Handling measurement and strategic issues in Kraljic’s portfolio model –
results of explorative case studies

Cees J. Gelderman
Open University of the Netherlands, P.O. Box 2960, 6401 DL Heerlen, The Netherlands, Phone +31-45 5762590, Fax +31-45 5762103, E-mail: kees.gelderman@ou.nl

Abstract
Kraljic’s purchasing portfolio model, which was introduced in 1983, still is the dominant approach in the profession. Contrary to the growing use of the Kraljic matrix, there are problems and unanswered questions with respect to measurement and strategic issues. Based on explorative case studies, derived from three Dutch industrial companies, to a large extent the critique of Kraljic’s model has been disputed and refuted, describing the solutions of experienced practitioners. The case studies point out what measurement methods are possible and what supplier strategies are feasible, including additional strategic movements of commodities within the matrix. The research findings indicate that there is no simple, standardised blue print for the application of the portfolio analysis. It requires reflecting on results, critical thinking and sophistication of purchasing management.

The Kraljic approach
Recently purchasing portfolio models have received considerable attention from academic and business world (e.g. Gelderman and Van Weele, 2002a and 2002b; Åhman, 2002; Dubois and Pedersen, 2002; Zolkiewski and Turnbull, 2000; Nellore and Söderquist, 2000; Wynstra and ten Pierick, 2000; Gelderman, 2000, Bensaou, 1999; Lilliecreutz and Ydreskog, 1999; Olsen and Ellram, 1997). Obviously, not all products and not all buyer-supplier relationships are to be managed in the same way. In general, purchasing portfolio models aim at developing differentiated purchasing and supplier strategies. Kraljic (1983) introduced the first comprehensive portfolio approach for purchasing and supply management. Kraljic’s approach includes the construction of a portfolio matrix that classifies products on the basis of two dimensions: profit impact and supply risk (‘low’ and ‘high’). The result is a 2x2 matrix and a classification in four categories: bottleneck, non-critical, leverage and strategic items.
Each of the four categories requires a distinctive approach towards suppliers, see figure 1. Non-critical items require efficient processing, product standardization, order volume and inventory optimization. Leverage items allow the buying company to exploit its full purchasing power, for instance through tendering, target pricing and product substitution. Bottleneck items cause significant problems and risks which should be handled by volume insurance, vendor control, security of inventories and backup plans. A further analysis of the strategic items is recommended. By plotting the buying strengths against the strengths of the supply market, three basic power positions are identified and associated with three different supplier strategies: balance, exploit, and diversify. The general idea of Kraljic’s model is to minimize supply risk and make the most of buying power (Kraljic, 1983, p. 112).
Although other models have been developed, Kraljic’s approach subsequently became the dominant approach to what the profession regards as operational professionalism Cox (1997, p. 270). Lamming and Harrison (2001, p. 596) confirmed that Kraljic’s matrix remains the foundation of purchasing strategy for many organisations across different sectors. Purchasing
portfolio models have gained ground in both academic research as well as in practice (Nellore and Söderquist, 2000, p. 246). In the course of time the Kraljic approach has entered many textbooks on purchasing and supply management. In contrast with a growing acceptance and use of purchasing portfolio models, there are some problems and unanswered questions.

**Problems and unanswered questions**

In general, decisions based on portfolio models are proven to be sensitive to the choice of dimensions, factors, and weights. Day (1986) concluded that measurement is considered to be the Achilles' heel for all portfolio models. What is exactly meant by 'profit impact' and 'supply risk'? How could or should we measure them in practice? Nellore and Söderquist (2000, p. 246) pointed at the risk that the variables used in portfolio analysis might not be accurate proxies for the dimensions they are supposed to measure. Theory does not provide prescriptions or procedures for measurement, leading Ramsay (1996, p. 15) to conclude that these concepts are “actually made up of a number of nebulous concepts without operational dimensions”. Olsen and Ellram (1997, p. 105) emphasized that the weighting of each factor is the most important part of the implementation process, but at the same time very subjective. The decision-makers must come to an agreement on the relative importance of each factor. Besides that, there are usually demarcation problems with respect to the measurement of key variables. What is the exact distinction between ‘a high’ and ‘a low’ supply risk? If we have problems discriminating between categories, than the classification of products will be arbitrary and so will be the provided recommendations. Homburg (1995, p. 829) for instance concluded that recommendations should be applied with reserve, especially if a product is positioned near a demarcation line. De Boer (1997, p. 4) suggested a fully customized approach: organizations should determine their own criteria and their own specific threshold values.

The introduction of the Kraljic portfolio approach can be considered as a major breakthrough in the development of professional purchasing. Syson (1992, p. 213) concluded that Kraljic’s approach represents “the most important single diagnostic and prescriptive tool available to purchasing and supply management”. However, others find the Kraljic approach counterproductive, providing recommendations either to exploit power (Olsen and Ellram, 1997, p. 106), or to avoid risk associated with the supplier exercising power (Dubois and Pedersen,
It is argued that the complexity of business decisions does not allow for simple recommendations. How could one deduce strategies from a portfolio analysis that is based on just two basic dimensions? (e.g. Heege, 1981, p. 23 and Dubois and Pedersen, 2002, p. 40). In addition several authors have described and presented similar portfolio models, be it from a rather normative and deterministic perspective: one overall purchasing strategy for each cell/ category. (e.g. Elliott-Shircore and Steele (1985), Syson (1992), Van Weele (1992), Hadeler and Evans (1994)). From such publications it might be assumed that all strategic items should be managed by means of (strategic) partnerships. We must conclude that this would be in variance with Kraljic’s intention, considering the three different supplier strategies for the strategic quadrant.

Often the suppliers’ side of the buyer-seller relationship is considered as a disregarded element in Kraljic's model. The Kraljic approach does not explicitly take into account the possible strategies and reactions of suppliers (Heege, 1981, p. 23; Kamann, 2000, p. 1). In a critical review of the Kraljic-approach Dubois and Pedersen (2002, p. 35) argued that purchasing portfolio models using ‘given products’ as a point of departure, in addition to a dyadic perspective, may be counterproductive where purchasing efficiency is concerned. Nellore and Söderquist (2000, p. 264) confirmed that it is imperative for any portfolio use to indicate the characteristics of the supplier with regard to the specification generation, the required relationship and the required type of specification for a given component. The design of a product entails issues that are not explicitly considered in portfolio models. Obviously, whether the product is developed by the supplier, the customer or developed jointly impacts on the relationships between parties (Araujo et al., 1999). Mismatches between buyer and seller are likely to occur if one does not take into account how a supplier (i.e. a marketing or sales manager) assesses the situation. And vice versa, of course. A partnership is only possible if that is the strategic intent of both parties.

Unquestionably, organizations must match their intentions and strategies.

Lilliecreutz and Ydreskog (1999, p. 68) stated that strategies that are solely based on Kraljic's matrix lack the dynamics of the power that the supplier can obtain. Gelderman and Van Weele (2000) pointed at the natural conflict of interests in buyer/supplier relationships. Both are likely to prefer a dominant power position due to the attached benefits. As a result, positions in the Kraljic matrices will always be amendable to the dynamics of buyer/seller relationships. Parties are inclined to seek for possibilities of influencing their relative power position. Cox (2001, p. 13) explicitly posited that a sufficient condition of success would be the ability to find ways to move from current positions of power to other more favourable positions. The Kraljic framework however, does not provide guidelines for movements within the matrix. It is not clear if and how other positions in the matrix are to be pursued through the implementation of the recommended strategies. Under what conditions is it advisable and feasible to pursue movements in the matrix? How should those movements be accomplished?

Leonard and Spring (2002, p. 469) concluded that there is a need for research on the way in which managers actually use portfolio models, how they are operationalised in complex organisations, and on the political process within organisations where the classification takes place. Olsen and Ellram (1997, p. 111) suggested that future research should include case studies to capture important aspects of the implementation process. We have discussed a number of unanswered question with respect to Kraljic’s portfolio approach. Literature suggested some significant problems with the application of portfolio models in purchasing. The critique of Kraljic however does not include the experience of practitioners. How do purchasing professionals handle such issues in practice? In general, what could we learn from their experience? Little is known about the actual use of portfolio models in purchasing. Most publications are conceptual or anecdotal by nature. This empirical study addresses the gap between the conceptual problems and the actual use
of portfolio models in purchasing. The results of the study clarify the handling of measurement and strategic issues by experienced professionals.

Methodology
The main objective of the case studies is to identify and to describe advanced current practices with respect to purchasing portfolio models. The cases studies are aimed at answering the following set of research questions:

1. Considering the unclear guidelines and the unanswered questions with respect to the measurement of (composite) dimensions and the weighting of factors in the use of a purchasing portfolio approach, how are these issues handled to the satisfaction of experienced purchasing professionals?

2. What kind of specific strategies of purchasing and supply are based on Kraljic's portfolio matrix?

3. What kind of movements are considered in the Kraljic matrix, in terms of current positions, future positions (goals) and means (strategies)?

Three in-depth case studies were conducted, involving three Dutch industrial firms. The case companies were selected and asked to participate in the research, based on their experience with the use of a purchasing portfolio approach. A selective, non-random sample is in line with the exploratory nature of the research questions at hand. Naturally, the composition of the sample is not made with the aim of being statistically representative of a population. The cases were studied sequentially, one after another. Because we wanted to explore different possibilities of the portfolio approaches, different units of analysis were included. The first case study dealt with the use of a portfolio approach on the corporate level of the company. The portfolio approach then is aimed at gaining synergy and leverage across business units. The second case study is positioned at the level of a large, multinational business unit with many plants all over the world. The third case study focuses on a business unit of a fairly small industrial company. The variety in levels should reveal different kinds of practice, according to specific circumstances and objectives. Although case studies may deal with unique situations, their results and conclusions may be compared. Comparison of cases may lead to the formulation of theoretical conjectures (Remenyi et al., 1998, p. 166). The comparative analysis of our three case studies has resulted in:

- a description and overview of solutions to the measurement issues, and
- the development of a conceptual model of strategic directions in the matrix (strategic issues).

Data were collected primarily through semi-structured interviews and secondary resources, such as internet web sites, annual reports, internal reports, and purchasing plans. A total number of 28 interviews were conducted. The case studies entailed the use of a key-informant method, interviewing a selected, limited number of participants. Informants were all chosen for their specialized knowledge of and experience with the use of portfolio models in real-life purchasing, notably business unit managers, purchasing managers and senior buyers (judgment sample). Several rounds of interviews were conducted with the respondents, at each stage reporting back the tentative analysis and conclusions from earlier rounds, providing them the opportunity:

- to check and recheck interim reports,
- to improve the match with the intended information, and
- to explore issues in more detail.

Obviously, these case studies do not allow for any statistical generalisation. The case studies aim to generate a particular set of results to some broader theory (theoretical generalisation). This
theory concerns the relationship between conditions, goals and purchasing strategies within the context of a portfolio approach.

**Comparison of the case studies**

Obviously, there is a different business context for the three cases. Figure 2 summarizes the main situational factors that describe the most notable case specific circumstances. These factors enlighten about the reasons behind the various ways in which the portfolio analysis is being used.

<table>
<thead>
<tr>
<th>Investigated unit/level of analysis</th>
<th>DSM</th>
<th>Akzo Nobel</th>
<th>Te Strake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value proposition</td>
<td>corporate level</td>
<td>business unit (DC) Decorative Coatings</td>
<td>business unit (E&amp;P) Engineering &amp; Production</td>
</tr>
<tr>
<td>Supply chain position</td>
<td>operational excellence</td>
<td>product leader</td>
<td>customer intimacy</td>
</tr>
<tr>
<td>Main products</td>
<td>main manufacturer</td>
<td>chemical, bio technical products and plastics</td>
<td>decorative paints</td>
</tr>
<tr>
<td></td>
<td>large number of industrial markets and customers</td>
<td>mass markets of professional users and consumers</td>
<td>mechatronical modules, units and machines</td>
</tr>
<tr>
<td>Customers</td>
<td>Euro 6.4 billion</td>
<td>Euro 1.8 billion</td>
<td>Euro 39.2 million</td>
</tr>
<tr>
<td>Sales</td>
<td>basically decentralized with a centralized purchasing unit</td>
<td>system of lead buying main buying and local buying</td>
<td>customer focus teams</td>
</tr>
<tr>
<td>Organization of purchasing</td>
<td>chemicals, raw materials, technical products/services, and physical distribution</td>
<td>raw materials</td>
<td>electrical and mechanical parts and components</td>
</tr>
<tr>
<td>Main spend groups</td>
<td>raw materials: Euro 750 million (43%)</td>
<td>Euro 26.6 million (68%)</td>
<td></td>
</tr>
<tr>
<td>Purchase spend</td>
<td>Euro 4.9 billion (78%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2  Context of the investigated cases

The unit of analysis in the three cases is rather different. The DSM-case investigates the use of a purchasing portfolio approach on the corporate level, aimed at synergy and leverage across business units (see Gelderman and Van Weele, 2002a). For different kinds of products and product groups the portfolio analysis serves as a framework for strategic discussion and ultimately for starting joint operations. The scope of the Akzo Nobel case is a large, international business unit. In more than 30 countries comparable portfolio-analyses are performed for the different sub-business units (area business units). The portfolio analysis concerns the procurement of ingredients (raw materials), to be used in the end product, decorative coatings. The third case is
performed at the business unit level as well. However, the business context differs to a large extent. Te Strake is a relative small, basically national manufacturer of technologically advanced modules. The importance of the (limited number of) customers is omnipresent. As a first tier supplier, Te Strake performs the portfolio analysis for each major customer separately: all items are positioned that are used for the production of the custom made product (module) for a specific customer.

From the various scopes of the case studies it can be concluded that a purchasing portfolio approach can be applied on many different levels of aggregation. The generic nature of the Kralic approach allows for customisation, implying that users have to make all kinds of decisions, implementing the portfolio analysis. We have found that measurement issues and strategic issues are handled in different ways. Some of the differences can be explained by differences of scale, scope, value proposition and supply chain position. The conditions on end markets, the requirements of customers, and the overall business strategy are very important circumstances for the selection of purchasing and supplier strategies.

**Measurement and use**

Purchasing professionals who want to use purchasing portfolio analysis face common problems. They all have to answer some basic questions of scope and design:

- what will be positioned?
- what will be the level of aggregation?
- for what (organizational) unit will the analysis be performed?

The case studies illustrate that many choices can be made. In most cases items are positioned on the matrix, from other sources it is known that sometimes suppliers or supplier relationships are positioned on the matrix. The portfolio analysis might be restricted to certain types of products, for instance raw materials (Akzo Nobel), logistical services, or non-product related products. Individual items can be positioned in a matrix, but product groups as well. The investigated portfolio approaches were connected to different organizational units: the corporate level (DSM), the level of area business units (Akzo Nobel), and the level of a major customer level (Te Strake).

Other options are conceivable. To conclude, the purchasing portfolio analysis allows for very different modes of application. Choices of design are important for the scope of the strategic recommendations and the specific portfolio based strategic that can be selected.

The case studies illustrate difference in use frequency, occasion, and purpose. In every company a champion could be found, introducing and supporting the portfolio analysis. In our case studies, these 'product champions' were the highest purchasing professionals in the organisation. It should be noted that performing a portfolio analysis means team work. The views of colleagues from different fields of expertise should be added to the more functional purchasing perspective. For a designer ‘replaceability’ might be important, while the production manager might focus on ‘risk of failure’. For reasons of support and implementation a cross functional team is required, with representatives from all relevant departments and specialist fields. Figure 3 summarizes some of the most significant characteristics of the investigated portfolio approaches, examining use issues and measurement issues.

It was found that in all investigated case studies, the filling of the quadrants (the measurement) was followed by a process of reviewing the positions in the matrix and a process of reflection on the consequences. Whatever method is selected, it should be clear that there are always subjective choices, limitations and elements that influence the actual positioning in the matrix. On closer consideration, questions have always to be answered for each position that is found in the matrix:

- why is an item/product positioned in this specific spot?
- is the found position in line with previous expectations?
- are positions, unintentionally and wrongfully, influenced by the measurement method?
- are re-adjustments therefore necessary?

In other words, after the matrix is filled, users reflect on the results. If necessary, manual adjustments are made. In-depth discussions on the positions in the matrix are considered as the most important phase of the analysis. Strategic discussions provide deeper insights and may lead more easy to consensus based decisions. It is felt by the users that the Kraljic framework facilitates these important discussions to a large extent.

Additionally, a reflection on the consequences is needed. How are the positions in the matrix to be viewed and assessed? Leading questions are:
- what is the actual meaning of the different positions in the matrix?
- what is the interpretation of the results?
- where are points of intervention? which risks are (un)acceptable?

It is imperative to recognize that the positioning of items does not complete the portfolio analysis.

<table>
<thead>
<tr>
<th>Use issues</th>
<th>DSM</th>
<th>Akzo Nobel BU - DC</th>
<th>Te Strake BU - E&amp;P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency, occasion</td>
<td>irregularly, in response to changes</td>
<td>regularly, fully integrated with daily practice</td>
<td>incidentally, on major customer level</td>
</tr>
<tr>
<td>Main advocate and project manager</td>
<td>director purchasing services</td>
<td>purchasing vice president of the BU</td>
<td>strategic buyer of the business unit</td>
</tr>
<tr>
<td>Main purpose</td>
<td>to identify and to develop synergy and leverage across BU’s</td>
<td>to detect and to cope with supplier dependence</td>
<td>to assess risk and to identify possibilities</td>
</tr>
<tr>
<td>Measurement issues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>consensus method</td>
<td>one-by-one method</td>
<td>weighted factor score method</td>
</tr>
<tr>
<td>Dimensions</td>
<td>- strategic importance</td>
<td>- value of purchases</td>
<td>- profit impact</td>
</tr>
<tr>
<td></td>
<td>- supply risk</td>
<td>- number of suppliers</td>
<td>- supply risk</td>
</tr>
<tr>
<td>Determination of factors</td>
<td>during the analysis, basically unlimited</td>
<td>in advance, factors are dimensions</td>
<td>in advance, limited number</td>
</tr>
<tr>
<td>Measurement of factors</td>
<td>consensus based</td>
<td>objective</td>
<td>consensus based</td>
</tr>
<tr>
<td>Determination of weights</td>
<td>implicitly, during the analysis</td>
<td>n.a.</td>
<td>explicitly, in advance</td>
</tr>
<tr>
<td>Aggregation of sub scores</td>
<td>consensus based</td>
<td>n.a.</td>
<td>arithmetic (additive model)</td>
</tr>
</tbody>
</table>

Figure 3 Characteristics of the purchasing portfolio approaches
The \textbf{first research question} of this study refers to measurement problems, associated with the use of a portfolio approach: how do experienced professionals handle issues with respect to the measurement of dimensions and factors? This question will be answered, by describing the solutions developed and used by different professionals. The case studies identified three kinds of different approaches to the \textit{measurement issues}, connected to every purchasing portfolio analysis:
- DSM uses a consensus method,
- Akzo Nobel uses a one-by-one method,
- Te Strake uses a weighted factor score method.

The \textbf{consensus method} is predominantly based on a process of reasoning and discussing. The reaching of consensus is very important when choices are made with respect to the measurement of variables and factors, and ultimately for the positioning of items/product in the matrix. Advocates of this approach regard this as a very attractive feature of the portfolio analysis that is being used. Profound, open discussions about purchasing issues are considered as the most critical part of strategy development. Differences of opinions become very clear, allowing for a true strategic discussion. As a rule, points of view always have to be substantiated by facts. DSM uses this consensus method for years. Users are content with the \textit{flexibility} and possibilities of this consensus based approach.

Quite a different approach is the 'one-by-one' method that is used by Akzo Nobel. Just one key variable is selected per dimension. The financial value of items comes very close to the profit impact, the supply risk is usually operationalized by the number of (alternative) suppliers. As a result, positions in the matrix can be determined in a rather \textit{quick} and \textit{unambiguous} way. The one-by-one method is quite popular with purchasing professionals. The user does not need an advanced information system that includes quantitative or quantifiable data on a set of factors. A related benefit is that it allows for the comparison of different matrices that use the same variables.

On the other hand, users might feel restricted by the fact that they can not account for other factors that are important to the profit impact and especially the supply risk. Critical information might be neglected. Users should decide if the advantages of the one-by-one method exceed the disadvantages and limitations.

Te Strake uses a 'weighted factor score' method that includes a number of factors for each dimension. The method allows for a completely customized approach, deciding on factors, weights, and (usually) scores. Total scores per dimension are calculated in an additive model. through the multiplication of scores and weights, the sub scores are added to a single value. Implicitly, it is assumed that a lower score on a factor can be compensated by a higher score on another factor. The user of an additive model should ask himself if this is an acceptable line of reasoning. For instance, if there is just a single supplier delivering a certain product, then there is a maximal dependence on this supplier. Would it be possible that the resulting supply risk is compensated by other factors? Other disadvantages of the weighted method are:
- depending on the level of aggregation, it could be necessary to dispose of a large number of quantitative data that are rarely available in a purchasing information system,
- working with constituent factors, the overall picture can be hard to see, especially when dealing with large numbers of factors and weights.

On the other hand, the portfolio analysis can be fully customized, according to one's own views and requirements. All relevant factors can be included in the analysis.

Figure 3 provides an overview of the main differences between these three measurement methods. The decision on the measurement method can be based on the following selection criteria, that are derived from the specific advantages and disadvantage of the methods:
- the required objectiveness (high?, then 1-to-1)
- number of key factors (high?, then consensus or weighted factors)
- available time (‘no’ time?, then consensus or 1-to-1)
Strategic directions
The investigated cases made clear that the development of portfolio based strategies requires additional information. In all case studies it was found that additional information has been included in the portfolio analysis:
- the overall business strategy,
- the situations on supply markets, and
- the performance capacities and intentions of (individual) suppliers.

The business strategy of Te Strake focuses on technological innovations, as first tier supplier. Purchasing and supply have to connect with these basic principles, partnering key suppliers for early involvement in product development and product improvement. The basic points of departure of Te Strake are for instance rather different in comparison to DSM, a firm that operates from an operational excellence perspective, always looking for cost reductions and efficiency. The marketing requirements on end markets are clearly translated by Akzo Nobel in guidelines for the development of purchasing strategies. Commodity markets are distinguished from niche markets, which affects the selection of purchasing objectives and strategies to a considerable extent. Obviously, the purchasing professional will take into account the situations on specific supply markets and the assessments of individual suppliers. Items with high supply risks will be treated differently, according to the reliability, the performance, the competences, and the intentions of the connected suppliers.

The second research question refers to the different kind of purchasing strategies, based on a portfolio approach. Figure 4 shows the handling of strategic issues that are observed in the three cases. Portfolio based strategies should be connected to portfolio based objectives. The research revealed three levels of portfolio based objectives: the item-level, the category-level, and the matrix-level. In all of the three investigated cases, objectives were formulated at the item-level. On a category-level, objectives can be formulated for the four quadrants. For instance, DSM wants to empty the non-critical category as much as possible. Akzo Nobel employs very detailed, measurable objectives for the categories in the matrix. For example:
- reduce the number of items in the bottleneck quadrant by 5%, and
- increase the value of all leverage items to 50% by reducing the number and value of strategic and non-critical items.

Finally, it is possible to make statements on level of the whole matrix. In general terms, DSM prefers a matrix that is filled in a particular way:
- the bottleneck and non-critical categories should be as empty as possible, by means of standardization and pooling of requirements;
- the leverage category should be filled with 'partners of convenience', meeting key success factors of business units (always price and logistics);
- the strategic category should be filled with 'strategic partners', with the proper capabilities for co-design;
- in addition, even for strategic items DSM rejects positions at the right side of the quadrant, implying high levels of dependence and high levels of supply risk.

<table>
<thead>
<tr>
<th>DSM</th>
<th>Akzo Nobel BU - DC</th>
<th>Te Strake BU - E&amp;P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection between purchasing strategies</td>
<td>meet the key success factors of the BU's</td>
<td>match the situations in end markets</td>
</tr>
</tbody>
</table>

- needed customisation and flexibility (high?, then weighted factors).
<table>
<thead>
<tr>
<th>and business strategy</th>
<th>Portfolio based objectives</th>
<th>Strategies for bottleneck items</th>
<th>Strategies for non-critical items</th>
<th>Strategies for leverage items</th>
<th>Strategies for strategic items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. item-level</td>
<td>- pooling</td>
<td>- purchase card</td>
<td>- partners of convenience</td>
<td>- strategic partners</td>
</tr>
<tr>
<td></td>
<td>2. category-level</td>
<td>- decomplex and pooling</td>
<td>- pooling</td>
<td>- strategic partners</td>
<td>- decomplex and supplier development</td>
</tr>
<tr>
<td></td>
<td>3. matrix-level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(commodity vs. niche)</td>
<td>1. item-level</td>
<td>- forced single sourcing</td>
<td>- minimize order cost</td>
<td>- maximize added value</td>
<td>- accept suppliers' terms</td>
</tr>
<tr>
<td></td>
<td>2. category-level</td>
<td>(consignment, stocks)</td>
<td>- cross sourcing</td>
<td>- partnership (rare)</td>
<td>- partnership (rare)</td>
</tr>
<tr>
<td></td>
<td>3. matrix-level</td>
<td></td>
<td></td>
<td></td>
<td>- supplier development</td>
</tr>
<tr>
<td>customers</td>
<td>1. item-level</td>
<td>- supplier development</td>
<td>- separate ordering</td>
<td>- competitive bidding</td>
<td>- supplier management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- accept the terms of the locked-in-relationship</td>
</tr>
</tbody>
</table>

**Figure 4** The handling of strategic issues in the investigated cases

Akzo Nobel uses an even more sophisticated system of developing portfolio based objectives. For each area business unit the whole matrix is assessed, mainly based on the situations on their end markets. For instance, niche markets require high quality ingredients. A logical consequence is that the strategic quadrant will be filled with a relatively large number of key suppliers, with whom close relationships are maintained.

Figure 4 has summarized the most common strategies that were found in the case studies. This brings us to the question of how to find common ground between those different kind of strategies. At first sight they are incomparable. If we take a closer look and take up a higher level of abstraction, there are some striking similarities, in spite of the differences in the level of the investigated cases. The strategies and their conditions usually refer to (im)possibilities to reduce the dependence on a supplier and to (im)possibilities to increase buying power. We will come back to these issues.

The *third research question* explicitly refers to possibilities of moving in the matrix. Figure 4 provides an overview of portfolio based strategies, be it not a very clear overview. The case studies revealed that, additionally to Kraljic's theory, experienced practitioners were very aware of the different choices within each quadrant. Based on the interviews and the overview of selected
strategies, we concluded that for each category two different kinds of strategic directions can be distinguished:
1. actions to pursue other positions in the matrix, and
2. actions to hold the same positions in the matrix.
Holding on to a position implicitly means that current circumstances are taken for granted. We have observed that a position in the matrix can be accepted for different reasons, sometimes positive, sometimes referring to a negative choice. A position might be preferred because a firm is convinced that it is the best position for a certain item. In other cases a position might be accepted, because there are no realistic possibilities for change. The first type of strategies are of a more active, radical nature. When possible and desirable, other positions in the matrix are identified and pursued. This **dichotomy** between 'holding position' and 'moving to another position' has laid the foundation of the conceptual model of strategic directions in the Kraljic- matrix, as is visualized in figure 5. We will illustrate and amplify on the dichotomy for each product category.

**HERE:FIGURE 5**  
Conceptual model of strategic directions for all categories

If we take a look at the bottleneck and the strategic quadrant at the right side of the matrix, those movements are pursued that reduce the supply risk. In terms of the matrix, this means moving to the left. Non-critical items are moved upwards, leverage positions could be exchanged for strategic positions. We will elaborate the strategic directions that can be identified in the conceptual model.

**Bottleneck items**
(1) holding the position: *“keep safety stocks”*
   If no other options are possible, then the category remains the same. Common responses to unfavourable bottleneck-positions are keeping (extra) stocks, consignment systems and long term contracting.
(2) moving to another position: *“decomplex the product and find a new supplier”*
   Bottleneck items are by definition of low value and of high risk. It should be interesting enough, especially from an economic point of view, to find and search other alternatives. The most common alternatives refer to the product (broadening specifications/decomplex) or to the supplier (searching, managing and developing suppliers). These measures must lead to a lower level of supply risk and a lower level of the dependence on a supplier.

**Non-critical items**
(3) holding the position: *“individual ordering”*
   Whenever it is not possible to pool the purchasing requirements, the only remaining option is some type of individual ordering, for instance by means of a purchase card.
(4) moving to another position: *“pooling of requirements”*
   Preferably, non-critical items are put together in large quantities, increasing the buying power of the firm. If necessary, a process of standardisation is pursued. The strategic direction is toward the leverage quadrant.

**Leverage items**
(5) holding the position: *“maintain a partnership of convenience”*
   The generally preferred leverage position can be used for a rather aggressive supplier management. Competitive bidding and short term contracts are feasible options to exploit the leverage position. The dominant power position allows for a command strategy. In one
of the investigated cases leverage suppliers are euphemistically referred to as 'partners of convenience'.

(6) moving to another position: “develop a strategic partnership”

Exceptionally, the leverage position is abandoned in search for a more strategic partnership with a supplier. A cooperative strategy is only pursued, if the supplier involved is willing and capable of contributing to the competitive advantage of the firm. Such a new role is only feasible for technological advanced suppliers. The case studies revealed that the move from 'leverage' to 'strategic' should be considered as an exception to the rule.

Strategic items

(7a) holding the position: “maintain a strategic partnership”

Long-term relationships with key suppliers should always contribute to the competitive advantage of the firm, as we have underlined. These relationships are rare, including mutual trust, mutual commitment, and an open exchange of information. A successful partnership can be very valuable for both parties.

(7b) holding the position: “accept a locked-in partnership”

On the other hand, a position in the strategic quadrant may be due to unchosen, unfavourable conditions. The resulting 'locked-in' situation is commonly caused by a patent position, a monopoly position, high switching costs (asset specificity) or by the directions of a major customer. These circumstances produce an involuntary stay at the strategic quadrant.

(8) moving to another position: “terminate a partnership, find a new supplier”

A partnership may develop in an undesirable way. A supplier's performance may become unacceptable and incorrigible. This may start a painful process of reducing the dependence on the supplier involved. The firm will have to search, develop and contract another supplier.

With these generic descriptions of purchasing strategies, based on portfolio analysis, we have answered the third research question: what kind of movements are considered in the Kraljic matrix? We have filtered and analysed the responses in the interviews and summarized the findings. This process has resulted in an overview of possibilities, visualized and represented in figure 5. We feel that a first and elegant solution is found to the unanswered question of goals (future positions) and means (strategies), allowing for further study.

Conclusions

The case studies began with the contention that we need to gain a better understanding of how purchasing portfolio models are being used in practice and how they could be used by purchasing professionals in order to pursue effective differentiated purchasing strategies. Publications have identified a number of problems and unanswered questions, but they do not reveal how purchasing professionals actually handle those issues. This study has clarified these issues, describing advanced practices with respect to purchasing portfolio models. The research questions referred to measurement issues and portfolio based strategies.

The investigated cases provided useful insights in the possibilities and actual use of purchasing portfolio analysis. In the case studies we found a variety of approaches and differences of scope and scale, which has to be viewed in the specific business context. The cases studies revealed three distinctive methods of measuring variables and weighting factors:

1. consensus method
2. one-by-one method
3. weighted factor score method.

Each method satisfies the needs and expectations of the different users. The reason for this can be found in the additional steps that have to be taken in the portfolio analysis. Before strategic actions
are determined, it is imperative to complete a further process of interpreting and reflecting on the results. The filling of a matrix should be considered as the starting point of portfolio analysis, definitely not the finishing point. After the matrix is filled, it is imperative that users reflect on the results. If necessary, manual adjustments should be made. In-depth discussions on the positions in the matrix are considered as the most important phase of the analysis. Strategic discussions provide deeper insights and may lead more easily to consensus-based decisions. It is felt by the users that the Kraljic framework facilitates these important discussions to a large extent.

Some argue that the complexity of business decisions does not allow for simple recommendations. How could one deduce strategies from a portfolio analysis that is based on just two basic dimensions (e.g. Dubois and Pedersen, 2002, p. 40)? Well, the answer is simple: one cannot! In addition to the various factors that constitute the two dimensions of any matrix, we have found that experienced portfolio users always included additional information on:
- the overall business strategy (related situations on end markets),
- the specific situations on supply markets and
- the capacities and the intentions and competences of individual suppliers.

Unquestionably, the supplier’s side should be included in any strategic thinking on the field of purchasing and supply management. Practitioners have found a reply to the critique of the Kraljic approach which said that the supplier’s side is a disregarded element in Kraljic’s model.

The handling of strategic issues was explored as well. Based on the case studies, a conceptual model of strategic directions has been presented, providing insights and overview of the main strategic choices for the categories in the matrix. In addition to Kraljic’s strategic recommendations, different kind of strategic responses were identified and described for each item category. A dichotomy was identified between:
- strategies to hold a position (1) and
- strategies to move to another position (2).

At the right side of the matrix (in the bottleneck and the strategic areas) movements are pursued in order to reduce a high level of supply risk. In terms of the matrix, this means moving to the left. Non-critical items are preferably moved upwards, exceptionally leverage positions are exchanged for strategic positions. These are the most common movements within the matrix.

From the buyer’s perspective a new classification of partnerships was found, related to the portfolio matrix:
- partners of convenience, located in the leverage quadrant, where relationships are dominated by the buyer;
- strategic partnerships, located somewhere in the middle of the leverage and strategic quadrant, further characterized as balanced relationships based on a high level of mutual dependence;
- locked in ‘partnerships’, located at the right side of the strategic quadrant, where relationships are dominated by suppliers, who are indispensable for the buyer.

We have described and discussed the critique of Kraljic’s model. Publications have stated questions and problems with respect to:
- the measurement of variables,
- the disregard for the supplier’s side,
- the selection of strategies based on two dimensions,
- the limited and deterministic character of the strategic recommendations, and
- the absence of explicit movements within the matrix.

However, our research findings indicate that experienced practitioners have found their solutions to these problems. We must conclude that the portfolio approach is very helpful in positioning commodities in the different segments and in developing differentiated purchasing strategies.
However, we should bear in mind that there is no simple, standardised blueprint for the application of the portfolio analysis. It requires critical thinking and sophistication of purchasing management. Although the findings are based on a limited number of case studies, the study has contributed to a better assessment of the critique on Kraljic’s model and to a better understanding of the possibilities of a purchasing portfolio approach in practice.
Figure 5  Conceptual model of strategic directions for all categories

x-axis = supply risk, y-axis = profit impact
References


