**Suppliers Managements**

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**Research Paper**

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**Introduction**

Supplier’s management is simply the management of supplier-facing business processes throughout the lifecycle of a supplier. Many procurement organizations have historically used strategic sourcing as the core methodology by which supply bases are shaped and suppliers are commercially engaged. But sourcing by itself is just one episodic process in a much larger supplier management lifecycle. In response, many organizations have broadened their sourcing activities to a category management activity that transcends category sourcing and pushes upstream into stakeholder management and downstream into deeper supplier engagement. Additionally, as rationalized supply bases lead to large suppliers that provide multiple categories, and as procurement organizations are increasingly seeking innovation and top line growth from key suppliers, supplier management is expanding beyond its traditional post- sourcing and post- contracting to become the default methodology to manage the lifecycle of suppliers within which these processes and other source-to- pay processes get executed. So, when we talk about supplier’s management, we are really talking about supplier lifecycle management because of this broader scope.

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**Key Areas of A Research Proposal**

The objective of Supplier Management is to ensure that all contract with suppliers support the needs of the business. All suppliers and contracts are manage through the Supplier and Contract Management Information System (SCMIS)

**Sub- Processes**

Providing the Supplier Management Framework, to provide guidance and standards for the procurement of service and product. This includes the provision of the Supplier Strategy and the preparation of Standard Terms and Conditions.

Evaluation of new Suppliers and Contracts, to evaluate prospective suppliers in accordance with the Supplier Strategy and to select the most suitable supplier.

Establishing new Suppliers and Contract, to negotiate and sign a binding contract with a supplier. This process is mainly applied for significant investments, either in externally provided services or in technology.

Processing of Standard Orders, to process orders for commodity products and services, and to order predefined items within the boundaries of existing contract framework.

Supplier and Contract Review, to verify if the contractually agreed performance is actually delivered, and to define improvement measures if required.

Contract Renewal or Termination, to carry out regular renewals of contracts, to assess if those contracts are still relevant, and to terminate contracts which are no longer needed.

**Definitions**

Purchase Order, an order for purchasing items from a supplier. If the order is for an externally supplied supporting service it is accompanied by an underpinning contract defining service level targets.

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Purchase Request, a request to purchase a service or a product from an external supplier, issued for example from release management during service build. Processing of a purchase will generally proceed only if the requester also holds an approved budget for the purchase.

Standard Terms and Conditions, a set of terms and conditions which are routinely attached to contracts and orders when procuring services or products.

Supplier and Contract Management Information System, the supplier and contract management information system is database or structured document used to manage suppliers and contract throughout their lifecycle. The SCMIS contains key attributes of all contracts with suppliers, and should be part of the service knowledge management system.

Supplier and Contract Review Meeting Minutes, minute’s document achieved vs agreed supplier performance. They also contain any identified supplier weaknesses and problems, as well as suggestions on how the situation could be improved.

Supplier Evaluation, resulting document from the supplier evaluation process, describing in detail the criteria used for evaluating and selecting a suitable supplier.

Supplier Service Level Report gives insight into a service provider’s external suppliers ability to deliver the agreed service quality. To this purpose, it compares the agreed and actually achieved service levels, and also includes information on the usage of services, ongoing measures for service improvement, and exceptional events.

Supplier Strategy sets guideline for the procurement of services and goods. It typically includes criteria for the selection of suitable suppliers and a list of preferred suppliers.

Underpinning Contract, a contract between an IT service provider and a third party. The third party provides supporting services that enable the service provider to deliver a service to a customer. Therefore, underpinning contract must be aligned with customer-facing service level agreements.

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**ABSTRACT**

Supplier relationship management or SRM is becoming increasingly relevant buyers in modern time. It has climbed up in order of importance and is only second to cost cutting as showed by research undertaken by the supply management publication (leach, 2012)) this precedence over other priorities may not be a new phenomenon as Jared (2009) a suppliers as their partners. However, such partnerships can bring their own problems as Heintrizs et al (1991) argue. According to them, the decision to continue or terminate partnerships with one’s suppliers should purely be based on a fair system of evaluation. So, the main objective of SRM can be to make the sourcing process between business and their suppliers more effective and streamlined. Through current industry based examples, the paper finds out that conventional wisdom of joint collaboration is a one size that does not fits all and a more sophisticated fit for purpose approach is the key when developing relationship with preferred suppliers.

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**CHAPTER ONE INTRODUCTION**

Supplier selection is one of the most critical activities for many companies and selection of wrong supplier could be enough to upset the company’s financial and operational Selection of a proper supplier which provides the company with the exact Product/raw material and/or services at the right price at the right time and in the required quantities. Regarding this two different approaches are given. It has been observed that many methodologies have been applied in literature for the proposed work In the last decade; a lot of changes have been seen in supplier selection process. Industries are now abandoning the lowest bidder supplier selection methodology of the Past as a replacement for empowering multidisciplinary sourcing teams to select the best supplier available for each component. Linear Programming (LPP), Mixed Objective Programming (MOP), analytical hierarchy processes (AHP) are commonly used techniques for the said issue. Supply chain consist of various components/ identities like supplier, manufacturer, factories, warehouses, distributions agents etc. These identities are involved for supplying raw materials, mechanism which reassembles in factory to produce a finished product. With the increasing importance of computer based communication technologies, communication networks are becoming crucial in supply Chain management. Supply chain management is situated at the intersection of different

Professional sectors. Designing an effective decision-support system has become crucial in recent years. Systems have to be able to deal with the uncertainty and volatility of modern markets. In such systems, the ability to learn and adapt to new conditions in the environment is of paramount importance.

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**RESEARCH OBJECTIVE**

To give a proposed model for primary data having applied fuzzy set theory as a novel Innovation the vague nature of some selection criteria has been incorporated by Utilizing russification to quantify the vagueness in decision parameters. and for the price negotiation agent technology have been incorporated.

To give an approach for supplier selection problem for existing data through an Agent, Fuzzy and case-based reasoning (CBR) which is a recently suggested method for solving the said problem by making use of previous similar situations. Moreover, a model is also employed for the Existing data to simultaneously consider suitable supplier selection. And an empirical study is given

As the study is concerned, a committee is formed of four decision takers (R & D Manager, Purchase Manager, Technical Head and operation Manager) having with different importance involved in supplier selection procedure from different departments within the company. After the analysis of data collected from different companies, three main criterions as Price (C1), Quality (C2), and Delivery (C3) have been selected for supplier selection modal. This study aims to build up a comprehensive and systematic supplier sourcing model for decision makers. Such a model should enable decision makers to evaluate supplier selection.

**Primary research objective**

To design a collaborative approach of case-based reasoning (CBR), Agent and fuzzy for supplier selection for the auto industry and to authenticate the approach by comparing with current system.

**Secondary research objective:**

To examine the characteristics of negotiation in supplier sourcing on which the

Negotiation protocol and strategy should be based agent technology to study the concept of fuzzy and agent negotiation in reference to supplier Selection.

To study concept, design MAS (Multi Agent System) with a focal point on Suppliers Selection Management. To study concept, design Case base with a focus on Suppliers Selection.

To build up two different models for existing and non-existing data and simulate data of boiler industry data on it.

**PROBLEMS OF THE PRESENT SYSTEM**

Lack of Automation in Supplier Selection.

Physical interference is there in supplier selection.

Very Slow in Processing, Incomplete Solutions, Less Accuracy.

**SCOPE OF WORK**

This study focuses on material supplier selection at main contractors for proposed

Model. The sourcing process in other stages of the project life cycle will just be discussed but not emphasize here. This study focuses on helping contractors as well as manufacturers to make an accurate estimation of the raw material. Since there are many different types of procurement methods in manufacturing, the scope of this study is only limited to auto sector. In addition, this study is location-specific and is confined to the sourcing of suppliers for industry in India. Factors affected the decision of supplier’s selection and are quite different in various culture and economic conditions, Decision in supplier sourcing is a complex multi-objective and multi-attribute decision-making process and this research will mainly focus on the IT application to facilitate this process. Therefore some difficult issues related to human factors and techniques such as the use of threatening, partnering and relationships considerations will resolved. Although in

decision process of this type of decision in practice quantitative and qualitative factors should be considered. This research will be mainly based on quantitative decision with final qualitative decision on some other terms as a supplement, despite attempts will be made to consider more comprehensive qualitative factors and to convert into more rational and quantitative decision terms.

**RESEARCH METHODOLOGIES**

The research on unstructured Information Management Using Multi agent System

Case base & Fuzzy Logic has been planned in various phases. The research work has been structured in such a way so as to include all aspect of taken technologies in supply chain management. Various phases of research are as follows. Data Collection, Analysis of data, modeling of the problems base on the data, Formulation of research paper, Presentations, Preparation of thesis.

**Data Collection**

Data collections have been done from Research Articles published in IEEE, Springer, and journal of artificial intelligence etc. intelligence has been used for reference. Data has been collected from various companieslike. Data were collected in two phases; **Primary Data**

• Visiting the companies, Discussion and interviews with professionals of various Companies.

• Data were collected by various methods, like case studies, tools analysis and Observation method.

**Secondary Data;**

Secondary Data were collected from following source.

Books and research Articles

Online research journals, online books, magazines and articles are used for this purpose.

• Online available Articles about topic of Agent Technology, Fuzzy and Case base reasoning.

**CHAPTER TWO LITERATURE REVIEW**

**INTRODUCTION**

In this chapter the literature available within the purview of the objectives of the present study is reviewed under following heads: Supplier selection methods and supplier selection criteria. The need for the proposed work is also discussed.

**LITERATURE REVIEW ON SUPPLIER SELECTION**

Selecting the right supplier can greatly enhance value, cost savings, quality standards and standardization throughout the manufacturing process.

Therefore, it is imperative that companies select reliable suppliers and share similar strategic objectives and values that are consistent with the overall strategy of the business.

The fundamental objective of the supplier selection process is essentially to reduce risk and obtain the most value for the buyer. In supply chain management, selecting appropriate cooperation partners is the essential

Step at the beginning of supply chain management. Chan (2003) described that from manufacturers’ point of view, customers became increasingly influential in terms of purchasing and bargaining power. For this reason, manufacturers need to cooperate or interact with suppliers to maximize the productivity at the minimum cost duringsatisfying customer requirements. And Ellram (1995) observed that supplier selection studies could be categorized as (i) prescriptive (suggesting models that should be used), (ii) descriptive (emphasizing models that are in use) and (iii) research that examines the supplier selection criteria. De Boer (2001) considered supplier selection as a five-phase process starting from the realization of the need for a new supplier; determination and formulation of decision criteria; pre-qualification (initial screening and drawing up a shortlist of potential suppliers from a large list); final supplier selection; to the monitoring of the suppliers selected (i.e. continuous evaluation and assessment). Braglia et al (2000) explained the two tasks in supplier selection that were also central to any decision making problem: (i) the process of evaluation and assessment and (ii) aggregation of evaluation and assessment to make a choice.

**Review on Supplier Selection Criteria**

Supplier selection includes a number of subjective criteria that can be described as those criteria based on personal judgment, such as, “quality

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“or “attitude”. Subjective criteria can be complicated to measure and generally, tend to be less accurate than objective criteria (such as quantitative measures). A number of research studies have been conducted focusing on the importance of choosing the right criteria for supplier selection.

Dickson’s (1966) study, based on a questionnaire, was sent to two hundred and seventy-three purchasing agents and managers, all members of the U.S. National Association of Purchasing Managers. Based on his findings,

Dickson’s study identified twenty-three different criteria as being essential to supplier selection. According to the Dickson’s study quality, delivery time and performance history were among the most important factors for supplier selection. Weber et al (1991) study reviewed seventy-four different articles written between 1966 and 1991, concerning different supplier selection criteria and methods. Among the most important selection criteria, net price, delivery precision, quality, production & capacity, and location were found by this study. Weber et al’s study also concluded that it would be impossible to successfully produce low cost, high quality products without the use of satisfactory suppliers and appropriate selection and maintenance of suppliers. The different ranking of criteria also suggests that supplier selection decisions are inherently multi-objective. While some of the criteria have changed, the major criteria have, for the most part, remained the same, reinforcing its significance.

In addition to the well-noted research studies of Dickson and Weber et al other researchers have also recently begun discussing the importance of additional supplier selection criteria, not mentioned in

the above studies. These criteria include aspects such as financial issues, strategy issues, risk management issues, organizational culture and technological capabilities. Barbarosoglu and Yazgac (1997) have also gone on to define three primary selection criteria, which include performance of the supplier, technical capabilities, financial position, and quality system. Tullous and

Munson (1991) sampled eighty manufacturing firms and they discovered that quality, price, technical service, delivery reliability and lead times were among the most important selection factors. Dickson and Weber et al are still recognized as the most common, and cited as the most comprehensive studies done on selection criteria. Mummalaneni et al

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(1996) reported the results of an exploratory study examining the trade-offs made by Chinese purchasing managers among the six attributes identified earlier. Swift (1995) examined the supplier selection criteria of purchasing managers with respect to single sourcing and multiple sourcing. Chao et al (1993) highlighted six key criteria of supplier selection and described the responses of a sample of Chinese purchasing managers. They have segmented the respondents into three clusters, based on similarities in their supplier evaluation processes and differentiate these clusters in terms of whether the managers emphasize reliable deliveries, price/cost considerations, or product quality.

**Supplier Selection Applications in Literature**

Goffin et al (1997) stated that supplier management was one of the key issues of supply chain management because the cost of raw materials and component parts constituted the main cost of a product and most of the firms have to spend considerable amount of their sales revenues on purchasing.

Boer et al (2001) presented a review of decision methods reported in the literature for supporting the supplier selection process. The review is

based on an extensive search in the academic literature. Feng et al (2001) described a stochastic integer programming approach for simultaneous selection of tolerances and suppliers based on the quality loss function and process capability indices. Ghodsypour and O’Brien (2001) used a mixed integer non-linear programming model to solve the multiple sourcing problems, taking into account the total cost of logistics, including net price, storage, and transportation and ordering costs. Buyer limitations on budget, quality, service, etc. can also be considered in the model. Choy and Lee (2002) proposed a Case-Based Supplier Management Tool (CBSMT) using the Case-Based Reasoning (CBR) technique in the areas of intelligent supplier selection and management that would enhance performance as compared to using the traditional approach. Cebeci and Kahraman (2002) and Cebeci (2001) measured customer satisfaction of catering service companies in Turkey by using fuzzy AHP. Masella and Rangone (2000) proposed four different Vendor Selection Systems (VSSs) depending on the time frame (short-term versus long-term) and on the content (logistic versus strategic) of the co-operative customer/ supplier relationships. Liu et al (2000) compared suppliers for supplier selection and performance

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improvement using Data Envelopment Analysis (DEA) Braglia and Petroni (2000) described a multi-attribute utility theory based on the use of DEA, aiming at helping purchasing managers to formulate viable sourcing strategies in the changing market place. Dowlatshahi (2000) focused on facilitating an interface and collaboration among designer at three planning horizons: strategic, tactical, and operational with respect to supplier relations.

To accomplish this interface, nine propositions for all areas of interface at three levels of planning are presented. Motwani et al (1999) attempted to fill a void in supplier selection research by developing a model for

sourcing and purchasing in an international setting, particularly in developing countries. Ittner et al (1999) examined the importance of supplier selection and monitoring practices with respect to the association between supplier strategies and organizational performance. Ganeshan et al (1999) described the dynamics of a supply chain that had the option of using two suppliers-one reliable, and the other unreliable. They analyzed the cost economics of two suppliers in a broader inventory logistics framework, one that included intransit inventories and transportation costs. Verma and Pullman (1998) examined the difference between managers’ rating of the perceived importance of different supplier attributes and their actual choice of suppliers in an experimental setting. Boer et al (1998) showed by means of a supplier selection example, that an outranking approach might be very well suited as a decision-making tool for initial purchasing decisions. O’Brien and Ghodsypour (1998) proposed an integration of an analytical hierarchy process and linear programming to consider both tangible and intangible factors in choosing the best suppliers and placing the optimum order quantities among them such that the total value of purchasing would become maximum.

Noci (1997) designed a conceptual approach that first identified measures for assessing a supplier’s environmental performance and secondly, suggested effective techniques for developing the supplier selection procedure according to an environmental viewpoint. Choi and Hartley (1996) compared supplier selection practices based on a survey of companies at different levels in the auto industry. Weber and Ellram (1993) explored the use of a multi objective programming approach as a method for supplier selection in a just-in-time (JIT) setting. Partovi et al (1990) reviewed the published applications of AHP in supplier selection. Willis and Huston (1990) discussed the various attributes that

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were important in implementing JIT into the purchasing process and introduced a new dimensional analysis model having certain advantages over the traditional methods.

**CHAPTER 3- RESEARCH ME THODOLOGY**

**Introduction**

Research methodology is considered as systematic way to resolve the research issues.

Generally, the process through which researchers proceed their work of explaining, predicting and describing is often known as research methodology (Rajasekar*et al*., 2006).The aim of the present study is to identify the impact of supply chain management in organized and unorganized retail sector. Therefore, the researcher has to choose suitable research design for the chosen problem. The chapter starts with the overview of research design and research philosophy and explains the use of philosophy and strategy by the researcher. This chapter also provides justification for the chosen approach, target population, sampling technique, sample size, data collection method, validity and reliability, ethical issue, and data analysis.

Discussing the methods applied to this study, it is also necessary to consider the fundamental purpose of the research as well as the research approach appropriate to the study (Punch, 2005). This also explains and justifies the use of sampling method used and validates the use of a normal data for undertaking statistical research. The present study adopts both primary and secondary data, where secondary information was gathered through various sources, while primary data was collected using survey method which was followed by the validity and reliability tests.

**Overview of research design**

The research design can be classified into three types such as explanatory, descriptive, and exploratory (Neuman, 2003). Exploratory study is often utilized when there is insignificant knowledge with respect to certain occurrence. The main aim of exploratory study is to develop a better insights regarding specific aspect, to generate innovative data as well as to construct a base for future investigation (Sekaran, 2000). Initially, descriptive research starts with enhanced concept concerning to specific occurrence when compared to exploratory study. Descriptive statistics are often designed and structured to examine the characteristics depicted in research question (Neumann, 2003). Finally, explanatory research knows the issue and has description of the issue. This method assists to determine the highlights of the complex inter relationship that exists within the issues proposed in the research questions (Miles & Huberman, 1994). The main purpose of this study is to identify the impact of supply chain management practices at different levels of process such as planning, sourcing and procurement, and execution affecting the performance of retailers. Therefore, the researcher has adopted both descriptive and explanatory approaches. Since descriptive research helps to examine the factors of supply chain practices development, explanatory method was used to illustrate the correlation between variables.

**Scope of the study.**

The study was conducted in Tamil Nadu. Tamil Nadu is one of the largest retail markets in the country and also preferred destination for many FMCG retailers due

to the high customer loyalty for their brands available FICCI (2012). Tamil Nadu is next largest state next to Maharashtra and Delhi in the industrial growth and income. There are about 8 -10 cities (Tier I,Teir II, Tier III) put together contributing to the GDP of the state. This state has maximum number of FDIs in many sectors like Automobile and IT sector (Wikipedia). Hence the state looks dynamics and encouraging for further growth in retailing.

The cities selected for the study are Vellore, Kanchipuram, Coimbatore, Erode,

Trichy, Madurai, Salem, Tiruvannamalai, Tirupur, Tirunalvelli. The lists of organized and unorganized retail stores are available from sites like www.hudku.com,www.jsutdial.com,www.edial.com,www.asklaila.com and also from Tamil Nadu retailers Association and Indian Retailers Association. Further, the definition of stores are identified from various authenticated websites such as USFDA, Dart Consulting (Dart consulting, 2012).

The population for the study comprises of Store managers involved in supply chain or Logistics department of organized and unorganized retail sectors. In selected Tier II cities Organized retail stores such as Aditya Birla Retail (MORE), Dairy Farm International (Food world), Spencer’s, The Heritage group (Herigtage Fresh), Reliance Retail Limited (Reliance Fresh), Niligiris Dairy Farm (Nilgiris), Pantaloon Retail (Big Bazzar) were selected and along with these the unorganized retail stores, and nearby big retail stores were included in this study.

**Research approach**

The research methodology can be predicted through both deductive and inductive approach.

**Deductive methodology**

The deductive methodology is also called as testing a hypothesis, where the researcher formulates theories or hypothesis and designs suitable research strategy to test the formulated hypothesis. In this method, the research questions are responded through analyzing several theories. This approach helps to create research principle and hypothesis. Thus, the deductive is said to be top down approach.

**Inductive methodology**

The inductive methodology is also called as building a hypothesis, where the researcher starts with collecting information in order to create a hypothesis.

Inductive approach works from certain observations to broader theories and generalization.

Initially, inductive approach starts with particular measures and observation in order to detect regularities and patterns, to create few tentative hypotheses to explore; finally, it will end up by establishing some general theories or conclusions (Trochim, 2006).Therefore, inductive is also known as bottom up method.

**Justification of chosen approach**

This study employs deductive approach. The framework of the research is created in order to focus supply chain management practices and identify how the supply chain management provides benefits to the performance of organized and unorganized retailers.

This approach tests the hypothesis to identify the impact of supply chain management practices at different levels of process such as planning, sourcing and procurement, and execution affecting the performance of retailers.

**Research strategy**

The most crucial step in the research methodology is to choose the suitable research strategy by relying on the study objectives. There are three types of research strategies, which are qualitative, quantitative, and mixed approach.

**Justification of chosen strategy**

The present study adopts quantitative approach. Since quantitative research methods helps to enhance reliability, objectivity and generalizability of findings, and are typically interested in prediction. This quantitative tool of analysis is relied on analyzing the numerical data. Hence, quantitative study is said to be an objective in nature. The

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present study develops research framework in order to focus on the factors that impacts supply chain management practices on various levels of process. The findings would indicate relationship between Supply Chain (SC) practices (planning, sourcing and procuring and execution) and operational performance and its impact on overall organizational performance of retailers.

Hence, adopting quantitative framework would be a most appropriate strategy.

**Data collection**

There are two types of data collection methods. They are (1) Primary data Collection;

(2) Secondary data Collection. In the present study, researcher adopts both primary and secondary data.

**Primary data**

Primary data was collected using the questionnaire method. Research instrumentdevelopment was preceded by detailed literature review and with the experience of theresearcher as described in the research design for identifying the variables. The validity of thecontent and of each construct was cross checked by pre-testing the questionnaire and througha series of interviews organized with academic experts and managers in the field. Initially theinstrument comprised of 86 items that captures the supply chain practices variables andretailer’s performance while later, this was modified to 87items.All of these steps are considered effective ways to increase response rates in other operations management researchstudies (Frohlich, 2002). The research tools are illustrated in detail as follows:

**Sampling technique**

There are various types of sampling techniques in order to select the study sample:

**Random Sampling**

Random sampling is said to be the easiest way of sampling technique. It is

observed that every respondent will get opportunity to get selected. If the population is large then it is difficult to select the exact sample size (Saunders *et al* 2003).

**Systematic sampling**

This type of method involves in selecting the sample at regular intervals from the sampling frame. This method is commonly known as nth name selection method, as the respondents are selected from the nth record (Saunders *et al.,* 2003).

**Stratified sampling**

In stratified method, the respondents are split into several layers by relying on the characteristics and then equal number of samples is chosen from each and every group (Saunders *et al*., 2003).

**Convenience sampling**

In convenience method, only a specific group of respondents are chosen from the whole population due to costs and time restriction. The sample selected from this technique will be homogenous population, i.e. population having similar behaviors and characteristics. The respondents are often chosen using this method, since they are the simplest way to attain for the study (Saunders *et al.,* 2003).

**Judgment sampling**

In this sampling technique, the samples are chosen from the subset of individuals of the entire population by relying on the judgment of researcher. The researcher often uses this sampling method, as the selection procedure takes place through measuring several technical futures which makes to select suitable sample for the study (Saunders *et al.,* 2003).

In this study, Purposive sampling, also known as judgmental selective or subjective sampling is a type of non-probability sampling technique. Non-probability sampling focuses on sampling techniques where the units that are investigated are based on the judgment of the researcher. (Dissertation.laerd.com) As this study concentrates on Tier II cities, the sampling technique used to select the respondents is through purposive sampling. The process followed to select the stores was as follows.

1. The list of Tier II cities from the sources available like TNRA and some more websites available.

2. From the list generated, where short listed all the branded and big retail outlet and unorganized stores.

3. In every selected city, areas where we could get a branded organized retail store and big retail stores were identified.

4. After identifying the branded and the big retail stores, two or three unorganized store for every organized retail outlet were selected at random.

**Sample size of stores selected.**

Sampling techniques provide a range of methods that enable you to reduce the amount of data you need to collect by considering only data from a subgroup rather than all possible case or elements.

**Secondary data**

Secondary data can be gathered using various methods, in which quantitative data is collected. Some of the important secondary data sources are books, websites, journals, and newspapers. However, most of secondary data was collected from academic databases to make sure the reliability of collected data.

**Validity and reliability**

**Validity**

In any research, validity is considered as essential in order to identify whether research finding is what it appears to be about (Saunders *et al*., 2009).There are

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different types of validity, those are construct, internal and external validity.

**Construct validity:**

As per Stake (1995), the construct validity can be attained through various sources those are evident for the triangulation process. Questionnaire method is the primary instrument employed for the data collection technique.

**Pilot study:**

Initially, pilot study was executed in the research process. Pilot study evaluates questionnaire before implementing into main population (Saunders, 2003). The main reason for the pilot study is to provide assurance to the participants that, they do not face any consequences during survey process. Moreover, the questionnaire can be developed or enhanced before implementing for the data collection process with results obtained from the pilot study. Pilot study also offers validity to the implemented questionnaire (Saunders, 2003) In the present study, pilot study was conducted for 80 stores from the total population (Fink, 2003). Over the following issues the participants were questioned:

• Clarity of the questions (Fink 2003)

• Relevance of the questions (Fink 2003)

• Overall layout of the entire questionnaire (Bell 2005)

• Length of time taken to complete the questionnaire (Bell 2005).

The questionnaire was altered as per the feedback obtained from the participants.

However, there was only slight change done in the questionnaire with respect to the length of the questionnaire like altering the font size and line spacing.

**Internal validity**

Internal validity is used to ensure the real aspects of results attained from the study (Remenyi, 1998). From the internal validity, it is determined that in spite of the reliable measurement made over the tool, it is recognized for the justification that links the variables. Internal validity predicts casual control. Therefore, it avoids the casual threats in order to restrain the internal validity.

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**External validity**

The external validity might refer to the enhancement or extension of the study results to wider context over the existing research environment (Remenyi, 1998). The existing research does not involve the external validity and is beyond the research range.

***Reliability***

Saunders *et al*. (2009, p. 156) have defined reliability as the extent to which analysis

Reliability refers to the measure that offers the same results on each time. Saunders *et al*. (2009) have identified four main threats, those are: observer error and bias, and subject error and bias. Moreover, the recorded data was re-checked to handle a high level of reliability and validity. As per Collis and Hussey (2009) reliability is said to be credibility of the research findings.

**Ethical issues**

Data analysis, data collection and data publication are the various features in research design that has ethical concerns (Burton, 2000). The researcher recognized the ethical implications at each and every step of the research. All personal and organizational details of participants are kept anonymous and these details are not used for any other purpose apart from research purpose. Moreover, every participant has been promised for Anonymity. Only willing respondents have been included for study and their details were treated with complete confidentiality.

**Data analysis**

Data analysis determined that collected information in the research is identified to be quantitative in nature. Therefore, various data collection method was implemented to analyze the obtained data.

The obtained data was examined with the help of statistical package. In order to analyze the survey, the investigator utilizes Statistics Package for Social Science software (SPSS). Both inferential and descriptive statistics were used to analyze the data.

**Percentage analysis:**

Percentage analysis refers to specific type of ratio. In order to compare a data seriesand assume their association, the percentage analysis was employed. The percentage analysisminimizes all the factors to a common base in order to make comparison easier.

**Cronbach’s alpha:**

The statistical packages such as SPSS can be utilized to determine the reliabilitythrough evaluating the reliability coefficients using Cronbach’s Alpha (Abdel Fattah, 2008) The Cronbach’s Alpha value varies between 0-1. When the value is higher, framed questions and reliability of the instrument is said to be high. The investigator assumed that Cronbach’s Alpha could be evaluated for the entire scales employed in the questionnaire.

**Chi-Square Test:**

Chi-Square test is often employed to compare the gathered data with the expecteddata from the specific hypothesis. Chi-Square test often has concern over the null hypothesisin which researcher determines and states that, there are no specific differences between theobtained and expected data.

**Pearson Correlation:**

The association between two continuous variables is evaluated through statistical test.

The direct proportional association among the variables is envisaged through positive values, whereas negative value determines inverse proportionality. The positive interrelation is signified by values greater than

**Period of Study:**

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The study started in the year 2010 and in the later years the instrument was developed for collecting the primary data. The instrument had a total of about 87 items which are mainly the Likert scale questions covering the entire concepts of Supply chain Planning, Sourcing and

Procurement and finally supply chain Execution. The primary data collection was done in year 2014 and later the analysis was done.

**Research Questions:**

Does supply chain (SC) practices (planning, sourcing and procuring and

Execution) affects the performance of retailers?

Whether supply chain planning in terms of demand forecasting, material

Planning, inventory management, and vendor, and logistics, affects the retailers’ performance

(Operational performance)?

whether supply chain sourcing and procuring (spend analysis, global sourcing,

SRM, supplier integration, contract management, sourcing and management) affects the

Retailers’ performance?

Whether supply chain execution (process order, RFID, reverse logistics,

Process management, and warehousing and inventory management) affects the retailers’

Performance?

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Whether the SC practices differs between organized and unorganized retailers

and in turn affect their performance?

**Objectives:**

The objectives of the study were identified as:

To determine the relationship between various components of Supply Chain Management (SCM) practices such as planning, sourcing and procuring and execution, in Indian organized and unorganized retail sector

To examine the relationship between supply chain (SC) practices (planning, sourcing

and procuring and execution) and operational performance and its impact on overall

Organizational performance of retailers

To assess the impact of supply chain planning on the retailers performance

To verify the influence of sourcing and procurement on the retailers performance

To explore the importance of Supply chain execution on the retailers performance.

To develop the supply chain capabilities needed to establish competitive advantage in

the current retail environment.

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**Hypothesis**

This study examines the supply chain management practices that consist of strategic

Supplier partnership, customer relationship and information sharing and its relationship to supply chain responsiveness. Hence, the following hypotheses are tested:

Supply chain management practices are not related to retailer’s performance There is no relationship between Supply chain management practices between organized and unorganized retail sector and in turn their operational Performance There is no relationship between Supply chain management practices between organized and unorganized retail sector and in turn their financial performance

**Limitations of study:**

The study is limited to determine the effect of Supply chain management practices especially during planning, sourcing and procurement stage and its impact on the retailer’s performance. The study is limited to Tamil Nadu only, so that findings have to place in proper perspective before applying.

This study was done prior to the implementation of more FDIs in retailing in this

Country, i.e. it is before BJP government took the power in July 2014.

**Indications for future research:**

This study will open the areas on which the further research can be done on

development on Supply Chain Management practices and also will researchers can emphasis on the volumes of sales increase and quantitative improvements in the operations and sales of a retailer. Further based on the factors and the sub factors used in this research future researchers can develop some more modifications in the SCM practices followed by the unorganized retailers and thus improve their business which helps them to sustain competitively against the increasing organized sectors. once the FDIs increase in organized sector the trends completely change and in such situations how unorganized retailers work. This provides a scope for further research.

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**Summary of Research Methodology Chapter.**

This chapter illustrates about the rationale and research method employed to choose different features that are associated with the research. Moreover, this section includes suitable data collection techniques, research design and statistical methods that are employed for the data analysis. The present study utilized both primary and secondary data. The most significant data collection technique employed in the research process was the questionnaire method, since it supported and confirmed the quantitative findings. SPSS was employed for the data analysis process in order to analyze the quantitative data by using inferential and descriptive statistics. Several analysis and test such as percentage analysis, Cronbach’s alpha and Chi-Square test were implemented in the research process for analyzing data and to examine the hypotheses.

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**Appendix 1**

Questionnaire (current state analysis)

Basic Information

Name

Role

Location

Business unit

Date of interview

Method (phone/face to face)

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How long has the interviewee been working for the sourcing department at Vaisala?

1. Does Sourcing/Vaisala have a supplier evaluation and selection process?

2. If yes, please describe the steps?

3. Additional information on supplier selection and evaluation.

**Appendix 2**

**Pilot Suppliers’ Questionnaire**

Basic Information

Name

Role

Location

Business unit

Date of interview

Method (phone/face to face)

How long the interviewee been working for the sourcing department at Vaisala?

Recognizing the need for supplier selection

1. Where did the need for supplier selection emerge in this pilot case?

a) During a new product project or a delivery project

b) From a reduction of a supply base

c) From a low performance of a current supplier

d) From a new technology need that our current suppliers cannot fulfill

e) Other, please explain

How were the key sourcing requirements identified?

2. What were the main key sourcing requirements when selecting a supplier?

a) Price and total cost

b) Delivery time and performance

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c) Quality

d) Other, please explain

Strategy decisions

3. What were the main decision steps that were defined before selecting the main can-

didates for supplier selection?

a) Single versus multiple sources

b) Location (local or global)

c) One time supplier versus long term relationship

d) Design support versus no support

e) Manufacturing technology

**Appendix 3**

**d) Other, please explain**

Identifying potential candidates

4. How were the potential candidates found? By…

a) Checking from the current supplier base

b) Using the preferred supplier list

c) Asking from colleagues

d) Researching on the Internet

e) Other, please explain

5. How were the potential candidates narrowed down?

(Open question, the answers were categorized)

6. What documentation was gathered from supplier during evaluation phase and where

documentation was stored?

(Open question, which will be categorized)

7. When was the NDA signed with the supplier?

(Open question, the answers were categorized)

8. Did you sign the code of conduct with the supplier?

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(Open question, the answers were categorized)

9. How did you evaluate the financial status of the new supplier?

a) By asking the supplier for information

b) By using an external service (D&B, Asiakastieto)

c) Other, please explain

10. When was a RFQ sent to potential suppliers?

(Open question, the answers were categorized)

11. How were the suppliers analyzed?

a) RFQs

b) Audits

c) Other, please explain

**Appendix 4**

12. How was the supplier selected?

(a) Based on the RFQ

(b) Together with category

(c) Together with project team

(d) Other please explain

13. How were the suppliers informed of the business award?

(a) Per phone

(b) Via email

(c) Per business award letter

(d) Other, please explain

14. How do you see the new supplier evaluation and selection process? What is missing from it or what should be improved?

15. Additional information on the supplier selection and evaluation.