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Why partners do not fit into purchasing portfolio models

by

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Abstract

Purchasing portfolio models have received great attention during the last two decades. The simplicity of application and the focus on power-dependence balancing has been appreciated by practitioners and academics alike. In this paper we argue that the starting point in 'given' products in addition to a dyadic perspective on purchasing management may be counteractive when purchasing efficiency is concerned. First, the object of exchange is not 'given' when firms interact, but may be subject to continuous development. Second, the dyadic perspective may obscure potentials for enhancing productivity and innovativity since both parties have other relationships that impacts on the collaboration between them.

Introduction

In recent decades, purchasing costs have risen. Currently, purchasing costs constitute the majority of the total cost of goods sold in both the private and public sectors (Gadde and Håkansson, 1998). In many firms, the value of purchased materials, components, and systems accounts for 50-80 percent of the total cost of goods sold (Cammish and Keough, 1991, p. 23; van Weele, 2000, p. 17-18). Thus, the purchasing function has a substantial impact on the total cost of a firm and thereby on the potential profit. This change has been accompanied by increasing attention to purchasing, as a field of strategic interest, both from managers and researchers.

Suppliers have also become increasingly important as they account for a large part of the value creation related to the buying firm's products and services (as an effect of increasing specialisation). Thus, managing the firm's supplier base is becoming an essential strategic purchasing issue, and consequently the need for differentiated approaches to purchasing behaviour increases. The variety in purchasing needs, and thus the need to purchase in different ways, is increasing which confront firms with new challenges.

In 1983 Harvard Business Review published an article by Peter Kraljic entitled *Purchasing must become supply management*. In essence, the article focused on purchasing as an important managerial area with a huge impact on profit. The article soon received a great deal of attention both among managers and academics, and is currently both applied in practise and used as reference by researchers in industrial purchasing. The reasons for this attention may be several. The article recognised purchasing as an important management issue, and thereby an area which was regarded as in need of useful models. Furthermore, the usefulness of the purchasing portfolio model presented by Kraljic (1983) was proven in that it clearly distinguished between different purchasing situations and gave logical recommendations as to how to act. In the later years, a number of academics, referring to Kraljic's article, have further developed his model of differentiated purchasing behaviour in relation to: (1) single materials or components, or (2) supply or purchasing situations (see e.g. van Stekelenborg and Kornelius, 1994; Olsen and Ellram, 1997). Following these elaborations of Kraljic's model, another line of development can be observed. This second wave focuses on classifying the content of buyer-supplier relationships as opposed to the initial focus set by Kraljic (see e.g. Bensaou, 1999; Gelderman and van Weele, 2000).

In parallel to these developments, the interest in, and empirical studies of, relationships between buyers and suppliers in industrial markets has grown enormously during the years

since Kraljic's article was published. These studies show that industrial markets can be characterised by the existence of long-term business relationships, and that these relationships are both complex and varying with regard to content and dynamic aspects. With this as a starting point, several concepts and frameworks have been developed which have contributed significantly to our understanding of: (1) the interactive nature of customer-supplier relationships, seen from a purchasing view (see e.g. Lamming, 1993; Lamming, 1996; Gadde and Håkansson, 1998; Araujo et al., 1999; Gadde and Snehota, 2000), and (2) different characteristics of business relationships and networks (see e.g. Håkansson, 1982; Ring and van de Ven, 1992; Kanter, 1994; Håkansson and Snehota, 1995; Möller and Wilson, 1995). Furthermore, we can observe a development from studies of dyadic buyer-supplier relationships to studies focusing on single business relationships in the context of the other relationships the firms are involved in (Blankenburg and Johanson, 1992; Anderson et al., 1994; Holmen and Pedersen, 2000). In addition to the characterisation of individual relationships, empirical studies show that single relationships also are affected by developments in other relationships. Thus, any business relationship exists both in itself and is at the same time embedded in a network context, and thus connected to other relationships.

The aim of this paper is to scrutinise the purchasing portfolio models in terms of their basic assumptions and implications. By contrasting these models with the industrial network approach some issues concerned with the principles of analysing purchasing situations are highlighted. Thus, the paper focuses on how relationships between buyers and suppliers are dealt with in these two different settings and discusses the implications of the different assumptions about the context in which purchasing takes place.

The next section presents an overview of the different purchasing portfolio models, on the basis of the model developed by Kraljic (1983). The classification dimensions used in the models are analysed and the portfolio approach in terms of suggested steps is discussed together with its implications. Furthermore, we introduce the industrial network approach and discuss the consequences of this approach in terms of interdependencies between relationships and products as 'network entities'. The paper ends with some conclusions on differences between the purchasing portfolio approach and the industrial network approach.

Purchasing portfolio models

The portfolio model concept was originally developed by Markowitz (1952), who used it as an instrument for managing equity investments. His point of departure was that rational investors will (or should) select portfolios which maximise the individual investor's utilities by maximising the expected return for a given level of risk or minimising the risk for a given level of expected return. These ideas have travelled far, as they are now applied for classifying different materials in purchasing or different buyer-supplier relationships. This is also pointed out by Turnbull (1990, p. 8) claiming *"Although the portfolio concept put forth by Markowitz (1952) was an instrument for the management of equity investments, the concept has been recognised to have viable applicability in other fields."*

As mentioned in the introduction, Kraljic (1983) was the first to bring portfolio models into the purchasing area: *"The Kraljic portfolio approach is generally considered as an important breakthrough in the development of theory in the field of purchasing and supply*

management." (Gelderman and van Weele 2000, p. 291). Kraljic's model is based on two dimensions for classifying a firm's purchased materials or components (see figure 1):

(1) "the strategic importance of purchasing in terms of the value added by product line, the percentage of raw materials in total costs and their impact on profitability"

(2) *"the complexity of the supply market gauged by supply scarcity, pace of technology and/or materials substitution, entry barriers, logistics cost or complexity, and monopoly or oligopoly conditions"* (Kraljic, 1983, p. 110).

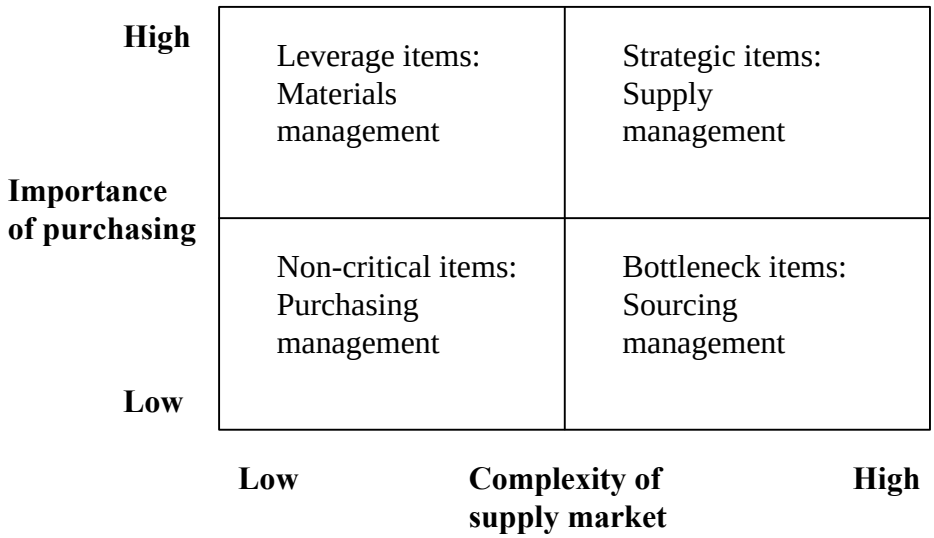

Figure 1. The Kraljic purchasing portfolio model
(Modified from Kraljic, 1983, p. 111).

Thus, Kraljic's model uses one internal and one external dimension, and the model aims at matching external resources provided by suppliers with the internal needs of the buying firm. The issue at hand is thus to optimise the way in which suppliers are managed, or in the words of Nellore and Söderquist (2000, p. 264): *"... the objective of the portfolio models - to optimize the use of capabilities of different suppliers - must be kept in mind."* The optimisation is based on the trade-off between the costs of obtaining the products on the one hand and the value achieved from obtaining them on the other. Turnbull (1990, p.7) also emphasises optimisation based on the limited resources of the buying firm: *"... the portfolio concept is a useful management tool for enforcing a discipline in the allocation of the company's limited resources to an optimal combination of business operations which will maximise long-term returns at the given levels of risk."*

A brief review of some of the latest purchasing portfolio models, see table 1, shows that two additional models using one internal and one external dimension have been developed by van Stekelenborg and Kornelius (1994) and Olsen and Ellram (1997). Stekelenborg and Kornelius (1994, p. 49) use *"the need for internal market demand control and the need for external supply market control"* to discern between four types of supply situations, whereas Olsen and Ellram (1997, p. 105) use *"difficulty of managing the purchasing situation and strategic importance of the purchase*" as their external and internal classification dimension respectively.

In the models of Bensaou (1999) and Gelderman and van Weele (2000), the classification dimensions are somewhat different. These two models use the power-dependence between the buyer and the supplier to differentiate between different types of relationships (or exchanges), and thereby bring into focus that the fundamental assumption for their models is the power-dependence argument. In our view, this is also the basis for the other suggested purchasing portfolio models, although this is not explicitly stated or discussed. Gelderman and van Weele (2000, p. 293) comment on this: *"In the […] Kraljic matrix it is not clear in what way the balance of power enters the model".*

Irrespective of whether or not dependency is explicitly dealt with in the purchasing portfolio models, they share a common view on the power-dependence argument. This is at the core of the models. Normative advice are given to avoid becoming dependent on individual suppliers e.g. through using at least two competing suppliers for strategic components (Nellore and Söderquist, 2000). Furthermore, Kraljic (1983, p.114) recommends exploitation of the suppliers' dependence whenever possible: *"To reduce the long-term risk of dependence on a single source, […] the company should also search for alternative suppliers or materials or even consider backward integration to permit in-house production. On the other hand, if the company is stronger than the suppliers, it can spread volume over several suppliers, exploit price advantages, increase spot purchases, and reduce inventory levels."* Following the power-dependence argument, most of the reviewed articles (see table 1 on the last page of the paper) also introduce an action plan to manage the suppliers, given the different categories in the purchasing portfolio models. Kraljic (1983) and Bensaou (1999) suggest (strategic) 'partnership' when the supplier and buyer are mutually dependent, Olsen and Ellram (1997) discuss 'strengthened relationships', and Gelderman and van Weele (2000) introduce the concept of 'balanced relationship' in similar situations.

In our view the purchasing portfolio models, with Kraljic's model, as the point of departure are popular and widespread partly because they are fairly easy to use, and partly because they give practical guidelines for how to manage different purchasing situations, suppliers and/or supplier relationships. This is also highlighted by Gelderman and van Weele (2001, p. 414): *"Kraljic's purchasing portfolio seems to be an effective tool for discussing, visualizing and illustrating the possibilities of differentiated purchasing and supplier strategies".* Furthermore, these models seem to handle the power-dependence problem in many purchasing situations by focusing on how to exploit the firm's purchasing power vis-à-vis suppliers and to reduce the risks to an acceptable minimum. However, this way of viewing purchasing situations and how to manage supplier relationships is based on a particular set of assumptions about how industrial markets operate. In the following sections we shall look into another way of describing and analysing purchasing and supplier relationships, namely the industrial network approach.

Interaction and 'networking'

The industrial network approach has inter-firm relationships as focal units of analysis rather than firms (Håkansson, 1982; Axelsson and Easton 1992). Furthermore, the approach emphasises connections between relationships and consequently their embeddedness in networks of relationships (Blankenburg and Johansson, 1992; Holmen and Pedersen, 2000).

Relationships have a certain content based on the links between the firms' activities, the ties between their resources and the bonds between them as actors. Also, the relationships have certain functions in relation to the individual firms involved, to the relationships per se and to connected third parties (Håkansson and Snehota, 1995).

The understanding and modelling of buyer-supplier relationships based on the industrial network approach is very different from what appears to be underlying purchasing portfolio approaches. Relationships are not regarded as isolated dyads and thus their impact is always related to other, connected, relationships. This also implies that the time dimension is of importance since industrial purchases are often recurrent and thus individual purchasing situations cannot be dealt with as isolated from previous or future ones. Moreover, relationships are considered both as means and ends owing to their interactive nature. That is, relationships are considered organising 'living' units that may evolve over time thus changing their contents and functions.

In this section we first deal with the reasons for, and consequences of, connections between relationships. Herein, we suggest that the products subject to exchange may be seen as 'network entities' rather than as isolated items. Thereafter, we discuss the differences between the industrial network approach and approaches underlying purchasing portfolio models.

Connected relationships

Relationships enable interacting firms to economise on their networks. This implies the possibility of creating and capturing connections among relationships in different ways: *"... if we are to understand the interactive nature of customer-supplier relationships in business markets and their dynamics, the scope of analysis needs to be broadened. Each relationship is dependent with a number of other relationships, together forming a network."* (Gadde and Snehota, 2000, p. 315). Below we will examine some of the most important connections when purchasing is concerned.

First, connections between the focal buyer-supplier relationship and the supplier's other customer relationships are the source of economies of scale in various activities, e.g. production, administration and logistics. Hence, adjustments made to capture or develop similarities among particular activities directed to its various customers lay the foundation to the supplier's ability to be a cost efficient and high performing supplier to each and one of its customers (Richardson 1972, Dubois 1998). Following from this argument all suppliers have unique features owing to their respective sets of customer relationships which will be reflected in their respective performance, i.e. their performance will be relative to any of its customers as a function of the supplier's other customer relationships. The potential productivity gains resulting from connections among the supplier's customer relationships are thus apparent. Less, apparent, but of great importance, is the abilities of suppliers to contribute to increasing the values of the exchange also stemming from how the supplier is connecting its customer relationships. The external capabilities, or resources, possible to access through developing supplier relationships is thus always directly or indirectly a function of the supplier's other relationships. This is the reason why we suggest relationships as units of analysis for network analysis rather than products as units of analysis for dyadic analysis when development of supplier relationships is concerned.

Secondly, connections between the focal buyer-supplier relationship and the customer's other supplier relationships are important for other reasons. Here, the need for adjustments is concerned with making the various products subject to exchange fit into the user context. This may be related to the production system of the customer and/or the 'end product' or any other technical system in which the products are used. Hence, the various technical dimensions of particular products e.g. physical shape, strength, weight, or technical performance make it connected to various other products with which resource interfaces need be developed (Wedin 2001). Following this way of viewing an individual product (as embedded in a user context) the relationship with the supplier producing it is depending on what is going on in other supplier relationships. There are different ways to deal with the interdependence between relationships resulting from the interdependence among the products they supply. These connections call for recognition of each product as embedded in wider structures. We may thus choose to analyse products as 'network entities' rather than as isolated objects subject to exchange in isolated buyer-supplier relationships.

If we focus on a product currently subject to exchange between two parties, this product can be seen as the result of an 'activity structure' as well as an input into another (see figure 2). Recognising this context, the product is part of a complex where it is subject to interdependence in several dimensions (Dubois, 1998):
(1) any product is the result of numerous activities carried out by different firms,
(2) the activities engage resources that are also activated in the production of other products (and this joint resource utilisation is the basis for economies of scale),
(3) products are connected to one another since they are parts of different technical contexts (e.g. components in a technical system of some kind).

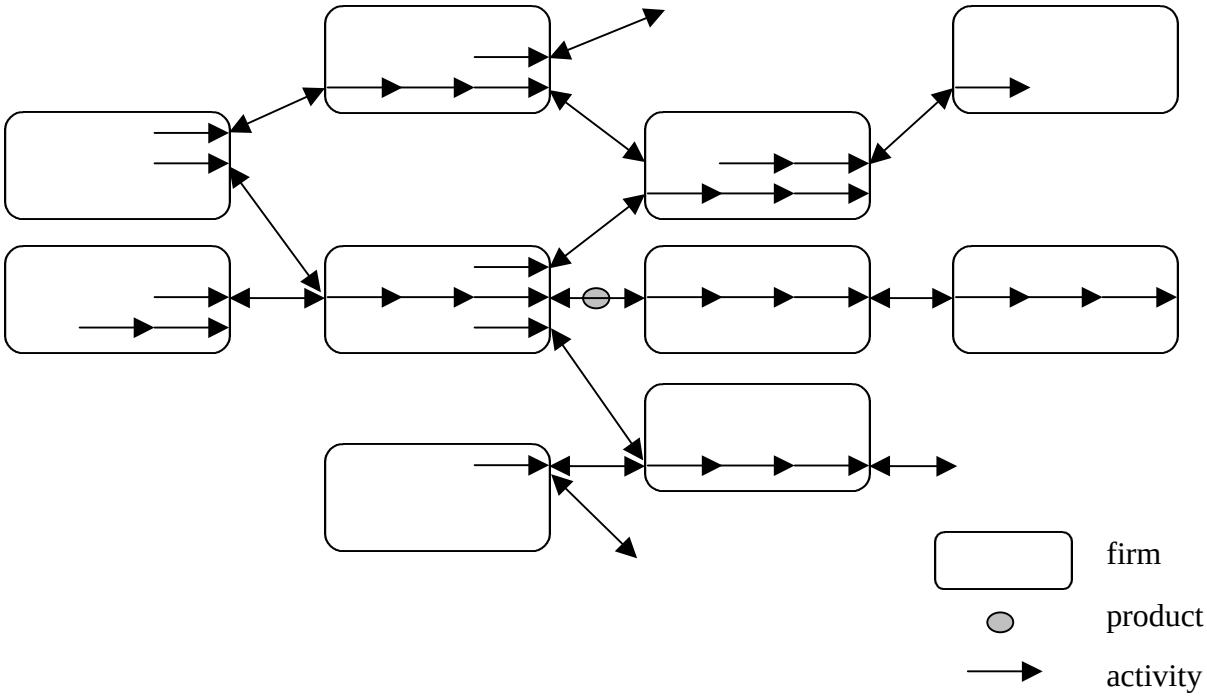

Figure 2. A product within an activity structure

In addition to these two categories of connected relationships there may be a number of other relationships with which the focal buyer-supplier relationship is connected (Dubois et al., 2001). Owing to increasing specialisation and the subsequent need for integration the supplier's supplier relationships, and the customer's customer relationships may also be of importance. Connections between a focal relationship and the customer's customer relationships can be created and captured to develop values and/or reduce costs through adaptations. Similarly, connections between the focal relationship and the supplier's supplier relationships entail a further extension of the external resources that can be accessed and influenced by the customer.

Consequences of an industrial network approach

All purchasing portfolio models have a specified product as the point of departure, i.e. the product is produced by the supplier and the buyer can assess and compare it with other potential suppliers' products. This may seem unproblematic since most companies can easily account for their purchases in terms of what products they buy. However, using 'given' products in the analysis of purchasing is indeed problematic since the costs and values associated with developing, producing and using the products are not included in the analysis. Nellore and Söderquist (2000) discuss the importance of the specification process in addition to previously considered portfolio dimensions: *"... it is not enough to simply state the characteristics of the suppliers in terms of attractiveness and relationship in order to deliver a certain component; one must designate the characteristics of the supplier with regard to the specification generator, the relationship required and the type of specification required for a* ***given*** *component in the portfolio dimension"* (Nellore and Söderquist, 2000, p. 264, emphasis added). Thus, the need to specify the 'given' product, being the object of a purchasing need, entails a number of issues that are not considered in portfolio models. Rather, they seem to imply that the customer is in charge of the specification.

Furthermore, the concept of interdependence *between* relationships is seldom discussed in the purchasing portfolio models. If this kind of interdependence is brought up at all it has to do with the costs of dealing with different supplier relationships. For example, Olsen and Ellram (1997, p.101) stress that: *"The literature on buyer-supplier relationships tends to focus on a single relationship or a single type of relationship, ignoring or downplaying the important task of allocating scarce resources between relationships."* Hence, interdependence between supplier relationships only concerns resource allocation to optimise the resources spent on managing the relationships. Furthermore, the interdependence between the buying firm and the individual suppliers is most often concerned with specialised investments. Thus, other kinds of interdependence between supplier relationships or to other parties in the network context of the buying and the supplying firm, in which the relationship is a part, are not considered.

In this section we have tried to attract attention to the importance of recognising interaction and networking aspects of purchasing. By limiting the analysis to concern only 'given' products in a purely dyadic context, purchasing portfolio models may obscure great potentials for increasing productivity and innovativity. Our point is that these potentials can only be identified through increasing awareness of the firm's network and can only be captured through successful co-operation with its various counterparts. We argue that purchasing portfolio models by simplifying the nature and context of purchasing do not capture vital

aspects of buyer-supplier relationships. First, because they are based on a distinction between two dimensions: one internal and one external. Second, because of the strong reliance on power-dependence balancing.

As pointed out by other critics, there is a great risk that the dimensions used in portfolio analysis are not accurate proxies for the many variables they are supposed to measure (Nellore and Söderquist, 2000, p. 246). Furthermore, we argue that neither the variables nor the dimensions are independent of one another. When firms co-operate closely external factors cannot easily be separated from internal ones. This, in turn, makes evaluation of the counterpart alone impossible or at least irrelevant. That is, dealing with external and internal factors as independent of one another directs the attention away from the fact that they are interdependent in many respects, and that these dimensions may be those of greatest importance.

The relative power-dependence between the parties is in purchasing portfolio models assumed to be decisive of how the gains are distributed between the parties. Hence, the strategic advice following from purchasing portfolio models are in essence recommendations to either (1) exploit power (if the customer is in power), or (2) avoid risks associated with the supplier exercising power. Here we have stressed the importance of considering interdependence as resulting from counterpart specific adjustments that reduce the total costs of exchange. Furthermore, these adjustments always have to be developed with consideration of other, connected, relationships.

Conclusions

The importance of the purchase (or rather exchange) and the complexity of the supply market are the two basic dimensions in portfolio models regardless of exactly how they are labelled and conceptualised. *The importance of the exchange* may facilitate interaction since it can be assumed to increase the willingness to make counterpart specific adjustments. Furthermore, the importance itself can be assumed to be the reason for engaging in interaction with the counterpart to start with. However, through interaction the parties are able to identify and develop further potentials that may result in increasing importance of the relationship. Håkansson and Snehota (1995, p. 385) argue: "*While business relationships generally start out from a first idea about 'exchange' the interaction process over time gives both parties the opportunity to 'bring into it' further elements."*

When a relationship has been established, *the complexity of the supply market* can be said to be either extremely high (since the number of alternative suppliers decreases with every counterpart specific adjustment), or it can be said to cease to exist since the parties do not handle their exchange on 'the market' but instead in a relationship. This also redirects the focus from individual transactions to specific relationships. The existence of interdependence between buyer and supplier owing to adjustments of various kinds (e.g. technical, logistic, administrative) implies that it becomes costly to change counterpart. Several authors have dealt with this as relationship investments with an economic nature and impact where the gains are of a long-term nature (Johansson and Mattsson, 1985; Håkansson and Snehota, 1995). This view on interdependency, as a consequence of adjustments, is very different from what purchasing portfolio models reflect. A customer and supplier making mutual counterpart

specific adjustments cannot avoid interdependence and thus both possibilities and problems take on other aspects of importance.

Hence, a focus on interaction and networking entails a different view on (inter)dependence compared with purchasing portfolio models. While the latter are based on power-dependence balancing issues (with the implicit assumption that any power advantage will be exploited and thus be costly for the counterpart) the industrial networks approach rather focuses on interdependence as an inevitable consequence of adjustments. These adjustments, in turn, are the basis for productivity and innovativity for the individual firms, for the relationships, and for the network as a whole.

The problem of analysing purchasing of 'given' products in a dyadic context is, we argue, a theoretical problem as much as it is a managerial one. There are surely many purchasing managers that (at least to some extent) deal with purchasing in accordance with what is prescribed by portfolio models. This may imply one of two things, or both. It may reflect the role of purchasing in many firms where technical, logistics or other departments take care of the most part of the interaction of importance thus leaving purchasing to negotiate less important contracts and conditions for 'given' products. Hence, it may be a result of purchasing being isolated from, or rather ignored by, other parts of the company. Or, it may be that purchasing is side-stepped *because* they prefer to deal with purchasing as isolated phenomena. Again, situations and actions are seldom easily separated. Regardless of the reasons for it, we argue that firms dealing with purchasing as being a matter of 'given' products supplied by independent suppliers may, if recognising the (more complex) network structures they are working in, be able to identify and capture network potentials and thus increase the contribution of the purchasing function.

When comparing the purchasing portfolio models and the 'interaction and networking' ways of dealing with purchasing we can clearly see that they imply two very different approaches. Purchasing portfolio models have been much appreciated owing to simplicity of application and focus on dyadic power-dependency situations being perceived as problematic by many firms. Although admitting to a more than mild affection for the industrial network approach, we argue that it enables us to perform more challenging and complex analyses focusing on inter-firm interaction, interdependence within and between relationships. Consequently, viewing products as variable network entities instead of as 'given' may lead us much further.

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Portfolio models[3]	Classification dimensions	Categories	Action plans	Phases in developing a supply strategy
Kraljic (1983)	- Importance of purchasing[4] - Complexity of supply market	**Materials/components** - Non-critical items[5] - Leverage items - Bottleneck items - Strategic items	- Exploit - Balance - Diversify	1. Classification 2. Market analysis 3. Strategic positioning 4. Action plans
van Stekelenborg and Kornelius (1994)	- Control need of the internal market demand - Control need of the external supply market	**Supply situations** - Plain supply situation - Internally problematic supply situation - Externally problematic supply situation - Complicated supply situation	- Purchasing as effort manager - Purchasing as demand manger - Purchasing as supply manager - Purchasing as integrative manager	1. Classify supply situation 2. Determine purchasing activities
Olsen and Ellram (1997)	- Difficulty of managing the purchase situation - Strategic importance of the purchase	**Purchases** - Non-critical - Bottleneck - Leverage - Strategic	- Strengthen the relationship - Improve the supplier attractiveness/the performance of the relationship - Reduce the resources allocated to the relationship	1. Analysis of the company's purchases 2. Analyse the supplier relationships 3. Develop action plans
Bensaou (1999)	- Buyer's specific investments - Supplier's specific investments	**Relationships** - Market exchange - Captive buyer - Captive supplier - Strategic partnership		1. Classify relationships 2. Identify contextual profiles 3. Design management profiles
Gelderman and van Weele (2000)	- Supplier's dependence - Buyer's dependence	**Supply strategies** - Efficient processing - Exploit power - Volume insurance - Balanced relationship		

Table 1. A literature review of purchasing portfolio models

[3] The review is organised with Kraljic (1983) as the point of departure.

[4] 'Importance of purchasing' is represented at the vertical axis and 'Complexity of supply market' is represented at the horizontal axis. This is similar for all the classification dimensions in this column.

[5] The four categories result from the combination of high-low on the two classification dimensions: *non-critical items* (low importance of purchasing and low complexity of supply market), *leverage items* (high importance of purchasing and low complexity of supply market), *bottleneck items* (low importance of purchasing and high complexity of supply market) and *strategic items* (high importance of purchasing and high complexity of supply market). This is similar for all the categories in this column.