

Strategic Direction through Purchasing Portfolio Management: A Case Study

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Abstract

Contrary to the growing number of academic publications in literature on purchasing portfolio models in literature, little is known about their actual use. Kraljic's 1983-model seems to be the dominant approach in the profession. This model, however, does not provide in guidelines for strategic moving commodities and/or suppliers within the matrix. Based on an in depth case study, derived from a major Ditch chemical company, the use of a portfolio techniques has been explored and described. The results indicate that Kraljic's portfolio approach, when used properly, indeed allows for sufficient guidance for developing effective purchasing and supplier strategies. Our case study points out what supplier strategies are feasible and what conditions should be met in order to make them happen. Hence, our observations from practice open up a range of new perspectives to the current thinking and use of the purchasing portfolio approach.

Keywords: Strategic Direction, Purchasing Portfolio Management

1.0 INTRODUCTION

Obviously, not all buyer-supplier relationships are to be managed in the same way. Research findings indicate that successful supply chain management requires the effective and efficient management of a portfolio of relationships (Bensaou, 1999). Kraljic (1983) introduced the first, comprehensive portfolio approach for the use in purchasing and supply management. By categorizing products in a 2x2 matrix, sensible guidelines were derived for managing supplier relationships. The Kraljic portfolio approach is generally considered as an important breakthrough in the development of theory in the field of purchasing and supply management (Syson, 1992). In general, purchasing portfolio models aim at developing and implementing differentiated purchasing strategies. Recently, some new specific applications have been introduced, notably supplier involvement in product development (Wynstra, 1998), supplier selection (De Boer, 1998), supplier development (Handfield et al, 2000), web-based procurement of MRO-items (Croom, 2000), specification process (Nellore and Söderquist, 2000), engineering-purchasing-supplier interaction (Nellore and Taylor, 2000), facilitation of an internal process of change (Axelsson et al, 2000), and interorganizational competence development situations (Møller and Momme, 2000).

Other authors have used Kraljic's basic ideas for the development of similar models, for instance Elliott-Shircore and Steele (1985), Syson (1992), Van Weele (1994), Lilliecreutz and Ydreskog (1999), Bensaou (1999), Gelderman and Van Weele (2000), Gelderman (2000), and to a certain extent Olsen and Ellram (1997a). Still, Kraljic's fundamental ideas and concepts dominate the discipline. However, there are some problems and unanswered questions. The purpose of this article is to provide new perspectives on Kraljic's model, reporting on some important advancements in the use of a portfolio approach in purchasing and supply management. This article addresses a major problem area with respect to Kraljic's approach: the nature of the strategic recommendations. The results are based on a case study research, conducted at a large industrial company that is structured around a number of fairly autonomous business groups.

1.1 The Kraljic purchasing portfolio approach

Kraljic (1983) introduced the first comprehensive portfolio approach for the determination of a set of differentiated purchasing strategies. The general idea is to minimize supply risk and make the most of buying power (Kraljic, 1983: 112). This explains the choice of dimensions: accounting for risk on the one hand, and using buying power on the other hand. 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, in proportion to the strategic implications, see figure 1.

Figure 1 Commodity segments and purchasing strategied according to Kraljic (1983)

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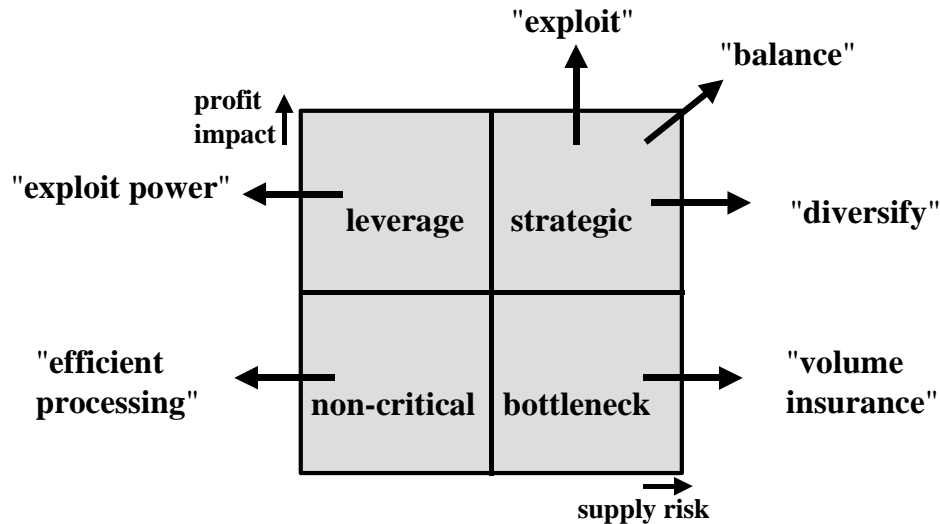


Figure 1 Categories and strategies in the Kraljic approach

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 by tough negotiating, targeted pricing and product substitution. Bottleneck items on the other hand cause a lot of problems and risks. Volume insurance, vendor control, security of inventories and backup plans are recommended. 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.

Purchasing portfolio analysis has subsequently become the dominant approach to what the profession regards as operational professionalism (Cox, 1997: 270). Kraljic (1983: 115) made a reasonable case for the usefulness of the portfolio approach by describing the experiences of some large industrial companies. Now, many years later the purchasing portfolio approach is being used by several other large companies, for instance Shell, Alcatel, Philips, Océ van der Grinten en Siemens (Van Weele, 1994). In a survey of Dutch companies Boodie (1997) found that almost 50% of the responding purchasing managers said that they used Kraljic for formulating purchasing strategies. For large companies, with more than 5000 employees, 85% used portfolio analysis.

2.0 Research Questions

In contrast with a growing use and adoption, there is a lack of empirical research, providing insights and evidence. Based on an extensive literature review, Olsen and Ellram (1997b: 228) concluded that normative research is needed on how to manage different types of buyer-supplier relationships. In general, little is known about the *actual use* of purchasing portfolio models. Current research, however, does not reveal how purchasing professionals handle the problem of positioning commodities and supplier into the portfolio, how they actually develop purchasing strategies, and what results are derived from its actual use. Through our in depth case study, which is to be followed by others, we try to overcome these shortcomings. Kraljic's strategic recommendations for the categories are usually summarized into simple concepts, like 'efficient processing', 'exploit power', 'strategic partnership' and 'volume insurance'. At first sight, these are quite logical, sound recommendations. However, if we take a closer look at the nature of these strategic recommendations, we must conclude that these strategies are rather generic by nature,

providing only rough indications for the most appropriate supplier strategies. They merely react and adapt to prevailing circumstances, taking the current power and dependence structure for granted. Purchasing professionals should always look for possibilities to move to other, strategically more attractive positions in the matrix. It is not clear if and how other positions in the matrix are to be pursued through the implementation of a recommended purchasing strategy (Gelderman, 2000).

The general strategic recommendations, as provided by Kraljic, should be elaborated and tailored in view of company specific circumstances and conditions. The Kraljic framework does not provide guidelines for moving commodities and/or suppliers around the different portfolio-segments. In line with the foregoing, the prime questions underlying our research were:

What kind of specific commodity and supplier strategies do purchasing professionals derive from Kraljic's portfolio approach?

How are commodities and suppliers, in terms of their positions, actually moved around the different portfolio-segments?

Under what conditions are the respective commodity and supplier strategies successful?

3.0 Research method

The case study method was chosen for a number of reasons. First, there is limited research on the actual use and possibilities of purchasing portfolio approaches. Publications are conceptual or anecdotal by nature. Second, case study research is preferable when the research questions focus mainly on 'how' and 'why' questions. We wanted to gain insights in the use and the possibilities of a portfolio approach, exploring and identifying the advanced practices of an experienced company. The questions in our research deal with exploratory issues, rather than frequencies or incidence. DSM, the actual case company (see Box 1), was invited to participate in the research, because of their extensive experience with portfolio approach in a large number of businesses.

The case study has been based upon a *key-informant method*. Hence a selected, limited number of executives and purchasing professionals was interviewed. The informants were chosen for their specialized knowledge of and experience with the use of portfolio models in real life purchasing. Of course, the director of Purchasing Services was used as the prime key-informant. The choice is justified by the fact that we wanted to interview an official with a clear overview of the entire purchasing operation. Other informants were chosen through a snowballing technique whereby our first informant nominated knowledgeable respondents, i.e. purchasing specialists and business unit managers. This, because we wanted to include and account for possible differences in experience and views, by confronting the decentral perspectives of the respective business unit managers to the likely more central perspective of the director Purchasing Services.

DSM: the case company

DSM is a large, integrated international group of companies that is active worldwide in the field of chemicals, biotechnical products and plastics. The company is divided into 16 business groups that are subsequently subdivided into business units. DSM is 'a sizeable customer' with a 6 billion US dollar purchase spend which corresponds with 70% of total turnover. An important objective is the achievement of purchasing *synergy* and *leverage*, across business groups/units.

The company's prime products are intermediates and ingredients for the pharmaceutical and food industries, performance materials for the automotive and electronic industries and polymers as well as industrial chemicals for a wide range of manufacturing industries. DSM operates in a number of global markets where *price and cost* are always key success factors. Pressure on prices and margins is omnipresent, which explains why chemical companies are always looking for opportunities to reduce cost, improve productivity and improve the value proposition to customers.

Central to DSM's purchasing practice is its strong price/performance orientation in its dealings with suppliers. Next, availability and a continuous, seamless supply of materials and services are important aspects in the relationship with its suppliers.

3.3 The use of the portfolio approach

For DSM the purchasing portfolio analysis is an important tool in developing purchasing strategies. It is aimed at starting and guiding strategic discussions with business group management. The philosophy of DSM is that the Kraljic matrix should serve as a framework for an in-depth discussion with representatives from the business groups involved. Preferably cross functional teams should decide and substantiate their points of view with respect to the

position of purchases in the matrix. Differences between actual and recommended practices are discussed too. Views and plans are 'challenged' as a internal warranty of quality. There are no calculating rules to decide whether the importance of a purchase is 'high' or 'low'. The same goes for the other dimension. The drawback of this method is that the validation of measures is limited. However, there is no belief in a quantitative approach for measuring values of the dimensions: "It is better to be roughly right, than exactly wrong." This does not imply that the assessment of positions in the matrix is a complete subjective matter. Points of view have to be substantiated by facts and figures with respect to underlying factors and variables. Management is forced into a critical evaluation of supply markets, suppliers and purchase practices. Portfolio analysis is an important tool, especially for discussing, visualizing and illustrating the possibilities of professional purchasing and supply management. These views are in line with Steele and Court (1996) who considered the lack of objective measurement as a beneficial characteristic. To conclude, an important benefit of Kraljic's portfolio model is that the actual using and customizing lead to a better understanding of the strategic issues at hand.

3.3 Connecting conditions, goals and strategies

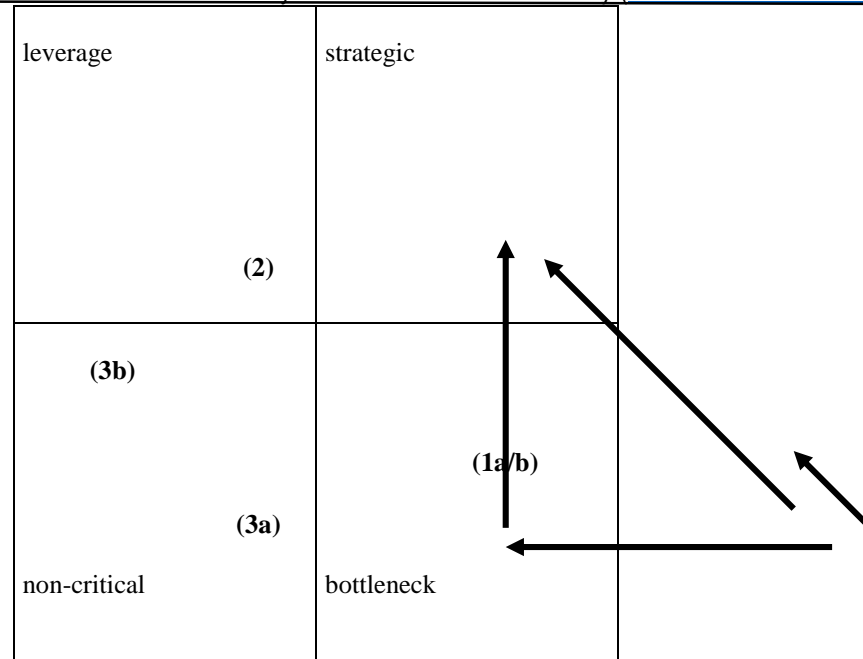
A main principle of DSM is that the non-critical and the bottleneck cells should be as empty as possible. Obviously leverage and strategic items are preferred to non-critical and bottleneck items. DSM is always looking for possibilities to move to other, better positions in the matrix, within the bounds of possibility. The in-depth interviews identified the most common strategic switches, from one category to another. In a general sense, the pursued movements in the matrix usually show a *clockwise* pattern: from bottleneck to non-critical, from non-critical to leverage, from leverage to strategic. The research revealed conditions leading to the choice of various purchasing strategies and new positions in the matrix.

3.4 Bottleneck items

For the 'bottleneck items' DMS aims at increasing buying power and/or developing new opportunities, reducing the dependence on a supplier to an acceptable level, see figure 2. A important issue concerns the question whether *standardization* of requirements is possible or not. If standardization is not possible, then in case of processed materials a *capacity deal* (1a) is explored, concentrating purchases to an approved supplier. A better deal is made by concentrating regular supply to one supplier, involving no core competence. A 'better' bottleneck-position is pursued by reducing supply risk on the one hand and increasing profit impact on the other hand. Another possibility is a *price measure* (1b), facing extreme price risks as a consequence of an unfavorable market structure. As noticed earlier, DSM's continuity is endangered by strong fluctuations in purchasing and selling prices.

Contractual measures can be taken as a defence against dangerous price peaks, for instance by hedging or by implementing special price clauses. By lowering the dangerous price risks, a 'better' bottleneck-position is pursued. More rigorous is the switch from 'bottleneck' to 'leverage'. Especially MRO-items are eligible for such a drastic move. Business groups/units have to agree on standardization and *pooling* (2) of their purchasing requirements. Some purchased products are bottleneck items, due to a degree of *over specification*. In a technical environment there is a natural drive for over specification, technical specialists tend to settle only for 'the best'. Obviously this results in financial non attractive deals. A related problem is the incompatibility of equipment and MRO-items, due to the fact that business units/groups work with their own specifications. This prevents the use of buying leverage by standardization and pooling of requirements.

In these cases DSM sets up a team of experts to investigate possibilities of standardization, following the principle of 'fit-for-use'. The idea is to make the end-product less complex: *decomplex* (3a). What specifications are really necessary to fit the needs of the business groups/units involved? "Delete the waste of diversity", serves as the leading device. The team chooses the best fitting standards, making the specifications more generic. This allows for *pooling* (3b) of requirements across units/groups. There are more purchasing and supply possibilities in case of a 'decomplexed' product and, obviously, by pooling purchases the buying power is enhanced. To conclude, in a two-step process, buying leverage is established, provoking a switch from 'bottleneck' to 'leverage' in the portfolio matrix.



current position	condition 1 standardization? overspecification? price risks?	condition 2: products	condition 3: strategy	main	purchasing (goals)	new position
bottleneck	not possible	no	not processed	materials	capacity	'better bottleneck'
bottleneck materials	not possible	no	extreme bottleneck'	processed	price	'better
bottleneck	possible	no	not exceptional	MRO-items	pooling (2)	leverage
bottleneck	possible	yes	not exceptional	equipment, MRO-items	decomplex (3a) and pooling (3b)	non-critical, leverage

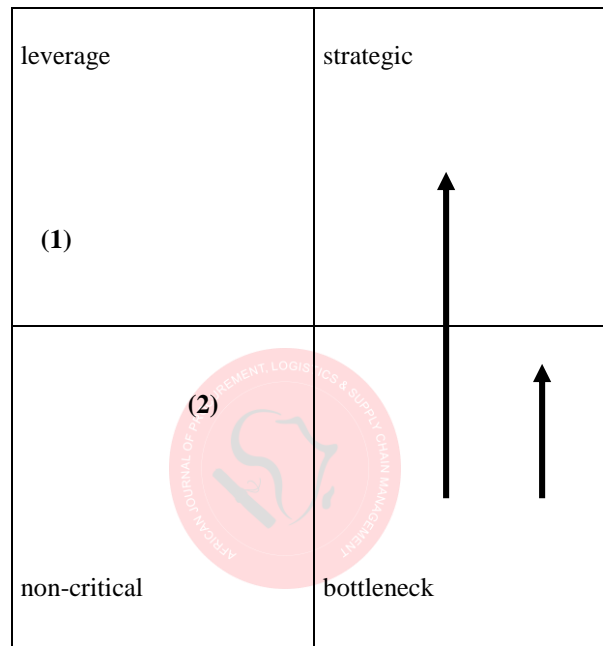
Figure 2 Conditions, purchasing strategies and goals for bottleneck items

3.5 Non-critical items

The main products in the non-critical category are office supplies and services. A key question with respect to these non-production orientated purchases is whether standardization and pooling are possible options or not. The product category 'travell' is an example for which pooling is a logical option. A framework agreement (master contract) with a preferred supplier is a contractual possibility. These arrangements are nowadays replaced by *e-procurement* and electronic catalogue and ordering systems (1). Almost the entire purchasing procedure can be completed by some

sort of automated ordering and orderhandling process. E-procurement is only feasible when it is possible to standardize and pool the purchasing requirements, preferably those of several (if not all) business groups/business units. For other commodities pooling is not an option, for example when the product is in some respect unique to a specific business unit/group or when business units/groups make a reasonable case for not wanting to pool their purchases. These non-critical products, then, are purchased on a transactional basis (market exchange, non-relational elements). However, in those cases, the *Purchase Card* (2) is considered a useful tool for these individual, non-strategic commodities.

At DSM, from time to time, commodities and supplier change position from the 'non-critical' to the 'bottleneck' segment. This happens when standard items for some reason are substituted by customer specific or supplier specific alternatives. Hence, a business unit/group is locked into a specific supplier-relationship, resulting in higher cost and a higher level of dependence. How unfortunate these movements in the portfolio can be, they sometimes need to be accepted due to DSM's decentralised corporate structure and the resulting autonomy of the business units, these countermovements are not always avoidable.



current position standardization and pooling?	condition 1: products	main strategy	purchasing (goals)	new position
non-critical services	possible	office supplies,	e-procurement (1)	leverage
non-critical services	not possible	office suppliers, non-critical	purchasing card (2)	'better'

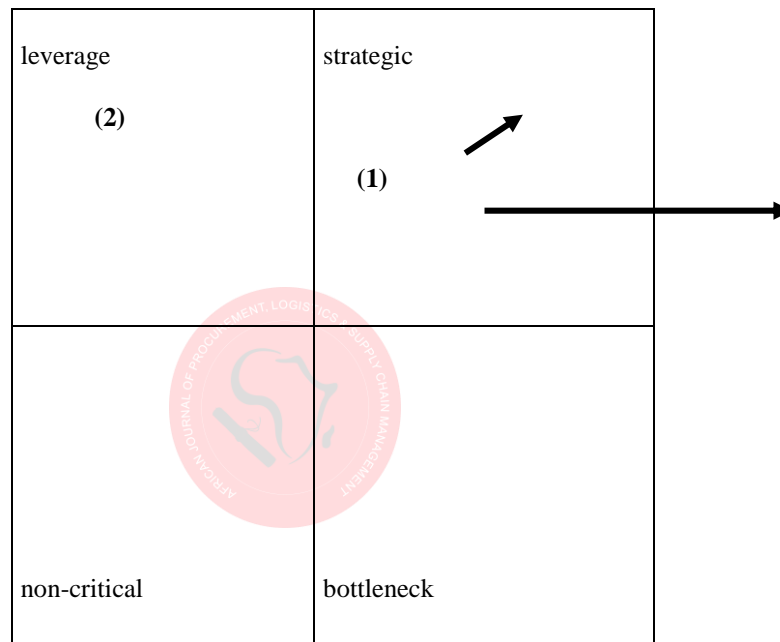
Figure 3 Conditions, purchasing strategies and goals for non-critical items

3.6 Leverage items

With regard to leverage items DSM distinguishes between 'strategic partnerships' and 'partnerships of convenience' (see figure 4). Detailed assessment of the supplier's profile indicates what kind of relationship is possible and desirable. The assessment implies the identification of key buying criteria and the performance of the supplier on

these criteria. Switching from the leverage to the strategic segment in the matrix might be sensible, when the supplier has the proper capabilities for *co-design*, in view of the main performance criteria. The move from 'leverage' to 'strategic' is feasible when only a limited number of suppliers appear to have the required capabilities and qualifications. Switching from the leverage to the strategic category might imply that DSM needs to spend time on supplier development to assure that suppliers are able to meet DSM's specific requirements. However, before investing in such a relationship, DSM wants to verify whether sufficient trust in the supplier is present at different levels of the organisation is present. Only then, a *strategic partnerships* (1) is considered. When a supplier does not qualify as a strategic partner, DSM will focus on efficiency and cost reductions. Leverage is sought in efficiency and supply chain optimization, not in design optimization. A *partnership of convenience* (2) at DSM is not considered as a 'strategic partnership', but as an tactical solution to operational problems (quality, logistics, efficiency).

Partnership relationships with suppliers can be technology driven (joint venture, co-development, concurrent engineering) or driven by logistics (JIT management). Only the latter DSM qualifies as a partnership of convenience, because in this type of relationships the advantages resulting from design optimization are not considered Hence, partnerships of convenience reside in the leverage segment.

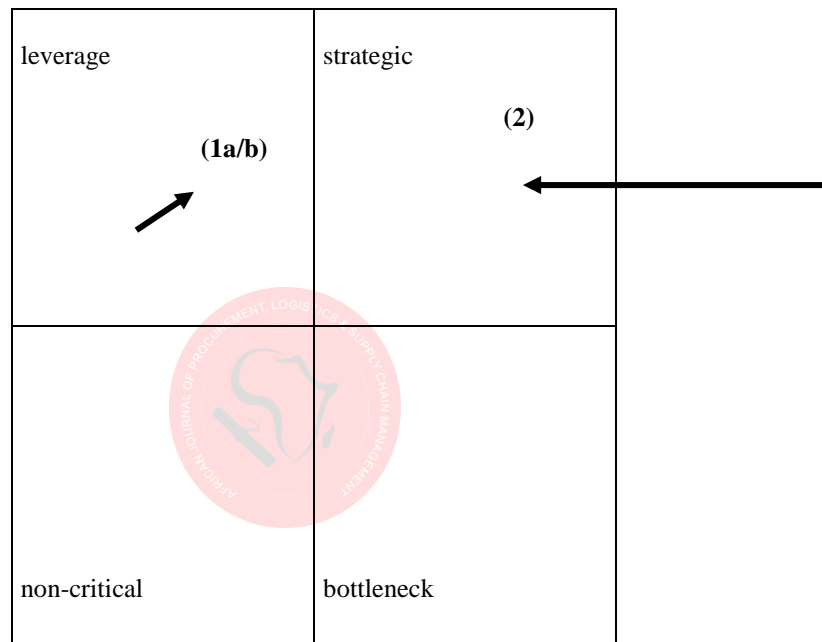


current position	condition 1:	condition 2:	purchasing strategy	new (goals)
	capabilities for co-design?	price performance?		
leverage yes	satisfactory		strategic partnership (1)	strategic
leverage no/n.a.	satisfactory or not satisfactory		partnership of convenience (2)	leverage

Figure 4 Conditions, purchasing strategies and goals for leverage items

3.7 Strategic items

Successful strategic partnerships are rare. In the course of time partnerships may become unsatisfactory. A position in the 'strategic' segment means a high mutual dependence between the parties involved. In some cases the firm is locked in a partnership, from sheer necessity. For instance, because of an oligopolic or monopolistic market situation. The development of new suppliers would solve this locked-in-situation. This is not possible if the situation is caused by patents. Another non-desirable possibility is that the supplier does not really want to be involved in co-development. There is always a chance that a partnership evolves into an indolent, relaxed relationship. Strategic partners should be world class suppliers, they are alert and high performing, not only in a technical but also in an economic sense. This means that strategic partners should meet external benchmarks with a more than satisfactory price performance. In case of not-optimal 'partnerships' with underachieving partners, a strategy of *decomplex and supplier development* (1) might be pursued. By making the product less complex, alternative solutions are within reach. If necessary, new suppliers are developed. Essentially DSM uses the natural drive to make oneself less dependent on the non-dependable supplier.



current position	condition 1: price performance? in co-design?	condition 2: strategy performance	purchasing (goals)	new position
strategic not	not satisfactory	satisfactory	decomplex and supplier development (1a)	leverage
strategic not	n.a. satisfactory		supplier development (1b)	leverage
strategic satisfactory	satisfactory		strategic partnership (2)	strategic

Figure 5 Conditions, purchasing strategies and goals for strategic items

5.0 CONCLUSIONS

This research departed from the contention that, in contrast with an increased adoption of purchasing portfolio approaches by academics, little is known about their actual use. The most popular and widespread approach, i.e. Kraljic's purchasing portfolio, merely provides general guidelines for the development of purchasing and supplier strategies. The main objective of our research was to identify and describe the experiences of a leading edge company, which should have considerable experience with working with this approach. Our findings suggest that the portfolio-approach indeed is very helpful in positioning commodities and suppliers in the different segments. However, its value predominantly seems to reside in the fact that it helps purchasing practitioners to move commodities and suppliers around specific segments in the portfolio in such a way that the dependence on specific suppliers is reduced.

Kraljic's purchasing portfolio seems to be an effective tool for discussing, visualizing and illustrating the possibilities of differentiated purchasing and supplier strategies. Next, it seems a powerful tool for coordinating purchasing and supplier strategies among various, fairly autonomous business units. Ofcourse, we are aware of the limitations of this study. First, the findings are based on a single case study. Generalization of findings is obviously not possible. Second, the study is conducted in a large industrial company that operates on very competitive, global markets. Additional research in different types of companies could reveal other and similar advanced purchasing portfolio practices.

The comparison with other companies could identify differences, to be explained by company specific-factors, such as company size, organizational structure, technology, customers, network position, and organisational culture. Third, the results may be biased because the information was collected from a limited number of key respondents. To conclude however, we feel that the study, be it to a limited extent, has contributed to a better understanding of the possibilities and an advanced use of a portfolio approach in purchasing and supply management.

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