

# Development of Frameworks for Vendor Base Rationalization and Impact of this on Supplier Relationship: A study of Indian Manufacturing Sector

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**Abstract** - In response to the increasing competition, organizations are working towards cost cutting, especially in the areas of procurement, plant operations and primary distribution. In order to reduce costs, managing vendor relationship is critical. The philosophy of Supplier Relationship Management (SRM) addressed interactions with the third party participation in a supply chain with the aim of improving its efficiency. Since it is difficult to maintain healthy relationships with several vendors keeping minimum cost, need for Vendor base rationalization arises. Vendor base rationalization is the process of reducing the number of Vendors, thus it not only reduces the complexity but also augments the bonding between the vendor and the organization, as the company can now work in collaboration with these vendors and thus reduce the costs incurred in the process.

Several qualitative and quantitative models have been developed earlier to assist companies in the process of vendor base reduction, but the applicability of these models is to be known in Indian context. This paper focuses on the development of the framework with the erstwhile developed models as base and tailoring them to Indian context. The research would be from Manufacturing firms' perspective and analysing the information collected from several procurement managers of various companies and thus coming up with a framework that will help organizations to decide upon the number of vendors they can have for effective relations.

**Keywords:** Kraljic Portfolio , Vendor base rationalization, Segmentation.

## 1. Introduction

In the current world the industrial development has moved from the traditional seller's market to an evolved environment of buyer's market where everything is consumer centric. Consumer's market concentrates more on competitive priorities, i.e., cost, quality, flexibility, etc. at a time, hence enterprises need to meet their requirements in order to stand out in this competitive environment. Similar challenges are faced by manufacturing companies. FMCG, a special case of the Manufacturing sector faces challenges like cost minimization, new product development, availability of products etc. India with its diversified geographies poses the major challenge of availability of the products in a cost effective manner. All these factors arises to the need of having an effective supply chain for meeting such requirements. An optimized and cost efficient supply chain is possible only when all the stakeholders both upstream and downstream in the chain have aligned their goals. Various companies have thus far concentrated more on forward integration by involving the distributors, retailers and key accounts in aligning their objectives with the overall object of cost effectiveness and profitability of the supply chain. The augmented inter-dependency between stages also brings in more risk and uncertainty. To overcome these challenges and hurdles, supply chain

members must work as single system by being unified and coordinating with each other. Hence there is a need to identify the coordination mechanisms that help in overcoming the uncertainty in supply chain and achieving supply chain coordination (Kaur Arshinder, Arun Kanda, & S.G. Deshmukh 2011). Moving ahead, the companies have started focusing on the backward integration i.e. they are trying to synergize with their suppliers for better performance. For successfully managing the supplies, the management needs different purchasing strategies depending on the supplier and the item they handle, as the issues and challenges differ significantly. Thus several procurement experts in corporate world suggested and implemented many purchasing portfolio models to classify items and get effective sourcing strategies (Stephan M. Wagner, Sidhartha S. Padhi & Christoph Bode, 2013).

Sourcing is the long term decisions of what is to be procured and from where. These decisions determine the composition of a company's supply chain. Whereas purchasing is conventionally performed operational function of handling day-to-day contracts, pricing, schedules, and payments, though purchasing has a major influence on the strategic direction of a company by cautious and deliberate supplier selection, which would have an impact on the character, shape, and form of the company's supply chain (Talluri & Narasimhan, 2004). The sourcing decisions have non-trivial impact on the supply chain as well as the company's bottom-line (Carr & Pearson, 1999), and a lot of literature is available on its implications for cost (Saeed, Malhotra, & Grover, 2005; Yeung, 2008). In order to have strong relations with the vendors companies can't have huge number of vendors, on the other hand the number of vendors can't be very small as this would increase the supply risk. So in order to achieve optimal supply chain performance a framework is necessary for finding optimal number of vendors required.

This paper focuses on the development of a framework which can be used for finding optimal number of vendors especially in the context of Indian FMCG sector. The framework is developed by using vendor segmentation methods available in the literature. With these methods as a base, a hybrid method has been proposed. In the first stage of process, the items being procured are segmented whereas in the second stage decision about the number of vendors of each item, based on its significance is taken. A survey was done with target group being the procurement managers to identify major factors which are to be considered for supplier classification. Later, suggestions are also given for the plan of action after the vendor base rationalization is done based on the vendor base segmentation. The major ways available for supplier segmentation are described in detail in the literature review section 2. The model developed for overall supplier segmentation and supplier rationalization is discussed in section 3. This is followed by the description of framework and its implementation on a real case in section 4. Finally, in section 5 the conclusions, results, and future research directions are presented.

## **2. Literature Review:**

Supplier relationship management is a crucial element of the supply chain management, which deals with various dimensions of the business relationships between suppliers and the companies. It focuses on the business requirements of the companies to communicate and manage their suppliers, while enabling them with efficient methods, processes and tools to support the overall collaborative relationship. Strong Supplier Partnerships is necessary for achieving win-win competitive performance; it gives companies competitive advantage along with making seamless information flow possible. Both for the buyer and supplier this requires

a strategic perspective as opposed to a tactical standpoint. Moreover this would need - a commitment over long time to work in collaboration for achieving mutual benefits of both the parties by sharing related information, risks and rewards of the relationship. The modern trend or current day approach towards the supplier relationship has been modified from the conventional perspective with companies trying to work on trust, commitment, corporate compatibility, well understood goals and objectives, strategic plan for collaborative relationship management, communication, equitable sharing of gains, losses, and investments, effective measurements and measurement strategies, collaborative decision making process, consensus management with their supplier thus strengthening the relationship. But having strong relationships won't be feasible if there is large supplier base. Supplier Rationalization helps organizations focus on key relationships which will yield optimized supply chain with high effectiveness. Moreover it can also be seen that the parameters for vendor evaluation and segmentation in the recent times are changing and several behavioural aspects like - building trust, shared vision & objectives, personal relationships, commitment & top management support, change management are coming under consideration. For rationalization of the vendor base first vendor base segmentation is to be done, based on the segmentation the vendor base consolidation or extension can be done depending on the supplier risk and criticality of the product.

Many researchers have worked on the supplier segmentation and rationalization. Various segmentation methods can be classified into the following categories:

- Portfolio
- Involvement
- Portfolio & Involvement (Rezaei & Ort 2012)

The inception of supplier segmentation in portfolio matrix format had happened when Kraljic (1983), a pioneer in the field of supplier segmentation, came up with the first comprehensive portfolio matrix method for purchasing and supply segmentation. To classify the materials or components that a firm procured, Kraljic has considered two factors: profit impact and supply risk. The profit impact of a given supply item can be defined in terms of the volume purchased, the percentage of total purchase cost or the impact on product quality or business growth. Supply risk is assessed in terms of the availability and numbers of suppliers, competitive demand, make or-buy opportunities, storage risks and substitution possibilities. Based on these two variables, materials or components can be divided into four supply categories: (1) non-critical items (supply risk: low; profit impact: low), (2) leverage items, (supply risk: low; profit impact: high), (3) bottleneck items (supply risk: high; profit impact: low), and (4) strategic items (supply risk: high; profit impact: high).

Dyer et al. (1998) compared the supplier to automaker relationships in the United States and Japan; based on the differences between the outsourcing and sourcing strategies, he had proposed strategic supplier segmentation. As per this, companies should first identify and define their core competencies and accordingly find the relevant core and non-core activities. Thus classifying the resources as strategic and non-strategic based on whether they are related to core activities or non-core activities respectively. The involvement method of supplier segmentation uses the level of involvement and co-ordination between buyer and supplier. Ellram (1991), has classified the relationships between supplier & buyers in four ways namely, determined a continuum to classify relationships in the supply chain as: short-term contracts, long-term contracts, joint ventures and equity interests. Several researchers who came after Kraljic followed Kraljic's way of supplier segmentation but also emphasized the need of an important aspect in supplier segmentation, which is the involvement, as it had a lasting impact on supplier segmentation. This approach of classifying that uses the portfolio as well as involvement aspects is classified as portfolio-involvement. For example by Masella

and Rangone (2000), have considered the nature of the relationship between buyer and supplier as one dimension for their approach of supplier segmentation.

In 2012 Jafar Rezaei and Roland Ortt have come up with a new segmentation method, in which they have integrated the variables used by portfolio and involvement segmentation methods. In addition, they extend the previous methods to include variables and functional areas that thus far are missing in contemporary segmentation literature. Furthermore, their approach provides a practical vision for an effective transition from supplier segmentation towards supplier management. Their approach is a process-driven scheme for supplier segmentation. They have classified all the parameters into two categories namely supplier capabilities and supplier willingness. Variable for measuring suppliers' capabilities and suppliers' willingness for possible supplier segmentation are shown in Table 1 & 2.

**Table 1: Supplier Capabilities (J. Rezaei and R. Ortt, 2012)**

<b>Price/cost</b>	<b>Reputation and position in industry</b>
Profit impact of supplier	Financial position
Reserve capacity	Performance awards & History
Industry knowledge	Technology development
Production, manufacturing/transformation facilities and capacity	Supplier's order entry and invoicing system including EDI
Geographic location/proximity	After sales support
Design & Technical capability	Packaging ability
Supplier process capability	. Reliability of product
Amount of past business	Recycling and reverse logistics program
Warranties and claims, Environmental health and safety (ISO 14000 and 14001 certification)	

**Table 2: Supplier Willingness ( Rezaei & Ortt, 2012)**

<b>Commitment to quality</b>	<b>Relationship closeness</b>
Honest and frequent communications/communication openness	Commitment to continuous improvement in product and process
. Bidding procedural compliance	Reciprocal arrangements
Prior experience with supplier	Impression
Ethical standards	Mutual respect and honesty
Willingness to co-design and participate in new product development	Willingness to integrate supply chain management relationship
Willingness to share information, ideas, technology, and cost savings	Willingness to invest in specific equipment
Consistency and follow-through	Supplier's effort in eliminating waste
Supplier's effort in promoting JIT principles	Long term relationship

### **3. Model:**

It can be seen that the models discussed above have either segmented only the vendors of particular product category like Jafar and Ortt, or segmented all the vendors at once (like Kraljic). But in this work, vendor base rationalization is achieved first by segmentation of category of products being procured by prioritizing them, which is achieved using Kraljic Matrix. Later the vendors of specific category can be classified by using the Jafar and Ortt method.

Figure1 shows the framework of this model. Steps to be followed are discussed as below:

- ✓ Prepare a list of items, that are being procured, with the details of the value and volume of the goods being procured
- ✓ Prepare the list of vendors available for a given item

- ✓ Classify items using Kraljic matrix considering the supply risk and profit impact
- ✓ Segment the vendors of leverage items firstly and then the strategic items on various criterions for supplier capabilities and supplier willingness. The criterions to be considered would vary from industry to industry
- ✓ Based on the segmentation the company can decide up on the vendors with whom it can strengthen its relations and those with whom it need to end the relation

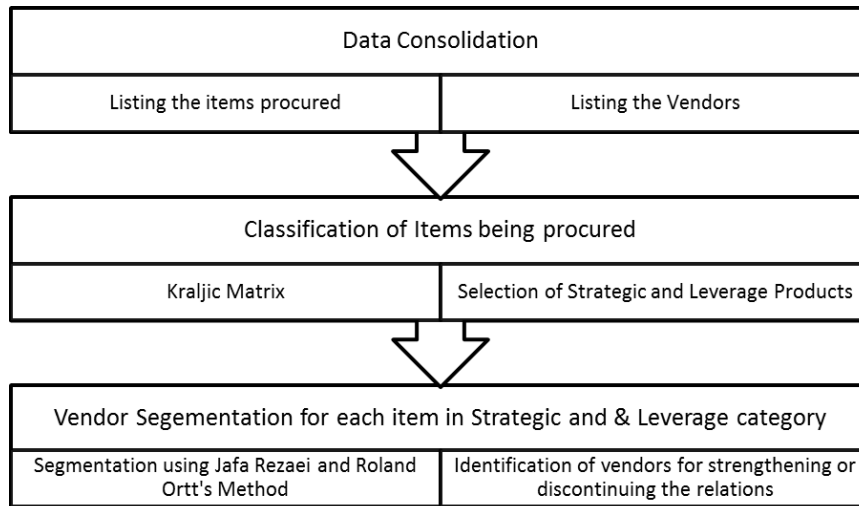


Figure 1: Framework of model

## 4. Data Collection and Criteria Identification:

### 4.1 Preliminary to identify major criterion:

In order to support the above proposed model, a practical substantiation is needed for which a questionnaire is floated to several procurement managers with experience ranging from 2-5 years in the FMCG sector. The questionnaire mainly comprised of questions dealing with the category of products the company is dealing with (types in Kraljic Matrix), the sector which the industry belongs to, the critical six or seven factors the industry is considering for supplier selection and to assess the supplier willingness, etc (first step of the model). This questionnaire proved to be very useful in analysing the present trends of industries of the sector and the importance they give to suppliers in integration of supply chain through various factors that they are considering to assess the suppliers. From the obtained raw data of the responses, the data is analysed and put into an interpretative manner. It was observed that for both strategic and leverage items the criterions identified were more or less the same. The responses obtained have been shown in Figure 2:

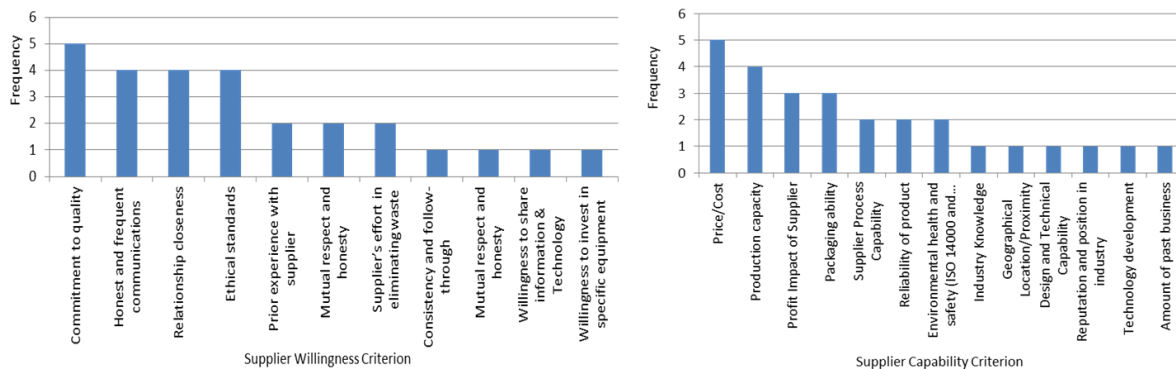


Figure 2: Responses Obtained from Preliminary Survey

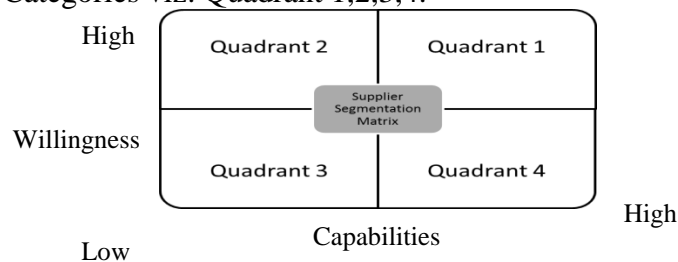
The major criteria for measuring supplier capabilities and supplier willingness are identified after Pareto Analysis of the results obtained from the survey. These are shown in Table 3:

**Table 3: Criteria Identified from preliminary survey**

Supplier Capabilities	Supplier Willingness
Price/Cost	Commitment to quality
Production, manufacturing/transformation facilities and capacity	Honest and frequent communications/communication openness
Profit Impact of Supplier	Relationship closeness
Packaging ability	Ethical standards
Supplier Process Capability	Prior experience with supplier
Reliability of product	Mutual respect and honesty
Environmental health and safety (ISO 14000 and 14001 certification)	Supplier's effort in eliminating waste

#### 4.2 Supplier Segmentation:

The set of criterion for measuring supplier capabilities and supplier willingness which will be used for the vendor base segmentation is obtained in first survey. Another survey was done in which the products procured are first classified based on Kraljic Matrix (as per the procurement managers discretion). This helped in identifying the leverage and strategic items being procured by the firm. Of these two, Leverage products are those which have less supply risk and high profit impact, and the buyers have many options for negotiation. Here the rationalization of vendor base should be done at priority as the profit impact is higher and it may happen that currently the organization may have huge vendor base. The Leverage or Strategic items are selected and there vendors are to be classified with the above mentioned criterion for both Supplier Capability and Supplier Willingness as per Jafar Rezaei and Roland Ortt 2012. Now, all the vendors of each of the product being procured have been segmented into 4 Categories viz: Quadrant 1,2,3,4.



**Figure 3: Supplier Segmentation Matrix (Rezaei and Ortt, 2012)**

For the vendors who fall in to the categories of Quadrant 2 and Quadrant 4, they can be moved to the Quadrant 1 quadrant by increasing either Willingness or Capabilities. Supplier Capabilities can be improved by Increasing the performance goals of the supplier, Giving proper them training in the required fields, Equipping them necessary technology and equipment by investing, Jointly working with them and having to personnel exchange activities, and Continuously evaluating suppliers' performance. Whereas supplier willingness can be amplified by strengthening the relations, giving awards for the performance of the vendors. A supplier's willingness to develop closer ties and share confidential information is likely to affect the buying firm's business performance, which is one of the main purposes of supplier development.

### 4.3 Implementation of Framework:

The framework proposed was tested for a major FMCG firm, in which the items were first classified as in Kraljic Matrix and then a leverage product is taken up for supplier segmentation based on supplier capability and supplier willingness criteria identified in the preliminary survey. Each supplier of the product is rated by procurement manager on all the criteria of capabilities and willingness. The results obtained were used to segment the vendors for that particular product. For this, the ratings obtained by each vendor have been summed separately for both willingness and capability. Once the scores of each vendor, is obtained a graph is formed with the averages of supplier capability and average of the supplier willingness as the center of the graph. Each vendor is plotted on to the graph based on the cumulative scores obtained on capabilities as well as willingness criteria (third step of model). For a particular product (whose supplier segmentation has been shown in the figure) which is being procured currently from various suppliers it was found that the company was currently having 18 vendors, but after vendor base segmentation, it was found that only 7 of these were falling in the 1st quadrant. While the number of vendors in Quadrant 3 was 5, Quadrant 2 has 3 suppliers; lastly quadrant 4 had 4 suppliers. Thus the company can reduce the vendors they are dealing with, by considering only the vendors falling in the first Quadrant, thus rationalizing their supplier base.

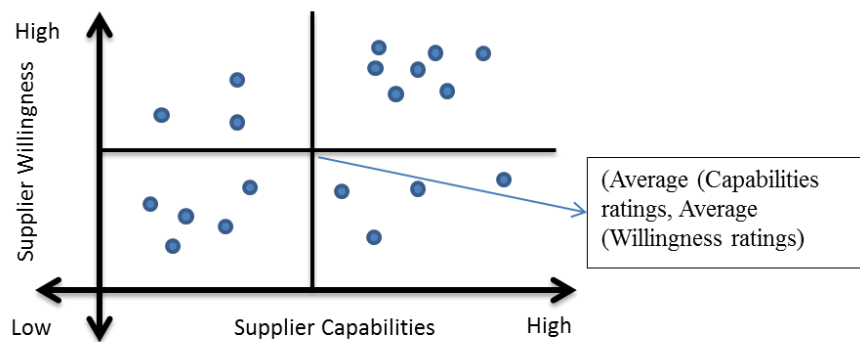


Figure 4: Supplier Segmentation for the leverage product in example

The advantages of reducing the size of vendor base are as follows:

- Reduced purchased costs
- Reduced procurement and supplier management costs
- Reduced noncompliance – and increased stakeholder satisfaction

The company has 2 options in regards with the suppliers in the Quadrant 4 i.e. either terminate the relationship with them or to develop them if needed. The product under consideration was leverage product thus the firm can terminate the relations with the Quadrant 4 suppliers and could strengthen the relations with the Quadrant 1 suppliers, while for Quadrant 3 & 4 suppliers the company can improve either of supplier capabilities or willingness based on the quadrant.

### 5. Conclusion:

To have an optimized supply chain, maintaining healthy and strong relations with all the stakeholders in the supply chain is necessary. Though companies have coined the need for this with the downstream members long back, they haven't concentrated much upon the suppliers. In the current dynamic scenario, it is essential for the companies to be more competitive, efficient and responsive. To achieve this target, companies need to start

collaborating with the suppliers and strengthen their relations with them. This arises the need of developing vendors when the number of suppliers available is very less. Simultaneously, reducing the vendor base when there is a large vendor base depending on the type of product. Thus vendor base rationalization is the need of the hour and the technique proposed here would help in undertaking the whole process of the rationalization in sequential and concentrated manner. After rationalization, the companies can collaborate effectively and efficiently with their vendors and leverage on the synergies.

This model can be modified at the implementation stage. Here equal weightages are given to all the criteria used for measuring supplier capabilities and supplier willingness, whereas for practical usage companies can give different weights to each of the criteria and can segment the vendors accordingly.

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