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## A Multi Criteria Decision Making Approach for Suppliers Selection

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### Abstract

The study deals with the factors affecting the supplier selection process, to study the interaction between them and thus empirically assess which factors are most influencing one in supply chain operations which must be given careful attention. For studying the interaction between the factors and prioritizing the factors, we have used ISM (Interpretive Structural Modeling) technique, by which we got the weights for the performance factors which are examined and ranked. AHP (Analytical Hierarchy Process) is used to rank the supplier and found out the best supplier from the group of supplier. This method is applied to an automotive component manufacturing industry in the southern part of India. Qualification and final selection of the supplier are done based on the method proposed. We have collected the data from the mentioned industry and the results are implemented by the industry.

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## 1. INTRODUCTION

### 1.1 Suppliers

Anyone who supplies products into the market is part of the supply chain, including manufacturers, importers, wholesalers, retailers and hire companies. Few products or services exist that so not require some supply chain management. The more suppliers that are involved, the supply chain management becomes more complex. There have been a number of philosophies about how to deal with the supply chain management. Backward integration, develop as many suppliers as possible to make

the supply item a commodity, competitive bidding, single source, supplier partnerships to name a few. In general, the closer a product or service is to a commodity item by definition the more potential suppliers are available. This can make the supply chain management extremely complex. Maintaining traceability becomes much more burdensome.

While selecting the suppliers, a company should concentrate on capabilities and competences not resources. When evaluating suppliers, clients tend to focus on the supplier's resources because these are highly visible on site tours, balance sheets and resumes. But they should be more interested in the supplier's ability to turn these resources – its physical and human assets such as physical facilities, technologies, tools and workforce – into capabilities that, in turn, can be combined to create high level customer facing competencies.

Need of selecting the best supplier is because it is unwise to pay too much, but it is unwise to pay too little. When you pay too much, you lose a little money that is all. When you pay too little, you sometimes lose everything, because the thing you bought was incapable of doing the thing you bought it to do.

Today, organizations that wish to carry on the sustainable growing need a robust strategic performance measurement and evaluation system because of changing demands of consumers, reduced product life cycle, competitive and globalised markets.

Best practice for supply chain dictates that managers should look to form closer, longer term relationships that deliver long term value to both parties. Strong relationships help drive collaboration, trust and value throughout your supply chain. Top level organisations recognise the importance of developing and maintaining world class supply chains that give them competitive advantages from others in their market. Transparency and performance have always been important for organisations looking to be a market leader. Therefore, many of them are starting to recognise the value in SPM for nurturing supplier relationships through a performance culture.

The concept of Interpretive Structural Modelling (ISM) was primary introduced by J. Warfield (1973). Warfield proposed ISM due to evaluate the complex socioeconomic systems. He stated that ISM approach facilitates to compel classification and direction on the complex relationships among components of a complexity of relationships among elements of a socioeconomic system. ISM is interpretive as based on a group's judgment and decision whether and how the system's elements are linked. It is structural as constructed on the relationship's foundation and final structure is exploited from the complex set of system's variables. It is also a modelling, as the final relationship is illustrated in a directed graphical model.

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