



This item was submitted to Loughborough's Institutional Repository by the author and is made available under the following Creative Commons Licence conditions.



**CC creative commons**  
COMMONS DEED

**Attribution-NonCommercial-NoDerivs 2.5**

**You are free:**

- to copy, distribute, display, and perform the work

**Under the following conditions:**

**BY:** **Attribution.** You must attribute the work in the manner specified by the author or licensor.

**Noncommercial.** You may not use this work for commercial purposes.

**No Derivative Works.** You may not alter, transform, or build upon this work.

- For any reuse or distribution, you must make clear to others the license terms of this work.
- Any of these conditions can be waived if you get permission from the copyright holder.

**Your fair use and other rights are in no way affected by the above.**

This is a human-readable summary of the [Legal Code \(the full license\)](#).

[Disclaimer](#) 

For the full text of this licence, please go to:  
<http://creativecommons.org/licenses/by-nc-nd/2.5/>

# ***A Review and Critique of Supplier Selection Process and Practices***

*by Mahmut Sonmez*

## **Business School**

*Occasional Papers Series*

*Paper 2006:1*

*ISBN 1 85901 197 7*



***A Review and Critique of Supplier Selection Process and Practices***

by

Mahmut Sonmez

Business School Occasional Papers Series

Paper 2006: 1

ISBN 1 85901 197 7

January 2006

THIS PAPER IS CIRCULATED FOR DISCUSSION PURPOSES AND ITS  
CONTENTS SHOULD BE CONSIDERED PRELIMINARY AND  
CONFIDENTIAL. NO REFERENCE TO MATERIAL CONTAINED HEREIN  
MAY BE MADE WITHOUT THE CONSENT OF THE AUTHOR.

# **A review and critique of supplier selection process and practices**

**Mahmut SONMEZ**

The Business School  
Loughborough University  
Ashby Road, Loughborough, LE11 3TU  
Leicestershire, United Kingdom  
E-mail: m.sonmez@lboro.ac.uk  
Tel: +44 1509 223106  
Fax: +44 1509 223960

## **Abstract**

With increasingly competitive global world markets, companies are under intense pressure to find ways to cut production and material costs to survive and sustain their competitive position in their respective markets. Since a qualified supplier is a key element and a good resource for a buyer in reducing such costs, evaluation and selection of the potential suppliers has become an important component of supply chain management. Hence, development of an effective and rational supplier selection model is naturally desirable. Several evaluation and selection models for supplier selection have been proposed and reported in the supply chain literature. This paper reveals the findings of a wide ranging literature review of supplier selection practices and models. Altogether 147 refereed academic journal articles are reviewed and classified into five categories. A list and summary of the papers falling into each category with brief annotations is provided. The areas that have received little attention or lack of research interest are discussed and some new research settings are also suggested.

**Key words:** Supplier selection; multiple criteria decision making; vendor selection; supplier management; international supplier selection; buyer-seller relationships; e-procurement

**Article Type:** Literature review

## **A review and critique of supplier selection process and practices**

**Purpose** – Supplier selection is an important purchasing activity for many firms. Today’s consumers demand cheaper, high quality products, on-time delivery and excellent after-sale services. Hence, companies are under intense pressure to cut product and material costs while maintaining a high level of quality and after-sale services. Achieving this starts with supplier selection. Therefore, an efficient supplier selection process needs to be in place and of paramount importance for successful supply chain management. It begins with the realisation 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; and the monitoring of the suppliers selected (i.e. continuous evaluation and assessment). The main purpose of this paper is to provide an extensive literature review and critique of the studies related to various aspects of supplier selection process over the last two decades and find out the areas that are under-researched.

**Design/methodology/approach** – An extensive literature review was conducted using phrases “supplier selection” and “vendor selection” as key words on major databases. A total of 147 refereed journal articles appeared between 1985 and 2005 on supplier selection were reviewed. These articles were categorised using keywords under five main headings: 1) Papers emphasising the decision criteria that should be used; 2) Papers reporting the use of decision making / support techniques and tools; 3) Papers focusing on buyer-seller relationships; 4) Papers studying the international supplier selection practices and 5) Papers emphasising the issues in online supplier selection, i.e. e-procurement.

**Findings** – The review revealed some trends in supplier selection related studies. Specifically, the review revealed that greater emphasis was placed on i) decision criteria and associated weightings used for supplier selection and ii) decision making methods/tools used and/or proposed for supplier selection. It was observed that there was a more recent trend towards studying the effects of buyer-seller relationships, international supplier selection and e-commerce on the supplier selection process and practices. The review also exposed the areas that attracted little or no research attention. There has been a growing demand and need for a more detailed supplier selection process by considering all qualitative and quantitative criteria. More effort should be made towards combining both qualitative and quantitative factors affecting the supplier selection process in a rational and systematic way. In addition, there were very few studies on supply chain security given the current political climate and security concerns around the world.

**Originality/value** – This paper provides an overall picture of research on supplier selection process and practices. This piece of research would be of value to both academics and practitioners interested in supplier management.

## **Introduction**

In increasingly competitive and globalised world markets, firms are constantly under pressure to find ways to cut material and production costs. Since a qualified and reliable supplier is a key element and a good source for a buyer in reducing production and material costs, evaluation and selection of the suppliers is an important component of supply chain management and an important task for the purchasing department of a firm in particular. Supplier selection and evaluation is the process of finding the suppliers being able to provide the buyer with the right quality products and/or services at the right price, at the right quantities and at the right time [92, 121]. Evaluation and selection of suppliers is a typical multiple criteria decision making (MCDM) problem involving multiple criteria that can be both qualitative and quantitative. Hence, supplier selection process requires a formal, systematic and rational selection model. There is an abundance of supplier evaluation and selection models proposed in the supply chain literature.

The main aim of this paper is to get an overall picture of research on the supplier selection process and practices. The paper looks into the sorts of decision making methods and tools reported in the literature and/or applied in practice. The paper also reveals some trends in supplier selection process by looking at the frequency of papers appeared in the refereed journals and categorising the papers theme-by-theme. It is aimed that the findings will lead to new research settings together with directions for future research.

The rest of the paper is structured in the following way. The next section will provide a brief background to supplier selection process. Then, the details of the literature review will be given. The findings of the extensive review will be provided before discussions and conclusions.

## Background

In this paper, we review refereed journal articles pertaining to supplier management, supplier selection practices and decision tools or methods used and/or proposed for supplier selection process in particular. Supplier selection is generally considered as a five-phase process starting from the realisation 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) [42]. Supplier selection involves two main tasks, which are also central to any decision making problem [23]: (i) the process of evaluation and assessment and (ii) aggregation of evaluation and assessment to make a choice.

### < Take in Figure 1 >

As can be seen from Figure 1, the evaluation and assessment task, first, requires the identification of decision attributes (criteria) against which the potential suppliers are to be assessed. Then, evaluation scales/metrics are determined in order to measure the appropriateness of a supplier. Such metrics or scales are useful and necessary to determine the likely worst and best outcomes for each attribute. The next requirement is to assign weights to attributes to indicate the relative importance and contribution of each criterion to the supplier evaluation and assessment. Furthermore, an attribute (father attribute) may comprise of several sub attributes (child attribute). In this case, sub attributes are assigned weights in accordance with their importance and contribution to the associated father attribute. The final step in the supplier evaluation and assessment is to evaluate potential suppliers against the attributes identified at the beginning using the scales/metrics established. Once candidate suppliers are given scores or ratings against each attribute, it is then necessary to aggregate these scores and/or ratings, which may be both qualitative and quantitative, to make a rational and sound choice over which suppliers should be included in the firm's supplier base. There

are two main approaches for aggregating scores/ratings: (i) compensatory (linear) or (ii) non-compensatory (non-linear) approaches [38, 41, 103, 110]. In compensatory approaches a weak performance on one criterion is offset by a good performance on another criterion. If a decision maker does not accept the weakness in one criterion to be compensated by the strength of another criterion, then the use of non-compensatory approaches is more appropriate in this case.

There are several factors that affect the supplier selection process, which is depicted in Figure 2 and briefly explained here. The number of suppliers to be selected depends on the sourcing strategy that a firm follows. If the firm is in favour of single sourcing, a single supplier is to be selected. If, on the other hand, the firm follows a multiple sourcing strategy, then more than one supplier is selected. In relation to sourcing strategy, the minimum order quantity and a supplier's capability may affect the supplier selection process. If a single supplier is unlikely to deliver the required goods and/or services due to limited capacity and/or unable to meet the minimum order quantity, then it is necessary to select more than one supplier.

**< Take in Figure 2 >**

Wilson (1994) quoted the study, conducted by Lehmann and O'Shaighnessy in 1982, which suggested that type of products has a significant effect on how the purchasing decision is made in terms of the choice (decision) criteria used and the weights assigned to each criterion [142]. Lehman and O'Shaighnessy defined product types and the most important criteria for each product type were as follows:

- 1) **Routine order products:** are those having no problems associated with learning to use the product and no questions regarding the functional capability of the product (reliable delivery and price were the most important criteria).
- 2) **Procedural problem products:** are those for which there is no question about the capability of the product, but likely problems with learning to use the product (service and delivery were the most important criteria).



- 3) **Performance problem products:** are those for which there is some doubt as to whether the product will perform satisfactorily in the application for which it is being considered (in particular a problem associated with technical outcome of the product's use) - (delivery and service were the most important criteria).
- 4) **Political problem products:** are those that require large capital outlays, multiple decision makers are likely to be involved in buying decisions (price, reputation, and product reliability data were the most important criteria).

Another factor affecting the supplier selection process is the type of manufacturing strategy followed by the buyer. There are three manufacturing strategies that may impact on the supplier selection: make-to-order (MTO), make-from-stock (MFS), and make-to-stock (MTS) strategies. In MTO strategy, the customer order is received prior to final assembly. The end product is assembled in anticipation of customer orders in MTS strategy while in MFS strategy, a company's procurement activities are conducted in anticipation of customer orders, but the end product is only assembled after a customer order has been received [25].

A buyer's preferences towards location of suppliers can have some impact on the supplier selection process. Choosing local (domestic) suppliers can be less complicated than of those overseas (international) suppliers. The supplier selection process for both domestic and international suppliers may involve different sets of decision criteria and weights assigned to each criterion. Finally, the authority of making the decision can be either in the hands of a single person (department) or multiple person (multiple department), which may further complicate the decision process of supplier selection.

It is generally agreed in the literature that the following makes the supplier selection decision making process difficult and/or complicated [41, 75, 78, 79, 95, 100, 136, 140]:

- Multiple criteria – both qualitative and quantitative
- Conflicts amongst criteria – conflicting objectives of the criteria
- Involvement of many alternatives – due to fierce competition
- Internal and external constraints imposed on the buying process

The background information in the previous paragraphs demonstrates and explains the need for a formal approach to conceptualise and structure the various elements and components of supplier selection process. The literature review in the next section looks at the studies on supplier selection.

## **Literature Review**

There are several keywords associated with the supplier selection. The terms “supplier selection” and “vendor selection” are frequently and interchangeably used in the literature. They both have the same meaning and are related to the selection of suppliers engaged in manufacturing and/or production of materials, product parts and components. The terms “bidder evaluation”, “tender evaluation” and “contractor selection” all refer to similar processes to supplier selection. While the first two terms are somewhat less frequently used, the term “contractor selection” is mostly associated with the purchasing of services offered by a firm in urban and civil engineering, and construction industry in particular. Since supplier management is a popular topic and attracts greater research interest, the literature review is based on two keywords: (i) supplier selection, and (ii) vendor selection.

An extensive literature review was carried out by focusing on the refereed journal articles only as supply chain management is a broad subject area having links to other subjects such as engineering, production, marketing and finance. The refereed journal articles are deemed appropriate as they can be accessed via major databases by scholars around the world. They can also provide a good picture of the supplier selection process worldwide. We do not claim that other publications such as books, conference proceedings and/or working papers are not worth reviewing but the task would be more complicated and may become unmanageable due to a large volume of publications in this subject area. The literature review was performed using the following databases most of which allowed access to full text articles: Science Direct, NESLI, Proquest (ABI/INFORM), Ingenta, Blackwell, Wiley Science, Emerald,

USTOR, Web of Science, Swetsnet, EBSCO and Inderscience. The search encompassed the articles that appeared between 1985 and 2005.

After an initial screening of the articles found, 147 articles were selected for the review. The distribution of the articles according to time period was as follows: four articles appeared between 1985 and 1989; 14 in 1990-1994; 47 in 1995-1999 and 82 in between 2000 and the first half of 2005. These articles were published in fifty-four different refereed academic journals some of which are listed here (number of articles published shown in brackets): The Journal of Operational Research Society (12), Industrial Marketing Management (10), International Journal of Production Economics (9), Journal of Supply Chain Management (8), International Journal of Purchasing & Materials Management (7), Supply Chain Management (7), European Journal of Operational Research (6), Expert Systems with Applications (6), Journal of International Business Studies (5), International Journal of Physical Distribution & Logistics Management (5), Journal of International Business Studies (5), Purchasing (5), International Journal of Operations and Production Management (4), Journal of Business Research (4), Journal of Information Technology (4), European Journal of Purchasing & Supply Management (3), Journal of Operations Management (3), and Journal of Purchasing and Supply Management (3).

The articles are initially categorised based on keywords under three broad groups: decision criteria used; decision making methods and tools, and buyer-seller relationships. The first broad category includes the papers on supplier selection (decision) criteria that examine several issues. The most common issue is how to assign weights to decision criteria. The second issue is the categorisation of decision criteria into three broad areas: critical, objective, and subjective criteria [70]. Another issue is that of incorporating environmental criteria into supplier selection process due to increasing consumer awareness and consumers' concerns

over environmental pollution [71, 72, 96, 104]. A few papers addressed the use or preferences towards different set of decision criteria by individual buyers' demographic differences. For example, the differences in gender of buyers influence the set of criteria used and weights assigned to the criteria [130]. Other factors such as age, the number of years spent in the job, educational background, experience and ethnic background also affect the choice of decision criteria and associated weights [1, 50, 68, 110]. Decision criteria used for supplier selection can be different depending on the size of a buyer organisation. Large companies use a different set of criteria and a formal approach when selecting suppliers compared to small and medium sized enterprises [113].

The second broad category includes the papers on decision methods and tools used for supplier selection. A formal decision making approach is required either at the prequalification stage or at the final selection stage. When there are more than one supplier selected (multiple sourcing), then there is another decision to be made as to how much purchase should be made from each supplier. Therefore, a buyer may opt to use more than one decision method to help him/her make a decision. Decision methods used for supplier selection can be divided into two groups: linear weighted or non-linear. A number of papers reported the use of mathematical programming methods such as goal programming, integer goal programming, total cost based approach and data envelopment analysis. There are also some papers on the use of artificial intelligence and expert systems which included the techniques such as case based reasoning and knowledge based systems supported by computer software. The Analytical Hierarchy Process (AHP), Multiple Attribute Utility Theory (MAUT), Outranking methods are well-known and typical multiple criteria decision making methods suggested for supplier selection. As Putton (1996) claimed there is still not much evidence which methods are actually used by individual buyers [110]. The use of multivariate statistical analysis such as structural equation modelling, principal component

analysis and factor analysis for supplier selection practice has also been reported in the literature.

The third broad category that the more recent papers fall into is based on the theme buyer-seller relationships. Some papers looked at the buyer-seller relationships in international supplier selection. While some papers emphasised the differences in buyer-seller relationships from the single or multiple sourcing points of view, some other papers examined the effects of trust on buyer-seller relationships. The idea that buyers and sellers are adversaries has now been replaced by considering buyers and sellers as collaborators. The buyer-seller relationship may become more important depending on the size of the buyer and seller organisations. The purchasing activity may be conducted by an individual in a small and medium sized enterprise while a group of individuals perform the purchasing activity in a large company.

## **Findings**

This section presents the findings from the reviewed articles in a tabular format. Pearson and Ellram (1995) and Wilson (1994) observed that supplier selection studies in the literature could be categorised as (i) prescriptive (suggesting models that should be used), (ii) descriptive (emphasising models that are in use) and (iii) research that examines the supplier selection criteria [113, 142]. Such division of supplier selection literature appears to be valid for the review reported in this article, perhaps with the addition of two more categories. With the developments in the world economy (i.e. globalisation) and in communication, information technology and transportation, there is tendency towards exploring the issues and concerns over international supplier selection as well as tendency towards better understanding of buyer-seller relationships. Another tendency in supplier selection studies is to look at the effects of selecting and assessing suppliers online (i.e. e-commerce, e-procurement). The findings from the review of the supplier selection related articles will be summarised under the following headings: 1) Papers emphasising the decision criteria that

should be used; 2) Papers reporting the use of decision making / support techniques and tools (whether descriptive or prescriptive); 3) Papers focusing on buyer-seller relationships; 4) Papers studying the international supplier selection practices and 5) Papers emphasising the issues in online supplier selection, i.e. e-procurement.

### ***Supplier Selection (Decision) Criteria***

Twenty-three per cent of the papers reviewed (i.e. 34 out of 147) examined the decision criteria used for supplier selection. Most papers attempted to identify and determine the relative importance of criteria for supplier selection in various industries as shown in Table 1. The decision criteria used for supplier selection and the weightings assigned to them can be different due to a number of factors; the demographic characteristics of the purchasing managers [68, 76, 99, 110, 113, 130, 133, 135, 141, 142, 145], the size of the buyer organisation (i.e. small vs. large) [113], the preferred sourcing strategy (i.e. single vs. multiple) and the existence of a supply chain (purchasing) strategy [83, 88, 90, 129], and the type of products and/or services purchased [2, 4, 11, 12, 22, 35, 50, 63, 77, 81, 86, 122, 123, 128]. Some scholars emphasised the need for integrating environmental criteria into the supplier selection process as more and more end users (customers) become aware and concerned about the environmental issues [71, 72, 96, 104].

**< Take in Table 1 >**

### ***Decision making methods and tools***

More than half of the papers reviewed reported and/or introduced the use of different decision making methods and tools for supplier selection. The decision making methods reported for supplier selection can be clustered into several broad categories: traditional (conventional) multiple criteria decision making (MCDM) techniques, mathematical programming, artificial intelligence and expert systems, and multivariate statistical analysis. In addition, there are two more categories that are somewhat different from the categories mentioned earlier: group decision making and multiple methods. Due to strategic importance and involvement of

various uncertainties and risks associated with the supplier selection process, the purchasing activity is usually carried out by buying teams rather than individual purchasing managers. The supplier selection process also concerns several other departments other than purchasing such as production, finance, and marketing. Hence, the personnel from these departments may involve in the decision making process of selecting suppliers alongside the purchasing manager. Therefore, some scholars emphasised the need for a rational and systematic group decision making process for supplier selection (see Table 2).

Single or multiple suppliers are selected depending on the sourcing strategy followed by the buying organisation. If a firm follows a single sourcing strategy, the task is to select the 'best' supplier among all alternatives that satisfies the firm's requirements. In such a case, a single decision making method capable of ranking alternative suppliers, such as MAUT and AHP, can be used. Multiple methods may be needed for selecting multiple suppliers if a multiple sourcing strategy is followed. This is because there are two types of decisions when a multiple sourcing strategy pursued by the buyer: (i) how many and which suppliers to select and (ii) how much purchase should be made from each supplier selected [78, 79]. Hence, some papers reported the use of more than one decision making technique for supplier selection (see Table 2). A list and classification of decision making methods and tools for supplier selection is provided in Table 2.

#### **< Take in Table 2 >**

##### ***Buyer-seller relationships***

Twenty-nine out of 147 articles reviewed examined the influence of buyer-seller relationship on the supplier selection process. There is now wider consensus among scholars that there has to be a strong collaboration between the buyers and the sellers as opposed to the idea that the buyers and sellers are adversaries [35, 142, 146]. One important observation about the papers related to customer-supplier relationships is that majority of these papers appeared from the

late 1990s up until the present time. This suggests and shows that more and more emphasis is placed on non-technical, non-qualitative aspects of the supplier selection process.

### ***International Supplier Selection***

Another area that has attracted research interest in the last five years is that of international supplier selection. Eighteen out of 147 articles reviewed focused on international supplier selection. Many companies have now realised the opportunities in terms of lower production and labour costs that other countries can offer. Then, it becomes necessary to understand and analyse these countries' political, legal, economic, socio-cultural and technological features as well as how to go about doing business in these countries. Selecting suppliers in foreign countries may then become complicated due to the uncertainties caused by lack of information and/or risks (such as safety and security related) associated with these countries' business environment. The selection of international suppliers may involve more criteria and require more time to gather information to evaluate potential suppliers. It was observed from the review that the papers reporting the various aspects of supplier selection process in a particular country is limited with mainly developed (technologically advanced) countries. USA is most widely studied country. Other countries include Canada [22], Germany [22, 24], The Netherlands [24], Switzerland [119], Sweden [107], China [27, 82, 99, 102, 117], Japan [54, 68, 73] and Korea [54, 108]. Although an effort was made to build a model for supplier selection in developing countries in [98], there is not much evidence how supplier selection process is carried out in developing countries.

### ***E-procurement: Online Supplier Selection***

The world has seen rapid developments in information technology and electronic data interchange in particular over the last two decades. The extensive use of the Internet has enabled buyers to locate large number of suppliers and has provided opportunities for suppliers to let buyers know of their existence. The Internet has become an e-marketplace



where buyers and sellers interact electronically. However, surprisingly, there were only nine papers focusing on e-procurement mainly from buyer-seller relationship point of view.

< Take in Table 3 >

## **Discussions, Conclusions & Future Research**

The earlier sections have highlighted some trends in supplier selection practices. The identification and determination of decision criteria and the methods used for supplier selection appear to be the dominating topics in supplier management literature. However, from the late 1990s until the present time, there are more articles emphasising the importance of buyer-seller relationship, international supplier selection and online evaluation and selection of suppliers largely due to globalisation and rapid developments in information technology.

Although there are a large number of articles studying the (decision) criteria to be used for supplier selection process, these papers do fail to address the need to include the criteria related to safety and security issues, which have become extremely important given the present threats to security and current 'climate' around the world. The security issue becomes much more important in selecting suppliers for products and materials for defence industry. The papers reviewed mainly concentrated on manufacturing related industries ranging from electric, electronic, textile, furniture to automobile, information systems and technology. There are hardly any papers on supplier selection for services rather than products and materials [45]. The review also provided strong evidence that there is a clear division of studies on supplier selection and contractor selection even though both processes follow an identical procedure. Contractor selection is mainly associated with the construction industry while supplier selection is concerned with manufacturing related industries.

The reviewed articles studied the purchasing activities of the private sector organisations. Surprisingly, there was no evidence of any research on how public organisations evaluate and

select suppliers. This may be either because such research reported within contractor selection literature or the purchasing activity is carried out by the private consultants hired by the public organisation, who would only provide a brief report to the organisation concerned. It is already known fact that the evaluation and selection of suppliers and/or contractors by public organisations is more complicated than by the privately owned organisations due to strict regulations and the bureaucracy to be followed by the public organisations. While the final decision to select suppliers is made by the public companies based on the principle “the best value for money”, the private sector companies do not base their selection decisions solely on price but also other criteria such as quality, on-time delivery, after-sale services, buyer-seller relationships and so on.

The review also revealed that there are a large number of decision making methods and tools proposed for supplier selection. Due to the multi objective nature of the supplier selection process, there are more papers emphasising the use of mathematical programming based decision making methods and total cost based approaches in particular. However, these approaches fail to address the subjective (qualitative) criteria for supplier selection. A decision model that accommodates both subjective and objective criteria is desirable. The review showed little effort was made on this issue. One major observation about the review was that the supplier selection process requires more and more detailed evaluation and assessment of potential suppliers. This is because now many companies consider the suppliers as their best intangible assets [92] and potential suppliers whether selected or not would want to know how they fared in the selection process and/or the areas which they need to improve.

This paper aimed to explore the various issues affecting the supplier selection process. The wide ranging literature review suggests that much of the focus on supplier selection process has been given to the decision criteria and the decision making methods used for evaluating

and selecting suppliers. There is now some evidence that more efforts are being made in examining the effects of buyer-seller relationship, international supplier selection and e-commerce (evaluating and selecting suppliers online) on the supplier selection process. The shift towards the qualitative and non-numerical aspects of supplier selection process clearly supports the idea that buyers benefits from considering these qualitative and non-numerical factors. However, the problem of how to quantify and measure these qualitative factors still remains to be tackled. A model incorporating both qualitative and quantitative criteria in a rational and systematic way is needed. Further research efforts should be made towards building such a detailed model by considering all qualitative and quantitative criteria.

## References

- [1] Aaronson, D., Bostic, R. W., Huck, P. and Townsend, R. (2004) Supplier relationships and small business use of trade credit. *Journal of Urban Economics*, **55**(1): p. 46-67.
- [2] Abratt, R., (1986) Industrial buying in high-tech markets. *Industrial Marketing Management*, **15**(4): p. 293-298.
- [3] Agrell, P.J., Lindroth, R. and Norrman, A. (2004) Risk, information and incentives in telecom supply chains. *International Journal of Production Economics*, **90**(1): p. 1-16.
- [4] Akarte, M. M., Surendra, N. V., Ravi, B. and Rangaraj, N. (2001) Web based casting supplier evaluation using analytical hierarchy process. *Journal of the Operational Research Society*, **52**: p. 511-522.
- [5] Akinc, U. (1993) Selecting a set of vendors in a manufacturing environment. *Journal of Operations Management*, **11**(2): p. 107-122.
- [6] Angeles, R. and Nath, R. (2000) An empirical study of EDI trading partner selection criteria in customer-supplier relationships. *Information & Management*, **37**(5): p. 241-255.
- [7] Arinze, B., Igbaria, M. and Young, L. F. (1992) A knowledge based decision support system for computer performance management. *Decision Support Systems*, **8**(6): p. 501-515.
- [8] Atkinson, J. B. (2004) On the economic tender quantity. *Journal of the Operational Research Society*, **55**(8): p. 884-891.
- [9] Avery, S. (1997) A single supplier helps cut costs. *Purchasing*, **122**(2): p. 73.
- [10] Avery, S. (1999) Quality process leads to one global PC supplier. *Purchasing*, **126**(1): p. 50-52.

- [11] Avery, S. (1999) Behind successful IT strategy is a powerful purchasing operation. *Purchasing*, **127**(6): p. 50-51.
- [12] Avery, S. (1999) Parts availability crucial to MRO supplier selection. *Purchasing*, **126**(1): p. 107-108.
- [13] Avery, S. (2000) Purchasing adds value to the supplier selection process. *Purchasing*, **129**(1): p. 96.
- [14] Bahli, B. and Rivard, S. (2003) The information technology outsourcing risk: a transaction cost and agency theory-based perspective. *Journal of Information Technology*, **18**(3): p. 211-221.
- [15] Balasubramanian, R. and Baumgardner, S. (2004) Good Supplier Management Aids New Product Launch. *Quality Progress*, **37**(6): p. 49-57.
- [16] Barbarosoglu, G. and Yazgac, T. (1997) An application of the analytic hierarchy process to the supplier selection problem. *Product and Inventory Management Journal*, **38**(1): p. 14-21.
- [17] Barua, A., Ravindran, S. and Whinston, A. B. (1997) Efficient selection of suppliers over the Internet. *Journal of Management Information Systems*, **13**(4): p. 117-137.
- [18] Basnet, C. and Leung, J. M. Y. (2005) Inventory lot-sizing with supplier selection. *Computers & Operations Research*, **32**: p. 1-14.
- [19] Berger, P. D. and Zeng, A. Z. (2005) Single versus multiple sourcing in the presence of risks. *Journal of the Operational Research Society*.
- [20] Bharadwaj, N. (2004) Investigating the decision criteria used in electronic components procurement. *Industrial Marketing Management*, **33**(4): p. 317-323.
- [21] Bhutta, K. S. and Huq, F. (2002) Supplier selection problem: a comparison of the total cost of ownership and analytic hierarchy process approaches. *Supply Chain Management: An International Journal*, **7**(3): p. 126-135.
- [22] Bowman, D., Farleyn, J. U. and Schmittlein, D. C. (2000) Cross-National Empirical Generalization in Business Services Buying Behavior. *Journal of International Business Studies*, **31**(4): p. 667-685.
- [23] Braglia, M. and Petroni, A. (2000) A quality assurance-oriented methodology for handling trade-offs in supplier selection. *International Journal of Physical Distribution & Logistics Management*, **30**(2): p. 96-111.
- [24] Buskens, V., Batenburg, R. S. and Weesie, J. (2003) Embedded Partner Selection in Relations between Firms. *Research in the Sociology of Organizations*, **20**: p. 107-133.
- [25] Cakravastia, A., Toha, I. S. and Nakamura, N. (2002) A two-stage model for the design of supply chain networks. *International Journal of Production Economics*, **80**(3): p. 231-248.

- [26] Choi, T.Y. and Hartley, J. L. (1996) An exploration of supplier selection practices across the supply chain. *Journal of Operations Management*, **14**: p. 333-343.
- [27] Choy, K. L., Lee, W. B., Lau, H. C. W. and Choy, L. C. (2005) A knowledge-based supplier intelligence retrieval system for outsource manufacturing. *Knowledge-Based Systems*, **18**(1): p. 1-17.
- [28] Choy, K. L., Lee, W. B. and Lo, V. (2002) An intelligent supplier management tool for benchmarking suppliers in outsource manufacturing. *Expert Systems with Applications*, **22**(3): p. 213-224.
- [29] Choy, K. L., Lee, W. B. and Lo, V. (2002) Development of a case based intelligent customer-supplier relationship management system. *Expert Systems with Applications*, **23**(3): p. 281-297.
- [30] Choy, K. L., Lee, W. B. and Lo, V. (2003) Design of a case based intelligent supplier relationship management system-the integration of supplier rating system and product coding system. *Expert Systems with Applications*, **25**(1): p. 87-100.
- [31] Choy, K. L., Lee, W. B. and Lo, V. (2003) Design of an intelligent supplier relationship management system: a hybrid case based neural network approach. *Expert Systems with Applications*, **24**(2): p. 225-237.
- [32] Choy, K. L., Lee, W. B. and Lo, V. (2004) Development of a case based intelligent supplier relationship management system - linking supplier rating system and product coding system. *Supply Chain Management: An International Journal*, **9**(1): p. 86-101.
- [33] Choy, K. L., Lee, W. B. and Lo, V. (2004) An enterprise collaborative management system - a case study of supplier relationship management. *The Journal of Enterprise Information Management*, **17**(3): p. 191-207.
- [34] Cox, A., (2001) Managing with power: Strategies for improving value appropriation from supply relations. *Journal of Supply Chain Management*, **37**(2): p. 42-47.
- [35] Craig, M. G., Daugherty, P. J. and Ellinger, A. E. (1997) Supplier selection decisions in systems/software purchases. *International Journal of Purchasing and Materials Management*, **33**(4): p. 41-46.
- [36] Cruz, M. (2001) Where the river flows. *Computer Reseller News*, **926**: p. 47.
- [37] Currie, W. L. (1998) Using multiple suppliers to mitigate the risk of IT outsourcing at ICI and Wessex Water. *Journal of Information Technology*, **13**(3): p. 169-180.
- [38] Da Silva, R.V., Davies, G. and Naude, P. (2002) Assessing customer orientation in the context of buyer/supplier relationships using judgmental modelling. *Industrial Marketing Management*, **31**(3): p. 241-252.
- [39] Davidrajuh, R. (2003) Modeling and implementation of supplier selection procedures for e-commerce initiatives. *Industrial Management & Data Systems*, **103**(1): p. 28-38.

- [40] de Boer, L., Labro, E. and Morlacchi, P. (2001) A review of methods supporting supplier selection. *European Journal of Purchasing & Supply Management*, **7**: p. 75-89.
- [41] de Boer, L., van der Wegen, L. and Telgen, J. (1998) Outranking methods in support of supplier selection. *European Journal of Purchasing & Supply Management*, **4**: p. 109-118.
- [42] de Boer, L. and van der Wegen, L. L. M. (2003) Practice and promise of formal supplier selection: a study of four empirical cases. *Journal of Purchasing and Supply Management*, **9**(3): p. 109-118.
- [43] de Boer, L., van Dijkhuizen, G. and Telgen, J. (2000) A basis for modelling the costs of supplier selection: the economic tender quantity. *Journal of the Operational Research Society*, **51**(10): p. 1128-1135.
- [44] Degraeve, Z., Labro, E. and Roodhooft, F. (2000) An evaluation of vendor selection models from a total cost of ownership perspective. *European Journal of Operational Research*, **125**: p. 34-58.
- [45] Degraeve, Z., Labro, E. and Roodhooft, F. (2004) Total cost of ownership purchasing of a service: The case of airline selection at Alcatel Bell. *European Journal of Operational Research*, **156**(1): p. 23-40.
- [46] Degraeve, Z. and Roodhooft, F. (1998) Determining sourcing strategies: a decision model based on activity and cost driver information. *Journal of the Operational Research Society*, **49**(8): p. 781-789.
- [47] Degraeve, Z. and Roodhooft, F. (1999) Improving the efficiency of the purchasing process using total cost of ownership information: The case of heating electrodes at Cockerill Sambre S.A. *European Journal of Operational Research*, **112**: p. 42-53.
- [48] Degraeve, Z. and Roodhooft, F. (1999) Effectively selecting suppliers using total cost of ownership. *Journal of Supply Chain Management*, **35**(1): p. 5-10.
- [49] Degraeve, Z., Roodhooft, F. and van Doveren, B. (2005) The use of total cost of ownership for strategic procurement: a company-wide management information system. *Journal of the Operational Research Society*, **56**(1): p. 51 - 59.
- [50] Deng, S. and Wortzel, L. H. (1995) Importer purchase behaviour: Guidelines for Asian exporters. *Journal of Business Research*, **32**(1): p. 41-47.
- [51] Dowlatshahi, S. (2000) Designer-buyer-supplier interface: Theory versus practice. *International Journal of Production Economics*, **63**: p. 111-130.
- [52] Dowlatshahi, S. (2001) Product life cycle analysis: a goal programming approach. *Journal of the Operational Research Society*, **52**(11): p. 1201-1214.
- [53] Dulmin, R. and Mininno, V. (2003) Supplier selection using a multi-criteria decision aid method. *Journal of Purchasing and Supply Management*, **9**(4): p. 177-187.

- [54] Dyer, J. H. and Chu, W. (2000) The Determinants of Trust in Supplier-Automaker Relationships in the U.S., Japan and Korea. *Journal of International Business Studies*, **31**(2): p. 259-285.
- [55] Fan, Y. (2004) Strategic outsourcing: evidence from British companies. *Marketing Intelligence & Planning*, **18**(4): p. 213-219.
- [56] Feng, C.-X., Wang, J. and Wang, J.-S. (2001) An optimization model for concurrent selection of tolerances and suppliers. *Computers & Industrial Engineering*, **40**(1-2): p. 15-33.
- [57] Fonseca, D.J., Uppal, G. and Greene, T. J. (2004) A knowledge-based system for conveyor equipment selection. *Expert Systems with Applications*, **26**(4): p. 615-623.
- [58] Ganeshan, R., Tyworth, J. E. and Guo, Y. (1999) Dual sourced supply chains: the discount supplier option. *Transportation Research Part E*, **35**: p. 11-23.
- [59] Gassenheimer, J. B. and Manolis, C. (2001) The influence of product customization and supplier selection on future intentions: The mediating effects of salesperson and organizational trust. *Journal of Managerial Issues*, **13**(4): p. 418.
- [60] Ghodyspour, S. H. and O'Brien, C. (1998) A decision support system for supplier selection using an integrated analytic hierarchy process and linear programming. *International Journal of Production Economics*, **56-57**: p. 199-212.
- [61] Ghodyspour, S. H. and O'Brien, C. (2001) The total cost of logistics in supplier selection, under conditions of multiple sourcing, multiple criteria and capacity constraint. *International Journal of Production Economics*, **73**: p. 15-27.
- [62] Goffin, K., Szwajczewski, M. and New, C. (1997) Managing suppliers: when fewer can mean more. *International Journal of Physical Distribution & Logistics Management*, **27**(7): p. 422-436.
- [63] Gonzalez, M. E., Quesada, G. and Monge, C. A. M. (2004) Determining the importance of the supplier selection process in manufacturing: a case study. *International Journal of Physical Distribution & Logistics Management*, **34**(6): p. 492-504.
- [64] Graham, G. and Hardaker, G. (1998) Defence sector procurement and supply chain relationships. *Supply Chain Management: An International Journal*, **3**(3): p. 142-148.
- [65] Gupta, S. and Krishnan, V. (1999) Integrated component and supplier selection for a product family. *Production and Operations Management*, **8**(2): p. 163.
- [66] Han, C. H. and Ahn, B. S. (2005) Interactive group decision-making procedure using weak strength of preference. *Journal of the Operational Research Society*, **56**(10): p. 1204-1212.
- [67] Harreld, H. (2001) Optimizing supplier selection. *InfoWorld*, **23**(47): p. 32.

- [68] Hirakubo, N. and Kublin, M. (1998) The relative importance of supplier selection criteria: The case of electronic components procurement in Japan. *International Journal of Purchasing and Materials Management*, **34**(2): p. 19-24.
- [69] Hong, J.-D. and Hayya, J. C. (1992) Just-In-Time purchasing: Single or multiple sourcing? *International Journal of Production Economics*, **27**(2): p. 175-181.
- [70] Houshyar, A. and Lyth, D. (1992) A systematic supplier selection procedure. *Computers and Industrial Engineering*, **23**(1-4): p. 173-176.
- [71] Humphreys, P., McIvor, R. and Chan, F. (2003) Using case-based reasoning to evaluate supplier environmental management performance. *Expert Systems with Applications*, **25**(2): p. 141-153.
- [72] Humphreys, P. K., Wong, Y. K. and Chan, F. T. S. (2003) Integrating environmental criteria into the supplier selection process. *Journal of Materials Processing Technology*, **138**(1-3): p. 349-356.
- [73] Iskandar, B.Y., Kurokawa, S. and LeBlanc, L. J. (2001) Business-to-business electronic commerce from first- and second-tier automotive suppliers' perspectives: a preliminary analysis for hypotheses generation. *Technovation*, **21**(11): p. 719-731.
- [74] Ittner, C. D., Larcker, D. F., Nagar, V. and Rajan, M. V. (1999) Supplier selection, monitoring practices, and firm performance. *Journal of Accounting and Public Policy*, **18**(3): p. 253-282.
- [75] Jayaraman, V., Srivastava, R. and Benton, W. C. (1999) Supplier selection and order quantity allocation: A comprehensive model. *Journal of Supply Chain Management*, **35**(2): p. 50-58.
- [76] Kamann, D.-J. F. and Bakker, E. F. (2004) Changing supplier selection and relationship practices: a contagion process. *Journal of Purchasing and Supply Management*, **10**(2): p. 55-64.
- [77] Kannan, V. R. and Tan, K. C. (2002) Supplier selection and assessment: Their impact on business performance. *Journal of Supply Chain Management: A Global Review of Purchasing and Supply*, **38**(4): p. 11-21.
- [78] Karpak, B., Kasuganti, R. R. and Kumcu, E. (1999) Multi-Objective Decision-Making in Supplier Selection: An Application of Visual Interactive Goal Programming. *Journal of Applied Business Research*, **15**(2): p. 57-71.
- [79] Karpak, B., Kumcu, E. and Kasuganti, R. R. (1999) An Application of Visual Interactive Goal Programming: A Case In Vendor Selection Decisions. *Journal of Multi-Criteria Decision Analysis*, **8**: p. 93-105.
- [80] Katsikeas, C. S., Al-Khalifa, A. and Crick, D. (1997) Manufacturers' understanding of their overseas distributors: the relevance of export involvement. *International Business Review*, **6**(2): p. 147-163.



- [81] Katsikeas, C. S., Paparoidamis, N. G. and Katsikea, E. (2004) Supply source selection criteria: The impact of supplier performance on distributor performance. *Industrial Marketing Management*, **33**(8): p. 755-764.
- [82] Kaynak, E. (1989) How Chinese buyers rate foreign suppliers. *Industrial Marketing Management*, **18**(3): p. 187-198.
- [83] Krause, D. R., Pagell, M. and Curkovic, S. (2001) Toward a measure of competitive priorities for purchasing. *Journal of Operations Management*, **19**(4): p. 497-512.
- [84] Kreng, V. B. and Chang, C.-H. (2003) Bayesian network based multiagent system--application in e-marketplace. *Computers & Mathematics with Applications*, **46**(2-3): p. 429-444.
- [85] Lam, S. W. and Tang, L. C. (2005) Multiobjective vendor allocation in multiechelon inventory systems: a spreadsheet model. *Journal of the Operational Research Society* advance publication 20 July 2005, doi:10.1057/palgrave.jors.2602027.
- [86] Lambert, D.M., Adams, R. J. and Emmelhainz, M. A. (1997) Supplier selection criteria in the healthcare industry: A comparison of importance and performance. *International Journal of Purchasing and Materials Management*, **33**(1): p. 16-22.
- [87] Lasch, R. and Janker, C. G. (2005) Supplier selection and controlling using multivariate analysis. *International Journal of Physical Distribution & Logistics Management*, **35**(6): p. 409-425.
- [88] Lee, E.-K., Ha, S. and Kim, S.-K. (2001) Supplier Selection and Management System Considering Relationships in Supply Chain Management. *IEEE Transactions on Engineering Management*, **47**(4): p. 307-318.
- [89] Liang, N. and Parkhe, A. (1997) Importer Behaviour: the neglected Counterpart of International Exchange. *Journal of International Business Studies*, **28**(3): p. 495-530.
- [90] Lin, C., Chow, W. S., Madu, C. N., Kuei, C.-H. and Yu, P. P. (2005) A structural equation model of supply chain quality management and organizational performance. *International Journal of Production Economics*, **96**(3): p. 355-365.
- [91] Liu, J., Ding, F.-Y. and Lall, V. (2000) Using data envelopment analysis to compare suppliers for supplier selection and performance improvement. *Supply Chain Management: An International Journal*, **5**(3): p. 143-150.
- [92] Mandal, A. and Deshmukh, S. G. (1994) Vendor Selection Using Interpretive Structural Modelling (ISM). *International Journal of Operations and Production Management*, **14**(6): p. 52-59.
- [93] Masella, C. and Rangone, A. (2000) A contingent approach to the design of vendor selection systems for different types of co-operative customer/supplier relationships. *International Journal of Operations and Production Management*, **20**(1): p. 70-84.

- [94] Michell, V. and Fitzgerald, G. (1997) The IT outsourcing market-place: vendors and their selection. *Journal of Information Technology*, **12**(3): p. 223-237.
- [95] Min, H. (1994) International Supplier Selection: A Multi-attribute Utility Approach. *International Journal of Physical Distribution and Logistics Management*, **24**(5): p. 24-33.
- [96] Min, H. and Galle, W. P. (1997) Green purchasing strategies: Trends and implications. *International Journal of Purchasing and Materials Management*, **33**(3): p. 10-17.
- [97] Mishra, A. K. and Tadikamalla, P. R. (2005) Order splitting in single sourcing with scheduled-release orders. *Journal of the Operational Research Society* advance publication 23 March 2005, doi:10.1057/palgrave.jors.2601974.
- [98] Motwani, J., Youssef, M., Kathawala, Y. and Futch, E. (1999) Supplier selection in developing countries: a model development. *Integrated Manufacturing Systems*, **10**(3): p. 154-161.
- [99] Mummaleneni, V., Dubas, K. M. and Chao, C. (1996) Chinese Purchasing Managers' Preferences and Trade-offs in Supplier Selection and Performance Evaluation. *Industrial Marketing Management*, **25**: p. 115-124.
- [100] Muralidharan, C., Anantharaman, N. and Deshmukh, S. G. (2001) Vendor rating in purchasing scenario: a confidence interval approach. *International Journal of Operations and Production Management*, **21**(10): p. 1306-1325.
- [101] Muralidharan, C., Anantharaman, N. and Deshmukh, S. G. (2002) A multi-criteria group decisionmaking model for supplier rating. *Journal of Supply Chain Management: A Global Review of Purchasing and Supply*, **38**(4): p. 22-33.
- [102] Murray, J.Y., Kotabe, M. and Zhou, J. N. (2005) Strategic alliance-based sourcing and market performance: evidence from foreign firms operating in China. *Journal of International Business Studies*, **36**(2): p. 187-208.
- [103] Naude, P. and Lockett, G. (1993) Market Analysis via Judgemental Modelling: An Application in the UK Chemical Industry. *European Journal of Marketing*, **27**(3): p. 5-22.
- [104] Noci, G. (1997) Designing 'green' vendor rating systems for the assessment of a supplier's environmental performance. *European Journal of Purchasing & Supply Management*, **3**(2): p. 103-114.
- [105] Nydick, R. L. and Hill, R. P. (1992) Using the Analytic Hierarchy Process to Structure the Supplier Selection Procedure. *International Journal of Purchasing and Materials Management*, **28**(2): p. 31-36.
- [106] O'Farrell, P. N. and Wood, P. A. (1994) International market selection by business service firms: Key conceptual and methodological issues. *International Business Review*, **3**(3): p. 243-261.
- [107] Olhager, J. and Selldin, E. (2004) Supply chain management survey of Swedish manufacturing firms. *International Journal of Production Economics*, **89**(3): p. 353-361.

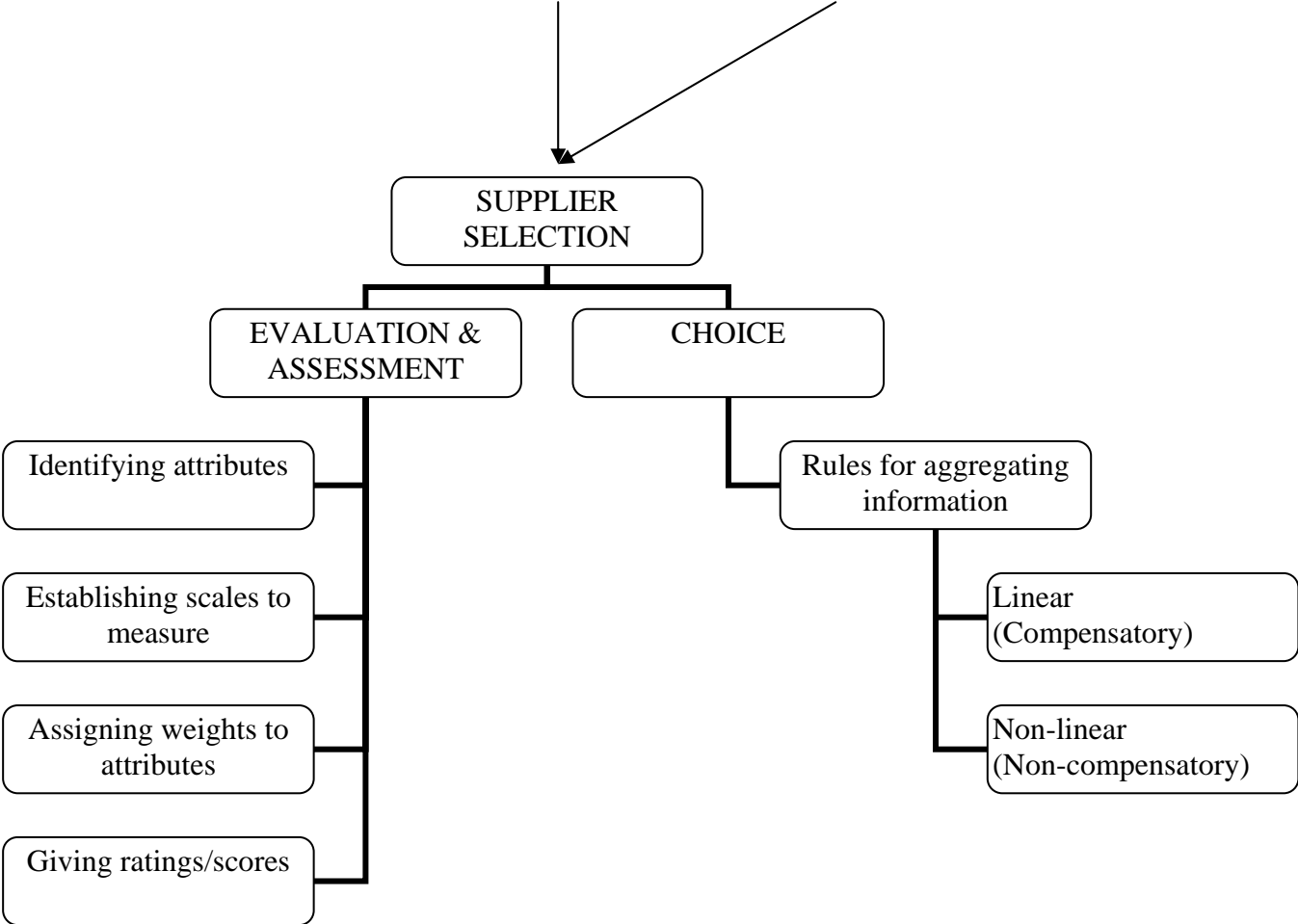
- [108] Park, D. and Krishnan, H. A. (2001) Supplier Selection Practices among Small Firms in the United States: Testing Three Models. *Journal of Small Business Management*, **39**(3): p. 259-271.
- [109] Park, D. and Krishnan, H. A. (2001) Understanding Supplier Selection Practices: Differences between U.S. and Korean Executives. *Thunderbird International Business Review*, **43**(2): p. 243-255.
- [110] Patton, W. E. (1996) Use of Human Judgement Models in Industrial Buyers' Vendors Selection Decisions. *Industrial Marketing Management*, **25**: p. 135-149.
- [111] Patton, W. E. (1997) Individual and Joint Decision-Making in Industrial Vendor Selection. *Journal of Business Research*, **38**: p. 115-122.
- [112] Patton, W. E., Puto, C. P. and King, R. H. (1986) Which buying decisions are made by individuals and not by groups? *Industrial Marketing Management*, **15**(2): p. 129-138.
- [113] Pearson, J. M. and Ellram, L. M. (1995) Supplier selection and evaluation in small versus large electronics firms. *Journal of Small Business Management*, **33**(4): p. 53-65.
- [114] Peng, M. W. and York, A. S. (2001) Behind Intermediary Performance in Export Trade: Transactions, Agents, and Resources. *Journal of International Business Studies*, **32**(2): p. 327-346.
- [115] Petroni, A. and Braglia, M. (2000) Vendor Selection Using Principal Component Analysis. *The Journal of Supply Chain Management: A Global Review of Purchasing and Supply*, **36**(2): p. 63-69.
- [116] Purdy, L. and Safayeni, F. (2000) Strategies for Supplier Evaluation: A Framework for Potential Advantages and Limitations. *IEEE Transactions on Engineering Management*, **47**(4): p. 435-443.
- [117] Qu, Z. and Brocklehurst, M. (2003) What will it take for China to become a competitive force in offshore outsourcing? An analysis of the role of transaction costs in supplier selection. *Journal of Information Technology*, **18**(1): p. 53-67.
- [118] Quayle, M. (1995) Changing a supplier - How do they do that? (Part 1). *Purchasing & Supply Management*: p. 26.
- [119] Quayle, M. (2002) Purchasing Policy in Switzerland: An Empirical Study of Sourcing Decisions. *Thunderbird International Business Review*, **44**(2): p. 205-236.
- [120] Roodhooft, F. and Konnings, J. (1996) Vendor selection and evaluation: An activity based costing approach. *European Journal of Operational Research*, **96**: p. 97-102.
- [121] Sarkis, J. and Talluri, S. (2002) A model for strategic supplier selection. *Journal of Supply Chain Management*, **38**(1): p. 18.

- [122] Sharland, A., Eltantawy, R. A. and Giunipero, L. C. (2003) The impact of cycle time on supplier selection and subsequent performance outcomes. *Journal of Supply Chain Management: A Global Review of Purchasing and Supply*, **39**(3).
- [123] Shipley, D., Egan, C. and Edgett, S. (1991) Meeting source selection criteria: Direct versus distributor channels. *Industrial Marketing Management*, **20**(4): p. 297-303.
- [124] Skjott-Larsen, T., Kotzab, H. and Grieger, M. (2003) Electronic marketplaces and supply chain relationships. *Industrial Marketing Management*, **32**(3): p. 199-210.
- [125] Smith, J. M. (1999) Item selection for global purchasing. *European Journal of Purchasing & Supply Management*, **5**(3-4): p. 117-127.
- [126] Smytka, D. L. and Clemens, M. W. (1993) Total cost supplier selection model: A case study. *International Journal of Purchasing and Materials Management*, **29**(1): p. 42.
- [127] Spekman, R. E. (1988) Strategic supplier selection: Understanding long-term buyer relationships. *Business Horizons*, **31**(4): p. 75-81.
- [128] Svensson, G. (2004) Supplier segmentation in the automotive industry: A dyadic approach of a managerial model. *International Journal of Physical Distribution & Logistics Management*, **34**(1/2): p. 12-38.
- [129] Swift, C.O., (1995) Preferences for Single Sourcing and Supplier Selection Criteria. *Journal of Business Research*, **32**: p. 105-111.
- [130] Swift, C. O. and Gruben, K. H. (2000) Gender differences in weighting of supplier selection criteria. *Journal of Managerial Issues*, **12**(4): p. 502.
- [131] Tam, M. C. Y. and Tummala, V. M. R. (2001) An application of the AHP in vendor selection of a telecommunications system. *OMEGA- International Journal of Management Science*, **29**: p. 171-182.
- [132] Tempelmeier, H. (2002) A simple heuristic for dynamic order sizing and supplier selection with time-varying data. *Production and Operations Management*, **11**(4): p. 499-515.
- [133] Thorelli, H. B. and Glowacka, A. E. (1995) Willingness of American industrial buyers to source internationally. *Journal of Business Research*, **32**(1): p. 21-30.
- [134] Tracey, M. and Tan, C. L. (2001) Empirical analysis of supplier selection and involvement, customer satisfaction, and firm performance. *Supply Chain Management: An International Journal*, **6**(4): p. 174-188.
- [135] Verma, R. and Pullman, M. E. (1998) An Analysis of the Supplier Selection Process. *OMEGA- International Journal of Management Science*, **26**(6): p. 739-750.
- [136] Vokurka, R. J., Choobineh, J. and Vadi, L. (1996) A prototype expert system for the evaluation and selection of potential suppliers. *International Journal of Operations & Production Management*, **16**(12): p. 106-127.

- [137] Wang, G., Huang, S. H. and Dismukes, J. P. (2004) Product-driven supply chain selection using integrated multi-criteria decision-making methodology. *International Journal of Production Economics*, **91**(1): p. 1-15.
- [138] Weber, C. A. (1996) A data envelopment analysis approach to measuring vendor performance. *Supply Chain Management: An International Journal*, **1**(1): p. 28-39.
- [139] Weber, C. A., Current, J. and Desai, A. (1998) Non-cooperative negotiation strategies for vendor selection. *European Journal of Operational Research*, **108**(1): p. 208-223.
- [140] Weber, C. A., Current, J. and Desai, A. (2000) An optimization approach to determining the number of vendors to employ. *Supply Chain Management: An International Journal*, **5**(2): p. 90-98.
- [141] Weber, C. A., Current, J. R. and Benton, W. C. (1991) Vendor selection criteria and methods. *European Journal of Operational Research*, **50**(1): p. 2-18.
- [142] Wilson, E. J. (1994) The relative importance of supplier selection criteria: A review and update. *International Journal of Purchasing and Materials Management*, **30**(3): p. 35.
- [143] Wu, C.-Y. (1990) Robot selection decision support system: A fuzzy set approach. *Mathematical and Computer Modelling*, **14**: p. 440-443.
- [144] Yahya, S. and Kingsman, B. (1999) Vendor Rating for an Entrepreneur Development Programme: a Case Study Using the Analytic Hierarchy Process Method. *Journal of the Operational Research Society*, **50**(9): p. 916-930.
- [145] Yan, H. and Wei, Q. (2002) Determining compromise weights for group decision making. *Journal of the Operational Research Society*, **53**(6): p. 680-687.
- [146] Youssef, M. A., Zairi, M. and Mohanty, B. (1996) Supplier selection in an advanced manufacturing technology environment: an optimization model. *Benchmarking for Quality Management and Technology*, **3**(4): p. 62-70.
- [147] Zwisler, C. E. (1997) How to select a franchise supplier. *Franchising World*, **29**(4).

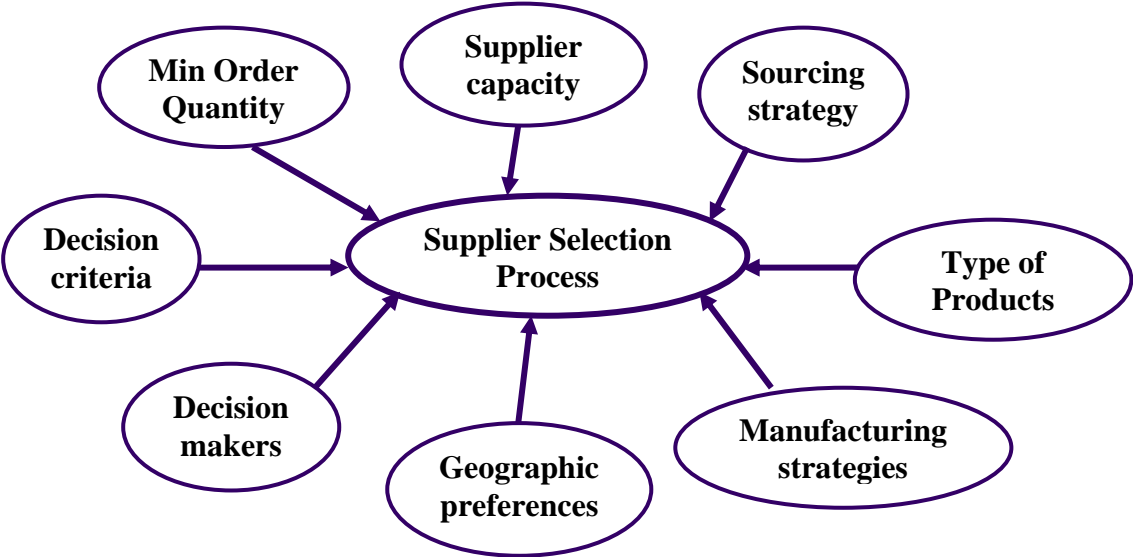
**Figure 1: Phases of supplier selection process and tasks in supplier selection**

Phase – 1	Phase – 2	Phase – 3	Phase – 4	Phase – 5
The need for a new supplier	Determination and formulation of decision criteria	Pre-qualification of suppliers	Final supplier selection	Monitoring of suppliers selected



Source: Created by the author based on the literature review.

**Figure 2: Factors affecting supplier selection**



*Source:* Created by the author based on the literature review.

**Table 1: List and summary of papers related to decision criteria used for supplier selection**

Paper ID	Brief description of content	Paper ID	Brief description of content
[2], Abratt (1986)	Analyses the buying process and identifies and determines the relative importance of the factors influencing supplier selection	[88], Lee, Ha & Kim (2001)	Proposes a methodology which identifies the managerial criteria using information derived from the supplier selection processes and makes use of them in the supplier management process.
[4], Akarte, Surendra, Ravi & Rangaraj (2001)	Identifies 18 criteria and groups them into four categories	[90], Lin, Chow, Madu, Kuei & Yu (2005)	Identifies the factors affecting the supply chain quality management
[11], Avery (1999)	Identifies the criteria used for IT purchases	[99], Mummaleneni, Dubas & Chao (1996)	Examines the Chinese managers' preferences of decision criteria when selecting suppliers
[12], Avery (1999)	Identifies factors affecting MRO supplier selection	[86], Lambert, Adams & Emmelhainz (1997)	Examines the decision criteria used by healthcare organisations and looks at the weights assigned to them
[13], Avery (2000)	Presents the experiences of three purchasing professionals and their preferred criteria when purchasing IT	[83], Krause, Pagell & Curkovic (2001)	Aims to develop a set of measures of purchasing's competitive priorities
[22], Bowman, Farleyn & Schmittlein (2000)	Examines the relative importance of factors that affect supplier selection and level of usage for global business services providers	[96], Min & Galle (1997)	Draws attention to include environmental criteria in the supplier selection process
[26], Choi & Hartley (1996)	Aims to identify supplier selection practices based on a firm's position on supply chain, and to provide recent supplier selection practices that incorporate contemporary supplier management issues	[104], Noci (1997)	Attempts to incorporate environmental criteria into supplier selection process
[35], Craig, Daugherty & Ellinger (1997)	Aims at exploring the criteria used during the selection of systems/software vendors for all or part of an integrated logistics information system	[71], Humphreys, McIvor & Chan (2003)	Attempts to integrate environmental factors into the supplier selection process
[50], Deng & Wortzel (1995)	Presents the results of an empirical study of the supplier selection criteria used by U.S. importers in three merchandise categories when selecting an Asian supplier	[72], Humphreys, Wong & Chan (2003)	Develops a decision support tool which should help companies to integrate environmental criteria into their supplier selection process
[63], Gonzalez, Quesada & Monge (2004)	Looks at the variables and their relative importance in supplier selection from quality, cost and productivity perspectives	[110], Patton (1996)	Attempts to find out what criteria and which methods purchasing professionals use in practice
[68], Hirakubo & Kublin (1998)	Examines the purchasing behaviour in the Japanese electronic and office equipment industries	[113], Pearson & Ellram (1995)	Examines and explores the differences in decision criteria used for supplier selection in small and large organisations



**Table 1: List and summary of papers related to decision criteria used for supplier selection (continued)**

Paper ID	Brief description of content	Paper ID	Brief description of content
[77], Kannan & Tan (2002)	Describes an empirical study of the importance of supplier selection and assessment criteria of American manufacturing companies for items to be used in products already in production	[130], C. O. Swift and K. H. Gruben, (2000)	examines the differences between the weightings applied to supplier selection criteria by male and female purchasing managers
[81], Katsikeas, Paparoidamis & Katsikea (2004)	Reports on a systematic examination of supplier performance in purchasing decision criteria of U.K. distributor firms of information technology (IT) products.	[133], Thorelli & Glowacka (1995)	Reports on factors thought to have an impact on decisions of purchasing professionals to source internationally
[122], Sharland, Eltantawy & Giunipero, (2003)	Examines the impact of cycle time on supplier selection	[135], Verma & Pullman (1998)	Examines the differences in weights assigned to decision criteria in actual choice of suppliers and perceived importance of decision criteria before selecting the suppliers
[123], Shipley, Egan & Edgett (1991)	Compares the performance of two channel designs in meeting customer sourcing criteria for industrial re-buy products	[141], Weber, Current & Benton (1991)	Looks at the criteria and analytical methods used in the vendor selection process
[128], Svensson (2004)	Investigates the models of supplier segmentation and supplier selection criteria.	[142], Wilson (1994)	Compares the relative importance of supplier selection criteria of late seventies and eighties with those of nineties
[129], Swift (1995)	Aims to determine whether there are differences in supplier selection criteria between purchasing managers who have a preference for single sourcing and those who prefer multiple sourcing	[145], Yan & Wei (2002)	Uses supplier selection criteria as an example to apply a proposed compromise weighting in a group decision making environment

**Table 2: List and classification of decision making methods reported in the reviewed articles**

Category	Method	Paper Reference number
Artificial Intelligence & Expert Systems	Neural networks	28, 32
	Case-based reasoning	27, 28, 29, 30, 31, 32, 33, 71
	Bayesian Belief Networks	84
Mathematical programming	Total cost based approaches	8, 14, 19, 21, 43, 44, 45, 46, 47, 48, 49, 114, 117, 120, 126, 146
	Non-linear programming	61
	Mixed integer programming	25, 49, 75
	Linear programming	60, 61, 145
	Integer programming	56, 65
	Heuristics	5, 18, 58, 132
	Goal programming	52, 78, 79, 137
	DEA	23, 91, 138, 139, 140
MCDM	AHP	4, 16, 21, 60, 100, 105, 121, 131, 137, 144
	Outranking methods	41, 53
	MAUT	57, 95
	Linear weighted point	101
	Judgemental modelling	38, 103
	Interpretive Structural Modelling	92
	Categorical method	70
	Fuzzy sets	143
Multivariate statistical analysis	Structural equation modelling	90, 134
	Principal component analysis	115
	Factor Analysis	83, 134
	Confidence interval approach	100
Other decision making tools	Group decision making	66, 92, 100, 101, 111, 112, 131, 145
	Multiple Methods	5, 21, 49, 60, 100, 137, 139, 140

**Table 3: List and classification of papers on buyer-seller relationship, international supplier selection and e-procurement (online supplier selection)**

Category	Brief content / article type	Paper Reference number
Buyer-Seller relationships	Socio demographic factors	1, 76, 107, 128
	Information and data sharing	3, 24
	Sourcing strategy and TQM	9, 10, 37, 55, 88, 94, 97, 102
	New product launch	15, 27, 33
	Conceptual & methodological	34, 93, 127, 139
	Review	51, 74
	Trust	54, 58, 59, 116, 122,
	E-commerce, e-procurement	124
International Supplier Selection	Decision criteria used	22, 50, 68, 80, 82, 98, 99, 109, 119, 133
	Methods proposed	39, 95, 117, 125
	Buyer-seller relationship	89, 102, 106, 107
E-procurement (online supplier selection)	Using the Internet, Electronic Data Interchange, evaluating & selecting suppliers online	4, 6, 17, 36, 39, 67, 73, 84, 124