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**BEBR**

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Technological Flexibility and Organizational  
Buying Behavior: An Exploratory Study

*Kjell Grønhaug*



# BEBR

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Technological Flexibility and Organizational Buying  
Behavior: An Exploratory Study

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TECHNOLOGICAL FLEXIBILITY AND ORGANIZATIONAL BUYING  
BEHAVIOR: AN EXPLORATORY STUDY

Abstract

This article explores the impact of the organizational technological flexibility on organizational buying behavior. Based on concepts and findings from organization and organizational buying literature, a set of interrelated propositions are developed and explored in a small-scale, in-depth study. Theoretical and managerial implications are highlighted.



## INTRODUCTION

Organizational buying is taking place in an organizational context. Participation in and performance of the buying activities are influenced by the buying tasks confronted with, the rules and procedures developed to handle such tasks, the presence of organizational members and their capabilities, organizational technology as well as other organizational characteristics (cf. Sheth 1973; Webster and Wind 1972).

Reviews of past research demonstrate that organizational buying processes and participation in such processes have been intensively studied (Bonoma et al 1977; Johnston 1981; Møller 1985; Shaikh and Hansotia 1985; Sheth 1977; Wind and Thomas 1981). As noted by Sheth (1977), "However, ... a very limited number of studies deal with the impact of organizational characteristics on the decision making process of buyers in the organization" (p. 28).

A variety of organizational factors have been proposed to exert impact on the buying decisions throughout the vast literature. (cf. the myriad of factors listed in the comprehensive models by Sheth 1973, and Webster and Wind 1972). One such factor is the organizational technology. Webster and Wind (1972) contend that "technology influences both what is bought and the nature of the organizational buying process itself" (p. 17), a point of view also shared by Sheth (1973; 1977). In organizational theory as well technology is assumed to exert impact on various organizational activities--including

procurement decisions, as emphasized in the seminal work by Thompson (1967). In previous organizational buying research, however, this dimension has received almost no attention at all (cf. Gronhaug and Bonoma 1980).

#### ORGANIZATIONAL TECHNOLOGY

Throughout the literature on organizations, the characteristics, determinants, and impact of technology have been extensively examined (Hall 1982; Harvey 1968; Thompson 1967; Woodward 1970). There seems to be, however, considerable disagreement about what to subsume under the concept, partly due to its multi-dimensionality (cf. Stanfield 1976).

One way of considering technologies is as means-ends relationships, which is consistent with the definition proposed by Thompson (1979). In assuming that organizations perform instrumental actions; e.g., they exhibit purposeful behavior (even though their intended behaviors may fail), he (Thompson) contends:

"Instrumental action is rooted on the one hand in desired outcomes and on the other hand in beliefs about cause/effect relationships" (1967, p. 14).

Moreover, he (Thompson) claims:

"Complex organizations are built to operate technologies which are found to be impossible or impractical for individuals to operate" (p. 15).

Technologies, e.g., means-ends relationships can be described in various ways. Such descriptions may, however, be more or less useful, partly depending on the underlying purpose. Here we will focus on the flexibility of the technology, which is believed to be of particular relevance for the understanding of organizational buying behavior. The

perspective of viewing the organization as an input-throughput-output system (Katz and Kahn 1966) may be useful to explain the flexibility-dimension. In order to produce a specific output many, few or maybe only one combination of input factors may be used. Moreover, the production equipment possessed by the organization may be used to produce many, few or perhaps only one type of product. In the extreme case, i.e., when only one type of product can be produced by one specific combination of input factors only, the organizational technology is completely inflexible. An example of inflexible technology is coke-making, where the range of possible outputs as well as combinations of inputs is highly restricted. When a large number of products may be made, each one by several combinations of input factors, the technology is flexible. Even when the technology per se is flexible, the flexibility may, however, be felt as restricted due to costs associated with switching from one type of product to another, costs associated with entering new markets and so on.

The organizational technology may be more or less well understood. When the technology is perceived as complex, and only partly understood, the perceived flexibility is likely to be limited. An example is the modest number of applications most users of computers are able to handle (in spite of the high number of potential applications available in most cases.) Moreover, perceived complexity is related to perceived uncertainty, which definitely may impact the buying behavior (cf. Bauer 1960). Thus in addition to "objective" physical limitations, the organizational technology may as well be restricted by cognitive limitations of organization members (for overview of organizational cognition see Weick 1979). It is believed, however,

that in most cases there will be a high and positive (but far from perfect) correlation, between "objective" and perceived technological flexibility.

#### PROPOSITIONS

Almost no previous research has been directly related to the impact of technological flexibility on organizational buying behavior. The propositions to follow will therefore be rather tentative.

In two of his propositions Thompson (1967) proposes:

... organizations seek to buffer environmental influences by surrounding their technical cores with input .... components" (p. 20), and " ... organizations seek to smooth out input transactions" (p. 21).

Important input factors are purchased in order to keep the organization going. The flexibility of the organizational technology--as defined above--is highly relevant in this context. An inflexible technology implies modest mobility, or as indicated by Porter (1980), high mobility barriers. If the technology--and the resources were completely mobile, without any transaction costs involved, and the organization was able to react instantaneously--as assumed in the economists' model of pure competition, there would be no need to buffer for environmental influences, nor for planning. These assumptions will seldom or never be completely met, in real life. Organizations may, however, vary considerably in technological flexibility (which is related to mobility of resources).

P1: The less flexible is the organizational technology (as defined above), the higher the need for proactive actions to secure adequate input in supply.

The rationale behind the proposition is that the less flexible is the technology the higher the need will be to foresee changes. The less flexible is the organizational technology, the longer will be the time period needed to change and adapt to new conditions.

The input factors purchased may be more or less directly linked to the organizational output, which in turn has to be exchanged to acquire new resources needed in order to survive and prosper (cf. Pfeffer and Salancik 1978). The output is of crucial importance to the organization. The goodness of the output as perceived by the market is directly linked to organizational success. Moreover, the organizational output is also related to the missions(s) served, e.g., chosen arenas for obtaining organizational goals. Intuitively important aspects of the organizational expertise will be directly related to activities needed to serve the missions chosen, including selection and transformation of inputs as well as exchange of outputs in markets. It should be noted that the relevant skills are possessed by individuals. When the skills needed are critical to the organization, such skills are likely to be possessed by members of the organization. Raw materials and the like are directly linked to the organizational output, and due to its importance for the organizational success people with the relevant skills are assumed available and involved in the procurement decisions. Moreover, the skill requirements are heavily influenced by the technology applied by the organization.

P2a: People with the relevant skills will be involved in the procurement decisions. When procurement decisions requiring specific skills occur frequently, (as will be the case for many purchases directly related to the organizational output) the needed expertise is likely to be possessed by organizational members.

The organization is also using various types of techniques and equipments in handling and transferring raw materials into relevant output. Purchases of relevant equipment also require skills. Such skills, however, will partly be different from the skills needed to select the relevant raw materials, and thus:

P2b: The composition of the buying centers will vary according to the type of tasks confronted with (where it is assumed that purchases of raw materials and production equipments represent different tasks).

When the organization technology is inflexible, the probability is high that the same type of raw materials and other products directly linked to the output, will be bought over and over again, and the task will be standardized. When a task is standardized it may easily be assigned to a person or group/department such as the purchasing department. When flexible organizational technology is the case, the purchasing task of raw materials will not be standardized to the same degree, and the assignment of such tasks to a specific person or group will not occur to the same extent, thus:

P2c: The extent to which a buying task will be assigned to a specific person or group of persons will be positively related to the degree of standardization of the task.

Organizations develop rules and procedures to handle the various tasks confronted with. When a specific task is repeated it becomes routinized (cf. Cyert and March 1963), which also is reflected in the "new task--modified rebuy--straight rebuy" perspective (Webster and Wind 1972b). Repetition of a buying task also implies standardization of rules and procedures--and very often--simplification. As the task becomes simplified and structured it is handled with greater confidence,



and less search usually takes place as demonstrated in several studies (for overview see Johnston 1981; Sheth 1977; and Wind and Thomas 1981), and thus:

P3: When the same (purchase) task is repeated, it becomes routinized, and search for information in such purchase situations will be reduced.

From this (P3a) follows that the more standardized is the task, the more rapidly the search will decrease when repeated.

As noted above, organizations develop rules and procedures to handle the various tasks confronted with (cf. Cyert and March 1963). Such rules and procedures may certainly be influenced by the organizational technology (Stanfield 1976). The repertoire of rules and procedures possessed by the organization may definitely influence how the buying tasks are handled by the organization. Any buying process has to be started in some way. The start of the buying process has been given various terms, such as "problem recognition," "identify needs," and "purchase intention" in the organizational buying literature (cf. Wind and Thomas 1981, p. 243 for overview). This is a crucial phase of the buying process, not at least to marketers wanting to initiate and influence such processes. When the technology is inflexible, the organization will probably develop rules and procedures to act in a proactive way in order to buffer for environmental influences to keep the organization going (cf. Thompson 1967, p. 1, and P1). For organizations operating flexible technologies, the need for proactive devices is less pronounced. From P2a it also follows that organizations low in technological flexibility more than organizations high in technological flexibility develop rules and procedures to handle purchases of strategic relevant input in a proactive way.

## AN EXPLORATORY STUDY

A small-scaled study was conducted to explore the propositions introduced above. Below are reported on design, data collecting procedures, and findings.

### Design

In depth cases based on several sources of information were preferred to get detailed descriptions of purchase activities and buying center compositions to explore the stated propositions which may be seen as a step in developing theory.<sup>1</sup>

An important aspect of any study is to get variability along dimensions assumed being relevant (cf. Campbell 1975). Even when conducting exploratory research--as in the present case--the researcher in most cases has some "hunches" about critical factors and relationships. By taking such "hunches"/assumptions directly into account, also exploratory research may benefit from theorizing at the outset of the project as emphasized by Bonoma (1985); Zaltman et. al. (1982), and others. In the present case, critical dimensions are assumed to be:

- organizational flexibility (degree of);
- task (type of)
- novelty of task

In order to create variability along these dimensions, the following exploratory design was conducted: Two organizations were chosen, one high and one low in technological flexibility. In each organization

two different types of purchases tasks were mapped, purchase of raw materials and production equipment. The last purchase of the two buying tasks were registered. In addition the first purchase of the raw materials bought, and a hypothetical purchase of new raw materials were traced. Thus, in each organization information was gathered on four purchases allowing for comparing buying behavior across organizational technologies, as well as across type and novelty of tasks. The hypothetical purchases may be considered as surplus information, but allow for examining potential repetitive behavior in new buying situations for similar task types (e.g., purchase of raw materials). By mapping several cases from the same organizations, it also allows for tracing the impact of the organizational technology across purchase situations. Thus the impact of the "collectivity," i.e., organizational technology might be traced back to each of the individual cases from this collectivity (cf. Lazarsfeld and Menzel 1970).

#### Organizations and Data

Based on a priori information contact was established with two firms, Alpha and Beta, classified as operating inflexible and flexible technologies respectively. Both organizations were small (less than 400 employees), with hierarchical, functional organizational structures. Alpha was mainly producing ploughs, and the product assortment was rather limited, while Beta was offering a wide range of shirts and pants.

Several data-sources were applied to get the detailed information needed, such as:

- Written materials about products, markets and the organizations (annual reports, brochures, memos) were studied.
- Informal interviews with top and middle managers were considered to get the understanding of the functioning and contextual settings of the two organizations.

Based on these discussions it became quite clear that the organizational technology of Alpha was considerably less flexible compared to the technology of Beta. Managers in Alpha believed it difficult to change to other products, and specific combinations of inputs were needed to make the products. The managers in Beta, however, found it quite easy to change output, and many products could be produced by a variety of input factor combinations.

Detailed in depth, "think loud" interviews were conducted to map buying processes and participation in these processes (cf. Douglas et al 1981). The following procedure was followed. In each organization a central person in the last purchase of raw materials was identified through the initial, informal interviews. The most important raw material as measured in terms of costs was chosen.

This person was instructed to "think back" to the last purchase, and to recall what initiated the purchase, how the purchase took place and who else had been involved at the various stages. Intensive probing was conducted, and rather detailed descriptions of the buying process were obtained. The same person then, was asked whether he had been involved in the first purchase of this product (raw materials), and if so, the procedure was repeated. The same procedure

was repeated for the last purchase of production equipment. If not involved, the respondent was asked whether he knew who else had been involved. In addition the person interviewed was asked how a purchase of a new raw material would be handled. Few problems were experienced in obtaining names (which is similar to the experience reported by Moriarty and Bateson 1982). These persons were contacted, and the same interviewing procedure was repeated. The total number of interviews was 22. (Interviews were not conducted with external representatives in the buying centers, nor with all the workers "heard" in the buying of production equipment in Beta (see Table 2)).

### Findings

The major findings are reported below:

(1) Table 1 reports on problem recognition and perceived alternatives for the last purchase of raw materials and production equipment in the two organizations:

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INSERT TABLE 1 ABOUT HERE  
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Inspection of line 2, part a) demonstrates that there are differences between the two organizations with regard to perceived alternatives for the raw materials purchased. Alpha did not perceive any alternative(s) to the one purchased, in contrast to Beta where several alternatives were believed to exist. This may be interpreted as a validation of the technological flexibility dimension emphasized above.

When comparing line 2, in part a) and b) respectively, it is observed that Alpha is perceiving alternatives to the purchased

production equipment, while Beta "doesn't know." For Alpha this may be interpreted as the production technology as such is rather rigid, while expansion of the production capacity (as mapped in this case), may be done in several ways.

(2) The initiation of the purchases differs dramatically in the two organizations. In scanning the environment (cf. Aguilar 1967), Alpha received and acted upon external information indicating expected increase in raw material prices. This information was contrasted with the sales budget, resulting in a purchase substantially larger than usual. The problem recognition in Beta was triggered off by an order. The obtained contract was immediately reported to the headquarter, discussed with production management, and specification of the needed input submitted to the purchase department. The initiation of the buying process in the two organizations is contrasted in Figure 1.

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INSERT FIGURE 1 ABOUT HERE  
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In Alpha the sales budget serves as an internal standard which enables the organization to behave in a proactive way when confronted with the environmental signals. The recognition process in Beta, however, is triggered off in a reactive way. The obtained sales order forces the organization to start the purchase process. The findings are in concordance with P1, emphasizing the need for proactive action when low in technological flexibility, as well as the stated assumption that organizations operating inflexible technologies develop rules and procedures to handle purchases of strategic relevant input in a proactive way.

The purchases of production equipments may be classified as new task/modified rebuy. None of the organizations had previously bought the same product. They were, however, acquainted with the basic needs and could rather easily perceive the benefits associated with the new equipment. The differences are once more noteworthy. From line 2, part b) it appears that the problem recognition in Alpha evolved gradually due to perceived capacity constraints. This perceived tension initiated search. The problem recognition in Beta, however, was initiated by an outside sales representative, who apparently knew their production technology, and made them aware of a new solution. Again, Alpha seems to behave in a proactive and Beta in a reactive way.

(3) Below is shown the participation in first and last purchases of raw materials as well as participants in the last purchase of production equipment in the two organizations.

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INSERT TABLE 2 ABOUT HERE  
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Inspection of Table 2 reveals that compositions of the buying centers vary across organizations, purchases and even for the same purchase when repeated, which corroborate previous findings (cf. Johnston and Bonoma 1981; Robinson et al 1967; Wind and Thomas 1981).

When looking at the first purchase of raw materials in Alpha, the role played by the company president is seemingly strange. There is, however, an explanation. The president in Alpha had just entered the company a few months ahead of the first purchase. Lack of knowledge about the other members and their expertise, and thus perceived uncertainty, almost forced him to "put his nose into everything."

Proposition P2a claims that people with the relevant skills will be involved in the procurement decisions. The pure variations in buying center compositions indicate organizations are trying to do so. This follows directly the assumed goal-directed behavior implying that organizations are trying to use their resources (including the skills of their members) in a rational way.

Inspection of Table 2 also demonstrates as proposed (P2b) that the composition of buying centers may vary across types of tasks, which follows from differences in skill requirements, and the attempt to use the organizational skills in a rational way. March (1981) in a similar vein contends:

Organizations frequently have procedures to involve potentially relevant people in decision making.... The individuals vary in ..., knowledge about a problem, ...." (p. 567).

From the previous discussion it is learned that the organizational technology of Alpha is less flexible than the technology of Beta. The ongoing purchases of raw materials are much more standardized in Alpha compared to what is the case for Beta. When inspecting the compositions of buying centers for last purchase of raw materials, it is evident that the purchasing department plays a far more dominant role in Alpha compared to the role played in Beta, which is in concordance with our stated proposition P2c. Careful examination of the detailed descriptions of participation in buying processes reported by other researchers also reflects findings supporting the proposition (cf. Belizzi and Walter 1980; Doyle et al. 1979; Matthyssens and Faes 1985).

From the above discussion follows (cf. 2c) that when the same task is repeated over and over again a specific person or group of persons



is likely to be assigned to this task. Inspection of first and last purchase of raw materials indicates that this is the case for Alpha. In Beta, however, the composition of the buying center is seemingly the same. The intuitive explanation is that the skills represented in the buying centers of Beta are needed. Moreover, even when repeated, purchase of raw materials in Beta remains the character of "modified rebuy," due to continuous modifications in specifications of needed input.

Examination of Table 2 does also lead to a few additional comments: Inspection of buying center composition for purchase of production equipment in Beta shows that the purchase was initiated by an individual external to the organization.<sup>2</sup> Discussions with the managers in Beta also revealed that they assumed the initiative to such purchases to come from external sources.

In all, but one of the buying centers reported in Table 2, the company president made the final decision. The presidential role, however, was mainly found to be to legitimize the decisions. In none of the four cases (cf. Table 2) where the president made the final decision only, the purchase decisions were modified in any way.

(4) Some of the buying activities are reported in Table 2. A more complete picture of the activities conducted is shown in Table 3.

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INSERT TABLE 3 ABOUT HERE  
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Inspection of Table 3 reveals that activities performed vary across organizations, and across type and novelty of the purchase tasks.

When inspecting the first and last purchase of raw materials, decrease in various search activities is observed in concordance with our proposition P3. Moreover, when comparing last purchase with the hypothetical new purchase of raw materials, increase in search is reported, supporting the proposition (P3a) as well as being in concordance with previous findings (for overview see Johnston 1981; Moller 1985; Wind and Thomas 1981).

When comparing Alpha and Beta across buying situations, it is evident that the search activities differ between the two companies. Alpha seemingly behaves in a more proactive search-oriented way (cf. P1 and P2a) than does Beta. The use of contract reported in Beta's purchase of production equipment is, however, noteworthy. Contracts may be considered as means for reducing uncertainty and transaction costs involved (cf. Williamson 1979), and thus Beta compared to Alpha is using other devices to handle transactional relationships.

Inspection of Table 3 does also show that both companies had previous experience with the supplier. Based on discussions with people involved in the procurement decisions, the following was found to be necessary conditions for change of supplier:

<u>Alpha</u>	<u>Beta</u>
Inadequate delivery	Change in fashion
Change in quality	Supply needed
Price changes	

This reveals that potential changes of supplier in Alpha are production- or technology-driven, while such changes in the case of Beta are market-driven, e.g., transmitted through products and sales.

## SUMMARY AND DISCUSSION

The purpose of the present article has been to explore and develop theory related to the impact of technological flexibility on organizational buying behavior. In doing so, an explicit perspective was developed from which a set of interrelated propositions was derived. The exploratory design benefited as well from the theorizing at the outset of the paper. Thus, stating assumptions and hunches explicitly may be useful in exploratory as it is in other types of research.<sup>3</sup>

The major concepts emphasized in this study are:

- organizational technology (flexibility)
- task
  - 1) type of
  - 2) novelty of
- buying activities (search, evaluations, etc.)
- buying center (participants)

in addition to the hypothetical construct, skill requirement(s). The interrelationships between the various concepts and propositions are summarized in Figure 2.

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INSERT FIGURE 2 ABOUT HERE  
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### Managerial Implications

Besides theoretical implications discussed above, the propositions and findings may have managerial implications as well:

First, some aspects of the organizational technology are easy to trace, such as production equipment and products offered. Thus

various characteristics as reflected in SIC-classifications may be useful in segmenting organizational buyers as basis for tailoring marketing strategies (cf. Wind and Cardozo 1974).

Second, the fact that technological flexibility seems related to organizational buying strategies (cf. P1, P3) should also be noted. For the selling firm it is of importance to know these strategies in order to time their marketing efforts.

Third, a major reason for doing research is rooted in the belief that regularities in behaviors exist, and that findings may be generalized. The mere fact that the reported findings coincide to a substantial degree with the theoretical arguments at the outset of the paper, indicates that generalization--to some extent--is possible.

Further, organizations develop rules and procedures to handle various tasks,<sup>4</sup> such as purchase decisions. Many of these rules are specific to the individual organization. Often they (the rules) are of crucial importance for the handling of purchase decisions, and thus for the tailoring of adequate marketing strategies. In organizational/industrial markets where the number of potential customers is modest and/or a small number of buyers represents a higher fraction of total sales, efforts should be done to register, interpret and adapt to such rules.<sup>5</sup>

Fifth, much of the organizational buying literature assumes long lasting relationships between sellers and buyers (cf. Hill et al. 1975). Reoccurring purchases from the same suppliers indicate long lasting relationships also to be present here. An emerging perspective is viewing organizational markets as networks (cf. Johanson and

Mattsson 1985). Emphasis on how to enter networks, and maintain relationships should be made. In depth buyer behavior studies may be extremely useful, not only in revealing buyer's preferences, but also to acquire knowledge about buying rules, procedures and skill requirements, highly relevant for the tailoring of strategies to attract new buyers and well as strengthen the ties with the old ones.

<sup>1</sup>Intensive, small-sample studies have proven to be a valuable tool to explore and develop theory in several disciplines, including organizational buying behavior (cf. Cyert et al 1956; Crow et al 1980; Kennedy 1983; Pettigrew 1975; Vyas and Woodside 1984; Wilson 1985).

<sup>2</sup>External membership in the buying center has also been noted by other researchers (cf. Wind 1978).

<sup>3</sup>Zaltman et al (1982); Bonoma (1985), and Wilson (1985) emphasize the need for stating the assumption explicitly. The procedure of "strategic sampling" as proposed by Glaser and Strauss (1967) when building theories from observations, and Campbell's (1975) quest for "degrees of freedom" in case studies are also in concordance with this point of view.

<sup>4</sup>For a provocative and enlightening discussion of the importance of organizational rules and procedures, see Starbuck (1983).

<sup>5</sup>This is well known for marketers selling their products to governmental agencies, foreign governments and to the MNC's. For an interesting discussion on selling to the offshore oil industry, see Reve and Johansen (1982).

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	<u>Alpha</u>	<u>Beta</u>
<u>a) Raw Materials</u>		
1. Problem recognized	Expected increase in prices/	Order (contract with buyer)
2. Perceived alternatives	None	Yes
<u>b) Production equipment</u>		
1. Problem recognized	Gradually perceived/need for increased production capacity	Visit from sales representative
2. Perceived alternatives	Yes	? (don't know)

Table 1: Problem Recognition and Perceived Alternatives

Raw Materials                      Production Equipment

Company/Roles

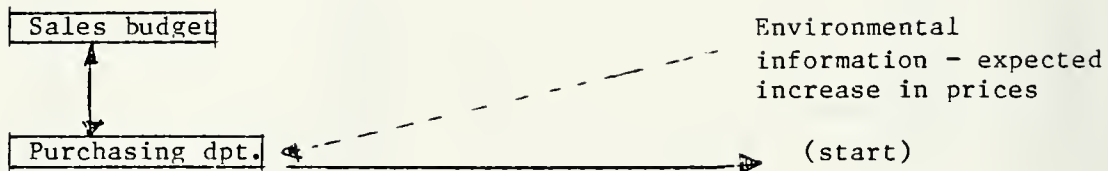
	First Purchase	Last Purchase	Last Purchase
a) Alpha			
1. Initiative	President	Purchasing	Construction/Production mgmt.
2. Requests/bids	President	Purchasing	Purchasing
3. Reading of information	President	Purchasing	Construction/Production mgmt.
4. Evaluation/ Computations	President/ Production	---	Construction/Production mgmt.
5. Final decision	President	President	President
6. Other	---	Production	Vice President/Foremen
b) Beta			
1. Initiative	Sales (Prod.) Purchasing	Sales (Prod.) Purchasing	Sales Representative (Supplier)
2. Requests/bids	---	---	---
3. Reading of information	---	---	---
4. Evaluation/ Computations	---	---	Production mgmt.
5. Final decision	President	President	Production mgmt.
6. Other	Design/ Marketing	Design/ Marketing/ Sales	Foremen/workers

Table 2. Participation in Buying Activities

Company/Activities	Raw Materials			Production equipment	
	First Purchase	Last Purchase	New Purchase	Last purchase	Last purchase
a) Alpha					
1. calculations	---	---	---	yes (impact on production costs)	yes (4)
2. bid(s)	yes (several)	yes (1)	yes (several)		
3. price evaluations	yes	yes	yes		
4. brochures	yes	no	no		
5. advertisements	yes	no	no		
6. tests	x	no	x		no
x) previous experience with the supplier	x	yes	x		yes
b) Beta					
1. calculations	---	---	---	yes (investment calculations)	no
2. bid(s)	yes (1)	no	no		
3. price evaluations	yes	no	yes		yes
4. brochures	no	no	no		no
5. advertisements	no	no	no		no
6. tests	x	no	x		yes (trial according to contract)
x) previous experience with the supplier	x	yes	x		yes

Table 3. Buying Activities

(1) Alpha



(2) Beta

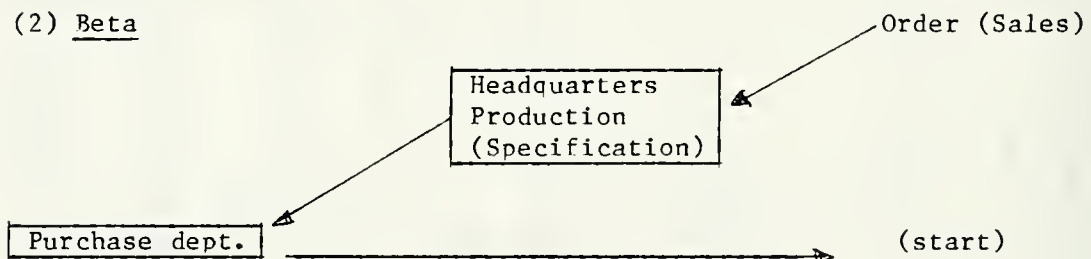


Figure 1. Problem Recognition -- Raw Materials (last purchase)

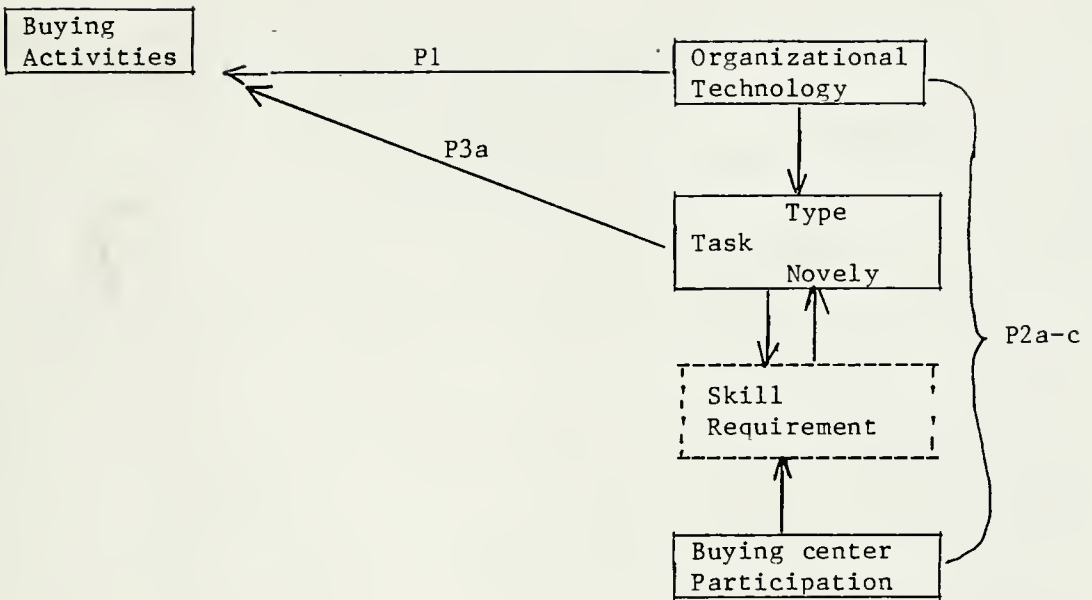


Figure 2. Concepts and Propositions














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