

Past, Present and Future Developments Make Purchasing Decisions More Important and Complex

¹Isaac Kofi Yornu | ¹Makafui R. Agboyi

¹Lecturers, Procurement Department, Accra Technical University

Email: ikyornu2000@gmail.com | makafuiagboyi@gmail.com

Abstract

By now it is beginning to be accepted both in theory and practice that purchasing is a factor of strategic importance for an organisation, rather than a merely administrative and operational activity (see e.g. Van Weele, 1997; Van Stekelenborg, 1997; Lonsdale and Cox, 1997; Telgen, 1997). In this chapter we discuss in detail how as a consequence of present and future developments, the increased importance and complexity of the purchasing function leads to purchasing decisions becoming more important and difficult. Next, we explain why in order to deal with these more important and complex decisions, it makes sense to consider supportive decision models for purchasing. As a result of many years of neglecting purchasing, such models are not yet sufficiently available. Therefore, we argue that it is useful and appropriate to invest research effort in supporting purchasing decision making through models.

Keywords: Future Developments, Purchasing Decisions

1.0 INTRODUCTION

In this section we investigate how developments in purchasing lead to purchasing decisions becoming more important and complex. The purpose is to investigate these developments thoroughly as well as to show the relevance of decision models for purchasing in the light of these developments. In our analysis, we assume that purchasing decisions become more complex if: An increased number of alternative courses of actions can be taken into account, e.g. more potential suppliers to choose from as a consequence of emerging supply markets (e.g. Eastern Europe, China, NDC's); An increased number of criteria or considerations have to be taken into account, e.g. environmental criteria; A faster decision making process is required, e.g. because of ever decreasing time-to-market demands; An increased number of people from various disciplines become involved, e.g. cross-functional development teams; Etceteras. In addition, we assume that the relevance of decision models further increases when developments lead to a greater need to justify and explain decisions, due to the increased importance of decisions (because of more severe direct or indirect consequences of bad outcomes of decisions). Our analysis of the developments is organised as follows. After discussing the current impact of purchasing, we investigate developments on a macro-economic level that may (also) have consequences for purchasing in companies and organisations in general and therefore also impact purchasing decision making. Next, we investigate developments on an organisational level that directly or indirectly may effect purchasing decision-making. Finally, we present an overview of very specific evidence in the literature of unique opportunities for using decision models in purchasing

2.0 LITERATURE REVIEW

2.1 Purchasing has already Shown a Growing Direct and Indirect Impact on Organisations

The supposed increased importance of the purchasing function is first of all and most notably reflected in the growing share of the turnover or budget organisations spend on paying their suppliers for delivering all kinds of products and services. The purchase value of goods and services already contributes substantially to a company's turnover. Telgen (1994) reports an average figure of 63% for Dutch companies, while companies like Canon and Sony show figures of circa 90%. The trend towards specialisation and focus on core-activities will lead to a further increase of purchasing's share in total turnover. An amazing example of this is the well-known software company Microsoft (Corbett, 1997). Microsoft does not produce or distribute any of its products. All of the production, all of the manufacturing, basically, is done by (a supplier, De Boer)...Microsoft has outsourced most of its financial functions. Microsoft does not even manage the PC's at their headquarters".

Secondly, the significance of the purchasing function can be related to the growing need for companies to simultaneously meet market demands such as price, quality, flexibility and the level of innovation (Bolwijn, 1986; Wijnstra, 1997). In order to meet these demands as well as to achieve cost reduction, companies have been forced to apply a more integrated approach in quality management and logistics. The success of efforts initiated in these areas depends to a large extent on the way the purchasing function is managed, e.g. when it comes to the process of supplier selection.

Furthermore, the purchasing function also contributes indirectly to improved company profits and stronger long terms positioning. Proactive management of the supplier base, a continuous search for substitute materials and early supplier involvement in the design and development phase may not only lead to significant cost reductions but

can also improve the quality of products and processes and can strengthen the innovative power of the company (Buter and Ederveen, 1997; Van Weele, 1997).

Finally, the insight emerges that apart from focusing on the purchasing of raw materials, components and capital equipment for the primary (production) processes, professionalizing the purchasing of non-production items and services is becoming a means for achieving drastic reduction of expenditures (De Boer and Telgen, 1995). This means that purchasing has not only become an important function in industrial companies but that also the service industry, governments, health care and other non-profit organisations are beginning to recognise its potential. An important implication of this development is that with the increasing importance of the purchasing function also the decision making on purchasing issues becomes more critical. This especially applies to the more tactic and strategic purchasing decisions e.g. make-or-buy and supplier selection decisions.

2.2 Developments in the International Business and Government Environment Further Complicate Purchasing Decision Making

Van Weele and Rozemeijer (1996) point out the several developments in the global business environment that will shape the purchasing function in the decades to come: globalisation of trade, the emergence of the Information society and changing customer preferences. We believe that these developments are also specifically important in relation to purchasing decision making.

Globalisation of trade enlarges purchasing's choice set: Globalisation of trade and increased international competition is considered to be a result of factors such as the following: deregulation on behalf of governments, intercultural homogenisation, the forming of trade regions, e.g. EU, improved transportation and the revolutionary developments in the area of IT. An important consequence of this development is not only an increase in potential customers, e.g. in Eastern Europe and China, but it also creates a bigger set of potential suppliers to evaluate and to choose from. It will directly affect purchasing decision-making.

Internet enlarges the choice set as well: The emergence of the so-called Information Society is based on the spectacular growth of the Internet. The Internet is expected to continue to change society and business as a whole, and not in the least it will change purchasing (see Telgen, 1998). Although there may still be technical limitations and doubts about safety, e.g. when paying over the Internet, Internet already serves a wide range of useful purposes for purchasers, e.g. market research, formulation of product specifications, finding information on suppliers etceteras. Although only a few suppliers actually have sites on the Web, Internet provides the purchaser with a wealth of additional information. From a decision making perspective, it again means that there are more alternatives to choose from and/or more data to compare and to decide on. Because of the increased scale of the decisions (e.g. more suppliers to choose from) and/or the increased complexity (e.g. much more data that could be used to decide) a systematic approach to decision making, e.g. through the use of appropriate decision models, seems the right way forward, even when in some respect purchasing decisions seem to become easier, e.g. because of the increased (price) transparency in the market.

Changing customer preferences require a broader and faster supplier evaluation: The third development mentioned by Van Weele and Rozemeijer concerns the changing patterns in consumer behaviour in the sense that consumers increasingly take into account other factors in addition to price, e.g. service, comfort, quality, fast delivery etceteras. Because of the growing set of products consumers can choose from, they become more sophisticated and demand improved benefits from the products offered. This in turn means that firms are under increasing pressure to develop products that are sufficiently innovative. As a logical consequence, these firms also transfer the increased demands they face upstream to their suppliers (Biemans, 1997). We believe that this not only means that choosing the right suppliers becomes more important but that the process of deciding is further complicated as an increasing number of factors (relating to the additional demands) have to be considered. Concerning the developments in the business environment, Van Weele and Rozemeijer (1996) draw the following conclusion (p.46): "The business environment will be highly uncertain in many industries in the next decade.....Size, common sense and past experience count for little in these unpredictable times". We believe this conclusion, especially their remark on common sense and past experience, clearly emphasises the need to seek ways of further professionalizing purchasing decision making and hence illustrates the relevance of the problem statement in this thesis.

Public procurement regulations enlarge purchasing's choice set and demand transparent decisions: In addition to developments in the business environment, developments in the (international) government environment are also particularly relevant to the problem statement of this thesis. Driven by the goals of establishing a single European market, fair competition, open and non-discriminatory government purchasing policies and not in the least achieving drastic savings in government spending and fighting fraud and corruption, the so-called EC-directives on public procurement were introduced. These directives require among other things that public purchasers follow certain specified procedures and time frames for all purchases (goods, services and works) above certain threshold contract

values, 5 million ECU for Works and 130,000 ECU for goods and services. From Pontarollo (1997) we point out the following elements of the compulsory set of purchasing procedures: Request for quotations may be open for all suppliers, restricted to a previously qualified subset or in some (exceptional) cases negotiated with chosen suppliers; Selection of suppliers and contract-award must be according to clear, objective, prestated criteria; Purchasers are either to accept the lowest price, or the most economically advantageous bid based upon the evaluation of a wide range of criteria such as delivery times, after sales service etceteras. These compulsory procedures seem to make a strong case for the problem statement in this thesis and suggested approach, i.e. investigating and developing decision models for supporting purchasing decision making.

First, the number of alternatives to consider, i.e. the number of quotations, may be far greater than before because invitation to tenders must be advertised in the official EU journal. Managing a much bigger number of tenders and suppliers requires a more structured and efficient decision making process. Purchasers must decide on how they are going to decide on the tenders that they will receive, e.g. whether or not to construct a list of qualified suppliers instead of directly advertising a call for tenders in the official journal¹.

Secondly, the requirement of selection according to objective, prestated criteria forces purchasers to adopt an explicit, systematic and unambiguous approach to both the formulation of criteria and the process of arriving at a final ranking of the tenders based on these criteria. In other words: purchasers are actually forced to use decision models, at least according to our definition of a decision model (see chapter 2). However, many government organisations still do not apply the EC-procedures or at least have problems with implementing the procedures (Telgen and De Boer, 1997; Green Paper, European Commission 1996). There may be several reasons for this, e.g. fear of time consuming complicated processes and the administrative burden. The underlying factor seems to be the often low status of the governmental purchasing function and its low level of professionalism (De Boer and Telgen, 1998). We believe that in general, a structural professionalization of the governmental purchasing function is required in order to achieve more transparent purchasing practices and ultimately to realise improved purchasing performance. The availability of appropriate and useful tools, i.e. decision models facilitating EU-tender processes, may be an important contribution to this professionalization.

We started this section with discussing the impact of the globalisation of trade and the emergence of Internet on purchasing decision making in businesses. However, purchasers in government organisations may experience similar developments, as can for example be deduced from the 1996 Green Paper issued by the European Commission (1996, p. 26): “In the longer term, the way forward for electronic procurement will undoubtedly be a fully electronic tendering system. This could include the extension of electronic procurement to meet existing mandatory requirements under the Directives (such as the obligation to publish) but, far more dramatically, to cover every other part of the procurement process”.

2.3 Developments in business strategy and structure further impact purchasing decision-making

We now discuss trends and developments in business strategy and structure that in our view will affect purchasing decision making and thereby provide an additional rationale for investigating and developing decision models for purchasing. First up is the ongoing trend to outsource so-called non-core activities. Secondly, we discuss the increasing importance of time in business strategy. Finally, attention is paid to trends in organising businesses and business functions such as purchasing.

The increase in outsourcing means: more decisions, criteria, alternatives and people involved: Numerous articles, dissertations, conference proceedings and books have been written on the trend in business strategy to focus on a few so-called core competencies and consequently to outsource the remaining non-core activities. In other words: non-core activities that used to be carried out in-house are now purchased from suppliers. Reasons for outsourcing may be the following (Welsh and Nayak, 1992): Convert fixed costs to variable costs; Balance workforce requirements; Reduce capital investment requirements; Reduce costs via suppliers' economies of scale and lower wages; Accelerate new product development; Gain access to invention and innovation from suppliers; Focus resources and attention on high value-added activities.

The term core-competence was introduced by Prahalad and Hamel (1990) and defined as follows (p.82.): “(Core competencies) are the collective learning in the organisation, especially how to co-ordinate diverse production skills and integrate multiple streams of technologies”. Thus, core competencies are not (necessarily) products or business functions and should not be confused with primary versus non-primary processes, e.g. assembly versus catering, cleaning and security. In other words, outsourcing of non-core competencies may include more than peripheral activities. Indeed, companies are also increasingly outsourcing processes within materials management,

¹ It should be noted however, that such a qualification process must also be carried out through the official EU-channels, i.e. an announcement must be advertised in the official EU-journal so that all suppliers may respond and fair and open criteria for qualification should be formulated.

assembly and even design and development. The latter is illustrated by the results of a survey carried out by PA Consulting Group (1996):

Business activity	Outsourced by 1991	Outsourced by 1996	Expekt to have outsourced by 2001
Property services	13	42	46
Application development	5	29	41
Catering	13	36	41
Voice data/networks	3	22	38
IT Technical Support	4	21	34
Network Design	3	18	33
Data Centre Operations	4	19	32
Payroll	8	22	31
Helpdesk/end user support	2	17	31
Legal services	7	19	27
Distribution/Support	9	21	24
Property Management	4	11	19
Promotion	7	16	18
Infrastructure Maintenance	4	10	14
Warehousing	3	9	14
Construction	8	12	13
Manufacture/Assembly	6	9	12
Personnel	1	4	10

Table 1.1: Trends in outsourcing of both primary and non-primary activities (PA Consulting Group, 1996)

Some even believe that outsourcing will take extreme forms in the future (Van Weele and Rozemeijer, 1996). In addition, this does not only apply to private businesses but also to governments, e.g. utilities, public transport, and telecommunication etceteras. In several ways, an ongoing increase in outsourcing will affect purchasing decision-making.

First of all, in total the financial volume related to all purchases will grow. This simply means that the total impact of purchasing decisions also grows. Hence, deciding on which activities should be considered for outsourcing and subsequently deciding on where to outsource, i.e. which suppliers to choose, are becoming more and more important decisions in the sense that poor decisions may result in the company losing a lot of money. This will increase the need to justify such decisions.

Secondly, an increase in outsourcing also implies a higher frequency of purchasing decision making. Furthermore, the scope and level of outsourcing decisions is changing as well. As firms outsource more, the need for communication, co-ordination and planning and control of interaction between the firm and the supplier organisations increases (Carter and Narasimhan, 1996). This has several implications: not only must these 'relational' factors be taken into account when selecting suppliers (thus increasing the complexity of the decision), the number of decision makers is also likely to grow. The point of broadened scope and decision making unit is also recognised by Marshall and Lamming (1997): "Many more important decisions, once seen as the domain of purchasing (the department, De Boer), such as the outsourcing issue, have been raised from a short-term cost-cutting decision to a major company-wide choice. This shows the growing awareness of decisions once thought of as 'rather' important to being 'of key-strategic relevance'. Similarly, Lonsdale and Cox (1997) illustrate the increased complexity of many outsourcing decisions by warning companies not to take such decisions lightly or incremental, i.e isolated, thereby once again stressing the need to view such decisions from a higher level and consider additional criteria instead of only short term cost savings when making such decisions.

Furthermore, the developments concerning (strategic) outsourcing also affect purchasing decision making in the sense that the number of alternative types of outsourcing options seems to grow. This is also pointed out by Gadde and Hakansson (1993) in their contemplation on how the ongoing trend of outsourcing will develop in the long run: "In any case, we are indisputably moving towards a new kind of organisation with many types of corporate product supply. Instead of either 'pure' in-house production or 'pure' purchasing from completely independent suppliers as the dominant form, we may find that intermediate forms are superior". This evolution from fixed boundaries between

purchasing and in-house production should be seen in the light of a more general development in which the once clear and sharp organisational boundaries seem to disappear and so-called virtual organisations emerge, i.e. temporary constellations of various types of organisations such as suppliers, competitors, close customers and universities (Biemans, 1997). Summarised, we believe that the increase and developments in outsourcing affect purchasing decision making as indicated in table 1.3.

Aspects of decision making	Impact of increase and developments in outsourcing
Consequences of poor decisions	increasing financial consequences of poor purchasing decisions: more pressure on justification
Number of people involved	increasing number of people involved throughout the organisation
Criteria/considerations	increase in number of criteria to consider, e.g. quality, communication with suppliers, risk of non-delivery
Alternatives available	many intermediate forms between traditional make (do) or buy; outsourcing in context of virtual company: more alternatives to consider
Efficiency of decision-making	increase in number of decisions to be made

Table 1.3: Impact of increase and developments in outsourcing on purchasing decision making

New organisational forms lead to the involvement of more decision makers and requires faster decision-making: An important change in business structure concerns the trend towards flatter and smaller organisations (Van Weele and Rozemeijer, 1996; Carter and Narasimhan, 1996). New organisational forms are necessary in order to adequately respond to and take advantage of the developments we discussed earlier on, e.g. globalisation of trade, increased competition, IT and Internet and drastic changes in customer patterns. The emerging of flatter, more dynamic organisations is likely to hold consequences for purchasing decision making.

First, as (purchasing) decision making will increasingly be a matter of (project organised) teamwork, the number of people involved in the decision making process will presumably grow. More than a functional, top-down decision making structure, the multi-functional and horizontal project orientated decision making structure may require a concrete framework for team discussion, decision planning and decision making. Decision models may serve as such a framework.

Secondly, in addition to more people being involved, the 'new' organisation implies high speed exchange of information and faster decision making in line with time-based competition. Purchasing decisions need to be made 'at the speed of light' (Russill, 1997). In combination with the technological opportunities, e.g. Internet, decision models may (also) be an important facilitator in this respect.

Thirdly, decision models may serve as a useful format for storing information concerning purchasing decisions. In this way, decisions made in the past can serve as learning tools and reference points in future situations where other decision makers may be involved, e.g. for deciding which criteria to use. This may also enhance the consistency of the decisions made. Storing information concerning purchasing decisions is especially important in organisations where teams (as well as their members) come and go and useful knowledge on decisions may disappear along with the people who made these decisions, unless this knowledge is stored and made available to others. The old way was to define 'what' decision purchasers were allowed to make. The new way is to define the manner in which decisions can be made and why (Russill, 1997).

The spreading of the purchasing function involves even more people in purchasing: Finally, when the business environment, business structure and business strategy change, and the purchasing function develops the position and required skills of the purchasing professional will change as well. In this respect, Telgen (1994) introduced the T-profile: purchasing professionals must not only have in-depth knowledge of purchasing issues but must also have some knowledge about a wide range of disciplines, e.g. production, finance, logistics, marketing etceteras. Similarly, other professionals will remain specialist in their respective field but will also develop general knowledge on other functions among which purchasing. In addition, general management more and more wants to be

involved in purchasing decision making. Telgen described the spreading of the purchasing function by identifying four roles that traditionally were performed by the purchaser. These four roles are shown in figure 1.1.

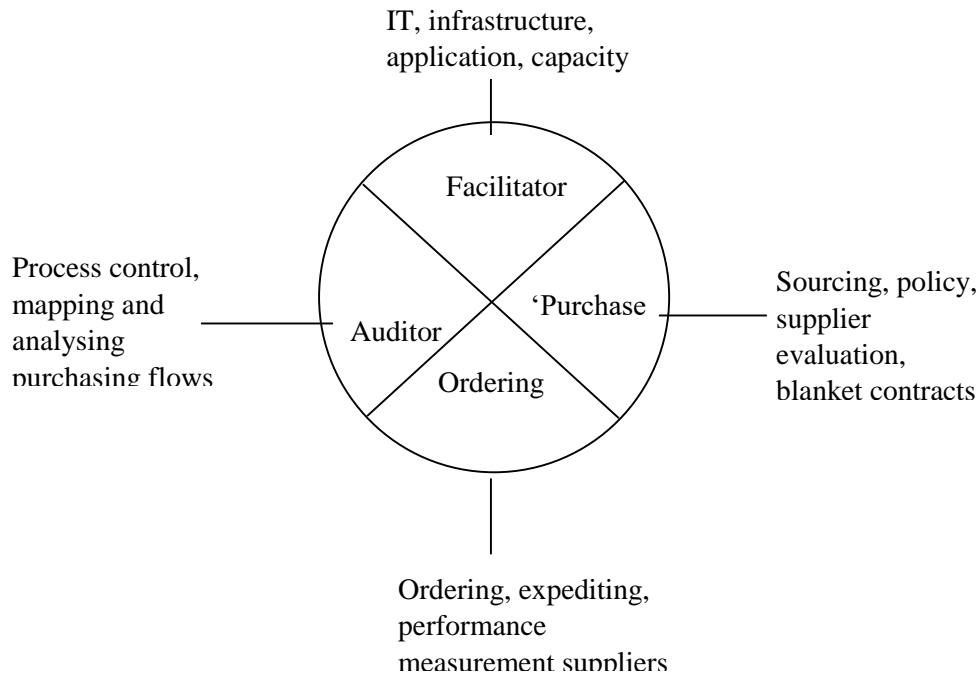


Figure 1.1: Typical and traditional roles of a purchaser (Telgen, 1997)

Each of these four roles will more and more move away from the purchaser and will be taken over by others in the organisation. This is illustrated in figure 1.2.

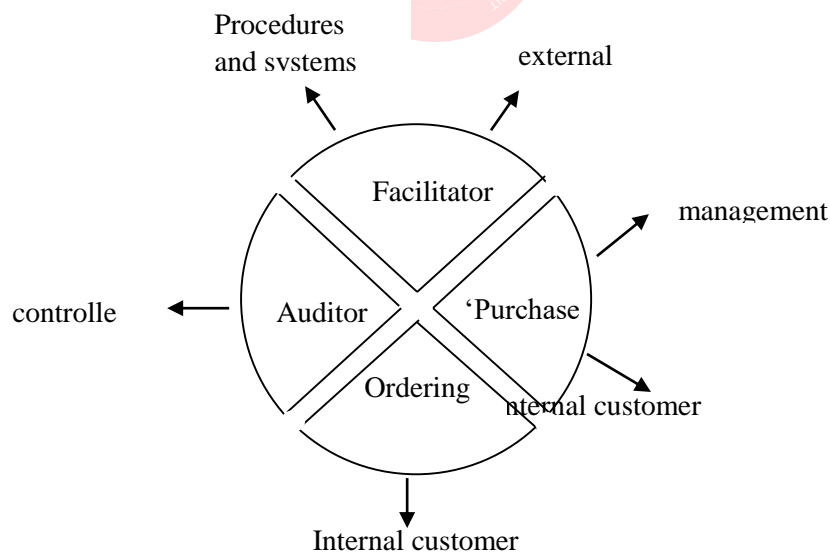


Figure 1.2: Transfer of the purchaser's traditional roles (Telgen, 1997)

This spreading of purchasing activities throughout the organisation is further reinforced by many purchasing professional's wish to 'get rid off' ordering activities while technological developments (e.g. catalogue systems, internet) enable internal customers to take over this task. All in all, it is clear that the spreading of the purchasing function also leads to an increasing number of people being involved in decision making about purchasing activities. This, in our view, constitutes yet another reason for investigating decision models for purchasing. The same holds

true for the new role and profile of the purchasing professional. We analysed Kolchin’s (1993) list of top ten skills for the purchasing professional of the future and matched these skills with the various purposes decision models may serve.

Top ten skills for purchasing professionals:	Purposes of decision models		
	Justifying, explaining, communicating decisions	learning, understanding of situations and past decisions	‘better’ decisions through increased consistency and explicit analysis
1. Interpersonal communication	+	+	
2. Customer focus			
3. Ability to make decisions		+	+
4. Negotiation	+	+	+
5. Analytical skills		+	
6. Managing change			
7. Conflict resolution	+	+	
8. Problem solving			+
9. Influencing and persuasion	+		
10. Computer literacy			

Table 1.4: Matching purchasing professional’s future skills with forms of support provided by decision models
Many of the required skills may in one or more ways be supported by decision models.

2.4 Decision models are necessary elements for effective purchasing decision making

In our contemplation so far, investigating decision models for purchasing seems logical but yet not completely trivial, at least not in the sense that it is obvious that purchasing decisions are currently made poorly. Purchasing decisions are made every day. They have to be made, irrespective of whether or not these decisions become more important and difficult. And even if these decisions are indeed becoming more important and difficult, it does not necessary follow that they are presently made in a poor fashion or will be in the future. However, although an ultimate judgement on the ‘goodness’ of a decision is impossible, many authors claim that there is definitely room for improvement as far as the current decision making practice is concerned (see e.g. Lonsdale and Cox, 1997; De Looff, 1997; Van Weele, 1997).

Notwithstanding the many indications of improvement potential for purchasing decision making, this still does not mean that investigating decision models is therefore the only obvious way forward. Given we could speak of ‘poor’ decision making, or at least decisions resulting in negative events or outcomes, there could be several factors responsible for that, e.g. a lack of adequate information or a poor implementation process (irrespective of the quality of the decision as such). However, using the so-called ‘control-paradigm’ by De Leeuw (1974) we will demonstrate why models in general and explicit decision models in particular are necessary (although not sufficient) conditions for effective control of the purchasing function.

2.5 Effective control of a (purchasing-) system requires four conditions to be met

Starting point for De Leeuw’s paradigm is a conceptualisation of a control situation which contains three basic elements: a controlling system, a system that is subject to control and an environment which can impact the two other systems both positively and negatively (see also figure 1.3):

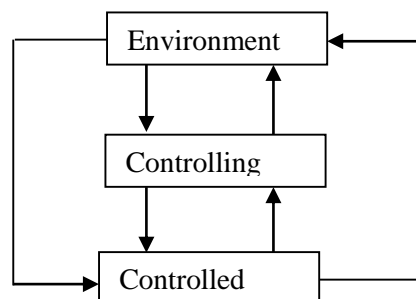


Figure 1.3: Control paradigm (De Leeuw, 1974)

Using this paradigm, and taking the viewpoint of the controlling system, Kramer (1978) defines four conditions for effective control of the controlled system: The controlling system must define a goal, which serves as a guide in deciding on which control-actions to take; The controlling system must have an adequate model of the controlled system; The controlling system must have sufficient information on the environment and the system under control; The controlling system must have a sufficiently rich set of alternative courses of action to choose from.

Now, let us suppose that the controlling system is actually a purchasing department in an organisation. Furthermore, we assume that the controlled system consists of all internal customers within the organisation while the environment consists of the suppliers available to the purchasing department. Naturally, the boundaries of the systems may be fixed in other ways, but this will not fundamentally change the point. We can now, at least theoretically, investigate how the four conditions for effective control relate to this purchasing setting. More specifically, we are interested in the attention that has been devoted to each of these four conditions in purchasing literature. The discussion takes place in the following order: goals, information, alternatives and finally models.

2.6 Goals, information and alternatives seem sufficiently available in purchasing

First of all, a purchasing department may specify a variety of goals concerning different aspects and different levels, e.g. a certain reduction of purchasing expenditures, improved satisfaction with the purchasing department's service, reducing the number of suppliers etceteras. More in general, in the purchasing literature, significant attention has been paid to the goals or objectives of the purchasing function as well as the purchasing department, for example: assurance of supply, reduction of purchasing related costs, contribution to technical product and process innovation, maintaining quality standards, etceteras (Van Weele, 1997; Leenders and Fearon, 1993). As we already indicated in the previous section, efforts in providing purchasers with information on the 'controlled' system (as well as on the environment) have traditionally been focussed on operational (ordering) and administrative aspects of purchasing. Although there do not seem to be technical barriers anymore, Van Stekelenborg (1997) concludes after intensive research on IT and purchasing, that there is still a lack of adequate systems for supporting the more tactic and strategic purchasing tasks. Apart from the undervaluation of purchasing during the past 30 years, another reason for this might be the lack of explicit (decision) models on which these information systems are to be based. Without such models, which connect goals, alternatives and system effects, it remains unclear what information should be available and in what form. This is especially relevant in the light of such radical developments as Internet, which offers a wealth of potential information.

As far as the set of alternative courses of action is concerned, a purchasing department may in general choose from a vast number of actions, e.g. all kinds of gradations between 'make' and 'buy' (Hakansson and Gadde, 1993), changing specifications, adding or replacing suppliers, reducing the number of suppliers, apply different contract types, intensify supplier relationships or turn towards a more 'arm's length' approach etceteras. Essentially, every purchasing text- or handbook contains the basic categories of purchasing 'control' variables (see e.g. Russil, 1997; Ederveen and Buter, 1997).

2.7 More attention must be paid to explicit decision models

If we consider the availability of models of the controlled system that enable the prediction of effects certain actions may have, it seems that in the purchasing literature and especially in the purchasing practice, this fourth condition for effective purchasing control is hardly met. That is, at least as far as explicit models are concerned. Such models, which explicitly link purchasing goals, information and alternatives together, are predominantly found in the field of financial accounting and cost management (see Ellram, 1996), quality management and inventory control. Apart from the often limited practical use of these models by purchasers (especially the countless inventory control models), these models only partly cover the spectrum of decision making situations found in purchasing (De Boer et al., 1998; Saunders, 1997).

The greater majority of 'true' purchasing models are actually 'mental' models, which relate to such concepts as a purchaser's 'feel', intuition and experience. Relying solely on such mental models for decision making may have several drawbacks and limitations.

First of all, there is the argument of the quality of the decision as such. In general, and also in purchasing, decision quality is considerably limited by human intellect (Downs, 1967). Unguided and intuitive decision making is susceptible to many forms of inconsistency and some form of explicit decision analysis is necessary to help decision makers structure, understand and in some way 'shape' their problem; they should not rely merely on mental models

(French, 1985). Due to several developments in purchasing the relevance of this point is only further increasing. This has been discussed in the first sections of this chapter.

Secondly, explicit models seem very helpful in facilitating communication between individuals as well as communication within groups. This is becoming more and more important as the purchasing function is increasingly spreading through the organisation and actively involves an increasing number of people in decision making activities (Telgen, 1997).

Closely related to the issue of communication and explanation is the aspect of justification of purchasing decisions which is becoming increasingly important both within private as well as government organisations. For the latter, it is actually compulsory to explicate the supplier selection decision for any major purchase. For private firms, not only the growing size of their outsourcing volume but also the increasing attention for ethics in business (Saul, 1997) are important drivers of the growing need to justify actions and decisions in purchasing.

Finally, as mentioned before, the design of adequate purchasing information systems not only requires an explicit representation of the key-variables in purchasing but also (and not in the least) their interconnectedness. Models, simplified abstractions from real systems, are a prerequisite for effective control and decision making; this is no less true for purchasing. In addition, we recognise that the availability of models in the purchasing literature is not enough. The models ultimately need to be available and accessible to purchasing practitioners which also requires attention for such factors as intellectual and social skills of purchasers, training and education, management commitment, adequate infrastructure etceteras (Kraljic, 1983; Batdorf and Vora, 1983). These factors relate to the practical availability of models in purchasing and should also be of concern in the research.

Summarised, we argue that compared to the other necessary conditions for effective control (purchasing goals, alternatives and information), explicit purchasing *models* seem to have attained the least amount of attention. We therefore argue that it is relevant and worthwhile to investigate purchasing decision models as part of all efforts to further professionalize purchasing decision-making. Russill (1997) puts it as follows: "There needs to be objectivity and best-practice in the key-decision making processes. Once the back of an envelope sufficed. Now the best-practice players are calling into play a wide range of of decision making techniques...which bring sophistication and science into the early stages of acquisition planning. Without them, prejudices and assumptions go unchallenged and data-bytes stay as data without becoming 'intelligence'. With them, the multi-specialist cross-business teams have the means by which they can be architects of winning supply-market strategies. Without them, well, 'we make it up as we go along!, hardly a sensible use of hard-earned sales-revenue'".

2.8 Past developments have hindered the developed of adequate purchasing decision models

In the previous section, we saw that a number of developments lead to purchasing decisions becoming more important and complex. Next, we argued that research effort should be dedicated to investigating and developing decision models for purchasing. However, we also indicated that so far only limited attention has been paid to this. In this section, we attempt to explain how this lack of attention might have come about. In order to do so, we study the purchasing function over a time horizon which goes back further than the 10 to 20 years which is usually the case. We find that after an initial period of high recognition and attention, a long period of steady decline in terms of attention and recognition followed which lasted until the early eighties. During the period in which purchasing was undervalued, many major developments in Operations Research took place, yet these were understandably not applied to purchasing. With the renewed recognition of purchasing, the backlog in terms of decision models also becomes visible.

2.9 In the beginning of this century, purchasing was considered an important business function

Contrary to what the popular, contemporary view implicitly assumes, the purchasing function has always been a key-function for companies (Farmer, 1995). In addition, during the first decades of this century, the purchasing function was also recognised as such. Some typical examples of this can be found in Ford (1926). Already in the early twenties, the Ford Motor Corporation bought three times as much as it manufactured and in total, its suppliers employed over two hundred thousand workers. Concepts as 'target costing' and 'supplier development' were in some way already practised by Ford as is illustrated in the following example: "We buy on cost and not on market price. In our own production, we set ourselves tasks - sometimes we arbitrarily fix prices, and then invariably we are able to make them; whereas, if we merely accepted things as they are, we should never get anywhere. We follow exactly the same practice with those from whom we buy - and invariably they prosper. Take a specific case. Before this policy was fully developed, a manufacturer was making a certain style of automobile body for us at a certain price each. He was not manufacturing in a large way and his profits were insignificant. We calculated that those bodies ought to be made at exactly half the price, and that is the price we asked him to get down to". Also, Ford showed a proactive approach towards supply: "...we must well look ahead to the possible depletion of sources, to the saving of material and to the finding of substitute materials and fuels".

Another valuable source of insights is Chandler (1962). This work illustrates the important role which purchasing played in the development and success of the first, major industrial enterprises in the United States (Farmer 1995). Apparently, purchasing departments and purchasing officers had high and prominent positions in such firms as General Motors, and top management was directly involved in purchasing matters. An example at General Motors may further illustrate this. Alfred Sloan, who became president of General Motors in 1923, personally sat with staff specialists and operating executives on interdivisional committees among which a purchasing committee. At times, Sloan himself was chairman of this corporate purchasing committee. Chandler also writes: "... Sloan believed the company could save \$5,000,000 to \$10,000,000 annually if the purchasing staff in the general office drew up contracts on items that were widely used by the corporation as a whole. The division managers offered many objections. As a result of these objections, Sloan proposed that the contracts be drawn by a committee of purchasing agents representing the different divisions. Besides writing specifications, the committee was expected to define broader buying policies and procedures". On the birth of the first big US steel mills in the beginning of this century, Chandler writes: "...the formation of a marketing department was usually followed or accompanied by forming purchasing departments and often by obtaining control of raw materials. Besides making possible the economies of large scale purchasing, the new department made it easier to co-ordinate supplies with the needs of the mills for materials..."

Finally, the following example shows that some of the principles of supply chain management, supplier involvement and development and even EDI (electronic data interchange) were already practised by the turn of the century as Chandler describes on page 389: "...the meat packers, with their heavy investment in distribution and purchasing as well as in the processing of all kinds of meats, had pioneered in such co-ordination by developing telegraphic communication between the branch houses, the packing plants and the stockyards. Both the branch houses and the buyers in the stockyards were in constant telegraphic communication with the central offices in Chicago. And with such information, the central office would allocate supply to demand almost instantaneously".

2.10 During the 50's, 60's and 70's purchasing's recognition strongly declined

However, although purchasing definitely played an important role in the companies in the beginning of this century (and even before that) and purchasing was recognised as an important function in those companies, this recognition gradually decreased towards the fifties and definitely during the sixties and early seventies. This decline of purchasing's recognition may be contributed to the companies becoming larger (through vertical integration and diversification), more established, bureaucratic and administrative and losing their true entrepreneurial founders (Farmer, 1995). Farmer characterises the fifties, sixties and early seventies as the era of 'purchasing myopia': while the fundamental importance of a proactive purchasing function was at least as valid as it is now, both the business community and the academics regarded purchasing an administrative, clerical activity rather than a strategic function. The development of the level of purchasing myopia may be visualised as is done in figure 1.4, which is based on Lamming (1995), Telgen (1997) and Farmer (1995).

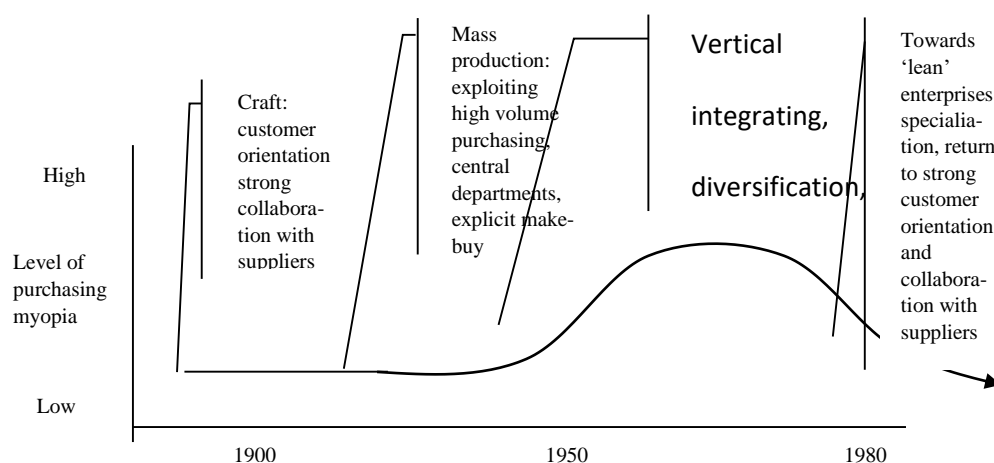


Figure 1.4: Purchasing recognition and myopia throughout the years (based on Lamming, 1995; Telgen, 1997 and Farmer, 1995)

We believe it is important to be aware of this more long-term perspective on the role and status of purchasing. First, it becomes clear that the importance of the purchasing function has been recognised before. The current process of increased recognition as such is therefore not new. Moreover, one might even argue that it is not correct to simply speak of an increased importance of the purchasing function. As far as the increase in *outsourcing* is concerned, we may clearly speak of an increased importance: many organisations are increasingly spending more of their turnover on purchasing. However, Farmer (1995) points out, that although purchasing's share in turnover was significantly lower during the sixties and seventies, it would be incorrect to conclude that the purchasing function as such was less important, even while it was considered to be that. Both the 1973 Oil crisis and the rise of Japanese companies towards the eighties showed that proactive, long term assurance of critical raw materials and effectively improving the supplier's incoming quality and scheduling reliability were very important aspects as well.

Secondly, many 'purchasing' concepts and issues are not fundamentally new either. Already before the industrial revolution, craftsmen (who specialised in certain skills) worked closely together with 'partners' from other disciplines in order to produce customer-specific products. While the (early) mass-production industries clearly adopted a more 'quote-to-drawing' approach towards their suppliers, they also applied the basic ideas of exploiting high volume purchasing. In addition, they showed a proactive and entrepreneurial vision on the supply side of their businesses through creating organisational structures for the purchasing function, a strong focus on assuring the availability of critical raw materials and top management involvement in purchasing (Lamming, 1995).

2.11 The decline in purchasing's recognition discouraged the development of purchasing decision models

With regard to decision making in purchasing, it is important to consider the possible consequences of the period of purchasing myopia for the research on purchasing as well as for the extent to which developments in such areas as Operations Research and Information Technology have been used to the advantage of purchasing. As to purchasing research, the emphasis has clearly been on highly descriptive approaches with the purpose of aiding the marketer in selling more products rather than helping the purchaser. Industrial marketers such as Faris, Robinson and Wind (1967) carried out much of the early purchasing research. Also, many major developments in Operations Research took place during the era of purchasing myopia, which might explain the strong emphasis of OR-researchers on developing tools for other business functions and areas, e.g. financial planning, logistics, production planning and definitely marketing. A good example of the latter is the book by Kotler and Lilien (1983) which shows that already in the early eighties there was a wealth of descriptive as well as normative decision models available for aiding marketers with market segmentation, demand assessment and forecasting, product design, pricing, distribution, advertising, sales-promotion, market planning and strategy etceteras. Many of the references in this book go back to the sixties and seventies. Also, still today, the contents of many textbooks on Operations Research (see e.g. Winston, 1990) reflects the consequences of thirty years of purchasing 'myopia'.

Similarly, the initial developments and business applications of computer and information systems took place while purchasing was still considered an operational and clerical activity. For example, in a survey of the literature (Eom and Lee, 1990) on the application of decision support systems from 1971 through 1988 only 2 out of the 203 applications articles were concerned with purchasing. Computer based systems for purchasing that utilise analytical techniques such as simulation or modelling are rare (Fearon and Moore, 1974). Computers are being called upon merely to perform fairly routine tasks (Parasuraman, 1981). Order processing and order monitoring, registration of creditors and account management, invoice control, supplier registration and performance monitoring are amongst the most frequent applications found within purchasing (Platford, 1986; Buter, 1990; De Roos et al., 1993). Most applications are focused on obtaining efficiency in routine, administrative activities carried out within purchasing (Van Eck, 1989; Van Stekelenborg and Van Weele, 1993). Effectiveness has never been a real motivation for applying information technology in decision-making processes. It can be concluded that existing decision support systems and information systems are still mainly directed at supporting operational purchasing decisions (De Boer and Van Stekelenborg, 1996; Plank et al., 1992; Van Stekelenborg, 1997).

2.12 Past, present and future developments constitute the rationale for investigating and developing purchasing decision models

In the previous sections we set forth the elements that together constitute the background and the reason for this thesis. At present, the purchasing function increasingly impacts on organisations, both directly and indirectly. As a result, purchasing decisions are becoming more and more important. In addition, various developments, which we have discussed in detail, further enhance this and complicate purchasing decision making even more. However, from all four conditions required for effectively controlling (and deciding on) purchasing, the availability of explicit decision models has gained least attention. Retrospectively, this backlog fits with the concurrent emergence of Operations Research and System Analysis and the decline of purchasing during the 50's, 60's, 70's until the early

80's. This thesis aims to contribute to overcoming this backlog by mapping, investigating and developing appropriate decision models for purchasing.

3.0 CONCLUSION

In this chapter we discussed the background and rationale of this thesis. We showed that the purchasing function already has a major impact (directly and indirectly) on the performance of organisations. In addition, we held forth that developments in the international business and government environment will further complicate purchasing decision making and that (future) developments in business strategy and structure further will have much impact as well.

Using De Leeuw's control paradigm we contended that from the four necessary conditions for effective control of the purchasing-‘system’, the condition concerning the availability of appropriate decision models has not been met satisfactorily.

Thirdly, we showed that the undervaluation of purchasing during the 50's, 60's and 70's has hindered the development of such models for purchasing. Therefore, we concluded that it is useful to invest research effort in developing supportive decision models for purchasing.

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