. The nodes and linkages of supply chain are also determined. At the end of study outcomes were discussed with the available data and the suitable interpretation was done and suggestions are put forth setting a path for future studies.

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## I. Introduction

Peanut Chikki is a traditional sweet (snack) which is made from groundnuts and jaggery.Chikki maker facing varieties of physical and chemical action in related to manufacturing the peanut chikki in day to day activities (H.S.Paine, 1928). Indian's has more traditional foods with more nutrition's and all the foods comes under the snacks, sweetmeats which are producing by local raw materials with more nutrition's (protein and carbohydrates). Peanut Chikki comes under sweetmeats which are more popular, it is prepared using peanut, jiggery, sesame and etc. (Bindhya Dhanesh T, 2013). Chikki's are more popular in rural population with attractive price compared with other confectionery products. There are three major types of market A, B and C (upper, middle, lower) class market. Market outlets of chikki are majorly in type "C" class stores. The products are also available in kirana shops and departmental stores and bakeries also sell chikkies. The cottage industries (unbranded) chikkies are selling to the wholesale dealers.

Traditional chikki was marketed after implementation of Goods and Service Tax by the government of around 18% for the peanut chikki by that product become more popular in Tamilnadu. Peanut chikkis are packed with the size of 100gms per pockets by using polypropylene wrappers or cellophane wrappers.

The production capacity is estimated at 500 kilograms per shift or 1500 kilograms per day. The yield of chikkies will be 37.5 tonnes per month and that per annum wouldbe 450 metric tonnes.With an ex-factory selling price at Rs. 80 per kilogram of peanut chikkies, the total sales revenue will be Rs. 360 lakhs per annum on full capacity utilisation.

Kovilpatti is one of the industrial cities where in the district of Thoothukudi of the state of south Tamil Nadu. Kovilpatti is famous for "kadalai mittai". It has a population of 2.5lac peoples (2016) and is known for candy paradise. Here, the most of small scale industries of peanut chikki manufacturing is the only occupation for many people and it has the strong inventory of raw materials from their neighbouring towns. It causes them as a largest supplier of peanut chikki in southern Tamilnadu.

Supply chain which is defined as the combined process with some business entities such as Suppliers, Distributors, and Retailers. These business entities are the people doing the activities like a) procuring raw materials, b) converting these raw materials into specified products as like what they want, c) finally delivering those finished products to retailers. For a decaderesearchers and practitioners are primarily investigating in the field of supply chain process (forward flow and backward flow). Recently researchers are turn to start doing on research in supply chain performance, design, length, entities, growth and etc. According to that supply chain concepts and methods are changing in the manufacturing industry is increased and also the supply chain practices like reducing product life cycle time, shrinking the lead time in delivery, increase in manufacturing costs are included. While at the same time in manufacturing supply chain concepts are arises largely it is important to note the supply chain playing vital role in business performance.

Business performance will be measured by using three dimensions in a manufacturing industries are financial performance, operational performance and supply chain performance. There is only less research attempts done in supply chain practices to measure the

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business performance in India by using financial results (Robert E.Morgan, 2003).

In order to improve the supply chain performance there is need to look out the whole supply chain practices. In this study performance measurement is defined with the criteria that are information quality, supplier relationship, logistics performance and responsiveness to the customer according to (N.Vivek, 2011).

## II. Literature Review

A review of past experiences and its studies of the related field are very helpful for the present researchers. It will give the guideline for the new researcher to compare the end results with earlier studies, to use its concepts, and so on. This research is designed to study of supply chain practices and its effect on supply chain performance and to determine whether the business entities have an impact on the business performance. Supply chain has been becoming the important factor to analyse the organisation performance (Inda Sukati, 2012). For a supply chain performance, the relationship between the business entities (supplier and buyer) requires strong partnership (Marcos Paulo Valadares de Oliveira, 2011). Vivek N (2011) says about the importance of various linkages between the entities involved in the supply chain activities for its efficient function, integration and flexibility.

*a) Information flow*

A supply chain contains three flows which are information flow, material flow and financial flow between the supplier and buyer of products (Abirami Radhakrishnan, 2005). In many of the supply chain links contains each business entities (seller, manufacturer, and distributor) are to be taken as single supply chain. Business to business exchange occurs in the supply chain which exchanges between the buyer and supplier (Yifeng Zhang, 2005)

*b) Supplier Relationship*

In supply chain practices the supplier relationship has a significant impact which is emphasized (Minkyun Kim, 2010). Significant research depends upon the business knowledge and supplier partnership to fulfil the customer requirements and expectation (Stank, Theodore P, 2002).

*c) Inventory Management*

We adopted the traditional technique of supply chain practices with respective of Inventory management in order to share the information between the firms for getting efficient performance (G. P., & Fisher, M. 2000).

*d) Logistic Performance*

The process of delivering the products from one business entities to other through the supply chain with different activities which includes inventory, warehousing, transportation, and disposal (Joseph Raymond Huscroft, Jr., 2010).

*e) Responsiveness to Customer*

In supply chain practices responsiveness to customer improves the wealth of supply chain and which is resolvable factor for build to order supply chain (Andreas Reichhart and Matthias Holweg, 2007).

*f) Partnership Quality*

Supply chain practices the benefits which are gained by the both the business entities (supplier and buyer) by the mutual partnership between the two different suppliers and buyers (Simatupang, T. M., & Sridharan, R. 2002).

*g) Supply chain Performance*

In an agro-foods supply chain management risk is also the part of supply chain which includes the driven factors (information sharing, supplier relationship, transportation) of measuring supply chain /organization performance (Edmond Yeboah Nyamah, 2016). The performance measurement of supply chain is taken as whole because each item in supply chain is integrated to the supply chain activities such as responsiveness, flexibility, efficiency (Lusine H. Aramyan, 2007). The supply chain performance measurement is done by using the relationship between the leaders (supplier, direct seller, distributor) perception of performance (Roberts, M. Koy, 2000). Literature review leads up to deriving the following hypothesis and development of conceptual model.

## III. Need for the Study

Most of the people prefer consuming branded confectionary products rather than a traditional peanut chikki. It is difficult to understand what attracts consumer to buy branded confectionary product in spite of its artificial characteristics.Most of the people are influenced to a larger extent,due to high availability and marketing of branded confectionary products in the all classes of market. Also, there are not much suppliers to distribute the traditional peanut chikki which henceforth have an insufficient supply to the A and B markets. So there is a greater need in order to address the lack of supply chain of the traditional products.

## IV. Scope for the Study

In modern business, the practice of positive supply chain performance is becoming more in important to reach and develop the market. Peanut chikki is not in much reach to the A and B class market because of inefficient supply chain practices and marketing of other confectionary products. This study will help us to find the solution in the supply chain nodes and links. This research is focusing on supply chain practices and its impact on supply chain performance of



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peanut chikki industry. This study will also help to enhance importance of the supplier relationship and information sharing on the supply chain performance.

## V. Objective

The aim of the study is to analyse the peanut chikki industry in kovilpatti with respect to the supply chain performance and objectives are:

a) To explore and discuss the supply chain practicesadopted within the peanut chikki industry.
b) To explore and discuss the nodes and linkages of supply chain on peanut chikki industry in Kovilpatti
c) To analyse the impact of information sharing between the business entities on the supply chain performance.
d) To explore and discuss the relationship between the suppliers (firm employers) and its performance.

## VI. Conceptual Model

*H1:* A firm's strategic information sharingis positively related to its supply chain
supply chain performance.

*H2:* A firm's strategic supplier relationshipis positively related to its supply chain
supply chain performance.

*H3:* A firm's strategic inventory managementis positively related to its supply chain
supply chain performance.

*H4:* A firm's strategic logistics performanceis positively related to its supply chain
supply chain performance.

*H5:* A firm's strategic responsiveness to customer is positively related to its supply chain
supply chain performance.

*H6:* A firm's strategic partnership qualityis positively related to its supply chain
supply chain performance.




*Figure 1:* Conceptual Model

## VII. Research Methodology

This descriptive research used to determine the insights of kovilpatti peanut chikki manufacturing and its supply chain practices by using a survey methodology. The items in the survey were obtained from existing scales. For example, the variables for measuring information sharing, supplier relationship, inventory management, logistic performance, responsiveness to the customers, partnership were taken from an existing endorse scale developed by N Vivek (2011). The sampling method which adopted for this study is cluster sampling for the suppliers. The samples respondents are into three-category supplier and their direct seller and their distributor of peanut chikki industries. The sample size is 108 came out from the questionnaire study (supplier 36, direct seller 36 and distributor 36). By using SPSS and Visualpls, going to derived the analysis for the data which is collected.



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## VIII. Results and Discussion

Understanding the impact of supply chain practices on the supply chain performance.

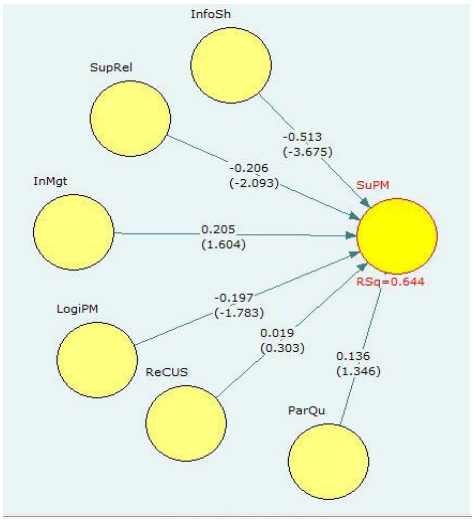


*Figure 2:* Testing Casual Model

*** Infosh – information sharing, SupRel – Supplier relationship, InMgt – Inventory management, LogiPM - Logistic performance, ReCUS – Responsiveness to customers, ParQu – Partnership quality, SuPM – Supply chain performance.*

Based on the above testing model the relation was found to be highly significant (Rsq =0.644).

*Table 1:* Boot Strap Summary

| | Entire sampleestimate | Mean ofsubsamples | Standarderror | T-Statistic |
|---|---|---|---|---|
| IS->SCP | -0.513 | -0.4787 | 0.1396 | -3.6746 |
| SR->SCP | -0.206 | -0.191 | 0.0984 | -2.0933 |
| IM->SCP | 0.205 | 0.2504 | 0.1278 | 1.6044 |
| LP->SCP | -0.197 | -0.1809 | 0.1105 | -1.7826 |
| RC->SCP | 0.019 | 0.0809 | 0.0626 | 0.3035 |
| PQ->SCP | 0.136 | 0.1581 | 0.101 | 1.3462 |

***IS – Information sharing, SR – Supplier relationship, IM – Inventory management, LP- Logistics performance, RC- Responsiveness to customer, PQ- Partnership quality, SCP- Supply chain performance.*

Here the sample size has been reduced to particular extent to get the accuracy of 0.1 and T value is t= 1.6 is accepted.Based on the above Boot Strap Summary we could see that variables information sharing (t= -3.6746) has reverse significant relationship towards supply chain performance because of incorrect information sharing between the suppliers. SupplierRelationship (t= -2.0933) has reverse significantrelationship towards supply chain performance, there is no business relationship but individual relationship seems to exist. Inventory Management (t= 1.604) has a significant relationship towards supply chain performance and logistic performance, responsiveness to customers, partnership quality has a very low relationship on the supply chain performance of peanut chikki industry.

Understanding the supply chain practices (nodes and linkages) of the peanut chikki industry in Kovilpatti.

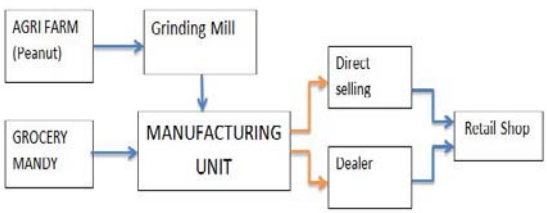


*Figure 3:* Supply chain path for a Peanut chikki industry in Kovilpatti



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Based on the above supply chain link, the point which starts from the Agri farm (peanut), and end to the consumer. Major supply chain process happening in the node of manufacturing unit (supplier of peanut chikki) to another node direct seller and to another node of dealer.

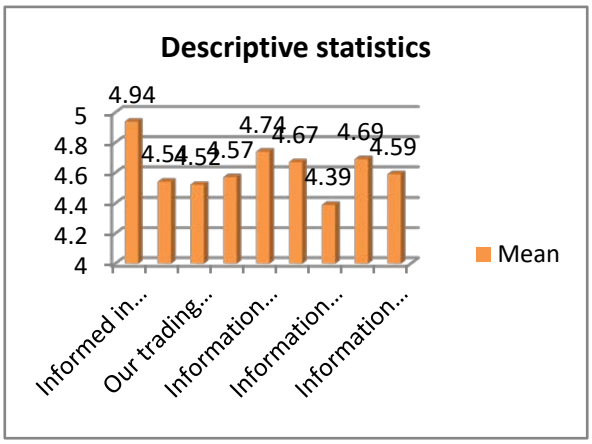


*Figure 4:* Impact of information sharing

Based on mean score, Informed in advance of our changing needs (4.94) is the most important factor which is influencing the supply chain performance followed by Information sharing between business entities Timely (4.74), Information sharing between business entities Adequate (4.69), Information sharing between business entities Accurate (4.67) , Information sharing between business entities Reliable (4.57) and so on. The least factor is further Information sharing between business entities Complete (4.39), followed by our trading partners share proprietary information (4.52) and so on. Basic aim of the study was to find out the different variables on the supply chain performance but as we can see from the above table certain factors such as creditors days and debtor's days has a negative impact on the supply chain performance.

Understanding the significant relationship of the suppliers (supplier, direct seller, and distributor) on the firm's performance.

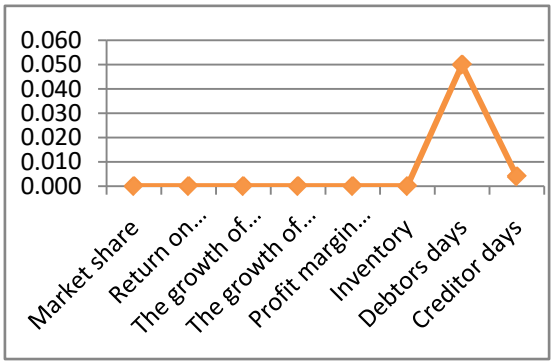


*Figure 5:* Suppliers relationship on the firm's performance

Differences between two groups in the mean scores of variables are studied using Student t test are discussed in this section. Also ANOVA followed by Correlation Analysis is used to verify the hypothesis stated in the first chapter.

P value, p= .000 <0.05 at 5% level of significant. There we accept the hypothesis, so the relationship can be studied using alternate hypothesis.

*Hypothesis I*

Supplier category has a direct influence with the performance of firm with the respective supply chain management.



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*Table 2:* Significant relationship on the firm's performance

| | Significant value |
|---|---|
| Market share | 0.000 |
| Return on investment | 0.000 |
| The growth of market share | 0.000 |
| The growth of sales | 0.000 |
| Profit margin of sales | 0.000 |
| Inventory | 0.000 |
| Debtors days | 0.050 |
| Creditor days | 0.004 |

Based on the significant value of suppliers' category relationship with supply chain performance, market share, return on investment, growth of market share, growth of sales, profit margin of sales, inventory has an 5% of significant relationship on the business performance and also debtors' days and creditor days has no significant relationship on the firms' performance.

## IX. Findings

Information sharing between the suppliers was wrong in spite of sharing the business information. There is no supplier relationship between business entities, but an individual relationship seems to exit.Inventory management has a positive significant relationship on the supply chain performance of peanut chikki industry.

Based on causal test model, it was found that information sharing, supplier relationship, has a reverse significant (t= 3.6746&2.0933) relationship on supply chain performance and also logistic performance, responsiveness to customers, partnership quality has no significant relationship on the supply chain performance. Based on descriptive statistics, the mean score of factors are Informed in advance of our changing needs (4.94) is scored highest mean value this shows most influential factors which favours supply chain performance followed by Information sharing between business entities Timely (4.74), Information sharing between business entities Adequate (4.69), Information sharing between business entities Accurate (4.67),Information sharing between business entities Reliable (4.57) and so on. The least mean score is for Information sharing between business entities Complete (4.39), followed by our trading partners share proprietary information (4.52) and so on.

Based on Anova, market share, ROI, growth of market share, growth of sale and profit margin of sale and inventory are positively significant with supply chain performance at 5% significant level, this indicate, the primary responsibility of an organisation to have regular track of market share, ROI, growth of market share and growth of sales and inventory positions to enhance the supply chain performance.

## X. Conclusion

Even though many researched were describes about the supply chain practices for various industries over a last decades. Supply chain management growing globally in all manufacturing industry with special importance of supplier relationship and information quality. This research is about to study the supply chain practices in the peanut chikki industry. Information sharing and supplier relationship have a strong impact on the supply chain performance. While suppliers (supplier, direct seller and distributor) have a strong impact on the organization performance with respect the supply chain of peanut chikki industry.

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