Faculdade de Engenharia da Universidade do Porto
Portugal

University of Twente Enschede
The Netherlands

Value creation with Information: A Semiotic analysis of the Virtual Business

Rita Trancoso

Prof. R. K. Stamper

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ORIENTATION

This project was supervised and oriented by Prof. Ronald K. Stamper and Marc Hafkamp from the Department of Information Management, and Dr. Tinus van Drunen, from the Department of Marketing, of the University of Twente in Enschede, Holland; and Prof. A. Soares Guedes from the Department of Industrial Engineering and Management of the University of Porto, Portugal.

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1. Introduction of the project

1.1. General project goals

This project is performed within the context of the research group on Effective Management of the Information Resource (EMIR), which aims at understanding information and related concepts, and using this understanding to use information effectively within and between organisations. The EMIR programme was established in 1988 under the strategic plan of the Department of Information Management of the School of Management Studies at the University of Twente, motivated by the persistently disappointing performance of investments in information technology over the previous decade or more. Over thirty international researchers contributed to this programme. The core of the EMIR research is based on semiotics, the theory of signs, which is adopted by professor Stamper to study the ways information is used in an organisational context. Based on this semiotic approach, he and his group developed a collection of methods and tools in the research project "Methods for Eliciting, Analysing and Specifying User Requirements" (MEASUR). This project was started in 1970 at the London School of Economics in the United Kingdom, with the support of IBM, Digital and the main UK Research Councils, SERC and ESRC, and brought to the University of Twente in the Netherlands in 1988. Apart from the Department of Information Management, three other departments from the School of Management Studies are involved in the EMIR programme: the Department of Economics and Financial Management, the Department of Operational Management and Logistics and the Department of Business Law, and it is expanding through collaboration with the Faculty of Computer Science at the University of Twente, the Centre for Telematics and Information Technology (CTIT), which co-ordinates the telematics research at the University of Twente and the Telematica Research Centre (TRC), in which the Dutch government and a consortium of major companies like Philips, IBM and KPN (the Dutch Telecom) participate.

Recently the EMIR group is building up collaboration between the members of the Departments of Information Management and Marketing concerning the nature of information resources in marketing. One PhD project now reaching its end is concerned with organised, long-term relationships between trading partners and it uses methods of semiotic analysis. Such long-term relationships are the foundation of so-called "virtual" or "imaginary" companies which can be global joint-ventures made possible by modern information technology. The group is interested in developing research in this area where problems of marketing are probably best approached via an understanding of the information resources involved. Of special interest are concepts of information technology like ISDN, EDI and INTERNET for applications in marketing such as telecommunication, telemarketing, internetmarketing, and database marketing. The project which this report presents, aims at studying the area where marketing and information management intersect, in order to explore the issues which might be the subject of a longer research project.

1.2. The project context

The project is performed in the Department of Information Management, a department of the School of Management Studies at the University of Twente. The University of Twente, founded in 1961, is one of the newest universities in the Netherlands, and is situated amid the fields and woodlands of the former country estate Drienerlo in the Twente region, halfway between the towns of Hengelo (75000 inhabitants) and Enschede (150000 inhabitants), and about 150 kilometres East of Amsterdam. It is distinguished by its commitment in bringing together Engineering Sciences, Applied Sciences and Social Sciences, both in education and research. The multiplicity of relationships that exist between the technical specialities and society at large is accordingly taken into consideration in the curricula. The University of Twente is a fully accredited, largely government-financed university with an enrolment in excess of 6500 students. The University of Twente has also proved itself successful in expanding its networks of international relations. It is substantially involved in European research projects for industry. The University of Twente places great emphasis on co-operation in academic areas with other Universities, by participating in international exchange programmes such as ERASMUS, and aims at further internationalisation of its academic community.

Management Studies is the largest graduate programme, enrolling about 1300 graduate students. The School of Management Studies has about 200 employees, and provides a four year graduate programme which selects courses from the fields of financial management and business economics, strategic management, marketing, management of technology, human resource management, information management, operational methods, systems theory, logistics, business law and international management. About 42 percent of the course programme, however, is provided by a selection of the Engineering Sciences and Applied Sciences, like Chemical Engineering, Mechanical Engineering, Applied Mathematics and Computer Science.

The Department of Information Management, which consists of eleven members, contributes to education and research of the School of Management Studies, and it also provides courses and participates in research at the School of Computer Science, especially in the applied area of Business Information Technology. A large number of the department members are also involved in training and consultancy services to companies. The domain of the department is the development, implementation and application of information systems to support performance and control of business activities, and management of information as a business resource. Areas of research and education are: methods for information requirements specification and development of business applications, organisational learning and knowledge management, interorganisational communication, business process redesign, planning and management of the information infrastructure. In January 1995 a co-operation has been started with the Department of Marketing, under the name of Marketing & Information Management. The aim of this co-operation is to develop a research programme which focuses on information management in the service industry. This project is performed in the context of exploring the domain of shared research for the

two departments. This is why the project will be supervised by members from both departments, Prof. R.K. Stamper from the Department of Information Management and Dr. M.C.H. van Drunen from the Department of Marketing.

1.3. Project description

In this project marketing will be studied from a semiotic perspective. Organisational semiotics studies signs and the way they are being used to organise behaviour in and between organisations in order to get things done. In the here-and-now of the action, the objects and events we are aware of, stand for themselves. We perceive them, interpret them and act upon them. Outside the here-and-now, both with respect to time and place, we cannot perceive the objects and events. We can only refer to them by using signs that represent these objects and events. This is the case if we refer to the past, to the future or to the world outside our direct scope. Semiotics studies the different aspects of using signs, like the physical properties, the empirical patterns, the syntactical structures of grammar, the meaning of signs as representations of objects and events in the social and physical world perceived by persons or groups, intentional use of signs to get things done and finally the changes in the social world resulting from the use of signs. Marketing is concerned with the transactions taking place in the process of value creation as goods and services move (literally or not) from the sources of raw materials through to the "final" consumer. Information is being used both to support and enable this process of value creation. Especially in planning and evaluation the use of signs is essential, because these activities refer to the future and to the past. In performance we are dealing with the substantive marketing activities. In marketing, however, these substantive activities themselves make use of signs to interpret and influence patterns of behaviour of the parties involved in the process of value creation (for example analyses of market behaviour, raising awareness and performing promotion, establishing agreements between subcontractors, etc.).

Emerging forms of organisational behaviour, like the "networked organisations", "imaginary organisations" and "virtual companies" are especially interesting from this perspective because, first of all, we may expect that they heavily rely on the use of signs to perform, co-ordinate and control their distributed activities. Secondly, we may expect that the different backgrounds of the members co-operating as a "virtual organisation" contribute to the complexity of using signs as shared representations of the perceived physical and social reality.

By relating traditional and new marketing concepts to information technological developments, a semiotic approach may reveal the strengths and weaknesses of information technological applications which are immediately referred to in this context, like multimedia applications on Internet, the exchange of messages by Electronic Mail Systems and EDI-applications, and sharing information resources to support and enable co-operative work by Groupware. It will place these and other applications in the context of the technical, formal and informal information system of the "virtual", "imaginary" or

"networked" company in which they are being used. We may expect that a semiotic approach will give us more insight in this complex area.

This project will explore the semiotic aspects of marketing, in order to gain more insight in the role and the meaning of information in marketing, in particular in the emerging new forms of organisational behaviour. This study has to reveal the substantive marketing activities and the way signs are being used to perform, control and communicate these activities. The results of this study will distinguish relevant key concepts and key problems of the emerging organisational forms from a marketing information perspective, and their relevant semiotic aspects. These results will guide further research in this area, especially in order to develop an information infrastructure supporting the marketing activities in these forms of organised behaviour.

This will be achieved by studying emerging organisational forms to identify their key marketing concepts and problems. The relevant substantive marketing activities concerning these key concepts and problems will be analysed as being the problem domain. As participants in these organisations are planning, performing and evaluating shared and distributed activities, they make use of signs to represent and communicate the objects and events they perceive in the social and physical world. The semiotics of marketing will be studied by exploring the physical, empiric, syntactic, semantic, pragmatic and social aspects of the use of signs to perform, co-ordinate and control the distinguished relevant substantive marketing activities. The analysis of the problem domain will be performed using the methods of MEASUR, in order to get the relevant concepts and their meaning clear.

1.4. The approach and the time schedule

As the project proposal introduces a very broad problem domain and aims at integrating topics from this broad domain an approach must be found to study these topics in an integrated way and to come up with some useful results. As a first step, to gain enough insights in the fields of organisation, marketing and information systems, an orientation has to be done to reveal the important and useful topics for the rest of the study. This orientation will be done by studying literature, following courses and by talking to people from the department who have expertise in these particular fields. The next step will be to select the theories, concepts and approaches which seem to be useful and to find a way of integrating them. This will result in a more sharply expressed problem statement and in some specific research questions to be answered. The final part will be to answer the research questions based on the choices that have been made, resulting in conclusions and recommendations for further research.

The orientation

- orientation on marketing
- orientation on information systems and semiotics
- orientation on organisations, especially new emerging organisational concepts like imaginary organisations, virtual organisations, intelligent organisations, networked organisations.

This orientation was estimated to take about 2 months (October, November). The result will be a report on this study.

The research design

- the problem statement: from a vague description to a clear and specific statement, showing the selected concepts and their probable relations.
- the definitions and operationalisations: definition of each of the concepts and the relations and how to study them.
- the research questions: the major questions to be answered about the concepts and the relations between them, as derived from the problem statement.

The research design was estimated to take about 2 months (December, January). The result of this will be a description of the research design.

The research process

- collecting and selecting the useful material
- studying the material
- relating the material to the research questions
- drawing conclusions with respect to the research questions by answering the them and explaining what has and has not been found.

The research process was estimated to take about 2 months (February, March). This will result in a report on the research findings.

Writing the report

- ordering all the material
- writing the final report
- presentation

Writing of the report is considered to be a part of the project steps. However, it may take some extra time to present the material as a final report to the reader.

Because the orientation appeared to be more time-consuming than expected, leading to a part of the research process to be done after the estimated project time and in addition to other activities that were planned after this project, a delay of about two months had to be taken into account.

2. Orientation

2.1. Orientation on Organisations

2.1.1. Introduction

In this chapter we will introduce the concept of organisation. We will first have a look at the definition of an organisation from different perspectives: the organisation as a social system, as a production system, as an information processing system, as an economic system, and as combinations of these in many different ways.

We will then provide a general framework for looking at the structure and function of organisations, following Mintzberg theory. We will refer to the components of the organisation and flows linking them; the co-ordination mechanism and the design parameters; the contingency factors; and the functioning of organisations in markets. These components will be used to explain the existence of different organisational forms, such as: the peer group; simple hierarchies; the unitary form; and the multidivisional form.

After that we will explain how the changes in the environment and the changes in the technology contributed and influenced the emergence of new forms of organisations: the T-form organisation - a general concept of the modern organisation, used by Lucas [Lucas, 1996].

This T-form organisation will be discussed, going through its characteristics, its design variables, and its benefits and disadvantages comparing to the *traditional* organisations.

2.1.2. What is an organisation?

There are many different definitions of "the organisation," which reflect different perspectives on organisational behaviour. As the real organisation is very complex, choices have to be made about what aspects of this complex reality one wants to study. For example, one can define an organisation as a social system, as a production system, as an information processing system, as an economic system and as combinations of these in many different ways. Krabbendam synthesises these perspectives by defining the organisation as a goal-oriented co-operation of people and resources, that achieves its goals by performing transformations that are valuable for its environment. The environment, in this definition, consists of all elements outside the organisation which may influence it or may be influenced by it. The transformations take place in the primary process of the organisation, in which a specific technology is used. A process consists of all activities, performed by people or resources, to transform input into output. The primary process consists of all activities which are directly aimed at producing the output that is desired by the environment. A technology is defined as a combination of knowledge, methods, techniques and tools.

To perform this process according to the norms of effectiveness and efficiency, maintenance and control processes are needed in order to protect the primary process against disturbances from the environment or in order to adjust this process to them. The maintenance processes consist of the activities that protect or maintain the other processes in order to realise the goals. The control processes consist of the activities aimed at taking measures in order to achieve the goals.

The coherence and co-ordination of the different sub-processes are realised by organisational arrangements, which are all the arrangements concerning the distribution and co-ordination of the activities that are necessary for performing the transformations [Krabbendam, 1988].

However, if we want to know about organisations and how they function in more detail, we need to explore some of the most important perspectives in some more depth.

The organisation as a social system

One perspective looks at the organisation as a social system that acts in an environment in order to achieve important organisational goals. Individuals make up an organisation, but within structural constraints. Organisations change, as a result of internal and external forces, but the changes themselves occur within the limits of the pre-existing organisational structure and the environment in which the organisation is operating [Hall, 1977]. A related perspective is the organisation as a political arena, in which individuals strive at their individual goals, and use others to realise these goals, for example by establishing coalitions [Vroom, 1981].

Child acknowledges the constraints set by the environment and the technology, but at the same time he distinguishes a dominant coalition, a group of persons within the organisation who are able to more or less influence these constraints in order to realise their own goals [Child, 1972].

According to Stamper, people get things done in an organised way in so far as their behaviour exhibits some regularities of behaviour, called social norms. A social norm is like a field of force that makes the members of a community tend to behave or think in a certain way. The shared norms are what define a culture or a subculture. A subculture may be a team who know how to work effectively together, and their norms include a solution to their organisational problem. The important aspect is that the tasks within the social system are performed according to the norms shared by its members [Stamper, 1993]. Some norm classifications are proposed by Stamper for further scrutiny [Stamper, 1995; Stamper, Hafkamp, De Waard, 1995]:

1. Social-psychological classification.

This classification distinguishes between the perceptual, cognitive, evaluative and behavioural norms. The basis of this distinction is the type of attitude the norm generates in the norm subject.

- perceptual norms: these norms concern the things that people in the organisation perceive as significant in the field of activity. The attitudes that are triggered, are about acknowledging the existence of some thing or some distinction.
- cognitive norms: these norms concern common-sense and scientific knowledge of the world. The attitudes they affect are about what to expect that will happen, or

about adopting a degree of believe or disbelief concerning the composition or structure of something.

- evaluative norms: these norms concern what people regard as good and bad or evaluate on other dimensions. The attitudes they affect are about evaluation on various dimensions of judgement.
- behavioural norms: these norms concern what one is obliged, permitted, forbidden or at liberty to do in any situation. The attitudes they affect are about the behaviour that is to be performed.

2. Action norms.

Action norms can be subdivided according to what kind of behaviour of the norm subject their propositions concern.

- standing orders: these norms generate simple commands to perform a substantive action.
- status norms: these norms introduce a new state of the social world, in effect they are confined to social actions. They do not change the physical world.
- powers of "legal action": these norms allow norm structures to be invoked or inhibited in their action - the norms are not altered, but used with discretion.
- "Legislative" powers: these norms confer or deny the right to make norms of certain kinds.

3. Substantive, communication and control norms.

This is another classification that distinguishes between classes of norms based on the subject matter or action domain.

- substantive norms: these norms are about the actions affecting changes in the physical or social reality.
- message norms: these norms are about messages that have to be communicated.
- control norms: these norms are about judgements that have to be made about behaviour, and the positive or negative sanctions involved.

4. Classification by instantiation.

All norms can exist in forms that are more or less difficult to examine, in other words
they can be instantiated in a different way.

- informal-implicit norms: these norms are exhibited in the ways people behave even though these people may not be aware of them.
- informal-explicit norms: although the norms are not explicitly recorded, people are conscious of them and can formulate them in words or demonstrate the norm in some appropriate behaviour.
- formal norms: these norms are explicitly recorded in a written form, such as rules, regulations and laws.
- technical norms: these norms are instantiated in machinery of some kind or other. Typically, these are the norms embedded in computer programs.

The organisation as a production system

Another perspective is the organisation as a coherent combination of elements in order to obtain input, transform this input and generate output. The transformation takes place in a production system, being a configuration of resources combined for the function of manufacture, transport, supply or service. The input consists of, for example, raw material, information, money, labour, etc. The transformation adds value to the input in a way that it creates output that is valuable for the environment of the organisation. This output may be products, services, profit for the owners, payments and work satisfaction for the employees, etc. A distinction can be made between manufacturing and supply systems on the one hand and transport and service systems on the other [Wild, 1985]. Four simple manufacturing and supply systems can be identified:

- manufacture or supply from stock, to stock, to customer, i.e. all input resources are stocked and the customer is served from a stock of finished goods;
- manufacture or supply from source, to stock, to customer, i.e. no input resource stocks are held, but goods are produced to stock;
- manufacture or supply from stock direct to customer, i.e. all input resources are stocked, but goods are made only against and on receipt of customers' orders;
- manufacture or supply from source direct to customer, i.e. no input resource stocks are held and all goods are made only against and on receipt of customers' orders.

In manufacture and supply the customers act directly upon the output: they pull the system, in that they pull goods out of the system whether direct from the function or from output stock. In transport and service the customers push the system, they act directly on the input. In such systems, therefore, some part of the resource inputs is not directly under the control of the operations management. In these "push systems" the customers control an input channel. Three transport and service systems can be identified:

- transport or service from stock, and from customer, i.e. input resources are stocked, and no queuing exists;
- transport or service from source, and from customer queue, i.e. no input resources are stocked, but customer inputs accumulate in a queue.
- transport or service from stock, and from customer queue, i.e. all input resources are stocked and customers are allowed to accumulate in queues.

The organisation as an information processing system

This perspective views organisations as systems of information processors (people and information technology) that support the acquisition, analysis, interpretation, transformation and sharing of information both internally and with the external environment [Applegate, 1994]. The demands for organisational information processing increases with increased complexity, uncertainty, equivocality or speed of change in the organisation and its environment. Organisational design can influence information processing capacity in two significant ways. First, increased demand for information can be directly reduced by creating slack resources or by structuring organisational tasks. An organisation effectively reduces information processing demand by adopting a more structured bureaucratic hierarchical design. Second, an organisation can increase

processing capacity through investments in human and information technology based information systems. Efforts to increase information processing capacity involve changes not only in an organisation's information processing systems, but also in management systems (to accommodate more frequent monitoring, analysis, and interpretation and to support expanded involvement). Information technology can influence the development of hierarchical controls or alternatively can support and enhance professional negotiation systems and informal social controls. It could be used as a tool to either decrease information demand - that is, automate - or increase the information processing capacity of the organisation and its decision makers - that is, informate. In the first role, it increases the self-acting and self-regulating capacities of the machine system, thus minimising human intervention. In this context, technology either replaces human workers altogether or structures and differentiates their tasks to decrease the level of judgement and skill required. In its informate role, it translates and makes visible what used to reside within the minds of the individual workers. Physical work is replaced by abstract intellectual work.

The organisation as an economic system

Quite another perspective is the economic one. The object of economy, which distinguishes it from other sciences, is that it deals with human choices about applying scarce, alternatively applicable resources in order to satisfy a multitude of needs, ordered by their intensity. So economic approaches to organisations are specifically dealing with the economic problem of optimal allocation of the scarce resources over the alternative uses. Resources which are optimally allocated, are said to be used efficiently. A business, in this perspective, is defined as a production organisation which aims at economical independence. Production, in this respect, is combining and transforming production resources into products, which have higher value than the assembly of production resources that are used to produce the products. A production organisation is economically independent if and only if, within a specific time period, what the organisation receives from selling products does not have lower value than the expenses to obtain and apply the resources necessary to make these products [Bouma, 1986; Bouma, 1988; Douma and Schreuder, 1992].

Adam Smith is usually credited as the founding father of modern economics. He showed that a tremendous increase in the productivity of work could be achieved by splitting the work up into distinct tasks and having these performed separately, the division of labour. In our present economic terminology, we say that there are economies of specialisation to be gained. By specialisation, the same amount of output can be produced with less labour effort, or, conversely, a greater amount of output can be produced with the same level of labour input. Specialised production is thus more efficient. The reason for this is that we may select tasks which particularly suit our own needs and capabilities and, by learning from experience, we can improve our performance of the task. As many organisations have learned over time, the gains from further specialisation are easily offset by the costs of dissatisfaction from a too narrow application of one's skills, with the resulting boredom and frustration. Another boundary has to do with co-ordination of the divided and specialised tasks. In economic terminology, exchange has to take place because of the division of labour and specialisation. Goods and services are exchanged whenever the rights to use them are transferred. Whenever exchange takes place, we speak

of an economic transaction. Basically, from an economic perspective there are two types of co-ordination of these transactions: the market and the organisation [Douma and Schreuder, 1992].

On the market, the price system is the co-ordinating device which takes care of allocation. In ideal markets, the price contains all the information needed for the co-ordination of transactions. The price mechanism is, therefore, a perfect channel of information to all parties potentially interested in transacting. Usually, there is a cost to using the price system. First of all, there is a cost (if only time) to finding out what the relevant prices are. Next, for important transactions a contract is usually drawn up to provide the basis for market transaction. And finally, there may be conditions under which it is hardly possible (or extremely costly) to reach a contractual agreement which may serve as a basis for market exchange. Apparently, there are many situations in which the price cannot absorb all the necessary information to enable the execution of transactions. In such cases, organisation may provide an alternative.

Organisations can be characterised as all those forms of co-ordination which do not use prices to communicate information between the transacting parties. It may also be the case that before the transaction, no information at all is available concerning, for example, the quality of the product. In this case, contract relationships can be established beforehand, which may have many different forms. Another problem is a situation of information asymmetry between parties in a transaction. In the case of symmetric information, no party has information different from other parties when they move into a transaction. If information is asymmetrically distributed, at least one of the parties has private information which provides an informational advantage. This advantage may be exploited when entering into a transaction. In order for information to be private, it should be unobservable to other parties. It is this unobservability of the private information which constitutes the essence of the information problem and introduces risks for the other party.

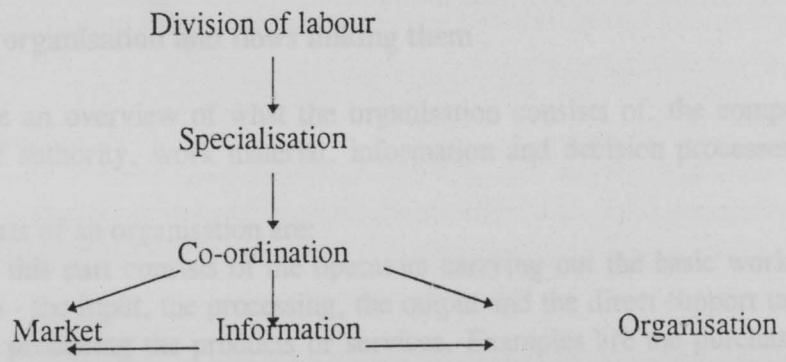


Figure 2.1.1 - Information as the liaison between the market and the organization [Douma and Schreuder, 1992]

So, all co-ordination requires information, and obtaining information involves costs. Thus, information can be seen as an economic good, deriving its value from its scarcity. However, the value of information can only be revealed to another party by disclosing the information, while such disclosure destroys its value. This is the paradox of information. Markets and prices are able to transmit certain types of information. Through

organisational co-ordination other types of information can be communicated. So markets and organisations provide different solutions for the information problems involved in economic transactions. Which (mix of) co-ordination mechanisms is most appropriate depends on the kind of information problem involved and the kinds of solutions offered by both mechanisms. Transactions will typically be executed at the lowest costs. As a consequence, transactions will shift between markets and organisations as a function of the transaction costs under these two alternatives. In fact, most transactions in the real world are governed by hybrid forms of co-ordination. Most markets are to some extent organised. Most organisations use prices (like transfer prices) to communicate information within the organisation. The actual mix of co-ordination mechanisms will depend mainly on the information requirements which are inherent in that situation.

2.1.3. How can we describe the structure and function of organisations?

Mintzberg provides a rather comprehensive theory for studying the structure of an organisation related to its functions in its environment [Mintzberg, 1979]. Mintzberg started his study from the observation that most literature failed to relate the description of the structure of an organisation to its functioning and its context. To understand how organisations structure themselves, he proposes to first study how they function. This part describes the basic components of the organisation, the function each performs and how these functions interrelate. Then, it describes the design parameters which together form the structure of the organisation, and the contingency factors to which organisations adjust in order to function in an effective and efficient way.

The components of the organisation and flows linking them

First, we will give an overview of what the organisation consists of: the component parts, and the flows of authority, work material, information and decision processes that link them.

The component parts of an organisation are:

- operating core: this part consists of the operators carrying out the basic work of the organisation - the input, the processing, the output and the direct support tasks associated with producing the products or services. Examples are the purchasing agents, the machine operators, the assemblers, the salespersons, the shippers, etc.;
- strategic apex: this part consists of the top management of the hierarchy, together with their own personal staff. This part is charged with ensuring that the organisation serves the needs of those people who control or otherwise have power over the organisation and that it serves its mission in an effective way. It consists, for example, of the board of directors, the executive committee, the president, the president's staff, etc.
- middle line: this part consists of the formal management that hierarchically joins the strategic apex to the operating core through the "chain of command". For

example, these are the foremen, the district sales managers, the plant managers, the regional sales managers, the vice-president operations and marketing, etc.

- technostructure: this is the part consisting of the analysts standardising the work of others in addition to applying their analytical techniques to help the organisation adapt to its environment.
- support staff: this part consists of the staff members supporting the functioning of the operating core indirectly, that is, outside the basic flow of operating work. For example, these are the legal council, public relations, industrial relations, research and development, pricing, pay-roll, reception, mailroom, cafeteria, etc.

These components of the organisation are linked together by different flows of authority, work material, information and decision processes. Only by focusing on these real flows can one see how the organisation really functions.

1. The system of formal authority.

Traditionally, the organisation has been described in terms of an organisational chart. While this chart does not show the informal relationships, it does represent an accurate picture of the division of labour, showing at a glance what positions exist in the organisation, how these are grouped into units and how formal authority flows among them.

2. The system of regulated flows.

Three distinct flows can be identified in the regulated system:

- operating work flows: the input, processing, and output, the movement of materials and information in a variety of combinations.
- regulated control flows: the vertical flows of information and decision-making in the formal control system from the operating core up the chain of authority. Flowing up is the feedback information, flowing down are the commands and work instructions.
- regulated staff information flows: horizontal lines of communication flow between the line and staff.

3. System of informal communication.

Centres of power exist that are not officially recognised; rich networks of informal communication supplement and sometimes circumvent the regulated channels; and decision processes flow through the organisation independent of the regulated system.

4. System of work constellations.

The organisation takes on the form of a set of work constellations, quasi-independent cliques of individuals who work on decisions appropriate to their own level in the hierarchy.

5. System of ad hoc decision power.

Authority and communication are not ends in themselves, but facilitating purposes for the other two basic flow processes: the making of decisions and the production of goods and services. Decision processes can be classified in highly standardised decisions at regular intervals and highly unstructured ones made irregularly. They can be categorised by their functional area. They can also be categorised by operating (related to the

operations), administrative (related to co-ordination of operating decisions) and strategic (which are significant in their impact). Specifically, one needs to understand how operating, administrative, and strategic decisions link together and what roles the different participants -operators, top and middle line managers, technocratic and support staffers - play in the phases of the different decision processes.

The co-ordination mechanism and the design parameters

Every organised human activity gives rise to two fundamental and opposing requirements: the division of labour into various tasks that have to be performed and the co-ordination of these tasks. The structure of an organisation can be defined simply as the total sum of the ways in which it divides its labour into distinct tasks and then achieves co-ordination among them. Six co-ordinating mechanisms seem to explain the fundamental ways in which organisations co-ordinate their work [Mintzberg, 1979; Mintzberg, 1989]:

- standardisation of norms: the norms for determining the work are controlled, usually for the entire organisation, so that everyone functions according to the same set of beliefs;
- mutual adjustment: which achieves co-ordination of work by the simple process of informal communication;
- direct supervision: which co-ordinates by having one individual take responsibility for the work of others;
- standardisation of work processes: work processes are standardised when the contents of the work are specified or programmed;
- standardisation of outputs: outputs are standardised when the results of the work, for example the dimensions of the product or the performance, are specified;
- standardisation of skills: skills (and knowledge) are standardised when the kind of training required to perform the work is specified.

Depending on the main co-ordinating mechanism, different kinds of organisations can be distinguished.

According to Mintzberg, the organisational structure encompasses those formal and semi-formal means - in effect the nine design parameters - that organisations use to divide and co-ordinate their work in order to establish stable patterns of behaviour. They can be grouped in four main groups:

1. Design of positions:
- job specialisation: horizontal job specialisation divides the performance of the work, vertical job specialisation separates the performance of the job from the administration of it;
- behaviour formalisation: this is the design parameter by which the work processes of the organisation are standardised;
- training and indoctrination: training refers to the process by which jobrelated skills and knowledge are taught, while indoctrination is the process by which organisational norms are acquired.

2. Design of superstructures.
- unit grouping and unit size: grouping can be viewed as a process of successive clustering. In effect, we have the fundamental distinction between grouping

activities by ends, the characteristics of the ultimate market served by the organisation (the products and services it markets, the customers it supplies, the places where it supplies them) or by the means, the functions (including work processes, skills, and knowledge) it uses to produce its products and services.

3. Design of lateral linkages.

- planning and control systems: the purpose of performance control is to regulate the overall results of a given unit. Performance control systems can serve two purposes: to measure and to motivate. Action planning emerges as the means by which the nonroutine decisions and actions of an entire organisation, typically structured on a functional basis, can be designed as an integrated system. The more global the responsibilities of a unit, the greater the tendency to control its overall performance rather than its specific actions.
- liaison devices: when a considerable amount of contact is necessary to co-ordinate the work of two units, a "liaison" position may be established to route the communication directly, bypassing the vertical channels. Devices to do this are, for example, task forces (committees formed to accomplish a particular task and then disband), standing committees (more permanent interdepartmental groupings which meet regularly to discuss issues of common interest), an integrating manager (a formal authority for the liaison, without extending this to the departmental personnel), matrix structures (these structures, which may have permanent form of stable interdependencies or shifting project work, allow more bases for grouping at the same time).

The liaison devices are tools primarily used where the work is, at the same time, horizontally specialised, complex and highly interdependent. They appear to be best suited to the work carried out at the middle levels of the structure, involving many of the line managers as well as staff specialists.

4. Design of decision making systems.

- Decentralisation: when all the power for decision making rests at a single point in the organisation, ultimately in the hands of a single individual, the structure is called centralised. To the extent that the power is dispersed among many individuals, the structure is called decentralised. Centralisation is the tightest means of co-ordinating decision making in the organisation, but decentralisation can be necessary as all the decisions cannot be understood at one centre, in one brain. Another reason is that it allows the organisation to respond quickly to local conditions and that it is a stimulus for motivation.
- Vertical decentralisation: the dispersal of formal power down the chain of authority in the line functions;
- Horizontal decentralisation: the extent to which staff controls decision processes.

The more professional the organisation, the more decentralised its structure in both dimensions, as the professionals decide about their own work in a large extent, and are in need of some formal power to have the authority about their own activities.

The contingency factors

The design parameters need to structure the organisation in such a way that it can cope with the characteristics of the work to be done. Effective structuring requires a consistency among the design parameters and contingency factors, as an organisation is not considered to be a closed system, but an open system related to and influenced by its environment. This is called an contingency approach to organisations. The contingency factors are related to the design parameters as they influence the work being done in the organisation by four factors:

- comprehensibility of the work: the ease with which the work of the organisation can be understood. This is influenced, for example, by the complexity of the environment and the sophistication of the technical system. It determines the intellectual load on the organisation, which influences the employment of experts and thereby most strongly affects the dependent variables of specialisation and decentralisation.
- predictability of the work: the prior knowledge that the organisation has of the work. This is, for example, influenced by age and size of the organisation, stability and hostility of the environment, the degree to which the technical system regulates activities. Predictable work lends itself to standardisation, and so this variable has its greatest influence on the parameters related to standardisation: behaviour formalisation, planning and control systems and training and indoctrination.
- diversity of the work: how varied is the work that the organisation needs to do. This will, among others, be influenced by the environmental diversity and the organisational size. Diversity influences the choice of the basis for grouping as well as the ability to formalise behaviour and use the liaison devices.
- speed of response: the speed with which the organisation must react to its environment. This is influenced by factors like environmental hostility, ownership and age of the organisation. Speed of response influences the design parameters of decentralisation, behaviour formalisation and unit grouping.

So we can distinguish some important contingency factors influencing the character of that contingency and by this the appropriate design parameters:

- Age and size of the organisation:
- Technical system;
- Environment;
- Power distribution.

Age and size of the organisation increase for example the formalisation, specialisation, size of the units, differentiation between units and a well developed administrative component.

Technical system involves two important aspects:

- a regulation dimension, influencing the work of the operators, the extent to which the operators' work is controlled or regulated by their instruments;
- a sophistication dimension: the complexity or intricateness of the technical system, namely how difficult it is to understand.

The more regulating the system, the more formalised the operating work, the more elaborate the administrative structure (a larger and more professional support staff), greater

decentralisation to that staff and greater use of liaison devices to co-ordinate the work of that staff).

With respect to environment, Mintzberg distinguishes four important aspects:

- stability: ranging from stable to dynamic;
- complexity: ranging from simple to complex;
- market diversity: ranging from integrated markets to diversified markets (range of clients, products or services, geographical dispersion);
- hostility: ranging from generous to hostile (like competition, relationship with unions, governments and other outside groups). Hostility affects structure through the intermediate variables of the predictability of the work, in that hostile environments are unpredictable ones. But of greater interest is its relationship with the intermediate variable of speed of response, since very hostile environments generally demand fast reactions by the organisation.

It is not the environment per se that counts, but the organisation's ability to cope with it. It relates to the design parameters in various ways. The more diversified the organisation's markets, the greater the tendency to split into market-based units (given favourable economies of scale). Extreme hostility in its environment drives any organisation to centralise its structure at least temporally. Disparities in the environment encourage organisations to decentralise selectively into differentiated work constellations, in which each constellation is given power over the decision required in its own sub-environment and in which each is allowed to develop the structure its decision process requires. Based on the dynamics and the complexity dimensions, four basic organisational environments, in which different kinds of organisations with different kinds of co-ordinating mechanisms fit.

	STABLE	*DYNAMIC*
COMPLEX	decentralised bureaucratic (standardisation of skills)	decentralised organic (mutual adjustment)
SIMPLE	centralised bureaucratic (standardisation of work processes)	centralised organic (direct supervision)

Figure 2.1.2 - The influence of the organizational environment in the characteristics of the organization.

A bureaucratic structure is defined as an organisation behaving in a predetermined or predictable way, in effect it is standardised. An organic structure is defined by the absence of standardisation.

A number of power factors also enter into the design of the organisation. The greater the external control of the organisation, the more centralised and formalised its structure. The loss of autonomy significantly changes the structure of the organisation, no matter what its intrinsic needs are - more power concentrated at the strategic apex, tighter personnel procedures, more standardisation of work processes, more formal

communication, more regulated reporting, more planning and less adapting. The power and needs of the members also tend to generate structures that are excessively centralised around these members. Fashion favours the "structure of the day (and of the culture)", sometimes even when inappropriate. Mintzberg shows, however, how the contingency factors and the design parameters should fit together in a constellation that enables the organisation to perform its tasks effectively and efficiently.

The functioning of organisations in markets: the behavioural theory of the firm

Processes of differentiation and integration of organisational activities show an ever-changing economic order, or, at a first glance, disorder. However, at the same time a coherence is created in the form of organisational networks. An organisational network is a combination of mutually dependent organisations, that are somehow co-operating in order to achieve a specific goal [Van Zuthem, 1984]. The economic perspective can shed more light on how the forces of co-ordination by organisational hierarchy and by market function.

The behavioural theory of the firm studies the question how a business firm makes economic decisions. Examples of economic decisions are decisions on price, output, advertising levels, investments in machinery, etc. In standard microeconomics one assumes that the firm has a single goal, usually profit maximisation. In the behavioural theory the firm is viewed as a coalition of participants. Participants of the firm are employees, investors, suppliers, distributors, consumers and possibly others.

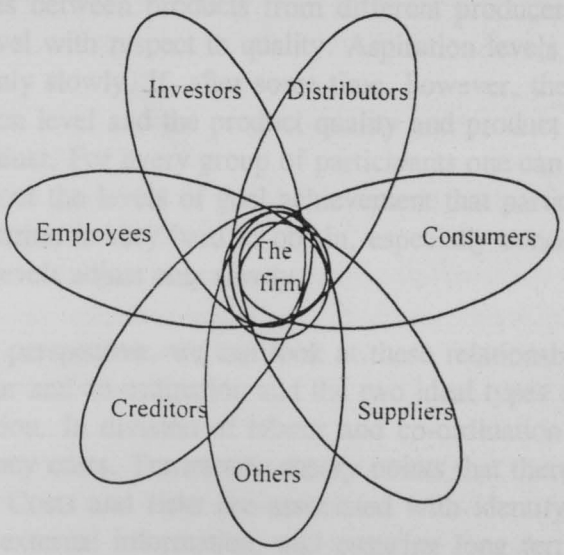


Figure 2.1.3 - The firm as a coalition of groups of participants [Douma and Schreuder, 1991]

Each participant has his or her own goals. These goals will ordinarily not coincide. In general a conflict of goals from different participants is expected. For example,

consumers cannot be offered lower prices and employees higher wages without lowering profits (the inducements for the providers of capital). In behavioural theory it is postulated that goals of firms are arrived at through a bargaining process. During this bargaining process both the composition and the general goals of the coalition are established. The bargaining power of each potential participant depends on how unique a contribution he can offer to the coalition. Each participant receives from the organisation inducements in return for which he makes contributions to the organisation. Contributions made by employees include the labour hours they put in, but also their ideas for improvements, their intelligence and so on. Inducements offered to employees include monetary payments (wages, retirement plans, etc.), but also non-monetary benefits such as self-achievement and job satisfaction. A similar relationship can be sketched for any other group of participants. The participant will continue his participation only as long as the inducements offered to him are as great as or greater than (measured in terms of his values and in terms of the alternatives open to him) the contributions he is asked to make. Hence the organisation will continue to exist only so long as the contributions are sufficient to provide inducements in large enough measure to draw forth these contributions. The fundamental difference between the behavioural theory and the standard microeconomics lies in the information participants have concerning alternative opportunities. In the model of perfectly competitive markets price is all that matters. Moreover, one assumes that consumers know exactly what prices are quoted by different producers. Naturally, they buy only from the cheapest source. In the behavioural theory one assumes that consumers do not know exactly what prices are quoted by other producers, but that, for example, each consumer has aspiration levels concerning prices for products. A consumer continues to buy from the same producer as long as the price is less than or equal to his aspiration level. If a consumer gets information on lower prices quoted by other producers he will slowly adjust his aspiration level downwards. This picture becomes more realistic if one allows quality differences between products from different producers. Then a consumer also has an aspiration level with respect to quality. Aspiration levels can be adjusted, but this adjustments occur only slowly. If, after some time, however, there is a large enough gap between the aspiration level and the product quality and product price, the consumer will look for another product. For every group of participants one can sketch a picture like this. The information about the levels of goal achievement that participants can realise if they join another organisation is very hard to obtain, especially concerning non-monetary payments. So aspiration levels adjust only slowly.

From an economic perspective, we can look at these relationships again as dealing with the division of labour and co-ordination and the two ideal types of co-ordination, the market and the organisation. In division of labour and co-ordination costs are involved: transaction costs and agency costs. Transaction theory points that there are costs and risks involved in transactions. Costs and risks are associated with identifying and contracting with partners, acquiring external information, and ensuring long term co-ordination and control. As in transaction theory, for co-ordination the need to acquire information, develop contracts, provide appropriate incentives, co-ordinate actions and institute effective control mechanisms incurs co-ordination costs, in this case internal co-ordination costs termed "agency costs." Both agency theory and transaction theory are based on the assumption that human beings are bounded rational, which means that the capacity of human beings to formulate and solve complex problems is limited, and that they sometimes

display opportunistic behaviour, which means that they try to exploit a situation to their own advantage.

Agency theory discusses the relationship between a principal and an agent who makes decisions on behalf of the principal, and studies the costs involved in contracting between the principal and the agent, monitoring the behaviour of the agent by the principal and the agent's reward structure. Examples are the relationships between the owner of a firm and the managers, the manager and his subordinates, an insurance company and a policy-holder, a patient and a physician. Agency relations can be found both within firms (for example, manager and subordinate) and between firms (for example, licensing and franchising). With the division and co-ordination of labour and the diversity of stakeholders which together form the firm, there is a need for control by the principle (for example the owner of a company) of the behaviour by the agent (for example the management of the company). This means that there is a need for the principle to be able to monitor the performance of the agent and also to influence the performance in the preferred direction by positive and negative sanctions. A crucial question is how well the principle can observe the agent's behaviour. In the case the principle can observe the agent's behaviour, there is symmetric information. In the case the principle has no information about the agent's behaviour or can only observe it indirectly by obtaining a signal concerning the level of effort by the agent, there is asymmetric information. In the latter situations the agent has private information about his level of effort, which the principle has not. Apart from the company results, in practice it is usually possible for the outsiders to observe to a certain extent the behaviour of the manager. This can be done for example by having the books audited by an external auditor, or by installing a board of directors. Monitoring the behaviour of the manager is not without cost. By spending more money on monitoring, the outsiders may be able to better monitor and influence the performance of the manager. A self-employed person receives the fruits of his efforts alone. If he puts in more effort, he produces more and earns more money. People who are working together in a team and share the proceeds of their work, will receive only a part of the earnings from extra effort, as results will be shared. So in a team people will put in a lower level of effort than persons who are self-employed. This phenomenon is called shirking. The members of a team could agree not to shirk, but if it is difficult to detect shirking, such mutual promise will not be effective. Here again, we see that the unobservibility of the effort put in by the team members causes an information problem. If the team members can see quite easily who is shirking and who is not, they can adjust team membership without a separate monitoring function. Suppose, however, that it is more difficult or costly for the team members to monitor other team members than it is for someone specialising as a monitor, whose only task would be to detect shirking. A team with such a monitor would then produce more than a team without a monitor. Of course, this monitor should also be rewarded, but if the value of the additional output from having a monitor is sufficiently high, it is in the interest of all team members to have a monitor. So, one can look at the organisation as participants linked by contracts, written and unwritten. Most agents receive a fixed promised payment or an incentive payment based on a specific measure of performance. There is a risk involved with the rewards after these payments have been paid, which is beard by the residual risk bearers, or residual claimants. An organisation is called noncomplex if specific information relevant to decisions is concentrated in one or a few agents. Specific information is detailed information that is costly to transfer among agents. Most small organisations tend to be noncomplex, and most large organisations tend

to be complex, but the correspondence is not perfect. In small, noncomplex organisations it is efficient to allocate both decision management (generation and choice of decision alternatives) and decision control (execution of the chosen alternative, measurement of performance and implementation of rewards) to those agents who have the specific information. When decision management and decision control are combined, residual claimants have no protection against opportunistic action of decision agents. So in small noncomplex organisations residual claims are also allocated to the important decision agents. An example is the small entrepreneurial firm, owned and managed by the same person. In the large corporation in which a large amount of division of labour and co-ordination takes place, the professional managers are no longer the residual claimants of the company, but still possess the specific knowledge relevant to specific decisions. It is now efficient to delegate decision management to the professional managers. Decision control, however, is exercised by the corporate staff and management of the company. In a large public corporation, there are many shareholders. Having many shareholders has advantages because the total risk to be shared is large and there are large demands for capital in order to be able to make fixed promises to other agents. However, it is very costly for all of the shareholders to be involved in decision control. So they delegate decision control to the board. While decision management is diffused within a large public corporation, decision control is exercised by the board on behalf of the shareholders.

Transaction costs for a particular transaction depend on the critical dimensions of that transaction. The three critical dimensions are:

- asset specificity: the asset specificity of a transaction refers to the degree to which the transaction needs to be supported by transaction specific assets. An asset is transaction specific if it cannot be redeployed to an alternative user without a significant reduction in the value of the asset. Asset specificity may refer to physical or human assets. This may lock the parties into the transaction.
- uncertainty or complexity of the transaction: in an uncertain or complex transaction a lot of information needs to be gathered (if this is possible at all) to know about the products, the other parties involved etc.
- frequency: when asset specificity is high, one expects transactions to be carried out within organisations rather than across markets. However, to set up a specialised governance structure (such as a vertically integrated firm) involves certain fixed costs. Whether the volume of the transactions conducted through such a specialised governance structure utilises it to capacity is then the remaining issue. The costs of a specialised governance structure are more easily recovered for high frequency transactions.

Transaction cost economics and agency cost economics can be used to explain the existence of different organisational forms, like the peer group, simple hierarchies, the unitary form and the multidivisional form [Douma and Schreuder, 1992].

The peer group

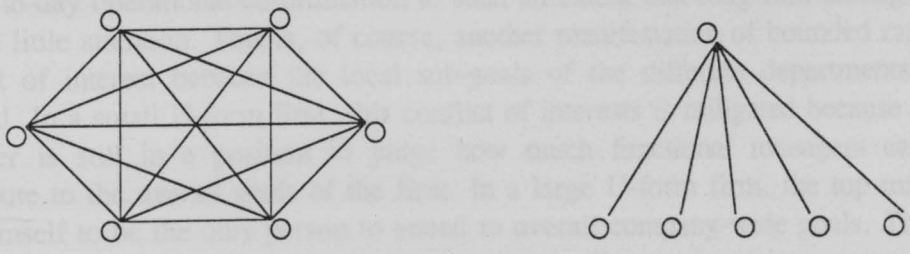
A peer group is simply a group of people working together without hierarchy. In a peer group, the most important co-ordinating mechanism is mutual adjustment. There is no boss, so there can be no direct supervision. The peer group sells its output, the proceeds of which are shared among the members of the peer group according to some sharing rule.

Examples are small partnerships of lawyers, auditors or doctors. Peer groups can exist because of the economies of scale that may be obtained by working together, both in production activities or information gathering. Second, a peer group may have risk-bearing advantages over a group of independent persons. Third, a peer group may offer associational gains, that is, the partners may be more productive when working as a member of a partnership than when working independently, for example because they feel responsible to do their fair share of the work. However, in large partnerships shirking may become a severe problem and thus, in a large peer group it is not uncommon that one or a few members are designated to perform productivity audits and are given the power to adjust compensation of group members accordingly. This intrudes a monitoring and control function, which violates the essence of the peer group, leading to a simple hierarchy.

Simple hierarchies

A simple hierarchy is a group of workers with a boss. Most of the production processes consist of several stages which are technologically separable. These stages can be separated by intermediate product inventories. There is no team production. The boss has the right to adjust wage rates, to alter the composition of the group and to tell the workers of the group what to do. So, direct supervision is an important co-ordinating mechanism. Most small manufacturing firms are organised as simple hierarchies.

In a peer group every member participates in decision making. In a simple hierarchy decisions are taken by the boss. Now suppose that the information relevant for decision making originates with each member. In a peer group each member must communicate with all other members. In a simple hierarchy he needs only to communicate with the boss. So a simple hierarchy can realise economies of communication over a peer group. A simple hierarchy can also realise economies in decision-making. Where in a peer group decisions are reached after discussion in the whole group, in a simple hierarchy the boss alone makes decisions, and less time may be needed for decision making.



Peer group Simple hierarchy

Figure 2.1.4 - Number of communication channels in a peer group and in a simple hierarchy [Douma and Schreuder, 1992]

The unitary form

In a simple hierarchy there is only one manager who co-ordinates the work of the other team members. Suppose that the economies of scale are such that the size of the

group is large. Then because of the bounded rationality, a single manager can no longer co-ordinate the work of all the team members. Several managers are now needed. This creates an opportunity for division of managerial work so that each manager can specialise in a certain type of managerial work. One manager, for example, may specialise in managing the factory, another in managing the marketing and sales people, etc. Thus, within the firm, departments along functional lines are created. Each functional department has a manager. The work of these functional managers is co-ordinated by a general manager. This organisation form is used widely by medium-sized firms, and is called the unitary form or U-form. Within a U-form enterprise there are at least two layers of managers. It is a multi-stage hierarchy as opposed to the single-stage hierarchy or simple hierarchy.

The multidivisional form

Now suppose that the U-form firm expands by adding several new products, like what happened in the early 1900s. At first, most of these companies continued as U-form enterprises. Only after some time they found out that for the large, multiproduct firm the U-form has severe disadvantages. First, in a large U-form firm there are several layers of management. Co-ordination of two functional departments (say marketing and production) occurs mainly at the top level. Thus, information has to be transmitted across several layers before it is used for decision-making. As information is transmitted there is usually a loss of information. Data are summarised and interpreted as they move upward and instructions are operationalised as they move downward. This leads to an accumulative control loss: the corporate board loses control of day-to-day operations as the number of management layers increases. The cumulative control loss is a result of bounded rationality: because of bounded rationality the data have to be summarised and interpreted before they reach the top manager and because of bounded rationality the top manager is unable himself to give detailed, operationalised instructions. Second, as the U-form firm grows, the character of the strategic decision-making process alters. The top manager is involved in day-to-day operational co-ordination to such an extent that long-run, strategic decisions receive little attention. This is, of course, another manifestation of bounded rationality. A conflict of interest between the local sub-goals of the different departments cannot be avoided. In a small U-form firm, this conflict of interests is miligated because the general manager is still in a position to judge how much functional managers care for and contribute to the overall goals of the firm. In a large U-form firm, the top manager may find himself to be the only person to attend to overall company-wide goals. The tendency to pursue operational sub-goals becomes too strong. Departmental interests voiced by the functional managers enter the strategic decision-making process. The solution to these problems is to introduce the multidivisional or M-form enterprise. The M-form firm is divided at the top level into several quasi-autonomous operating divisions, usually along product lines. Top management is assisted by a general office (corporate staff), the main characteristics and advantages of the M-form are given by Williamson [Williamson, 1975]:

- The responsibility for operating decisions is assigned to essentially self-contained operating divisions. The divisions operate as quasi-firms.
- The corporate staff attached to the general office performs both advisory and auditing functions. Both have the effect of securing greater control of operating division behaviour.

- The general office is principally concerned with strategic decisions including the allocation of resources among the operating divisions.
- The separation of the general office from operations provides general office executives with the psychological commitment to be concerned with the overall performance of the organisation rather than to become absorbed in the affairs and subgoals of functional departments.

Compared to the U-form organisation of the same activities the M-form serves to economise both on bounded rationality and on opportunism. Bounded rationality is less a problem in the M-form firm than in the U-form firm because information is transferred less often. Opportunism is attenuated in the M-form firm because it is easier to translate an overall goal (e.g. profit maximisation) into operational subgoals per division (e.g. profit maximisation for each division).

Between divisions numerous transactions of intermediate goods and services take place. There are internal markets within the M-form enterprise for intermediate goods and services. Financial results of each division are affected by the prices (usually called transfer prices) at which these internal transactions take place. Transfer prices may be either set by the corporate headquarters or negotiated between divisions. If divisions are left free to negotiate transfer prices for internal transactions, then one advantage of organisations over markets (reduction of transaction costs due to costly haggling and workflow interruptions) is seriously impaired. If, at the same time, divisions are allowed to involve parties outside the organisation to provide the intermediate products and services and they themselves are allowed to offer their intermediate products and services at other parties, the difference between the internal and external market virtually disappears. There is simply one market for goods and services with several suppliers and several customers. Internal markets also exist for human resources, capital, and for any other resource of the company. Thus, internal markets can be organised to a certain extent or profit centres may compete within the enterprise just as independent companies would compete on an external market. Between internal and external markets there may be a waterproof shield, a semi-permeable shield or no shield at all. The more competition there is between profit centres and the fewer shields there are between internal and external markets, the more the large enterprise functions as a set of independent companies.

By creating markets to replace organisational structures, the agency costs are reduced but the transaction costs may increase. By creating organisational structures to replace the market, the transaction costs are reduced but the agency costs may increase. From an economic perspective, these costs play an important role in decisions about division of work and co-ordination.

2.1.4. What new forms of organisation can we distinguish?

Changes in the environment and their consequences

The past decade was a time of dramatic change, with large and small firms struggling to survive. Familiar strategies, rigid hierarchies, and swollen middle

management ranks became the targets of major organisational reform. The need to simultaneously manage both speed and complexity was driving new forms of organisation. Many are of the opinion that the traditional hierarchy has outlived its usefulness and that new models of organisation are needed to cope with a dynamic and uncertain and complex environment [Applegate, 1994]. The bureaucratic hierarchy and entrepreneurial organisational forms were well defined at the beginning of the twentieth century and the difficulty of balancing the flexibility and responsiveness of the entrepreneurial organisation and the efficiency, scope, and control of the bureaucracy was debated intensively during the 1950s and 1960s. The matrix organisation was born of these struggles. During this same period, the adhocracy was defined to meet the special challenge of organising to support teams of experts (knowledge workers) working together on projects designed to produce complex, radical innovations. Applegate gives an overview of the developments of organisational forms to fulfil the environmental requirements [Applegate, 1994].

The entrepreneurial organisations are able to respond creatively and quickly because their small size and relatively simple context permit important decisions to be centralised, yet still reflect real time understanding of the business environment and allow immediate feedback. A single individual, typically the founder alone or in concert with a small cohort of trusted companions, defines corporate strategy in a highly intuitive and non-analytical way. The small size of the entrepreneurial firm enables direct observation and communication among all involved, and the changing nature of strategy affords little opportunity for standardisation. Co-ordination and control are exercised through direct supervision and mutual adaptation. As they grow in size and complexity, successful entrepreneurial organisations frequently evolve toward "mature" bureaucratic hierarchies.

The bureaucracy matches situations where there exists a readily understood and highly structured set of tasks for converting inputs into outputs, where the same product or service is to be produced over and over and where the environment is stable enough to ensure that the technology will remain relatively constant, the products and services will continue to meet customer needs, and the flow of raw materials (including people and capital) will continue uninterrupted. Behaviour is codified in detailed policies, procedures and job descriptions that facilitate tight control through direct supervision. The operating core needs to be "sealed off" from all non-routine events and conditions and hierarchical chains of authority are developed to deal with situations that fall outside the routine. In the traditional bureaucratic hierarchy, the organisation is broken down into distinct units of specialisation, each responsible for one major task associated with designing, developing, manufacturing, marketing, selling and servicing a product. These units are subdivided into smaller and smaller units until the job of each individual in the organisation was specified in detail. But, during the late 1960s and 1970s, the limitations of the hierarchy for enabling firms to manage the increasing competitive intensity, uncertainty and speed of change in the environment led to the development of a new organisational model, the matrix.

Matrix structures violated the scalar chain and unity of command of bureaucracy by incorporating dual reporting, authority, decision-making and communication channels. Three conditions justify the increased cost and effort associated with managing and controlling the matrix:

- significant pressure from the environment to organise around more than one area of focus and expertise;

- sufficient environmental uncertainty, complexity and interdependency necessitate implementation of wide-band information processing systems;
- successive pressure to share the physical or human resources.

In theory, the matrix was designed to acknowledge and resolve the conflicts that arose among multiple management groups that brought unique but interdependent sets of knowledge, skills, and resources to decision-making and operations. Its multiple information channels were designed to model the complexity of the business environment, and overlapping authority and accountability were designed to encourage collaboration. In practice, however, the matrix did not live up to its theoretical promise. Power struggles led to confusion, conflict and other indecision; dual reporting and authority levels made accountability problematic; lack of tools for managing and communicating information diminished understanding of the business and created information overload; and duplication of resources engendered excessive overhead and cost.

The adhocracy, another organisational model developed about the same time as the matrix to address similar environmental conditions, exhibited many of the same problems. The adhocracy is described by Mintzberg as the configuration most appropriate for sophisticated innovation, which requires that experts unite in interdisciplinary teams to work on complex projects with long time horizons. Most adhocracies adopt a modified matrix structure, with professionals grouped into functional or market-based units that serve as their "organisational homes," but deployed to project teams to carry out the work of the organisation. Liaison units or individuals constitute the primary co-ordination mechanisms between teams that may be assigned to work on different parts of a project, and between functional/market units and project teams. Co-ordination within teams is primarily by professional negotiation and leadership, which relies on intensive communication and collaboration. Traditionally, such communication was possible only when team members were co-located, but advanced electronic mail have recently emerged to support co-ordination among dispersed project teams. The adhocracy is ideally suited to a simultaneously dynamic and complex environment and to finding of one-of-a-kind solutions to complex problems; it is not well-suited to routine activities. Over time, the uncertainty, inefficiency, and outright "chaos" inherent in the structure often give rise to difficulties. The adhocracy's inherent ambiguity, when combined with the high degree of interdependence and autonomy associated with tapping professional expertise and judgement, renders the structure fertile ground for conflict and ruthless competition among team members and political manouvres. Given the inherent sources of instability and growth that attends success and age, the adhocracy frequently evolves into a professional bureaucracy concentrated on a specific market or focused on a standard set of services, which is common at universities, hospitals, and large, established accounting firms that operate in stable environments. It is the routinization of products and services that distinguishes the professional bureaucracy from adhocracy. Both the professional bureaucracy and adhocracy rely on standardisation of expert skills and knowledge to ensure co-ordination and control. However, in the adhocracy this is combined with administration of the project work, where in the professional bureaucracy there is much more individual autonomy.

Trends in the organisational forms show still many of the characteristics of the hierarchical form. The most consistently reported changes were the decrease of the

hierarchical levels and the increase of the span of control at each level. Finally, in addition to the progress in "flattening" the organisation, there was evidence that firms were also "downsising" by selling off portions of the business that were viewed as non-value-adding, to enable them to focus resources and management attention on "core competencies." However, as Mintzberg showed already, an organic structure characterised by decentralisation and mutual co-ordination as the main co-ordinating mechanism, is needed to cope with a dynamic, uncertain and complex environment. Many different organisational forms are proposed to fulfil these requirements, among which networked, horizontal or process-based, knowledge-based, intelligent, team-based, adaptive, and learning organisations. Despite the lack of clarity in the vision for the new organisation, a unifying theme runs through all: information technology is a critical component that is both driving the change and enabling survival [Applegate, 1994].

Changes in the technology and their consequences

With the evolution of the "information society" several other, information technology related, changes can be detected. Cash and colleagues have delineated three areas in the evolution of organisational use of information technology from the 1950s to the 1980s [Applegate, 1994]:

- The first era is that of using the mainframes of the 1950s and 1960s to automate information-intensive "back-office" administrative processes such as payroll and accounting, to improve transaction efficiency.
- The second era is that of using mini and microcomputers of the 1970s and 1980s to enable users to develop applications that were designed to improve personal (and work group) productivity and effectiveness.
- The third era is that of using applications that stress the strategic potential of information technology to transform the business and industry.

Applegate adds a fourth era:

- The era of the evolution of network and database technology during the late 1980s, which enables the management of a flexible and dynamic information infrastructure. This, in turn, allows rapid development and deployment of transaction processing, end-user information reporting, communication, productivity and decision support and strategic applications. With its potential for integrating the previous three eras of technology applications into a single, integrated architecture, the ability to use information technology to support and enable new organisational infrastructure became apparent.

With the evolution of information technology, the work and the workforce changed. White-collar workers outnumber the blue-collar workers: in 1956 in the United States for the first time in history most of the workers worked with information rather than producing goods. Information technology evolved from a simple tool to support administration to a critical component of business, redefining markets and industries and the strategies of the firms that compete within them. Distance and time have become much less significant determinants of market and organisational structures. Moreover, information has become a major economic good, frequently exchanged in concert with, or even in place of, tangible goods and services.

The 1990s have also seen the emergence of examples of "virtual" corporations, organisations comprised of many small, independent agents or firms. The connections among these constituent entities, which effectively function as nodes in an information network, enable organisations to achieve dramatic scope and scale while preserving flexibility and local responsiveness. These new forms of organisation, which all point to the centrality of a fully connected, integrated information and communications network enabled by advanced information technology, challenge our legal and social definitions of organisations.

Information technology has not only radically altered our view of interfirm boundaries, many argue that it is also challenging our notion of boundaries within firms. As companies install sophisticated information and communications platforms that have the potential to link everyone to a common source of organisational memory and a fully distributed network of relationships, the rigid partitions between organisational layers and functions begin to crumble, providing an ability to simultaneously influence strategy, production, co-ordination, and control and thereby enable new forms of organisation.

Information technology has been shown to reduce transaction costs while enabling improved management of the heightened operating risk, influence the timeliness, and level of detail of information shared between firms and decrease the co-ordination costs. This puts the organisational forms of centralised markets (global networks) and decentralised markets (small firm networks) besides the functional hierarchy and the divisionalised form. Although agency costs can be minimised by centralising decision-making, such an approach fails to consider relevant trade-off costs, namely that decision-makers at the top must gain access to the information needed to make decisions (i.e. information costs), and must be capable of analysing and processing relevant information in a timely enough manner to ensure that they make optimal decisions (i.e. decision costs). The solution to minimising information and decision costs is to decentralise decision-making to the point at which individuals possess all the information they need to make decisions. The role of information technology is to enable organisations to allow decision-making to occur across a greater range of hierarchical levels without suffering as much of loss in decision quality or timeliness. The availability of advanced information technologies can enable those who authorise and make decisions to bypass hierarchical channels, leading to higher quality, more timely and more interactive decision-making.

The development of information technology systems that enable electronic integration among industry participants can support the development of value-adding partnerships and outsourcing relationships that enable firms to decrease their dependence on strategies of vertical integration, while ensuring control of production processes. They enable more complex, information intensive market structures.

The T-form organisation

The organisation design challenge has traditionally been conceptualised as a trade-off between centralisation and control, and decentralisation and autonomy. More recently, it has been noted that in environments that are dynamic, complex and uncertain, collaboration becomes a third critical organisational design criteria [Applegate, 1994]. The difficulty of simultaneously balancing all three of these design criteria has rendered previous hybrid designs, such as the matrix and the adhocracy, unstable, costly and conflict-ridden.

However, it is suggested the emergence of a new "information enabled" hybrid organisational model that marries the features of the hierarchy, entrepreneurial form, matrix and adhocracy in unique ways. This sheds new light on the organisation design challenge and the critical role of a flexible information infrastructure for meeting the demand for increased information processing capacity and for minimising information, decision-making and agency and transaction costs inherent in the new design [Applegate, 1994]. This type of organisation is described in general as the T-form organisation.

2.1.5. The T-Form Organisation

The T-Form is a general organisation structure, referring to a firm based on information technology design variables as well as conventional organisation design principles.

There is a series of new IT design variables to be used in creating a technology-based, or T-Form organisation. These technology-based variables can be used to design the T-Form organisation that is appropriate for each firm's unique business environment.

Ideally, instead of designing an organisation and adding IT later, managers will use technology actively in designing their organisations in the first place.

The first information systems processed basic transactions, often where there was intense paperwork (orders, billing, accounting, and production control). Nowadays, however, organisations have found ways to employ technology that go well beyond simple transaction-processing applications. Out of the convergence of communications and computer technologies, they have created new opportunities in the way work is organised. The first transaction-processing systems altered workflows and tasks for one department or a small group of departments. Today's technology provides managers with opportunities to create new structures for entire organisations.

The manager who designs a T-Form organisation has a great deal of freedom in choosing its structure. IT organisation design variables can be used in a number of different ways.

The characteristics of the T-Form organisation

The characteristics of the T-Form organisation are described by Lucas [Lucas, 1996]:

- flattened hierarchy: with few layers of management; In order to be highly efficient and to minimise overhead, managers should employ technology to produce an organisation with a relatively flat structure - a structure that has a minimum number of layers of management. The T-Form organisation substitutes layers of management for technology. First, communications technology demolishes the old idea of span of control: now, a manager can stay in contact with and "supervise" a large number of subordinates electronically. This type of supervision requires much more trust between manager and subordinate. Second, technology, not a larger number of subordinates, can be used to help the manager perform his or her tasks. Another objective for today's

corporation is to remain flexible. Market needs and business conditions change rapidly. A firm has to respond quickly to these changes, a characteristic not associated with large bureaucracies.

- matrix management: allows multiple assignments to be given to staff members. A T-Form organisation also uses temporary work groups to create much needed flexibility. Today electronic communications are making it easier to form and manage task forces of employees who cut across a number of functional areas of a business, and that can span large physical distances.
- decentralised decision making: technology makes it possible to provide managers at any level in the firm with the information they need for problem solving; once individuals close to the problem have that information, management has to be willing to delegate decision making to them. The presence of delegated, decentralised decision making implies that organisational members possess a high level of trust. Decentralised decision making is essential if the organisation is to achieve flexibility. Flexibility depends in part on good and quick problem solving, and firms have found that managers close to a problem are in the best position to solve it.
- logical structure: the logical structure of an organisation is what anyone and his customers and suppliers perceive as they deal with the organisation; the structure that the external world sees. The logical structure also identifies what processes and functions need to be performed. This structure may be considerably different from the actual physical structure. The physical design determines how the organisation realises the logical view. As a result of its logical design, a company of many parts may look like one monolithic organisation to customers placing an order. It may appear to have a number of internal departments when, in fact, the departmental functions are performed by external organisations. The T-Form organisation is less concerned with its physical structure than with its logical structure. This type of organisation may appear to be a traditionally structured firm while its actual physical structure relies on communications technology like electronic mail (e-mail), groupware, and distributed offices, providing the firm with more flexibility than the traditional structure ever did. Reporting relationships can and will change as the T-Form firm faces new demands.
- electronic links with customers and suppliers: used to managing routine customers and suppliers transactions, but also to establish electronic mail and groupware connectivity with external organisations, in order to work more closely on a continual basis with those customers and suppliers. Electronic communications, such as electronic data interchange (EDI), facilitate such close relationships. This is also another reason to eliminate old-fashioned notions of physical location and rigid organisational charts.
- process reengineering: focus management attention on business processes, regardless of the department or functions that might have partial responsibility for a process. An order entry system, for example, cuts across a number of departments from order taking to inventory control to the ware-house. Instead of looking at the work of each of these functions as a separate task, process engineering concentrates on the order-cycle process itself. In the T-Form organisation, also, functional organisation is becoming less important. The T-Form identifies its processes and has process "owners" who are responsible for seeing that the process works.
- virtual components: a virtual component is a company function that exists physically in a traditional organisation, but that has been replaced by an electronic version in the T-Form organisation. A step beyond the virtual component is the virtual organisation. The virtual organisation can be created through a negotiated agreement with another firm.

These types of agreements represent a new form of strategic alliance with other corporations. Such an alliance implies more than just a make-or-buy decision; the firm is purchasing more than a component to plug into some part of its organisation. An alliance involves a pooling of interests, not a onetime purchase or sale. The firms in an alliance become interdependent and form a partnership; each is interested in the success of the other. An alliance lets each firm do what it does best; that is, each firm operates where it has a comparative advantage. A trend in today's business, after many companies diversified or bought other firms, is to return to one's "core competence."

- ability to successfully manage IT: managers understand and participate in the decisions their organisations make about technology. Management takes an active part in shaping and managing IT.
- technology infrastructure: it has adequate technology in place to take advantage of new opportunities. The infrastructure includes components such as routine transaction-processing systems, an internal and external communications network, data networked workstations for all managers, support staff and a variety of production workers, and data retrieval and analysis capabilities. In fact, traditional capital budgeting techniques, like the net present value, do not work very well when applied to infrastructure investments. But a communication network is necessary because it connects everyone in the firm. It allows the flexible organisational structures described above. This network will soon be intelligent, populated with agents that will do tasks for the manager the way a robot does for the factory worker. Software to support workgroups is also an important component of the T-Form organisation, even though a direct and short-run return from that kind of investment is also very difficult to demonstrate.
- sound working environment: one objective of the T-Form organisation is to create an environment in which employees can excel. Traditional organisations often stifle creativity and frustrate employees. Managers in a T-Form organisation have to trust employees and give them significant responsibility. The T-Form organisation is lean; managers no longer have a large number of subordinates with whom to discuss decisions or multiple committees to delay a decision. The T-Form organisation helps employees maximise their contributions to the firm and enjoy the satisfaction that comes with being able to perform well.

Each T-Form organisation will share these characteristics described above, but, however, each organisation will also use IT design variables in ways that create a detailed structure that is unique to the firm and its environment. The shape of this structure will depend on the nature of the firm's business and the environment in which it operates. We can have a T-Form organisation in a services company or in a manufacturing company, but the mix of the design variables will be different and appropriate for each one of them.

In designing the T-Form organisation there is nothing wrong with considering the traditional approaches to organisation design. Traditional and IT organisation design variables should be considered simultaneously in structuring the organisation.

Information technology is defined to include computers, videoconferencing, artificial intelligence, virtual reality, fax machines, cellular and wireless phones and pagers, all forms of electronic communication, and so on.

Conventional design literature typically fails to recognise the new design variables enabled by information technology. Yet, such IT solutions as e-mail or groupware can often be used in place of such conventional solutions as task forces or liaison agents. These

new IT-enabled variables may be totally distinct from traditional design variables, or they may be an extension of traditional variables.

IT design variables can be grouped into four design categories: structural, work process, communications, and interorganisational relations [Lucas, 1996].

1. Structural IT design variables

Virtual components: a virtual component is a company function that exists physically in a traditional organisation, but that has been replaced by an electronic version in the T-Form organisation. An organisation can use IT to create organisational unit components in other than conventional form, with dramatic reductions in inventory. Virtual components are a way of providing customer service and of making a company more efficient; they encourage strategic alliances.

Electronic linking: through electronic mail, electronic or videoconferencing, and fax messages, it is possible to form links within and across all organisational boundaries, creating interorganisational systems. New workgroups can be formed quickly and easily.

Technological levelling: technological levelling is the action of substituting layers of management and a number of management tasks for IT. In some bureaucratic organisations, layers of management exist to look at, edit, and approve messages that flow from the level below them to the level above. With electronic communications, some of these layers can be eliminated. In addition, a manager's span of control can be increased since electronic communications can be more efficient than phone or personal contact for certain kinds of tasks, particularly those dealing with administrative matters.

2. Work process IT design variables

Production automation: IT is being used not only to automate manufacturing processes, but also for automating information-processing and assembly-line tasks in the financial industry. In cases where information is the product of a firm, IT is the factory.

Electronic workflows: interest in process reengineering has led to the development of workflow languages and systems. As organisations eliminate paper and perform most of their processing using electronic forms and images, workflow languages will be used to route documents electronically to individuals and workgroups that need access to them.

3. Communications IT design variables

Electronic communications: electronic mail systems, electronic bulletin boards, and fax machines all offer alternatives to formal channels of communications.

Technological matrixing: through the use of electronic communications, matrix organisations can be created at will. Companies can form temporary task forces, using e-mail and groupware, in a matrix organisation based on technology.

4. Interorganisational relations IT design variables

Electronic customer/supplier relationships: companies and industries are rapidly adopting electronic data interchange (EDI) and other forms of electronic communications to speed the ordering process and improve accuracy. Through electronic customer/supplier relationships, companies are eliminating paper and the inefficient rekeying of information from one company's system into another's.

Figure 2.1.5 groups the traditional and the IT design variables into the four design categories described above, and shows the correspondence between them.

Note that no single IT variable exists for the traditional variable of control mechanisms. Some firms use electronic information systems to provide control after an organisation has been designed: system examples include budgets, project management applications, and similar monitoring systems.

It is possible to characterise new organisation structures that make different use of the variables just described: virtual organisations, negotiated organisations, traditional organisations, and vertically integrated conglomerates. These prototypical organisations show a mixture of conventional and IT design variables and suggest some of the rich organisational forms that will appear in the future. They all can be viewed as precursors to the T-Form organisation.

Class of Variable	Traditional Design Variable	IT Design Variables
Structural	Definition of organisational subunits	Virtual components
	Determining purpose, output of subunits	
	Reporting mechanisms	
	Linking mechanisms	Electronic linking
	Control mechanisms	
	Staffing	Technological levelling
Work process	Tasks	Production automation
	Workflows	Electronic workflows
	Dependencies	
	Output of process	
	Buffers	Virtual components
Communications	Formal channels	Electronic communications
	Informal communications/collaboration	Technological matrixing
Interorganisational relations	Make-or-buy decision	Electronic customer/supplier relationships
	Exchange of materials	Electronic customer/supplier relationships
	Communications mechanisms	Electronic linking

Figure 2.1.5 - Traditional and IT design variables [Lucas, 1996]

Figure 2.1.6 summarises the IT design variables that contribute to each organisation's development. In some cases, the IT variable is substituted for traditional elements; in other cases, it is necessary for the very existence of an organisational form. In certain instances, the IT variable is optional or not applicable.

A successful organisation design does not necessarily mean that the firm will be successful, though a good design certainly contributes to success. The T-Form organisation, like any firm needs a strategy in order to compete. IT design variables help this organisation implement its chosen strategy and, in fact, may suggest a strategy to the firm. IT design variables facilitate strategies for firms that want to be the low-cost producer or the high-quality provider, that want to reduce cycle times, emphasise customer service, become global organisations, and/or right-size themselves.

Organisation Design Variable	**Virtual Organisations**	**Negotiated Organisations**	**Traditional Organisations**	**Vertically Integrated Conglomerates**
Virtual components	Substituted for physical components	Substituted for physical components	Used to replace isolated components	Forced onto electronic subsidiary
Electronic linking components	Essential part	Essential part	Optional	essential part
Technological matrixing	Used for everyone	Used for co-ordination	Used for various groups	Used for co-ordination and task forces
Technological levelling	Used to supervise remote workers and groups	NA	Used to reduce layers of management	Used to reduce layers of management
Electronic workflows	Used as crucial part of strategy	Used as crucial part of strategy	Used where applicable to restructure work	Become key to co-ordinating work units
Production automation	NA	Designs communicated	Used where applicable	Production co-ordinated among work units
Electronic customer/supplier links	Used extensively	Used extensively	Becomes potentially important	Becomes key to operations

Figure 2.1.6 - Use of IT design variables in four prototypical organisations [Lucas. 1996]

The benefits of the T-Form organisation are:

- greater flexibility;
- increased efficiency;
- fewer layers of management;
- reduced overhead;
- better customer service;

- reduced cycle times;
- improved operations;
- increased revenues;
- enhanced decision making;
- new services and lines of business;
- alliances with suppliers and customers;
- reduced paper processing and fewer manual procedures.

IT design variables can be used to transform the organisation to:

- a lean organisation with the minimal number of employees necessary for the business to function;
- a responsive organisation that reacts quickly to threats from competitors and changes in the environment;
- a minimum overhead organisation;
- a structure with low fixed costs, due to virtual components, partnerships, and subcontracting;
- an organisation that is responsive to customers and suppliers;
- an organisation that is more competitive than firms with traditional structures:
- an organisation that allows its employees to develop their capabilities and maximise their contributions to the firm.

One of the major advantages of the T-Form organisation is that it lacks a large number of hierarchical levels. This flat organisation is responsive because decisions are made quickly; they do not have to pass through many managerial levels. The flat structure and the resulting responsiveness add up to lower overhead than is found in the traditional bureaucratic organisation

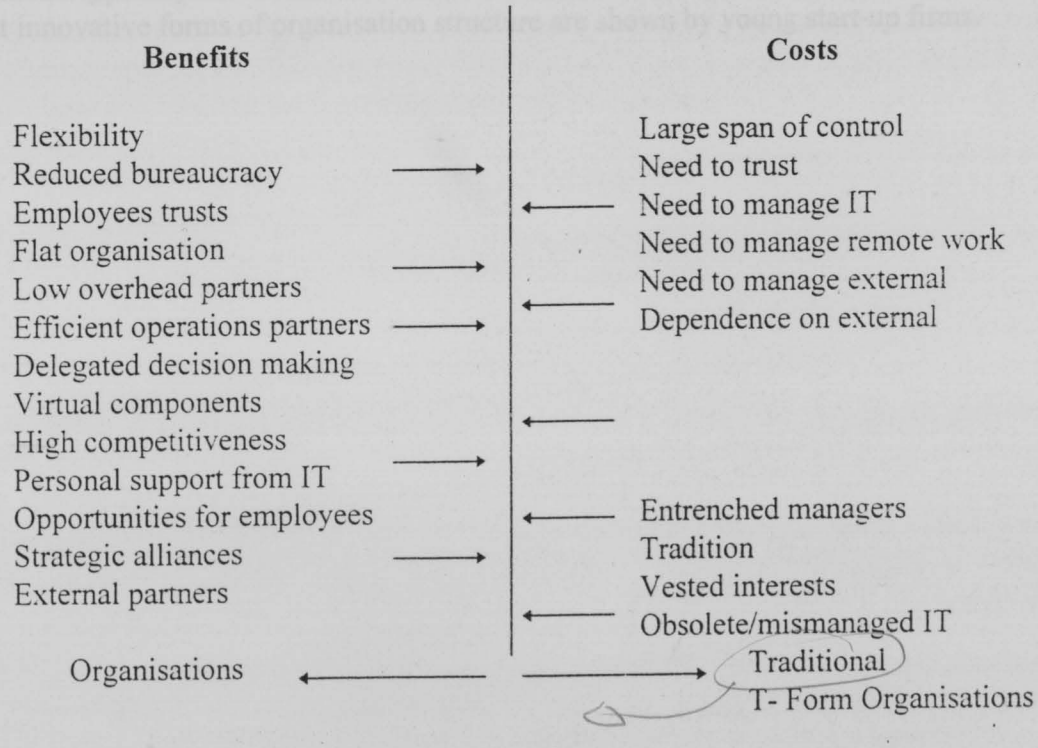


Figure 2.1.7 - Forces in changing an organisation's structure [Lucas. 1996]

There are, however, costs that go along with these benefits:

- the organisation has to invest in information technology;
- the organisation has to manage its IT;
- employees have to learn new technologies and constantly update their knowledge;
- managers have to work with a large span of control;
- managers have to supervise remote workers;

the organisation has to manage its close relationships with partners and other companies in various alliances.

While each individual variable, each new use of technology, may sound like a small step, the overall impact of using IT design variables to create a T-Form organisation will be profound. Instead of ageing as it passes through channels or getting lost on someone's desk, information becomes a resource of the firm; it is processed and available instantaneously. The firm becomes a strategic partner with its suppliers and customers through electronic links and virtual components. Employees of the firm are finally empowered to solve problems themselves because they have the information and the ability to communicate easily with others who can help find a solution. Certainly the T-Form organisation will be more efficient, but it also will be more effective in delivering a product or service compared to traditional organisations.

Information technology has enabled new organisation design variables and new types of organisations. Today's manager has many more options for designing an organisation than his or her predecessor did some years ago. The problem today is that managers are faced in many instances with organisations that have existed for decades; these organisations typically have a traditional structure and do not change easily. That is why the most innovative forms of organisation structure are shown by young start-up firms.

2.2. Orientation on Marketing

2.2.1. Introduction

In this chapter we will give a general overview on Marketing.

First we will go through the core concepts of marketing: needs, wants, and demands; products; value, cost, and satisfaction; exchange, transactions, transvections, and relationships; markets; and marketing and marketers.

After that we will follow, step by step, all the different activities in the marketing process.

We will then dive in the marketing environment - the company's microenvironment and macroenvironment.

Products will be confronted with services: we will talk about their characteristics, the strategies attached to each one of them, their mixes, their differences, their marketing implications, and the relationships between them.

We will also refer to the marketing channels and the communication process in marketing. Having a good product is not enough: marketers must know how to promote and advertise it, to reach the customers.

Finally we will have a look at some important marketing approaches: the marketing segmentation and the selection of the target markets; the value chain and the competitive differentiation, referring to the identification of potential sources of value enhancement and the use of those sources to make a product different from the competitor's; and the product life-cycle, how and when to put a product in and out the market.

2.2.2. The core concepts of Marketing

According to P. Kotler [Kotler, 1991], *Marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating, offering, and exchanging products of value with others.*

This definition of Marketing rests on the following core concepts: *needs, wants, and demands; products; value, cost, and satisfaction; exchange, transactions, and relationships; markets; and marketing and marketers.* These concepts are illustrated in figure 2.2.1:

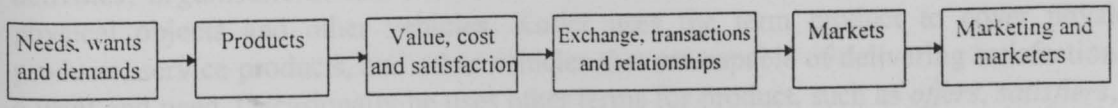


Figure 2.2.1 - The core concepts of marketing [Kotler, 1991]

Needs, Wants, and Demands

The starting point for the discipline of Marketing lies in human needs and wants. People need food, air, water, clothing, and shelter to survive. Beyond this, people have a strong desire for recreation, education, and other services. They have strong preferences for particular versions and brands of basic goods and services.

A useful distinction can be drawn between needs, wants and demands.

A *human need is a state of felt deprivation of some basic satisfaction.* People require food, clothing, shelter, safety, belonging, esteem, and a few other things for survival. These needs are not created by their society or by marketers; they exist in the very texture of human biology and the human condition.

Wants are desires for specific satisfiers of these deeper needs. These needs are satisfied differently in each society: an American needs food and wants an hamburger, but if a Balinese needs food, he will probably satisfy his hunger with mangoes. While people's needs are few, their wants are many. Human wants are continually shaped and reshaped by social forces and institutions, such as churches, schools, families, and business corporations.

Demands are wants for specific products that are backed up by an ability and willingness to buy them. Wants become demands when backed up by purchasing power. Many people want a Ferrari; only a few are able and willing to buy one. Companies must therefore measure not only how many people want their product but, more important, how many would actually be willing and able to buy it.

These distinctions shed light on the frequent charge by marketing critics that "marketers create needs" or "marketers get people to buy things they don't want." Marketers do not create needs; needs pre-exist marketers. Marketers, along with other influencers in the society, influence wants. They suggest to consumers that a Ferrari would satisfy a person's need for social status. Marketers do not create the need for social status but try to point out that a particular product would satisfy that need. Marketers try to influence demand by making the product attractive , affordable, and easily available.

Products

People satisfy their needs and wants with products. Kotler defines products broadly to cover *anything that can be offered to someone to satisfy a need or want.* Normally the word *product* brings to mind a physical object, such as an automobile, a television set, or a soft drink. And we normally use the expression *products and services* to distinguish between physical objects and intangible ones. But in thinking about physical products, their importance lies so much not in owning them as in using them to satisfy our wants. We don't buy a car to look at but because it supplies transportation service. Thus physical products are really vehicles that deliver services to us.

In fact, services are also supplied by other vehicles, such as *persons, places, activities, organisations,* and *ideas.* In other words, services can be delivered through physical objects and other vehicles. Kotler uses the term product to cover physical products, service products, and other vehicles that are capable of delivering satisfaction of a want and need. Occasionally he uses other terms for product, such as *offers, satisfiers,* or *resources.*

Manufacturers get into a lot of trouble by paying more attention to their physical products than to the services produced by these products. They often forget that customers buy them because they satisfy a need. A tube of lipstick is bought to supply a service: helping the person look better. A physical object is a means of packaging a service. The marketer's job is to sell the benefits or services built into physical products rather than just describe their physical features. Sellers who concentrate on the product instead of the customer's need are said to suffer from "marketing myopia."

Value, Cost, and Satisfaction

Usually a consumer has to choose among the many products that might satisfy a given need. He can visualise a number of products that will satisfy this need. These alternatives constitute his *product choice set*. If the consumer would like to satisfy different needs, Kotler calls these his *need set*. Now each product has a different capacity to satisfy his various needs. Somehow the consumer has to decide on which product delivers the most satisfaction.

The guiding concept is *value*. Value is the consumer's estimate of the product's overall capacity to satisfy his or her needs. We can ask a consumer to imagine the characteristics of an *ideal product* for a certain task. Then the value of each actual product would depend on how close it came to this ideal product. But each product involves a *cost*, therefore the consumer has to consider the product's value and price before making a choice. Usually he chooses the product that will produce the most value per monetary unit.

Exchange, Transactions, and Relations

The fact that people have needs and wants and can place value in products does not fully define marketing. Marketing emerges when people decide to satisfy their needs and wants through exchange.

There are four ways people can obtain products they want:

self-production: the consumer does not need to interact with anyone else. In this case there is no market and no marketing;
coercion: no benefit is offered to others except that of not being harmed;
begging: consumers have nothing tangible to offer except gratitude;
exchange: consumers approach others and offer some resource , such as money, another good, or some service, in exchange for the product they want.

Marketing arises from this last approach to acquiring products. *Exchange is the act of obtaining a desired product from someone by offering something in return.* Exchange is the defining concept underlying marketing. According to Kotler, for exchange to take place, five conditions must be satisfied:

1. There are at least two parties.
2. Each party has something that might be of value to the other party.
3. Each party is capable of communication and delivery.
4. Each party is free to accept or reject the offer.
5. Each party believes it is appropriate or desirable to deal with the other party.

If these conditions exist, there is a potential for exchange. Whether exchange actually takes place depends upon whether the two parties can agree on *terms of exchange* that will leave them both better off (or at least not worse off) than before the exchange. This is the sense in which exchange is described as a value-creating process; that is, exchange normally leaves both parties better off than before the exchange.

Exchange must be seen as a process rather than an event. Two parties are said to be engaged in exchange if they are negotiating and moving toward an agreement. If an agreement is reached, we say that a *transaction* takes place. Transactions are the basic unit of exchange. A transaction is a product of the double search in which customers are looking for goods and suppliers are looking for customers. It is an exchange of information leading to an agreement concerning the marketing of goods. It is a joint decision between buyer and seller. There is always explicit or implicit negotiation in which each side measures the current opportunity by its next best alternative.

A *transvection* is the unit of action for the system by which a single end product is placed in the hands of the consumer after moving through all the intermediate sorts and transformations from the original raw materials in the state of nature. A *transformation* is a change in the physical form of a product or in its location in time and space which is calculated to increase its value for the ultimate consumer who adds the product to his assortment. In other words, transformations add form, space and time utility. A transvection is in a sense the outcome of a series of transactions, but a transvection is obviously more than this. From its etymology the word was meant to convey the meaning of *flowing through*, with special reference to something which flows through a marketing system - in one end and out the other. A transaction is limited only to the successive negotiations of exchange agreements. A transvection includes the complete sequence of exchanges, but it also includes the various transformations which take place along the way. Transactions involve a transfer in ownership or use privileges covering not only sales but all forms of short-term rent and lease agreements.

A *transaction* differs from a *transfer*. In a transfer, A gives X to B but does not receive anything tangible in return. Transfer behaviour can also be understood through the concept of exchange. Typically, the transferer has certain expectations upon giving a gift, such as getting back gratitude or seeing good behaviour in the recipient. Marketers have recently broadened the concept of marketing to include the study of transfer behaviour as well as transaction behaviour.

In the most generic sense, the marketer is seeking to elicit some *behavioural response* from another party. A business firm wants a response called buying, a political candidate wants a response called voting, a social-action group wants a response called adopting the idea. Marketing consists of actions undertaken to elicit desired responses to some object from a target audience.

To effect successful exchanges, the marketer analyses what each party expects to give and get. Simple exchange situations can be mapped by showing the two actors and the wants and offers flowing between them. The process of trying to arrive at mutually agreeable terms is called *negotiation*. Negotiation leads to either mutually acceptable terms or a decision not to transact.

So far we have explained the nature of *transaction marketing*. Transaction marketing is part of a larger idea, that of *relationship marketing*. Smart marketers try to build up long-term, trusting, "win-win" relationships with customers, distributors, dealers and suppliers. That is accomplished by promising and delivering high quality, good service, and fair prices to the other party over time. It is accomplished by strengthening the

economic, technical, and social ties between members of the two organisations. The two parties grow more trusting, more knowledgeable, and more interested in helping each other. Relationship marketing cuts down on transaction costs and time; in the best cases, transactions move from being negotiated each time to being routinized.

The ultimate outcome of a relationship marketing is the building of a unique company asset called a *marketing network*. A marketing network consists of the company and the firms with which it has built solid, dependable business relationships. Increasingly, marketing is shifting from trying to maximise the profit on each individual transaction to maximising beneficial relationships with other parties. The operating principle is, build good relationships, and profitable transactions will flow.

Markets

The concept of exchange leads to the concept of a market. By Kotler's definition [Kotler, 1991], a market *consists of all the potential customers sharing a particular need or want who might be willing and able to engage in exchange to satisfy that need or want.* Thus the size of the market depends upon the number of person's who exhibit the need, have resources that interest others, and are willing to offer these resources in exchange for what they want.

Marketers see the sellers as constituting the *industry* and the buyers as constituting the market.

The term *markets* is used to cover various groupings of customers: *need markets* (such as the diet-seeking market); *product markets* (such as the shoe market): *demographic markets* (such as the youth market); and *geographic markets* (such as the Portuguese market). The concept may also be extended to cover noncustomer groupings as well, such as *voter markets*, *labour markets*, and *donor markets*.

Modern economies operate on the principle of division of labour where each person specialises in the production of something, receives payment, and buys needed things with this money. Thus modern economies abound in markets. The basic kinds of markets are shown in Figure 2.2.2.

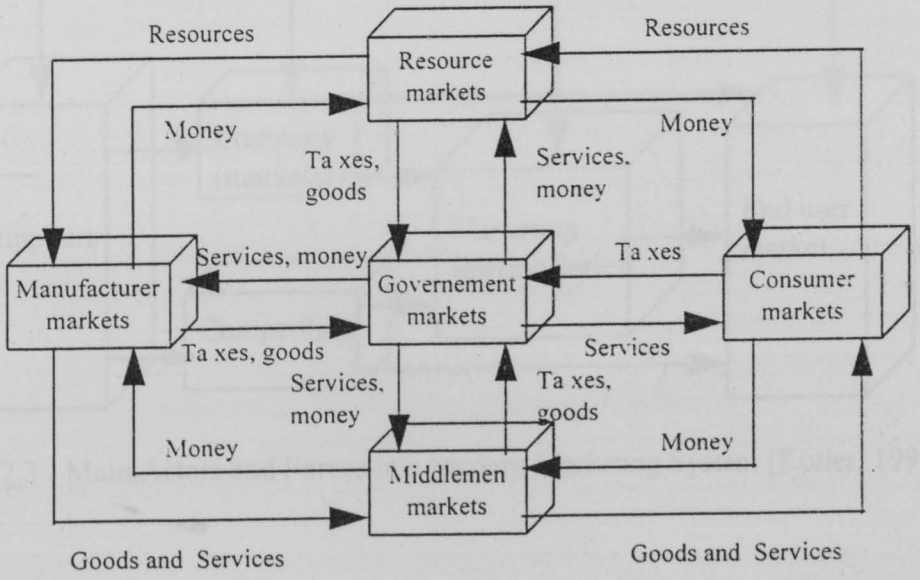


Figure 2.2.2 - Structure of Flows in a Modern Exchange Economy [Kotler, 1991]

Essentially, manufacturers go to resource markets (raw-material markets, labour markets, money markets, and so on), buy resources, turn them into goods and services, and sell them to middlemen, who sell them to consumers. The consumers sell their labour, for which they receive money income to pay for the goods and services they buy. The government is another market that plays several roles. It buys goods from resource, manufacturer, and middlemen markets; it pays them; it taxes these markets (including consumer markets); and it returns needed public services. Thus each nation's economy and the whole world economy consist of complex interacting sets of markets that are linked through exchange processes.

Marketing and Marketers

Marketing means human activity taking place in relation to markets. Marketing means working with markets to actualise potential exchanges for the purpose of satisfying human needs and wants.

If one party is more actively seeking an exchange than the other party, Kotler calls the first party a *marketer* and the second party a *prospect*. A *marketer is someone seeking a resource from someone else and willing to offer something of value in exchange*. The marketer can be a seller or a buyer. The marketer is seeking a response from the other party, either to sell something or to buy something.

In the normal situation, the marketer is a company serving a market of end users in the face of competitors, as represented in Figure 2.2.3. The company and the competitors send their respective products and messages directly and/or through marketing intermediaries to the end users. Their relative effectiveness is influenced by their respective suppliers as well as major environmental forces.

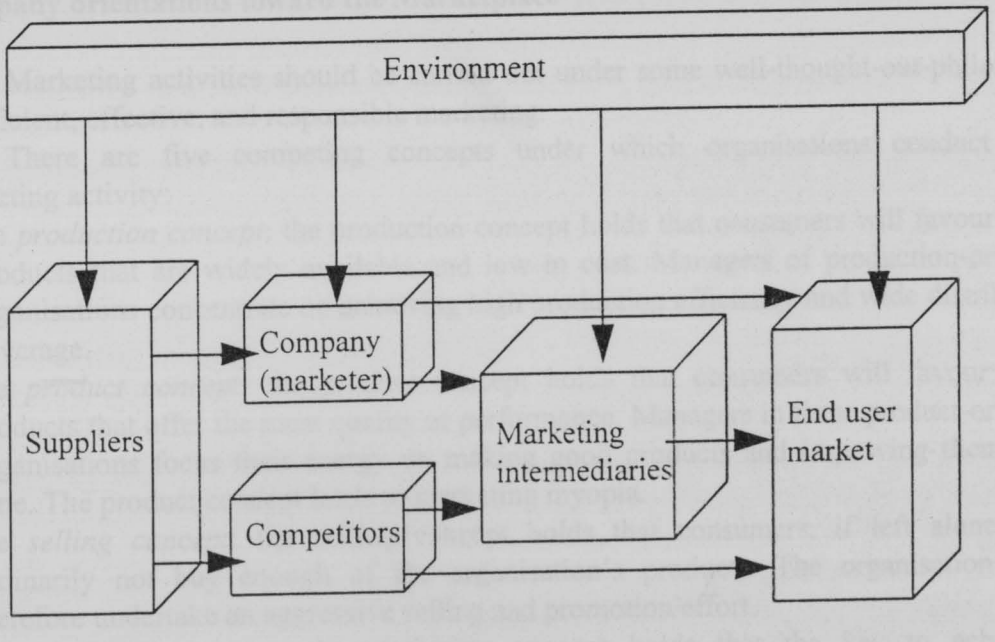


Figure 2.2.3 - Main Actors and Forces in a Modern Marketing System [Kotler, 1991]

Kotler redefines the definition of marketing: *marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating, offering, and exchanging products of value with others.*

Marketing Management

Coping with exchange processes calls for a considerable amount of work and skill. *Organisations* must attract resources from one set of markets, convert them into useful products, and sell them in another set of markets. This is what *organisational marketing* is about.

Marketing management takes place when at least one party to a potential exchange gives thought to objectives and means of achieving desired responses from other parties. The American Marketing Association approved in 1985 the following definition: *Marketing (management) is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organisational objectives.* This definition recognises that marketing management is a process involving analysis, planning, implementation, and control; that it covers ideas, goods, and services; that it rests on the notion of exchange; and that the goal is to produce satisfaction for the parties involved.

Marketing management has the task of influencing the level, timing, and composition of demand in a way that will help the organisation achieve its objectives.

Marketing managers cope with these tasks by carrying out *marketing research*, *planning*, *implementation*, and *control*.

Company orientations toward the Marketplace

Marketing activities should be carried out under some well-thought-out-philosophy of efficient, effective, and responsible marketing.

There are five competing concepts under which organisations conduct their marketing activity:

- the *production concept*: the production concept holds that consumers will favour those products that are widely available and low in cost. Managers of production-oriented organisations concentrate on achieving high production efficiency and wide distribution coverage.
- the *product concept*: the product concept holds that consumers will favour those products that offer the most quality or performance. Managers in these product-oriented organisations focus their energy on making good products and improving them over time. The product concept leads to marketing myopia.
- the *selling concept*: the selling concept holds that consumers, if left alone, will ordinarily not buy enough of the organisation's products. The organisation must therefore undertake an aggressive selling and promotion effort.
- the *marketing concept*: the marketing concept holds that the key to achieving organisational goals consists in determining the needs and wants of target markets and delivering the desired satisfactions more effectively and efficiently than competitors. The marketing concept rests on four main pillars: a *market focus*, *customer orientation*, *co-ordinated marketing*, and *profitability*.

- the *societal marketing concept*: the societal marketing concept holds that the organisation's task is to determine the needs, wants, and interests of target markets and to deliver the desired satisfactions more effectively and efficiently than competitors in a way that preserves or enhances the consumer's and the society's well-being. This concept calls upon marketers to balance three considerations in setting their marketing policies, namely, *company profits*, *consumer want satisfaction*, and *public interest*.

Interest in marketing is intensifying as more organisations in the business sector, the non-profit sector, and the international sector recognise how marketing contributes to improved performance in the marketplace.

2.2.3. The marketing process

The marketing process consists of:

- analysing marketing opportunities: the first task is to analyse the long-run opportunities. To identify and evaluate its opportunities, the company needs to build and operate a reliable marketing information system. The managers must stay on top of broad trends in the macroenvironment, and must also pay close attention to identifying and monitoring its competitors.
- researching and selecting target markets: the firm needs to know how to measure and forecast the attractiveness of any given market. This requires estimating the market's overall size, growth, and profitability. The market measures and forecasts become key inputs into deciding which markets and new products to focus on. Modern marketing practice calls for dividing the market into major market segments, evaluating them, and selecting and targeting those market segments that the company can best serve.
- designing marketing strategies: the firm needs to develop a differentiating and positioning strategy for that target market. It also needs to study carefully the positions taken by its major competitors in the same target market.
- planning marketing programs: company planners must not only formulate the broad business strategies to help the company achieve its objectives but also must plan marketing strategies and tactics for specific products. According to Kotler [Kotler. 1991], *marketing strategy* comprises the broad principles by which marketing management expects to achieve its business and marketing objectives in a target market. It consists of basic decisions on marketing expenditures, marketing mix, and marketing allocation. Marketing management must decide what level of *marketing expenditures* is necessary to achieve its marketing objectives. Company also has to decide how to divide the total marketing budget among the various tools in the *marketing mix*. *Marketing mix* is the set of marketing tools that the firm uses to pursue its marketing objectives in the target market. McCarthy popularised a four-factor classification of these tools called the *four Ps*: *product*, *price*, *place* (distribution), and *promotion*.

This is represented in Figure 2.2.4. organising, implementing, and controlling the marketing effort: the final step in the marketing management is organising the marketing resources and implementing and controlling the marketing plan. The company must build a marketing organisation that is capable of implementing the marketing plan. Marketing organisations are typically headed by a marketing vice-president, who performs two tasks: co-ordinate the work of all the marketing personnel; and work closely with the vice-presidents of finance, manufacturing, research and development, purchasing, and personnel to co-ordinate company efforts to satisfy customers. The company needs feed-back and control procedures to make sure that the marketing objectives will be achieved. Companies need to analyse periodically the actual *profitability* of their various products, customer groups, trade channels, and order sizes.

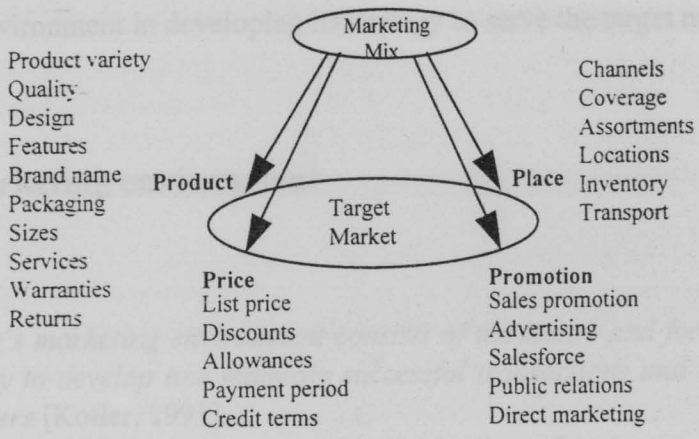


Figure 2.2.4 - The Four Ps of the Marketing Mix [Kotler, 1991]

Figure 2.2.5 presents a summary of the marketing management process and the forces shaping the company's marketing strategy.

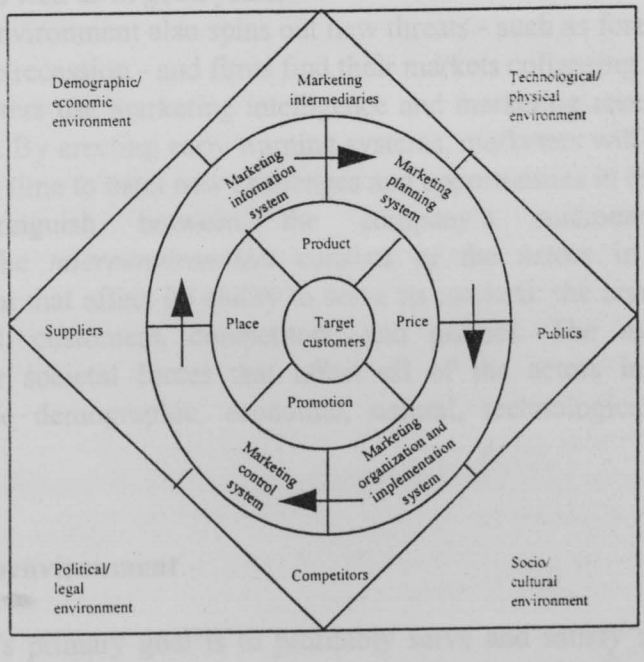


Figure 2.2.5 - Factors Influencing Company Marketing Strategy [Kotler, 1991]

The target customers stand in the centre, and the company focuses its effort on serving and satisfying them. The company develops a marketing mix made up of the factors under its control, the *four Ps*. To arrive at its marketing mix, the company manages four systems: a marketing information system, marketing planning system, marketing organisational system, and marketing control system. These systems are interrelated in that marketing information is needed to develop marketing plans; the plans in turn are implemented by the marketing organisation; and the results of this implementation are reviewed and controlled.

Through these systems, the company monitors and adapts to the marketing environment. The company adapts to its microenvironment, consisting of the marketing intermediaries, suppliers, competitors, and publics. And it adapts to the macroenvironment , consisting of demographic/economic forces, political/legal forces, technological/physical forces, and social/cultural forces. The company takes into account the actors and forces in the marketing environment in developing its strategy to serve the target market.

2.2.4. The marketing environment

A company's marketing environment consists of the actors and forces that affect the company's ability to develop and maintain successful transactions and relationships with its target customers [Kotler, 1991].

A good company should take an outside-inside view of its business, monitoring the changing environment and continuously adapting their businesses to their best opportunities.

To the company's marketers falls the major responsibility for identifying major changes in the environment. The marketing environment is constantly spinning out new opportunities, in bad as well as in good years.

The marketing environment also spins out new threats - such as foreign competition, a military crisis, a deep recession - and firms find their markets collapsing.

Company marketers use marketing intelligence and marketing research to track the changing environment. By erecting early warning systems, marketers will be able to revise marketing strategies in time to meet new challenges and opportunities in the environment.

We can distinguish between the company's microenvironment and macroenvironment. The *microenvironment* consists of the actors in the company's immediate environment that affect its ability to serve its markets: the company, suppliers, market intermediaries, customers, competitors, and publics. The *macroenvironment* consists of the larger societal forces that affect all of the actors in the company's microenvironment: the demographic, economic, natural, technological, political, and cultural forces.

The company's microenvironment

Every company's primary goal is to profitably serve and satisfy specific needs of chosen target markets. To carry out this task, the company links itself with a set of

suppliers and a set of marketing intermediaries to reach its target customers. The *suppliers/company/marketing intermediaries/customers chain* comprises the *core marketing system* of the company. The company's success will be affected by two additional groups, namely, a set of competitors and a set of publics.

There are several actors in the company's marketing microenvironment:

- Company: marketing management, in formulating marketing plans, takes into account the other groups in the company, such as top management, finance, R&D, purchasing, manufacturing, and accounting. All of these groups constitute the *company's internal environment*. All of these departments have an impact on the marketing department's plans and actions. The many potential conflicts between marketing and the other functions mean that marketing has to negotiate with internal company groups in the course of designing and implementing its marketing plans.
- Suppliers: suppliers are business firms and individuals who provide resources needs by the company and its competitors to produce goods and services. Developments in the "suppliers" environment can have a substantial effect on the company's marketing operations. Many companies prefer to buy from multiple sources to avoid depending on a single supplier who might raise prices or limit supply. Company purchasing agents try to build long-term relationships with key suppliers. In times of shortage, purchasing agents find that they have to "market" their company to suppliers in order to obtain preferential supplies. The marketing manager is a direct purchaser of certain services to support the marketing effort, such as advertising, marketing research, sales training, and marketing consulting. The manager has to decide which services to purchase outside and which to produce inside by adding specialists to the staff.
- Marketing intermediaries: marketing intermediaries are firms that aid the company in promoting, selling, and distributing its goods to final buyers. They include middlemen, physical-distribution firms, marketing service agencies, and financial intermediaries. *Middlemen* are business firms that help the company find customers or close sales with them. Middlemen are able to perform several marketing tasks more efficiently than the company itself. Middlemen come into being to help overcome the *discrepancies* in quantities, place, time, assortment, and possession that would otherwise exist. *Physical distribution firms* assist the company in stocking and moving goods from their original locations to their destinations. There are two kinds: warehousing firms and transportation firms. *Marketing servicing agencies* - marketing research firms, advertising agencies, media firms, and marketing consulting firms - assist the company in targeting and promoting its products to the right markets. The company faces a "make or buy" decision with respect to each of these services. *Financial intermediaries* include banks, credit companies, insurance companies, and other companies that help finance and/or insure risk associated with the buying and selling of goods. The company's marketing performance can be seriously affected by rising credit costs and/or limited credit.
- Customers: a company links itself with suppliers and middlemen so that it can efficiently supply appropriate products and services to its target market. Its target market can be one or more of the following five types of customer markets: consumer markets, industrial markets, reseller markets, government and non-profit markets, and international markets.

- Competitors: the company vies with a host of competitors. These competitors have to be identified, monitored, and outmaneuvered to capture and maintain customer loyalty. The competitive environment consists not only of other companies but also of more basic things. A company must be aware of its *desire competitors*, *generic competitors*, *product-form competitor*, and *brand competitors*. A company must keep four basic dimensions in mind, which can be called the *four Cs* of marketing positioning. It must consider the nature of the *customers*, *channels*, and *competition*, and its own characteristics as a *company*.
- Publics: a *public* is any group that has an actual or potential interest or impact on a company's ability to achieve its objectives. Not only does a company have to contend with competitors in seeking to satisfy a target market, but it must also acknowledge a large set of interested publics. Every company faces several important publics: financial publics, media publics, government publics, citizen-action publics, general public, internal publics. Although companies must put their primary energy into effectively managing their relationships with their customers, distributors, and suppliers, their overall success will be affected by how other publics in the society view their activity. Companies would be wise to spend time monitoring all their publics, understanding their needs and opinions, and dealing with them constructively.

The company's macroenvironment

The company and its suppliers, marketing intermediaries, customers, competitors, and publics all operate in a larger macroenvironment of forces and megatrends that shape opportunities and pose threats to the company. These forces represent "uncontrollables," which the company must monitor and respond to. There are six major forces, namely, demographic, economic, natural, technological, political, and cultural.

- Demographic environment: the first environmental fact of interest to marketers is population because people make up markets. Marketers are keenly interested in the size of the world's population; its geographical distribution and density; mobility trends; age distribution; birth, marriage and death rates; and racial, ethnic, and religious structure.
- Economic environment: the economic environment consists of factors that affect consumer purchasing power and spending patterns. Markets require purchasing power as well as people. Total purchasing power depends on current income, prices, savings, and credit. Marketers should be aware of major trends in income and of changing consumer spending patterns.
- Natural environment: the deteriorating condition of the natural environment is bound to be one of the major issues facing business and the public in the 1990s. In many world cities, air and water pollution have reached dangerous levels. There is a great concern about industrial chemicals creating a hole in the ozone layer that will produce a "greenhouse effect," namely, a dangerous warming of the earth. Marketers need to be aware of the threats and opportunities associated with four trends in the natural environment: the shortage of raw materials, the increased cost of energy, the increased levels of pollution, and the changing role of government in environment protection.

- Technological environment: the most dramatic force shaping people's lives is technology. The economy's growth rate is affected by how many major new technologies are discovered. In the time between major innovations, the economy can stagnate. Each technology creates major long-run consequences that are not always foreseeable. The marketer should watch the following trends in technology: accelerating pace of technological change, unlimited innovational opportunities, high R&D budgets, concentration on minor improvements, and increased regulation of technological change.
- Political environment: marketing decisions are strongly affected by developments in the political environment. This environment is composed of *laws*, *government agencies*, and *pressure groups* that influence and limit various organisations and individuals in society. The main political trends are: substantial amount of legislation regulating business, changing government agency enforcement, and growth of public-interest groups.
- Cultural environment: the society that people grow up in shapes their basic beliefs, values, and norms. People absorb, almost unconsciously, a world view that defines their relationship to themselves, to others, to nature, and to the universe. The main cultural characteristics and trends of interest to marketers are: the core cultural values having a high persistence, each culture consisting of subcultures, and secondary cultural values undergoing shifts through time. The major cultural values of a society are expressed in people's view of themselves, others, organisations, society, nature, and the cosmos.

2.2.5. Product versus Service

What is a product?

Product is the first and most important element of the marketing mix. Product strategy calls for making co-ordinated decisions on product mixes, product lines, brands, packaging, and labelling.

According to Kotler, a product *is anything that can be offered to a market for attention, acquisition, use, or consumption that might satisfy a want or need.*

Most products are *physical products*, such as automobiles, toasters, shoes, etc. But *services*, such as haircuts, concerts, and vacations are also products. Kotler states that products consist broadly of anything that can be marketed, including physical objects, services, persons, places, organisations, and ideas.

In planning its marketing offer or product, the marketer must think through five product levels. The most fundamental level is the *core benefit*, namely the fundamental service or benefit that the customer is really buying. In the case of a hotel, the night guest is really buying "rest and sleep." In the case of drills, the purchasing agent is really buying "holes."

The marketer has to turn the core benefit into a *generic product*, namely a basic version of the product. Thus a hotel consists of a building that has a front desk and rooms to rent. A toaster, a concert, a medical examination are also generic products.

At the third level, the marketer prepares an *expected product*, namely a set of attributes and conditions that buyers normally expect and agree to when they purchase this product. Hotel guests, for example, expect a clean bed, soap and towels, plumbing fixtures, a telephone, clothes closet, and a relative degree of quiet.

At the fourth level, the marketer prepares an *augmented product*, namely one that includes additional services and benefits that distinguish the company's offer from competitor's offers. A hotel, for example, can augment its product by including a television set, shampoo, fresh flowers, rapid check-in, express check-out, and so on. Today's competition essentially takes place at the product-augmentation level. According to Levitt: the *new competition* is not between what companies produce in their factories, but between what they add to their factory output in the form of packaging, services, advertising, customer advice, financing, delivery arrangements, warehousing, and other things that people value.

At the fifth level stands the *potential product*, namely all of the augmentations and transformations that this product might ultimately undergo in the future. Whereas the augmented product describes what is included in the product today, the potential product points to its possible evolution. Here is where companies search aggressively for new ways to satisfy customers and distinguish their offer.

Some of the most successful companies add benefits to their offer that not only *satisfy* the customer but also *delight* the customers. Delighting is a matter of adding *unexpected surprises* to the offer.

Each product is related to certain other products. Product hierarchies stretch from basic needs to particular items that satisfy those needs. Kotler identifies seven levels of the product hierarchy:

- *Need family*: the core need that underlies the product family.
- *Product family*: all the product classes that can satisfy a core need with more or less effectiveness.
- *Product class*: a group of products within the product family that are recognised as having a certain functional coherence.
- *Product line*: a group of products within a product class that are closely related because they function in a similar manner or are sold to the same customer groups or are marketed through the same types of outlets or fall within given price ranges.
- *Product type*: those items within a product line that share one of several possible forms of the product.
- *Brand*: the name associated with one or more items in the product line that is used to identify the source or character of the items.
- *Item*: a distinct unit within a brand or product line that is distinguishable by size, price, appearance, or some other attribute.

Two other terms frequently arise. A *product system* is a group of diverse but related items that function in a compatible manner. A *product mix* is the set of all products and items that a particular seller makes available to the buyers.

Marketers have traditionally classified products on the basis of varying product characteristics. The thought is that each product type has an appropriate marketing-mix strategy.

Most companies handle more than one product. Their product mix can be described as having a certain breadth, length, depth, and consistency. The four dimensions of the product mix are the tools for developing the company's product strategy.

What is a service?

According to Kotler, a service *is any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Its production may or may not be tied to a physical product.*

Services are intangible, inseparable, variable, and perishable. Each characteristic poses problems and requires strategies. Marketers have to find ways to "tangibilize" the intangible; to increase the productivity of providers who are inseparable from the product; to standardise the quality in the face of variability; and to influence demand movements and supply capacities better in the face of service perishability.

A company's offer to the marketplace usually includes some services. The service component can be a minor or a major part of the total offer. In fact, the offer can range from a pure good on the one hand to a pure service on the other. Four categories of offer can be distinguished:

- A pure tangible good: here the offer consists primarily of a tangible good such as soap, toothpaste, or salt. No services accompany the product.
- A tangible good with accompanying services: here the offer consists of a tangible good accompanied by one or more services to enhance its consumer appeal. For example, an automobile manufacturer sells an automobile with a warranty, service and maintenance instructions, and so on.
- A major service with accompanying minor goods and services: here the offer consists of a major service along with some additional services and/or supporting goods. For example, airline passengers are buying transportation service. The service requires a capital-intensive good called an airplane for its realisation, but the primary item is a service.
- A pure service: here the offer consists primarily of a service. Examples include psychotherapy and massages.

As a consequence of this varying goods-to-service mix, it is difficult to generalise about services unless some further distinctions are made. First, services vary as to whether they are *people based* or *equipment based*. Some, but not all services require the *client's presence*. Services differ as to whether they meet a *personal* need (personal services) or a *business* need (business services). Finally, *service providers differ in their objectives* (profit or non-profit) and *ownership* (private or public).

According to Kotler, service industries have typically lagged behind manufacturing firms in adopting and using marketing concepts, but he thinks that this is now changing. Kotler defends that services marketing strategy calls not only for external marketing but also for internal marketing, to motivate the employees, and interactive marketing, to create skills in the service providers. To succeed, service marketers must create competitive differentiation, offer high service quality, and find ways to increase service productivity.

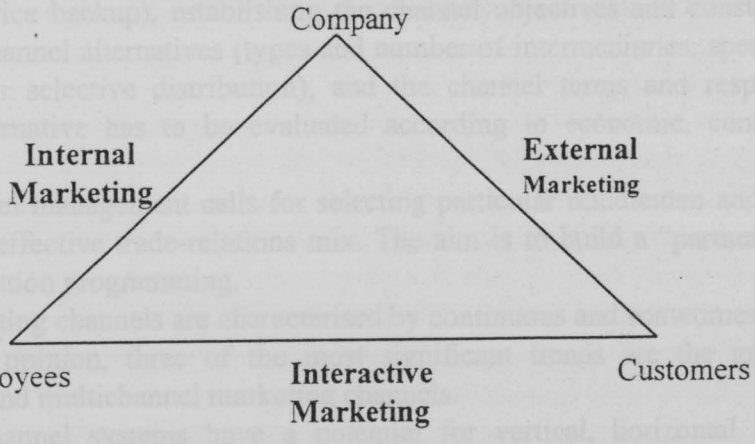


Figure 2.2.6 - Three Types of Marketing in Service Industries [Kotler, 1991]

Even product-based companies must provide and manage a service bundle for their customers; in fact, their services bundle may be more critical than the product in winning customers. The service mix includes presale services such as technical advice and dependable delivery, as well as postsale services such as prompt repair, and personnel training. The marketer has to decide on the mix, quality, and source of various product-support services that customers require.

2.2.6. Marketing channels

In today's economy, most producers do not sell their goods directly to the final users. Between them stands a host of marketing intermediaries performing a variety of functions and bearing a variety of names.

According to Stern and El-Ansary, marketing channels *can be viewed as sets of interdependent organisations involved in the process of making a product or service available for use or consumption.*

Marketing-channel decisions are among the most complex and challenging decisions facing the firm. Each channel system creates a different level of sales and costs. Once a firm chooses a marketing channel, it must usually remain with it for substantial period. The chosen channel will significantly affect and be affected by the other elements in the marketing mix.

Middlemen are used when they are able to perform channel functions more efficiently than the manufacturers can. The most important channel functions and flows are information, promotion, negotiation, ordering, financing, risk taking, physical possession, payment, and title. These marketing functions are more basic than the particular retail and wholesale institutions that may exist at any time.

Manufacturers face many channel alternatives for reaching a market. They can sell direct or use one, two, three or more intermediary-channel levels. Channel design calls for determining the service outputs (lot size, waiting time, spatial convenience, product

variety, service backup), establishing the channel objectives and constraints, identifying the major channel alternatives (types and number of intermediaries, specifically intensive, exclusive, or selective distribution), and the channel terms and responsibilities. Each channel alternative has to be evaluated according to economic, control and adaptive criteria.

Channel management calls for selecting particular middlemen and motivating them with a cost-effective trade-relations mix. The aim is to build a "partnership" feeling and joint-distribution programming.

Marketing channels are characterised by continuous and sometimes dramatic change. In Kotler's opinion, three of the most significant trends are the growth of vertical, horizontal, and multichannel marketing channels.

All channel systems have a potential for vertical, horizontal and multichannel conflict stemming from such sources as goal incompatibility, unclear roles and rights, differences in perception, and high dependence. Managing these conflicts can be sought through superordinate goals, exchange of persons, co-optation, joint membership in trade associations, diplomacy, mediation, and arbitration.

2.2.7. The communication process

Modern marketing calls for more than developing a good product, pricing it attractively, and making it accessible to target customers. Companies must also communicate with their present and potential customers. Every company is inevitably cast into the role of communicator and promoter.

Marketing communications is one of the four major elements of the company's marketing mix. Marketers must know how to use advertising, sales promotion, public relations, and personal selling to communicate the product's existence and value to the target customers.

The word *blaze* embraces all forms of advertising information and propaganda. Blaze can be regarded as the attempt to answer the buyer's questions before they are asked. It can be regarded as aid to search by the consumer or his agent. While blaze is aid to search, it is not search. The questions which blaze anticipates may not be the questions for which consumers want answers. They may be the questions which the supplier hopes the consumer will ask or which he believes are uppermost in the consumer's mind. Searching can be defined as a form of sorting, but blaze must be regarded as a form of transformation. Blaze is intended to change the attitudes and informational states of consumers. Blaze is the obverse of search. It is the imparting of information by one party intended to influence search by the other party.

According to Kotler, the communication process itself consists of nine elements: sender, receiver, encoding, decoding, message, media, response, feedback, and noise. Marketers must know how to get through to the target audience in the face of the audience's tendencies toward selective attention, distortion, and recall.

Developing the promotion program involves eight steps. The communicator must first identify the target audience and its characteristics, including the image that the

audience has of the product. Next the communicator has to define the communication objective, whether it is to create awareness, knowledge, liking, preference, conviction, or purchase. Then a message must be designed containing an effective content, structure, format, and source. Then communication channels - both personal and nonpersonal - must be selected. Next the total promotion budget must be established. Four common methods are the affordable method, the percentage-of-sales method, the competitive-parity method, and the objective-and-task method. The promotion budget must be divided among the main promotional tools, as affected by such factors as push versus pull strategy, buyer-readiness stage, and product-life-cycle stage. The communicator must then monitor to see how much of the market becomes aware of the product, tries it, and is satisfied in the process. Finally, all of the communication must be managed and integrates for consistency, good timing, and cost effectiveness.

2.2.8. Market segmentation

A company that decides to operate in some broad market - whether consumer, industrial, or government - recognises that it normally cannot serve all customers in that market. The customers are too numerous, dispersed, and varied in their buying requirements. Some competitors will be in a better position to serve particular customer segments of that market. The company instead of competing everywhere, often against superior odds, needs to identify the most attractive market segments that it can serve effectively.

Kotler names the heart of modern strategic marketing as *STP* marketing - *segmenting, targeting, and positioning.* This does not obviate the importance of *LGD* marketing - lunch, golf, and dinner - but rather provides the broader framework for strategic success in the marketplace.

Sellers can take three approaches to a market. Mass marketing is the decision to mass produce and mass distribute one product and attempt to attract all kinds of buyers. Product-variety marketing is the decision to produce two or more market offers differentiated in style, features, quality, sizes, and so on, and designed to offer variety to the market and distinguish the seller's products from competitor's products. Target marketing is the decision to distinguish the different groups that make up a market and to develop corresponding products and marketing mixes for each target market. According to Kotler, sellers today are moving away from mass marketing and product differentiation toward target marketing because the latter is more helpful in spotting market opportunities and developing effective products and marketing mixes.

The key steps in target marketing are market segmentation, market targeting, and product positioning. Market segmentation is the act of dividing a market into distinct groups of buyers who might merit separate products and/or marketing mixes. The marketer tries different variables to see which reveal the best segmentation opportunities. For each segment, a customer-segment profile is developed. The effectiveness of the segmentation analysis depends on arriving at segments that are measurable, substantial, accessible, and actionable.

Next, the seller has to target the best market segment(s). To do so, the seller must first evaluate the profit potential of each segment, which is a function of segment size and growth, segment structural attractiveness, and company objectives and resources. Then the seller must decide how many segments to cover. The seller can ignore segment differences (undifferentiated marketing), develop different market offers for several segments (differentiated marketing), or go after one or a few market segments (concentrated marketing). In choosing target segments, marketers need to consider interrelationships and potential roll-out plans.

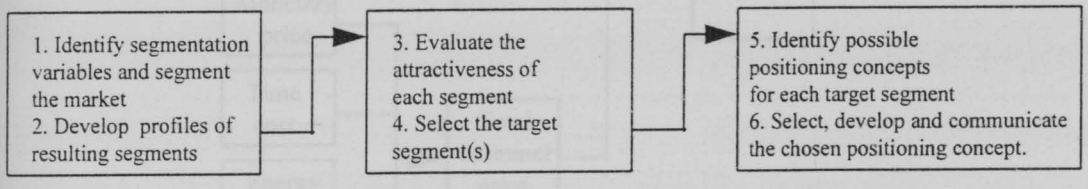


Figure 2.2.7 - Steps in Marketing Segmentation, Targeting, and Positioning [Kotler,1991]

2.2.9. Value creation and competitive differentiation

Differentiation allows a firm to get a price premium based on the extra value perceived by the customers.

Kotler thinks that the key to winning long-term customers is to understand their needs and buying behaviour better than competitors do.

Kotler's premise is that buyers will buy from the firm that offers the highest delivered value. *Delivered value* is the difference between *total customer value* and *total customer price* - see figure 2.2.8.

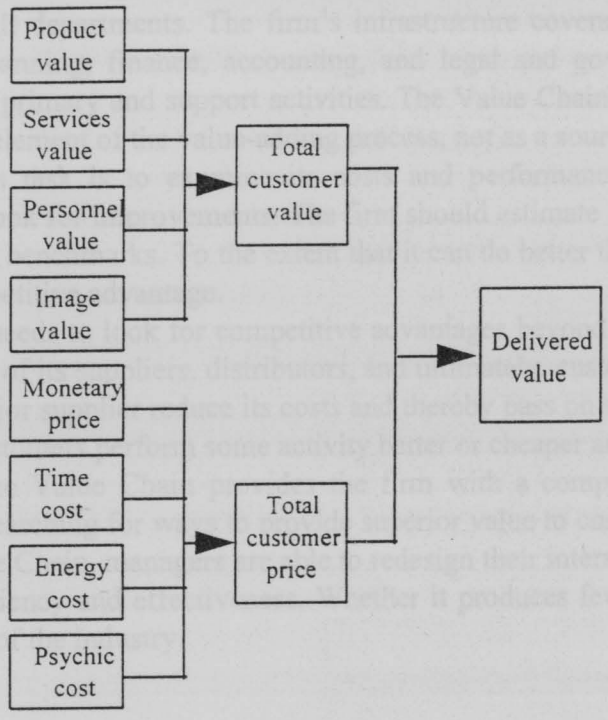


Fig.2.2.8 - Determinants of Customer Added Value [Kotler, 1991]

Some marketers might argue that this is too rational a theory of how buyers choose suppliers. Clearly, buyers operate under various constraints and furthermore make occasional choices that give more weight to their personal benefit than to the company benefit. However, Kotler assumes that delivered-value maximisation is a useful interpretative framework that applies to many situations and that yields rich insights.

The value chain

Porter proposed the *Value Chain* as the major tool for identifying potential sources of value enhancement (see Figure 2.2.9). Every firm is a collection of activities that are performed to design, produce, market, deliver, and support its product. The Value Chain is a model that describes a series of value-adding activities connecting a company's supply side with its demand side. It is usual to refer to the stages involved as links in the Value Chain.

The Value Chain disaggregates a firm into nine strategically relevant activities in order to understand the behaviour of costs in the specific business and industry and the existing and potential sources of differentiation. The nine value activities consist of five primary activities and four support activities.

The primary activities represent the sequence of bringing materials into the business, operating on them, sending them out, marketing them, and servicing them. The support activities occur throughout all of these primary activities. Thus procurement represents the purchasing of various inputs for each primary activity, only a fraction of which are handled by the purchasing department. Technology development occurs in every primary activity, only a fraction of which are done in the R&D department. Human-resource management

also occurs in all departments. The firm's infrastructure covers the overhead of general management, planning, finance, accounting, and legal and government affairs that are borne by all the primary and support activities. The Value Chain model treats information as a supporting element of the value-adding process, not as a source of value itself.

The firm's task is to examine its costs and performance in each value-creating activity and to look for improvements. The firm should estimate its competitors' costs and performances as benchmarks. To the extent that it can do better than its competitors, it has achieved a competitive advantage.

The firm needs to look for competitive advantages beyond its own value chain, into the value chains of its suppliers, distributors, and ultimately, customers. Thus the company might help a major supplier reduce its costs and thereby pass on savings to the supplier; or it might help customers perform some activity better or cheaper and win their loyalty.

Clearly, the Value Chain provides the firm with a comprehensive framework for systematically searching for ways to provide superior value to customers. By analysing the stages of a Value Chain, managers are able to redesign their internal and external processes to improve efficiency and effectiveness. Whether it produces few or many ideas depends upon the nature of the industry.

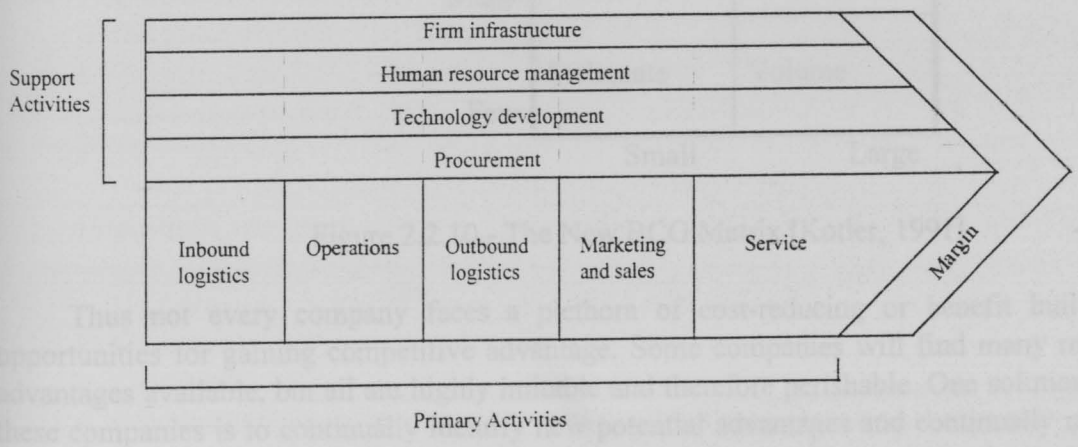


Figure 2.2.9 - The Generic Value Chain, by Michael Porter [Kotler, 1991]

The Boston Consulting Group distinguished four types of industries based on the number of competitive advantages and their size (see Figure 2.2.10). The four industry types are as follows:

- *Volume Industry*: A volume industry is one in which companies can gain only a few, but rather large, advantages. An example would be the construction-equipment industry where a company can strive for the low-cost position or the highly differentiated position and win "big" on either basis. Here profitability is correlated with company size and market share.

- *Stalemated Industry*: A stalemated industry is one in which there are few potential advantages and each is small. An example would be the steel industry where it is hard to differentiate the product or its manufacturing cost. The companies can try to

hire better salespeople, entertain more lavishly, and the like, but these are small advantages. Here profitability is unrelated to company market share.

- *Fragmented Industry*: A fragmented industry is one in which companies face many opportunities for differentiation, but each opportunity is small. A restaurant, for example, can differentiate in many ways but end up not gaining a large market share. Profitability is not related to restaurant size: both small and large restaurants can be profitable or unprofitable.

- *Specialised Industry*: A specialised industry is one in which companies face many different opportunities, and each differentiation can have a high payoff. An example would be companies making specialised machinery for selected market segments. Some small companies can be as profitable as some large companies.

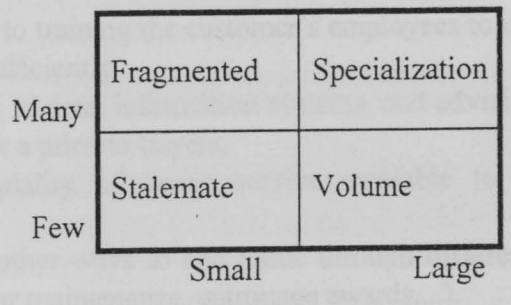


Figure 2.2.10 - The New BCG Matrix [Kotler, 1991]

Thus not every company faces a plethora of cost-reducing or benefit building opportunities for gaining competitive advantage. Some companies will find many minor advantages available, but all are highly imitable and therefore perishable. One solution for these companies is to continually identify new potential advantages and continually move them out one by one to keep the competitors off balance. These companies need to "routinize" the innovation process, expecting not so much to achieve a major sustainable advantage but rather to discover many little differences that can build up market share over time.

Competitive differentiation

Kotler defines differentiation as *the act of designing a set of meaningful differences to distinguish the company's offer from competitors' offers.*

A company or market offer can be differentiated along lines of product, services, personnel or image.

In the product differentiation, we find highly standardised products that allow little differentiation, and at the other extreme we find products capable of high differentiation. Here the seller faces an abundance of design parameters, such as:

- Features: the characteristics that supplement the product's basic functioning.
- Performance: refers to the levels at which the product's primary characteristics operate.

- Conformance: the degree to which a product's design and operating characteristics come close to the target standard.
- Durability: a measure of the product's expected operating life.
- Reliability: a measure of the probability that a product will not malfunction or fail within a specified time period.
- Repairability: a measure of the ease of fixing a product that malfunctions or fails.
- Style: describes how well the product looks and feels to the buyer.
- Design: all the foregoing qualities are design parameters.

In addition to differentiating its physical product, the firm can also differentiate the accompanying services. Kotler defends that when the physical product cannot easily be differentiated, the key to competitive success often lies in services augmentation and quality. The main service variables are:

- Delivery: refers to how well the product or service is delivered to the customer.
- Installation: refers to the work that has to be done to make a product operational in its planned location.
- Customer training: refers to training the customer's employees to use the vendor's equipment properly and efficiently.
- Consulting service: refers to data, information systems, and advising services that the seller offers free or for a price to buyers.
- Repair: describes the quality of repair service available to buyers of the company's product.
- Miscellaneous services: other ways to add value through differentiated services (better product warranty or maintenance, patronage awards,...).

Companies can gain a strong competitive advantage through hiring and training better people than their competitors do. Better-trained personnel exhibit six characteristics:

- Competence
- Courtesy
- Credibility
- Reliability
- Responsiveness
- Communication

Even when the competing products and their accompanying services look the same to buyers, buyers may perceive a difference in the company or brand images.

One seeks to achieve certain characteristics in an image. It must convey a *singular message* that establishes the product's major virtue and positioning. It must convey this message in a *distinctive* way so that it is not confused with similar messages from competitors. It must deliver *emotional power* so that it stirs the heart as well as the mind of the buyer.

Positioning strategy

Positioning is, according to Kotler, the act of designing the company's offer and image so that the target market understands and appreciates what the company stands for in relation to its competitors. The company's positioning must be rooted in an

understanding of how the target market defines value and makes choices among vendors. The positioning tasks consist of three steps. First, the company has to identify possible product, services, personnel, and image differences that might be established in relation to competition. Second, the company has to apply criteria to select the most important differences. Third, the company's product-positioning strategy will then enable it to take the next step, namely plan its competitive marketing strategies.

2.2.10. Managing the product life-cycle

Products and markets have life cycles that call for changing marketing strategies over time. During a product's life, a company will normally reformulate its marketing strategy several times. Not only do economic conditions change, and competitors launch new assaults, but in addition, the product passes through new stages of buyer interest and requirements. Consequently a company must plan successive strategies appropriate to each stage in the product's life cycle. The company hopes to extend the product's life and profitability even knowing that the product will not last forever.

Every new need follows a demand life cycle that passes through the stages of emergence, accelerating growth, decelerating growth, maturity, and decline. Each new technology that emerges to satisfy that need exhibits a demand-technology life cycle. Particular product forms of a given technology also show a life cycle, as do brands within that product form.

The sales history of many products follow an S-shaped curve consisting of four stages. The *introduction* stage is marked by slow growth and minimal profits as the product is pushed into distribution. During this stage, the company has to decide between strategies of rapid skimming, rapid penetration, or slow penetration. If successful, the product enters a *growth* stage marked by rapid sales growth and increasing profits. The company attempts to improve the product, enter new market segments and distribution channels, and reduce its prices slightly. There follows a *maturity* stage in which sales growth slows down and profits stabilise. The company seeks innovative strategies to renew sales growth, including market, product, and marketing-mix modification. Finally, the product enters a *decline* stage in which little can be done to halt the deterioration of sales and profits. The company's task is to identify the truly weak product; develop for each one a strategy of continuation, focusing, or milking; and finally phase out weak products in a way that minimises the hardship to company profits, employees, and customers.

Not all products pass through an S-shaped product life-cycle (PLC). Kotler refers that PLC theory has been criticised on the grounds that companies cannot predict the shapes in advance, or know what stage they are in within a given shape, or predict the duration of the stages. He also refers that PLCs are the result of chosen marketing strategies rather than of an inevitable sales history that is independent of the chosen marketing strategies.

Kotler defends that PLC theory must be broadened by a theory of marketing evolution. This theory holds that new markets *emerge* when a product is created to satisfy an unmet need. The innovator usually designs a product for the mass market. Competitors enter the market with similar products leading to *market growth*. Growth eventually slows

down and the market enters *maturity*. The market undergoes increasing *fragmentation* until some firm introduces a powerful new attribute that *consolidates* the market into fewer and larger segments. This stage does not last, because competitors copy the new attributes. There is a cycling back and forth between market consolidation based on innovation and fragmentation based on competition. The market for the present technology will ultimately *decline* upon the discovery of super technologies.

Kotler thinks that companies must try to anticipate new attributes that the market wants. Profits go to those who introduce new and valued benefits early. The search for new attributes can be based on empirical work, intuition, dialectical reasoning, or needs-hierarchy reasoning. According to the author, successful marketing comes through creatively visualising the market's evolutionary potential.

2.3. Orientation on Information Systems and Semiotics

2.3.1. Introduction

In this chapter we will talk about information, semiotics, and information systems.

First we will have a look at the concept of information: its definitions, its properties, and its applications.

We will then explain what is Semiotics, the theory of signs. We will refer to its basic concept - the sign -, and how Semiotics uses it to view the world. We will describe the three aspects of the traditional division of Semiotics, and how Stamper arrived to a fuller Semiotic Framework by adding three more essential aspects to the properties of signs. This six layers' Semiotic Framework will be explained, and described level by level, covering all the different types of properties of signs.

At the last part, we will talk about Information Systems. After a general overview and definition of Information Systems, we explain how Stamper uses a Semiotic approach to study Information Systems.

This chapter aims to define clearly the concepts and definitions of "Information," "Semiotics," and "Information Systems," in order to then demonstrate how Semiotics can lead to a more profound understanding of Information and Information Systems.

2.3.2. What is information?

To study the notion of information, let us start with looking at some definitions.

"The distillation of data, through its being processed, results in the creation of information." (H.D.Cifton, *Business Data Systems*)

"Data is the ore, the raw material from which information is developed." (Dorn, *The Nature of Information*, Infotech State-of-the-Art Report 9 No 7 1981)

"...data are first condensed into information and from this information meaning is distilled." (F.Keay, *The Numerate Manager*)

"...some tangible or intangible entity which reduces uncertainty about a future state or event." (H.C.Lucas, *The Analysis, Design and Implementation of Information Systems*)

"Information: the meaning that a human assigns to data by means of the known conventions used in data representations." (M.Bohl, *Information Processing*, 1976)

"The word "information" is best used to denote a combination of fact plus a meaning an observer attributes to it." (P.Checkland, *Systems Thinking, Systems Practice*)

"Information is knowledge that was unknown to the receiver prior to its receipt." (*Penguin Dictionary of Information Technology*)

"Information: (1) any knowledge or message useful for decision or action,
(2) a compound idea or the meaning derived from data."
(B.Langefors & K.Samuelson, *Information and Data in Systems*)

"Information is data which have been analysed and organised so that they become meaningful." (T.Stonier, *Wealth of Information*)

"The terms "information" and "data" are frequently used interchangeably; however, information is generally defined as data that is meaningful or useful to the recipient. Data items are therefore the raw material for producing information." [G.B. Davis. M.H. Olson, *Management Information Systems*].

As we can see from above, most of the definitions of information are rather unclear and involve other very complex notions like knowledge and meaning. They do not define a precise concept of information.

As Stamper states [Stamper, 1993], the explosive growth of information technology has not been accompanied by the needed improvement in the understanding of information. Unfortunately, it is very common to see computers being used with great technical skill but with only poor results for the client organisation. The reason for this technical efficiency combined with organisational ineffectiveness is that usually people know a lot about information technology, but very little about the information it carries. Information is a vague and elusive concept, whereas the technological concepts are very easy to grasp.

Information has some rather paradoxical properties: it's inseparable from material/energy yet distinct; when shared, its value may decrease but more often it increases; one cannot give a customer a full specification of an information product without giving him the product itself; information is not a standard commodity which can be aggregated (2 tons of coal + 3 tons of coal = 5 tons of coal); it has no economic unit of measurement (such as escudos per ton); it may be given away but retained; information cannot be dealt with using standard accounting procedures because of its paradoxical

properties: cooperative strategies are often better than competition for maximising the utility of information available and information value. These properties arise many problems at different levels: legal, organisational, governmental, intellectual and others.

It seems that the concept of information is very fuzzy and is certainly unsuitable as a primitive notion on which to base a science. Semiotics, the theory of signs, provides the concept of a "sign" as a concrete, primitive notion for the study of information, as we will explain in the next chapter. Stamper is trying to develop a clear and precise definition of information, using Semiotics as an approach for better understanding information. According to him, "information" is a property of signs, so it can have many different meanings depending on the different properties of the signs.

2.3.3. What is semiotics?

The theory of signs, semiotics or semiology, has a long history dating from the ancient Greek philosophers. John Locke in his Essay Concerning Human Understanding, treats semiotics together with physics and ethics as one of the three main branches of human knowledge. "Semiotics" and "semiology" overlap but have different origins and traditions. "Semiotics" tends to relate more to the logical aspects of signs, whereas "semiology" tends to relate more to the role that signs play in society and language. Semiotics is associated with the work of Charles Sanders Peirce, an American logician, George Herbert Read and his student, the social-psychologist Charles Morris. Semiology is associated with a tradition originating with Ferdinand de Saussure, Roland Barthes and Umberto Eco. Rather broadly stated, semiotics is related to an Anglo-Saxon or Northern European tradition, whereas semiology is related to a Southern European tradition. In this paper we will follow the Anglo-Saxon tradition, in a semiotic view of "information."

Semiotics provides the concept of a *sign* as a primitive notion.

Business is getting things done by using information. All information is "carried" by signs of one kind or another, so understanding signs should contribute to our understanding of information and information systems [Stamper, 1993].

Semiotics is the theory of signs, so it can be very profitable to use it as an approach to the study of business organisations.

C.S. Peirce defined sign as
" A sign is something which stands to somebody for something in some respect or capacity."

This definition emphasises that a sign has at least three aspects:

- some physical representation
- something to which this refers or alludes
- somebody able to interpret this relationship.

Two questions arise from here: for what does a sign stand? How does it stand for something else?

A sign stands for something in the "real" physical and social world, this is what gives a sign its meaning.

There are several theories of meaning, with different explanations and definitions for the meaning of a sign. Within the diadic theories of meaning [Stamper, 1995], we can find three approaches:

- the objectivist approach, known as the " *conduit metaphor*", defining meaning as an objective thing contained by the sign itself. They see signs as little trucks that carry their loads of meaning.

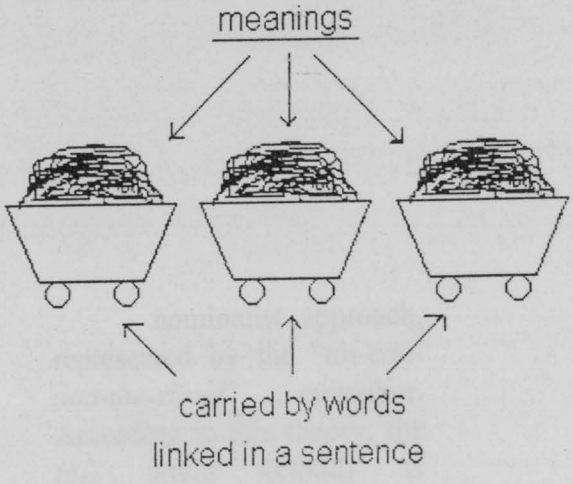
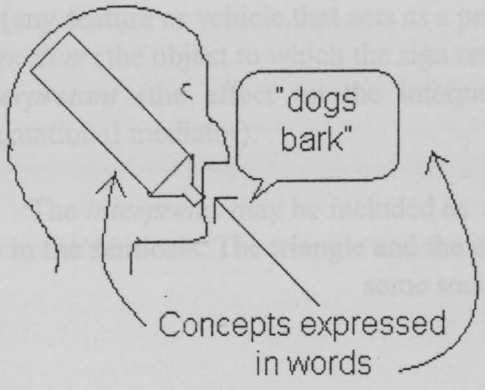


Figure 2.3.1 - The *conduit* metaphor [Stamper, 1995]



- conceptualist approach, represented by the "*tooth-paste-in-the-head*" metaphor, implying that concepts exist in one's mind. These concepts are "squeezed out" into signs and reconstituted in the mind of the receiver of the sign.

Figure 2.3.2 - The *tooth-paste-in-the-head* metaphor [Stamper, 1995]

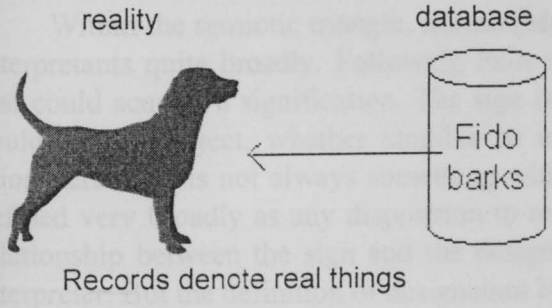


Figure 2.3.3 - The *tin-can-and-the-cloud* metaphor [Stamper, 1995]

- nominalist approach, represented by the "*tin-can-and-the-cloud*" metaphor. According to this theory, the real world (cloud) is composed of individual things pointed at by the character strings in the database (tin can). It assumes a world composed of ready-made individuals belonging to some class of individuals.

As a triadic theory of meaning, C.S. Peirce introduced his semiotic triangle which has been followed by other authors such as Ogden and Richards [Ogden and Richards, 1923] and Charles Morris [Morris, 1946]. They held the opinion that cognitive processes and their results can be adequately represented in a triadic relation of semiosis.

Usually, this semiosis involves three or four factors (see figure 2.3.4):

a *sign* (any feature or vehicle that acts as a preparatory stimulus),
a *designatum* (the object to which the sign refers) and
an *interpretant* (the effect on the interpreter, the interpreter's disposition, or a representational mediator).

The *interpreter* may be included as a fourth factor. The interpreters are the agents in the semiosis. The triangle and the interpreters exist within and on account of some social con

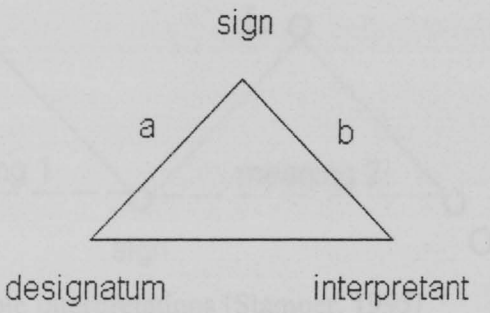


Figure 2.3.4 - The semiotic triangle [Morris, 1946]

Within the semiotic triangle, Morris [Morris, 1946] defined signs, designata and interpretants quite broadly. Following Peirce, he defined *signs* as virtually anything that could acquire a signification. The sign is always a physical thing. A *designatum* could be any object, whether tangible or intangible, real or imaginary, shared or idiosyncratic. It is not always something with a physical existence. *Interpretants* are defined very broadly as any disposition to respond. The triangle treats meaning as a relationship between the sign and the designatum, an interpretant established by an interpreter. But the definition of designatum by Morris is rather vague and broad. How do people know what exactly is the designatum, that "object" to which a sign refers? Holm and Karlgren [Holm and Karlgren, 1995] mention two theories to its definition : *a response to a sign-stimulus* (from the receiver's point of view) and, according to Wittgenstein, *the usage of the sign* (from the sender's point of view). So, there are two ways for a sign to get its meaning: because people use it in an action context, or because people react on it in an action context. Thus, to define the meaning of a sign, we need to place the interpreter in the action context. We need to know both the interpreter of the sign and what the sign enables him to do in terms of behaviour. Hence, we can only define meaning by defining the interpreter-in-a-context and the behaviour of this interpreter (either being an action of using the sign or a reaction on the sign-stimulus). The interpreter has a very important role in establishing the

meanings of signs in terms of their usage in practical circumstances. The interpretation takes place in a social context of people adjusting, influencing, and coordinating their behaviour. In any instance of sign usage, two or more interpreters are involved, not one as Peirce's triangle would seem to imply. In fact, there are two or more semiotic triangles involved [Stamper, 1995], as shown in figure 2.3.5. In the first one, the interpreter I1, called the *signifier*, experiences something, some object called O1, in the real world and expresses it by a sign, called S. The sign S is going to be interpreted by a second interpreter I2, called the *signified*, who selects an object O2 in the real world according to his interpretation of the sign S, without access to O1. Thus the sign usually has two meanings. The "objects" which each of the interpreters associate with the sign will be socio-subjectively established and maintained; they may be the same or different. Each "object" is some pattern of usage and we should think, not of things that stand there, existing independently, but of repertoires of behaviour which are established in the norms shared by groups of people.

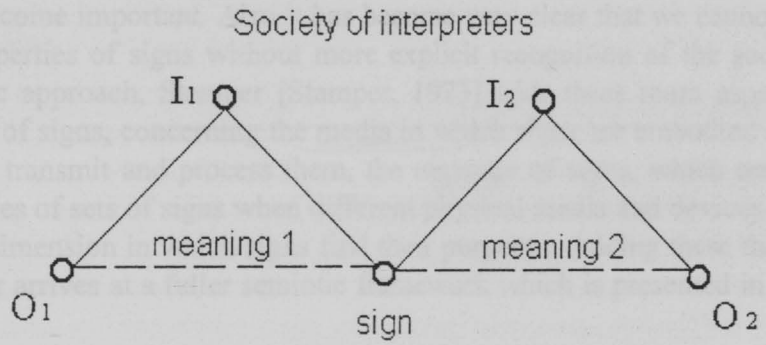


Figure 2.3.5 - Multiple interpretations [Stamper, 1995]

Morris [Morris, 1938] subdivided semiotics into three aspects:
pragmatics (the relations of signs to their interpretants or usage of signs),
semantics (the relations of signs to their designata or meanings of signs) and
syntactics (the formal relations of signs to one another or the structure of signs).

The first two, semantics and pragmatics, correspond respectively to 'b' and 'a' of the semiotic triangle (Figure 2.3.4). These three aspects can be found in the research problem of many semiotic studies which could be formulated as : *how does a sign according to somebody stand for something else.*

The semiotic triangle captures some but not all aspects of using signs. The factors governing the economics of signs, and the indispensable role that society and its culture play in making the understanding of signs possible were ignored and left out of the interpretation of signs.

Aware of the importance of these factors, Stamper [Stamper, 1973] adds three more aspects to the traditional division of semiotics:

physics (concerning the physical properties of the signs),
empirics (concerning the statistical properties of the signs) and
social (concerning the social effects of the signs).

With these six aspects of signs, Stamper develops a fuller semiotic framework. Peirce's definition might be improved by adding another phrase to make more explicit the social context which Stamper assumes to be necessary:

" A sign is something which stands to somebody for something in some respect or capacity, *in some community or social context.*"

Semiotics are used by Stamper to obtain a deeper understanding of communication and organisational development.

2.3.3.1. The Semiotic Framework

As it has been said, traditionally the divisions of semiotics have been *syntactics*, *semantics*, and *pragmatics* which deal respectively with the structures, meanings and usage of signs, reflecting the philosophical roots of the subject. In recent years and in business contexts the factors governing the economics of signs have become important. Also it has become very clear that we cannot fully acount for the properties of signs without more explicit recognition of the social world. In his semiotic approach, Stamper [Stamper, 1973] adds three more aspects of signs: the *physics* of signs, concerning the media in which signs are embodied and the hardware used to transmit and process them, the *empirics* of signs, which treats the statistical properties of sets of signs when different physical media and devices are used, and the *social* dimension in which signs find their purposes. Adding these three extra aspects, Stamper arrives at a fuller semiotic framework which is presented in the Figure 2.3.6, below.

The semiotic framework is represented in the form of a ladder with six steps linking the physical and the social worlds. Each of the six levels is concerned with an aspect of the use of signs in communication. The three upper levels in the semiotic framework are concerned with the effect of signs upon human affairs , such as how signs function in communicating meanings and intentions to change attitudes. They form the "Human information functions." The three lower levels are concerned with the technical support of human communication activities, such as how signs are structured and used in language, how signs are organised and transmitted and what physical properties signs have. They belong to the "Technology platform."

Human information functions	SOCIAL WORLD beliefs, expectations, commitments, contracts, law, culture....
	PRAGMATICS intentions, comunications, conversations, negotiations,...
	SEMANTICS meanings, propositions, validity, truth, signification, denotations,...
The Technology Platform	SYNTATICS formal structure, language, logic, data, records, deduction, software, files,...
	EMPIRICS pattern, variety, noise, entropy, channel capacity, redundacy, efficiency, codes,...
PHYSICAL WORLD signals, traces, physical distinctions, hardware, component density, speed, economics,...	

Figure 2.3.6 - The Semiotic Framework [Stamper, 1993]

The indispensable role that society and its culture plays in making signs possible is crucial to the treatment of semiotics explained here.

We will look now in a little more detail at the different levels in the semiotic framework, and at how it can be used to describe and analyse different aspects of communication and information. "Information" has many different meanings, including one or more on each of the semiotic levels. "Information" is a property of signs appropriate for the concepts at that semiotic level. Many different meanings of "information" can be understood in many precise ways as a number of different properties or of operations performed with signs. So, for each of the semiotic levels, we will give a different definition of "information."

The technology platform

Physical world

In the information systems we need to model the physical means of representing signs. The commonest terms used for a phenomenon with this function are "signal," if it is dynamic, or "mark" if it is static. "Token" is an established generic term for a particular instance of a sign, and "physical token" abstracts its mere physical properties.

In this physical area of semiotics we model signals and marks, their sources and destinations and the routes over which they are transmitted. This level is concerned with the physical properties of signs and with using and creating the physical media for creating, carrying and storing physical-tokens. We use the methods of physics and engineering to study physical-tokens (signals or marks), looking for cheap, compact and easily manipulable forms.

All the usual physical properties of objects (marks) and events (signals) are relevant. Depending on the type of a sign, its physical properties can be shape, size, intensity (the number of distinct tokens per unit of time or space), moving speed, acceleration, loudness, source, destination, etcetera. The physical properties of the media transmitting the signs can be the kinds of material the sign-carrier is made up of, the energy content, the rate of deterioration, the speed of transmission, etcetera. These are of particular importance in finding the costs of information systems, and IT equipment manufacturers compete mostly in these terms.

In the physical level, "information" means a collection of tokens as when we talk of the information in a database amounting to x megabytes [Stamper, 1993].

Empirics

This level is concerned with the statistical properties of signs, apart from the different physical media and devices that are used. Individual tokens have no relevance here. At the empirics level we deal with the repeated patterns that can be imposed on the physical phenomena and which can be recognised and transmitted reliably using the given media. Issues at this level are concerned with: effects of coding, entropy measurement, optimal signal transmission, channel capacity, etcetera.

"Information" at this level has the definition as the entropy of a source, which measures the unpredictability of an ergodic source. In a simpler way, we may say it is the average surprise-value of the signals [Stamper, 1993].

Syntactics

Syntatics is concerned with the structure of signs, regardless of how people use them or what they mean. At this level we analyse only the formal relationships among the signs and the operations to which they may be subjected. This level is concerned with forming and structuring the basic sign-types or patterns into larger structures, such as sentences or reports. Signs like words, mathematical expressions, or sentences are examples of such a structure, which can be composed of some basic parts.

At the syntactic level, "information" is the amount of statments that a state-description describes out of a set of statments [Stamper, 1993].

Human information functions

Semantics

This level is concerned with the meaning of signs. Meanings are relationships between signs and the other things which they stand for. A theory of meaning depends upon what these other things might be. As we have seen, there are some different semantic theories of meaning: the objectivist approach, the conceptualist approach,the nominalist approach, and the behaviouralist approach. "Meaning" clearly has different meanings according to the semantic theory adopted. So, we should adopt one of these theories before we start the semantic analysis of a sign, to be able to say what it is that a sign can mean. Semantics is concerned about the truth, the validity, the signification, the denotation of signs, which all depend upon its meaning.

Here "information" has the same definition as meaning, being the relationship between a sign and what it stands for [Stamper, 1993].

Pragmatics

To have any use, a sign must always have an intention imputed to by its creator and its interpreter. Pragmatics is concerned with the intentional use of signs to create and alter social relationships. It analyses the relationships between signs and the behaviour of responsible agents, in a social context. The context is essential if we want to understand signs in the pragmatic domain. In most communications, signs are used almost always accompanied by intentions such as making commitments, reaching agreement and entering into social relationships. It is essential for a successful communication that the receiver of the sign understands the intention of the sender when using that sign. In many cases, when different intentions are imposed, signs with the same meaning can be used for different purposes, because the context will be different for each one of them.

Pragmatically, "information" is the amount of consequences that the sign provoques [Stamper, 1993].

Social world

Each and every sign that is used will have a social consequence. No sign can be fully understood without regard for its potential or actual social consequences. This level is concerned with the social fabric which is not only the context in which signs are used, but also the product of sign usage. The social world consists of norms of many kinds - ways of behaving, sets of values, shared models of reality and so on. These define the shape or form of social reality. In a social community, people share knowledge, assumptions, behaviour, etc., in order to understand one another. However, differences in experiences, values and expectations can create difficulties in understanding.

At the social level we are concerned with the actual, perlocutionary effects of the signs, whereas pragmatically we are interested in the illocutionary or intended effects. At the pragmatical level we focus on the sender of the sign and his intentions when using it, and at the social level we focus on the receiver of the sign and his reactions to it.

The word "information" is now often used as the name of a kind of abstract substance, but it can be used as a process of giving form to something, a process of imparting form to a social situation [Stamper, 1993].

As explained above, the Semiotic Framework can be applied to describe and analyse different aspects of sign usage or communication. Actually, the semiotic framework can be applied to everything in the real world, as everything we experience can be seen as a sign, at least representing itself.

"Signs are the means by which physical artifacts (tokens) are used to create, sustain, alter and use the social world" [Stamper, 1993]. The semiotic framework links the physical to the social world helping us understand how this process occurs. By using the semiotic framework we can achieve a complete and new perspective of the real world.

2.3.4. What is an Information System?

As Davis and Olson make clear [Davis and Olson, 1985], a diversity of terms is used to refer to computer-based information processing systems supporting the functions of an organisation, like "information processing system", "information and decision system", "organisational information system" or simply "information system." They themselves prefer "management information system", but they also frequently use just "information system." They define this system as:

an integrated, user-machine system for providing information to support operations, management, and decision-making functions in an organisation. The system utilizes computer hardware and software; manual procedures; models for analysis, planning, control and decision making; and a database.

The fact that it is an integrated system does not mean that it is a single, solid structure. Rather, it means that the parts fit within an overall design. Conceptually, a management information system can exist without computers, but it is the power of the computer which makes these systems feasible. The concept of a user-machine system implies that some tasks are best performed by humans, while others are best done by machine. The user of an information system is any person responsible for entering input data, instructing the system, or utilizing the information output of the system. For many problems, the user and the computer form a combined system with results obtained through a set of interactions between the computer and the user. The computer can be a personal computer serving only one user or a large computer that serves a number of users through terminals connected by communication lines. It is usually insufficient for human recipients to receive only data, even summarized data. Data usually needs to be processed and presented in such a way that the result is directed toward the decision to be made. To do this, processing of data items is based on a decision model.

Management information systems typically provide the basis for integration of organisational information processing. Individual applications within information systems are developed for and by diverse sets of users. If there are no integrating processes and mechanisms, the individual applications may be inconsistent and incompatible, resulting in problems with using shared data for different applications and purposes. The first step in integration of diverse information system applications is an overall information system plan, guiding their design and determining how they fit in with other functions. Information system integration is also achieved through standards, guidelines, and procedures. The enforcement of such standards and procedures permits diverse applications to share data, meet audit and control requirements, and be shared by multiple users. The trend in information system design is to separate application processing from the data used to support it. The separate database is the mechanism by which data items are integrated across many applications and made consistently available to a variety of users. The underlying concept of a database is that data needs to be managed in order to be available for processing and to have appropriate quality. This data management includes both software and organisation. The software to create and manage a database is a database management system. When all access to and use of the database is controlled through a database management system, all applications utilizing a particular data item access the same data item which is stored in only one place. A single updating of the data item updates it for all uses. Integration through a database management system requires a central authority for the database. The data can be stored in one central computer or dispersed among several computers, the overriding requirement is that there is an organisational function to exercise control.

Davis and Olson distinguish and integrate two perspectives of classifying information systems. One, which they call the "activities subsystems" describes the management information system as a pyramid structure based on different levels of management and decision making. The bottom layer consists of information for

transaction processing and status inquiries (e.g. processing of orders, shipments and receipts). The next level consists of information system resources in support of day-to-day operations and control (e.g. scheduling of activities and performance reports). The third level consists of information system resources to aid in tactical planning and decision making for management control (e.g. formulation of budgets and resource allocation). The top level consists of information resources to support strategic planning and policy making by higher levels of management (formulation of objectives and strategic plans).

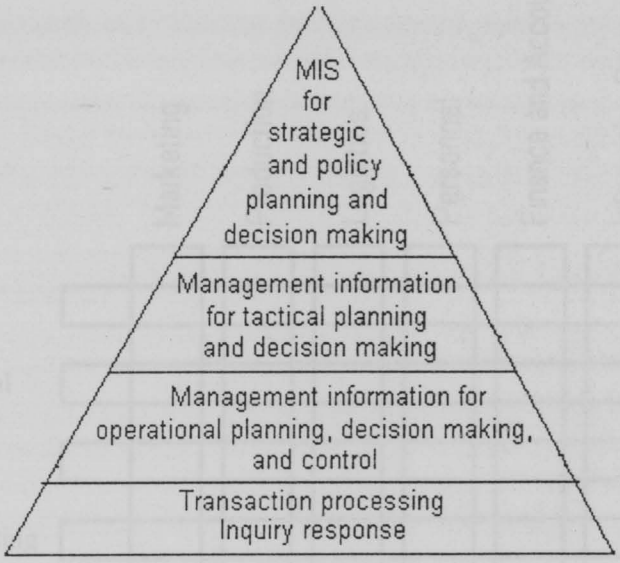


Figure 2.3.7 - Management information system [Davis and Olson, 1985]

Each level of information processing may make use of data provided for lower levels, but new data may also be introduced. For example, some of the information to support management and decision making is provided by the data obtained for transaction processing, while some may be new data about activities external to the organisation.

The second perspective, which they call the "organisational function subsystem," distinguishes between the major organisational functions which are somewhat separable in terms of activities and which are traditionally defined as separate managerial responsibilities: marketing (e.g. sales forecasting, sales planning, customer and sales analysis), manufacturing (e.g. production planning and scheduling, cost control analysis), logistics (e.g. planning and control of purchasing, inventories, distribution), personnel (e.g. planning personnel requirements, analysing performance, salary administration), finance and accounting (e.g. financial analysis, cost analysis, capital requirements planning, income measurement), information processing (e..g. information systems planning, cost-effectiveness analysis) and top management (e.g. strategic planning, resource allocation). The management information system, from this perspective, can be viewed as a federation of information systems. The database is the primary means of integration of the various subsystems. For instance, the sales and inventory information used by the marketing subsystem is supplied through the logistics

subsystem; the same data is used by the manufacturing subsystem for production planning and scheduling.

Davis and Olson combine both perspectives in an integrated management information system that consists of subsystems covering all activies and organisational functions. Some activities subsystems will be useful for more than one organisational function subsystem, others will be useful for only one function.

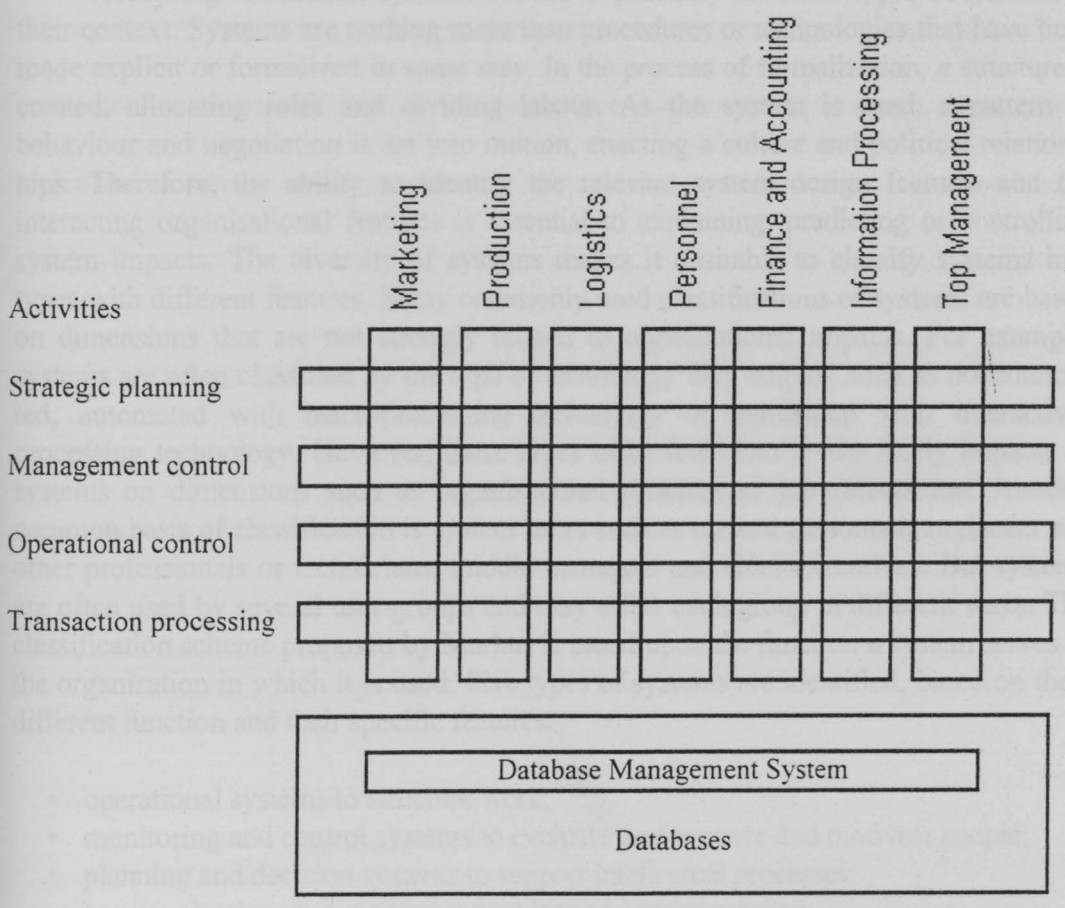


Figure 2.3.8 - Relation of activities to functional subsystems [Davis and Olson, 1985]

Davis and Olson argue that since the management information system is a support system for organisational functions, the concepts of organisation, organisation behaviour, management, and decision making are a key to understanding the function of a management information system. This idea is supported by the work of Markus, who argues that the impact of systems are produced by the interaction between system design features and the features of the organisation in which the systems are used. She calls this the "interaction perspective" [Markus, 1984]. At least four features are distinguished:

- Technology: the collection of methods, techniques and know-how for a specific task.
- Structure: the formal patterns of authority and responsibility that prescribe roles and divide the labour among various parties.

- Culture: the norms, values, beliefs and nonprescribed behaviour patterns that characterize relationships inside and between groups or departments in organisations.
- Politics: the processes of negotiation that occur among individuals and groups with differing interests and objectives and with differing bases and relative levels of power.

According to Markus, systems consist of precisely the same types of features as their context. Systems are nothing more than procedures or technologies that have been made explicit or formalized in some way. In the process of formalization, a structure is created, allocating roles and dividing labour. As the system is used, a pattern of behaviour and negotiation is set into motion, enacting a culture and political relationships. Therefore, the ability to identify the relevant system design features and the interacting organisational features is essential to explaining, predicting or controlling system impacts. The diversity of systems makes it desirable to classify systems into types with different features. Many commonly used classifications of systems are based on dimensions that are not strongly related to organisational impacts. For example, systems are often classified by the type of technology they employ such as nonautomated, automated with batch-processing technology or automated with interactive-processing technology. However, these types offer few clues to the likely impacts of systems on dimensions such as organisational structure or job satisfaction. Another common basis of classification is system users such as clerical personnel, engineers and other professionals or technicians, middle managers and chief executives. But systems are often used by several user groups and may affect each group in different ways. The classification scheme proposed by Markus is based upon the function a system serves in the organisation in which it is used. Five types of systems are identified, based on their different function and their specific features:

- operational systems to structure work;
- monitoring and control systems to evaluate performance and motivate people;
- planning and decision systems to support intellectual processes;
- communication systems to augment human communication;
- interorganisational systems to facilitate interorganisational transactions.

Several points should be made about these types of systems. First, their features are independent of technology. An operational system may be unautomated or automated using any type of technology. Second, the features do not assume a particular type of user. Some operational systems may be used by chief executive officers, and some planning and decision systems may be used by technicians and clerks. Third, some systems are composed of subsystems of multiple types. For example, a manufacturing system may have operational, monitoring and control and planning and decision subsystems. While such a system cannot be neatly classified into a single type, the collection of design features it encompases is a useful guide to its likely organisational impacts.

1. Operational systems

Operational systems serve the purpose of structuring the performance of work tasks. Typically, operational systems focus on the physical or tangible aspects of an activity, such as material handling, the preparation of drawings or designs and document production. The intellectual aspects of the activity may also be affected, usually by altering the range of choices that need to be made or the alternatives that need to be considered, but when an activity is primarily intellectual, with a very limited physical component, the type of system applied to it falls into the planning and decision category (e.g. medical diagnosis, strategic planning and investment evaluations). The task structured by an operational system may be performed by people in any occupational category or hierarchical level (clerks and secretaries, blue-collar workers, engineers and architects, accountants and managers). The tasks structured by operational systems may be central or peripheral to the core business of an organisation (processing of claims in insurance companies or the billing of advertising customers in a newspaper). The key design features of operational systems are work rationalisation, which means reorganisation with up-to-date methods and procedures in order to make the work process more efficient, and routinisation, that is, to make the work process uniform so that outputs are consistent, and predictable quantities and qualities of inputs - labour and materials - can be used. The design features of operational systems are closely related to certain features of the organisational setting in which the work process occurs. Because operational systems are intended to reduce labour costs, a relevant feature is the size, composition and structure of the labour force for that production process. In addition, because operational systems impose new methods and routines on the performance of work, they affect the design of jobs and the work flow among jobs and the patterned interrelationships among people and organisational units.

2. Monitoring and control systems

Monitoring and control systems are intended to evaluate the performance of people and/or organisational units and to motivate people to improve their performance. The dimensions of performance monitored and evaluated by these systems may be objective, like dollars spent, or subjective, like package appearance. They may relate to the outcome, like the number of units produced, or to the behaviours required to produce outcomes, such as patient contact hours or billable hours. The performance in question may be that of an individual from any hierarchical level or occupational group or it may be that of a department, division or subsidiary. The purpose of the monitoring may be to assist in the future planning process, to facilitate learning about controllable variances, to maintain performance within certain parameters or to motivate people to achieve better results in the future. Finally, the focus of the system may be internal or external. Thus, the system may be designed to assist the person or unit in self-control - that is, setting personal goals and monitoring achievement - or for external control - that is, administering rewards or punishments for achieving goals set, at least in part, by others. The key design features of monitoring and control systems include the following:

- goals or standards on each dimension of performance for which an individual or unit is held responsible;
- measures of actual performance;

- evaluation: comparison of performance with the goal or standard;
- feedback: communication of performance against the standards to influence subsequent performance;
- reward: administration of extrinsic rewards like bonuses, commissions, piecework compensation, or merit raises, and punishments like penalties, suspension or termination.

Control theorists have argued that people's behaviour can be measured and compared to preset objectives to determine the extent of the undesirable variance, if any. When presented with feedback - that is, evidence of the size of the negative variance - the rational employee (presumably armed with the knowledge of what actions will produce what outcomes) will adjust his or her behaviour in ways that bring results back to standard. The design features of control systems are related to features of the system's organisational context, like the design of jobs, the degree of autonomy, the closeness or slackness of supervision, the stress of high performance demands or the boredom of easily achieved goals, and the ongoing behaviour patterns, values and belief systems.

3. Planning and decision systems

Planning and decision systems are designed to support processes and activities that are primarily intellectual, such as drawing conclusions from evidence, making predictions from past performance and deciding on an appropriate course of action to follow. The intellectual problems attacked by these systems may arise so frequently that the benefits of routinization are sought, or they may be one-of-a-kind situations of such importance that steps are taken to improve the quality of the decision outcome. The plans and decisions subjected to systemization may be those habitually made by relatively low-level employees in the organisation like the inventory controllers who determine when and what quantity of parts and materials to reorder. Planning and decision systems, however, have also been applied to the responsibilities of of high-ranking staff specialists and professionals. Structured decision methods and computer-based programs have been designed to support the thought processes of investment analysts and stock portfolio managers, engineers and geologists, brand managers and marketing experts and physicians, among others. Some planning and decision systems are directed at matters of concern to the highest managers in an organisation: for example, the decision to make an acquisition or divestiture, the formulation or modification of marketing strategy, the choice of location for a major new facility and so forth. The key design features of planning and decision systems are models and data manipulation. In different forms, these features are present in virtually every planning and decision system. Models are formalized descriptions of either a real-world process that an expert is attempting to analyze - for example, the economy or a company's financial performance - or the mental processes that an expert would use in attempting to understand the real-world process. Models of the former type may be optimizing, designed to recommend the best course of action subject to specific constraints, or simulation models, designed to evaluate the effects of alternative actions under differing environmental conditions. Models of the latter type are often called expert systems because they simulate the analysis an expert would make. The key design features of planning and decision systems, models and data manipulation, are related to features of the contexts in which the systems are used. Because these systems are intended to

facilitate data analysis, they may reduce the amount of labour involved in data handling. This is related to the size and composition of the information-processing work force, which is almost totally white collar in nature. Because these systems seek to impose structure on decision-making and planning activities, they have implications for the design of the decision-makers' jobs and the skill requirements for these jobs. Furthermore, many decision and planning situations involve the input of several parties. In some cases, staff specialists in headquarters make plans and decisions that affect line or staff personnel in divisions or subsidiaries; in others, divisions and subsidiaries have relative autonomy. Systems that structure decision-making and planning processes may influence the structural arrangements, and the organisational culture characterising the relationships among parties.

4. Communication systems

Communication systems are designed to augment communication among people, which can be a secondary function of the other types of systems discussed before. Communication systems are characterised by two types of design features: procedures intended to reduce the constraints of geography and communication media that change the form, speed or interactiveness of communication. Recent technological advances have led to a proliferation of communication systems employing computer-based text messaging, videodisc and cd-rom training programs, voice mail and video conferencing, among others. The design features of communication procedures and media are related to features of organisational life, especially those concerning time and geography. Communication systems attempt to transcend distance and make the succesful operation of business independent of the location of people and resources. Another important feature of organisation related to the design features of communication systems is the communication network, or pattern of communication channels. Media differ in the number of people brought into contact in a single communication event. With telephone only two are connected, but television may reach millions. They differ in direction of communication. Mail is one way, telephone is two way and CB radio is many to many. They differ in requiring the simultaneous presence or participation of communicating parties. Telephone requires simultaneous presence, mail does not. These media characteristics shape and constrain the patterns of communication among the connected parties. This central feature of organisation is strongly associated with the structural aspects of work flow coordination and degree of centralisation and with organisational culture.

5. Interorganisational systems

Interorganisational systems are intended to facilitate transactions involving more than one organisational entity. The other types of systems described before, concern transactions that occur within an organisation, although they may involve interactions among internal subunits. Interorganisational systems, in contrast, concern habitual interactions among autonomous but interdependent organisations. Some firms have developed systems to facilitate these transactions, and these systems may have subsystems with the design features of operational, monitoring and control, planning and

decision and communication systems. These design features are related to specific organisational features inside one or more firms who use the system to conduct transactions. However, interorganisational systems also have design features that relate not just to the features of the transacting parties but also to the relationship between them. These design features are the procedures that structure the transaction and the media and technologies that change the nature of the transaction conducted. The related organisational features are the quality and nature of relationships, first, with customers or suppliers and, second, with competitors.

System Types and Functions	Examples	Key Design Features	Related Organizational Features
Operational: to structure work	Letter of Credit Computer-integrated manufacturing	Work Rationalization Work Routinization	Work force composition Job design Organizational structure, work flow coordination Organizational culture
Monitoring and control: to evaluate performance and motivate people	Space management Typing productivity measurement	Standards Measures Evaluation Feedback Reward	Job design Organizational culture
Planning and decision: to support intellectual processes	Planning models Decision support systems Expert systems	Models Data manipulation	Work force composition Job design Organizational structure Organizational culture, centralization versus decentralization
Communications: to augment human communication	Message systems Teleconferencing	Communication procedures Communication mediation	Spatial and temporal factors Communication channels and networks
Interorganizational: to facilitate interorganizational transactions	Cash management for corporate banking customers Wholesale distributors' order - entry systems	Procedures for interorganizational transactions Mediation of interorganizational transactions	Relations with customers or suppliers Relations with competitors

Figure 2.3.9 - Function, design features and related organisational features of each system type [Markus, 1984]

These definitions and classifications define the information system as embeded within or as a part of the organisation. From this perspective, all these systems involve using information in different ways and for different purposes. But the definitions and classifications do not explain how these socio-technical systems deal with information and they also do not make clear how to study the social and the technical component in an integrated way. The semiotic approach, explained earlier, can be used to study the features of these socio-technical systems from an information perspective in an structured and integrated way.

The most common definition we can find is that an Information System is a computer system that provides information in an organisation, by taking raw data and converting it into information. Usually this definition is associated with a picture of a network through which information is supposed to flow like some mystical fluid - the metaphor of an information system as a kind of a plumbing system. This view of the Information Systems prevents one from seeing and talking about those aspects of information most important for the effectiveness of organisations. This "information - plumbing" paradigm is oriented towards the building of technical systems, thus it is useful for thinking about the three lower levels in the semiotic framework, the three levels that make up the technological platform. Even if this is placed within the organisational context, like we have seen before, it is not clear how social groups give meaning and intention to the signs which circulate in the information system, nor does it have anything to say about the relationships between people which are created, sustained and exploited through the use of signs.

Stamper developed a totally different paradigm, oriented towards the needs of organisations [Stamper, 1993]. It concentrates on the meanings of signs, the intentions of using them and the social effects they produce, and keeps the technical aspects in the background, supporting the social ones.

According to him, an information system is a social system in which signs are being used in an informal, formal and technical way in order to get things done. Only by correctly embedding the computer-based system in the social system can the data it contains have any meaning, express knowledge or support intelligent behaviour. Thus, computer systems only have a value to a business in so far they embody the solutions to problems belonging to the social domain.

Stamper divides the real information system in three main layers: the information technology system, the formal information system, and the informal information system, as shown in figure .

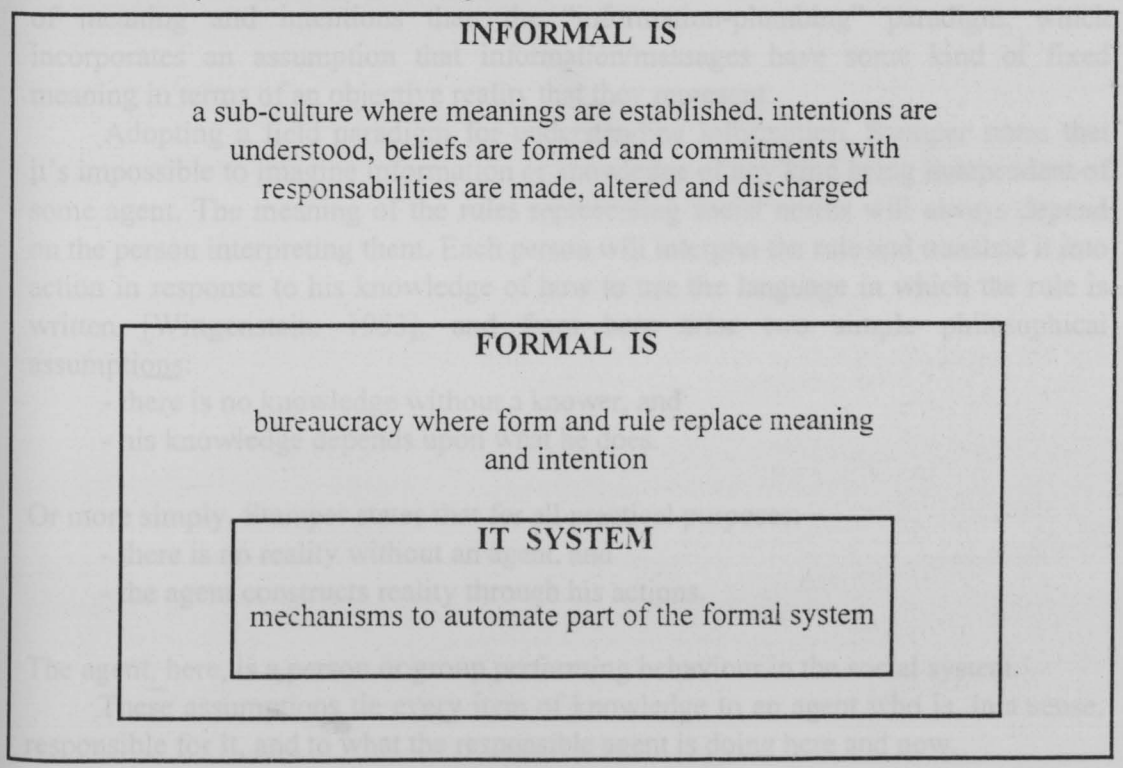


Figure 2.3.10 - The organisational onion [Stamper, 1993]

The informal information system is the one in which people exchange information by just talking to each other, without any conscious effort or any method of analysis. It consists of the sub-culture where meanings are established, intentions are understood, beliefs are formed and commitments with responsabilities are made, altered and discharged. This system is the most important.

The formal information system creates routine information tasks and formalises the communication between people. It depends upon the explicitly defined forms or patterns of the signs being handled and upon the explicit rule governing the information tasks. One could say that in the formal information system form and rule replace meaning and intention.

The technical information system consists of the machines that automate the formal system. It has a supporting role within the formal system. The technology is used mainly to transmit and store signals which are employed in an informal way.

With this approach, Stamper puts the computers into a subservient role within an organisation.

Stamper uses the concept of a norm to understand and unify all the layers of the real information system. He sees a social system, from an information perspective, as a system of shared social norms for perceiving, understanding, valuing and behaving. The shared norms are what define a culture or a sub-culture. These norms exist in the social system, like a field of force that makes the members of the system tend to behave or think in a certain way. The important aspect is that the tasks within the social system are performed according to the norms shared by its members, and in the most efficient way. Words and other signs will have different meanings in different fields or norm systems. Even in a single organisation there will be separate but overlapping fields - professions, departments, project groups, etc. - and they will use language and other signs in different ways. This is what Stamper calls the "information-field" paradigm. This field paradigm is more sensitive to the subtleties of meaning and intentions than the "information-plumbing" paradigm, which incorporates an assumption that information/messages have some kind of fixed meaning in terms of an objective reality that they represent.

Adopting a field paradigm for understanding information, Stamper states that it's impossible to imagine information or knowledge of any kind being independent of some agent. The meaning of the rules representing social norms will always depend on the person interpreting them. Each person will interpret the rule and translate it into action in response to his knowledge of how to use the language in which the rule is written [Wittgenstein, 1953], and from here arise two simple philosophical assumptions:

- there is no knowledge without a knower, and
- his knowledge depends upon what he does.

Or more simply, Stamper states that for all practical purposes:

- there is no reality without an agent, and
- the agent constructs reality through his actions.

The agent, here, is a person or group performing behaviour in the social system.

These assumptions tie every item of knowledge to an agent who is, in a sense, responsible for it, and to what the responsible agent is doing here and now.

Starting from the concepts of responsible agents and norms, the concept of the information system can be reconsidered in order to integrate social and technical aspects. If one keeps in mind the general form of a norm:

IF < condition > THEN < consequent >

or, more specific:

IF < condition > THEN < agent > < forbidden / obliged / permitted / at liberty > < action >

this tells which agent must be provided with the information specified in the condition component. In fact, the information should represent the condition in order to enable the agent to decide what to do. It also tells that the consequence of the agent's action must be communicated to those who have to respond to it, as in fact the behaviour of the agent changes the social or physical world and by this it may provide a condition to which has to be responded. The Semiotic Framework provides help in selecting the ways these conditions can or have to be represented. Hence, a system of norms, provided that they specify the agents responsible for applying them to the facts, will tell all that is essential about the patterns of communication in the organisation. The norms may be written down in the form of rules, or represented by any other sign, providing the link between the informal and formal systems. Computer systems simply have mechanisms that embody norms, usually in the form of software, which perform some norm specified tasks more efficiently than people can perform them.

One can use the norm system as the basis for designing the communications network, and indeed one can use it to drive the communications themselves [Stamper, 1993].

3. The research design

3.1. The problem statement and the research questions

The aim of the research project is to explore issues for further research in the area of intersection between marketing and information systems in the context of emerging organisational forms. So based on the orientation a choice has to be made about how to define this intersection in order to guide further explorative study. In this part, a choice of a focus is explained and a justification of this choice is given. From this choice a problem statement and some research questions are derived which will direct the next steps of the project.

The choice we propose can be explained by starting from the general definition of an organisation as a goal-oriented co-operation of people and resources, that achieves its goals by performing transformations that are valuable for its environments [Krabbendam, 1988]. This co-operation is explained from an economic perspective as the division and coordination of work in such a way that more value is created than without the division and coordination [Douma and Schreuder, 1992]. In this co-operation individuals may strive at their individual goals, but they do so by establishing coalitions which are more or less permanent [Child, 1972; Vroom, 1981]. At the same time, at a larger scale, mutually dependent organisations cooperate in order to achieve their specific goals [Van Zuthem, 1984]. The behavioural theory of the firm explains organisations as coalitions of participants, like employees, investors, suppliers, customers, distributors, etc., which consists as long as for each participant the value of participating in the coalition is at least as large as the alternatives [Douma and Schreuder, 1992]. What is important is that, from an economic perspective, an organisation creates value for the participants (both monetary and non-monetary in nature), and exists as long as the value of what these participants receive from the organisation is perceived as higher than the value of the resources they provide.

Organisation and coordination of the co-operation of participants in coalitions takes place in so far as they (partly) share perceptions, beliefs, valuations and behaviour, refered to as the social norms of the coalition [Stamper, 1993]. The composition and the shared norms of the coalition are established in a process of bargaining. In this process, information is obtained and exchanged. At the same time, the coordination of the distributed work and the transactions involved, both by the price mechanism of the market and by organisational means, also requires information in order to know about, anticipate or respond to the behaviour of other participants. This information may be hard to obtain and involve costs to obtain it, or it may only be partly available (information asymmetry). However, it is clear that information plays an important role both in bargaining and in coordination involved in value creation.

To study the way an organisation creates value in more detail, we choose the marketing concept of the value chain. The value chain describes the organisation as a series of value-adding activities connecting a company's supply side with its demand side [Kotler, 1991]. These value-adding activities consist of five primary activities representing the sequence of bringing materials into the business, operating on them, sending them out, marketing them, and servicing them, and the support activities that occur through all of

these primary activities. As it is argued that a firm needs to look for competitive advantages beyond its own value chain into the value chain of its suppliers, distributors, and customers, we will use the value chain concept in order to provide a comprehensive framework for analysing the stages of value creation in a network of participants cooperating in specific value-creating processes. This establishes a kind of value-creating system performing specific primary value-creating activities and the support of these activities.

From the outline of this study, a particular form of emerging organisation, the "virtual organisation," seems to be of importance, as especially in this kind of organisation it seems that an understanding of information resources can contribute to solving marketing problems. The virtual organisation is a specific form of the T-form organisation, which creates value by using mainly intangible resources, like knowledge, relationships, information etc. The T-form organisation provides a general framework for describing a firm based on information technology design variables as well as conventional organisational design variables. With respect to the conventional design parameters, we can use the work of Mintzberg [Mintzberg, 1979; Mintzberg, 1989]. The information technology design variables are described by Lucas [Lucas, 1996], who classifies them into structural information technology design variables (virtual components, electronic linking, technological leveling), work process design variables (production automation, electronic workflows), communications design variables (electronic communications, technological matrixing), and interorganisational relations information technology design variables (electronic customer/supplier relationships). These design variables can be used to fill in the design of the value-chain activities in the T-form organisation.

Important characteristics of the T-form organisation from an information perspective are the logical structure and the virtual components of the organisation. The logical structure of an organisation is the structure that anyone from the external world perceives when dealing with the organisation. The logical structure identifies what processes and functions are performed or need to be performed, and it may be considerably different from the actual physical structure. As a result of its logical design, a company consisting of many parts may look like one monolithic organisation to, for example, a customer placing an order. It may appear to be traditionally built out of a number of internal departments when, in fact, the departmental functions are performed by external organisations or while its actual physical structure relies heavily on information technology, providing the firm with more flexibility than the traditional structure ever did. Virtual components are functions that exist physically in a traditional organisation, but that have been replaced by an electronic version in the T-form organisation [Lucas, 1996]. What this seems to imply, is that we can distinguish a substantive, physical value-chain and a representation of this substantive physical value-chain which reflects it. Secondly, it also seems to imply that different participants may perceive different representations of this substantive, physical value chain, and that the representation of this value-chain may change over time independently or in concert with changes of the substantive, physical value-chain. Thirdly, it seems to imply, as the virtual components show, that information and information systems are being used as essential components or resources in the process of value-creation itself. From this follows a rather straightforward choice to study the role of information systems in the process of value creation in virtual organisations.

As we want to explore especially the role of information systems in the process of value creation, both as a supportive element and as a source of value itself, we use the semiotic perspective to study the value chain from an information point of view. From an information perspective, an organisation creates value by using information and communication in order to realise changes in the social world. So information systems are needed in order to enable and support the process of value creation. From the semiotic perspective, we can study the way information and communication are used in more detail, by looking at the organisation as a social system in which signs are being used in order to get things done in the physical and social reality. That is where, in the end, the value is created [Stamper, 1993]. In this perspective, an organisation is a system of (partly) shared norms of perception, understanding, valuation and behaviour. These norms can be implemented informally, formally and automated. What most of the time is referred to as "the organisation," are the informally and formally implemented norms. What most of the time is referred to as "the information system," especially in the context of using information technology, are the technically implemented shared norms. The approach we choose here, does not make that kind of distinction between an organisation and an information system. We are, in this stage, not specifically interested in a particular information technological application, as we want to explore in a more general way how virtual organisations use information in their value-creating process. So, to be more specific, we look at the value-creating processes of a virtual organisation as social processes in which signs are being used informally, formally or in an automated way to create value. Or, to state it differently, we look at the virtual organisation as a specific kind of information system that uses signs to create value, and that is partly implemented informally, partly formally and partly automated. The Semiotic Framework will be used to explore all aspects of the use of information in the process of value creation. A basic distinction can be made between the substantive activities dealing with the social and physical reality, and the activities dealing with signs representing them. One may act upon the signs as if they were the substantives themselves, but the distinction is important. Both cases can be explored by using the Semiotic Framework. As the substantive processes of the physical value chain can be, in principle, perceived and interpreted by direct observation without the need to represent them, they can be considered to be signs representing themselves. In the process of representation and communication, other signs can be used to represent them. So, the Semiotic Framework can be applied to the substantive physical value chain as a direct representation of itself, and to the value chain in which physical aspects are replaced by virtual components, and to the logical structure representing the physical value chain to the participants.

As a conclusion, we can give a more specific problem statement:
In this project we study the role of information in the process of value creation by virtual organisations.

The combination of the concepts of the value chain, the design variables used to design the value-creating activities of the T-form organisation, and the Semiotic Framework to describe the aspects of information and the way it is used in this value-creating process, provides a comprehensive framework for studying the way information systems are used in value creation by virtual organisations.

Virtual organization has become posssible in a wider range of industries (publishing has been around a long time) largely because the IT is available. This improvement at the

physical level creates greater channel capacity, storage capacity, and reliability at the *empiric* level, without which the formal co-ordination of manufacturing, assembly, logistics, finance and so on could not be put in place at the *syntactic* level. The *semantic* level changes as a result of these developments because new percepts are formed, for example, the notions of value chain and virtual organization. The necessity for close co-operation forces those involved - people and organizations - to act and speake in close agreement which is only possible when they reach a high degree of unity in their semantics. The possibilities created at the lower levels could not be exploited at the *pragmatic* level without developments in terms of the distribution of responsibilities and styles of conversation that work over a much wider, even global stage, and the ability to maintain this kind of interaction successfully (the routine is easy but the problems arise in a dynamic situation where the conversations are needed continually to change and adapt in order to maintain performance and explore product, process and market innovations). The most notable changes at the *social* level are the creation of the virtual organization itself which requires structure to maintain a high degree of trust to be maintained even without a fully developed legal framework as a scaffold.

At all aspects of using signs, costs are involved in order to enable organised and coordinated behaviour to create value. All value, in the end, is established by what is or is not enabled in a specific social context in which one lives and acts, for example by obtaining physical things that enable specific and valued behavior, or by establishing social constructs like (mutual) obligations that also enable specific valued behaviour. By understanding what has to be taken into account at all aspects and what action needs to be performed, we can start to understand what costs are involved. By understanding value in terms of what is or is not enabled in the social world, we can start to understand what value is involved. This helps to understand the organisation as a social system in which participants cooperate as long as the perceived value of what they receive is not less than the perceived value of what they contribute, and to design an information infrastructure in order to enable and support this.

From this, three research questions can be derived:

1. How does a virtual organisation create value?
Starting from the description of the virtual organisation and the design variables of the T-form organisation, the value-creating process of the virtual organisation will be described by applying the concept of the value-chain.

2. What is the role of information in value creation?
To answer this question, the Semiotic Framework will be applied to the physical value-chain, and to the virtual value chain.

3. How does a virtual organisation use information to create value?
Finally, the answers we got from applying the Semiotic Framework to the value-chain concept, will be applied to the specific value chain of the virtual organisation.

3.2. Definitions and operationalisations

In this part, the components of the problem statement will be defined: the virtual organisation, the process of value creation, and information. For each of the components an operationalisation will be given by describing the way they will be studied.

The virtual organisation:

The virtual organisation is a specific kind of T-form organisation, which relies mainly on electronic replacement of physical functions, the so called virtual components.

To provide a description of how the virtual organisation functions, it seems worthwile to use the general definition of an organisation given by Krabbendam and use this to describe the organisation:

-what are its goals, what value does it create and to whom;
-what participants and resources are working together in this value-creating process;
-how do they co-operate;
-what are its transformation processes (the activities performed by people and resources to transform input into output), its input and its output;
-what is the specific technology used (knowledge, methods, techniques and tools), especially related to the role of the "virtual components;"
-what is its environment;
-how are the activities coordinated (arrangements concerning the distribution and co-ordination that are necessary for performing the transformation).

The process of value creation:

The process of value creation consists of the primary value creating activities and the supporting activities as described by the concept of the value chain.

The value chain consists of the following activities plus those who perform them and way they do so:

- inbound logistics
- production operations
- outbound logistics
- marketing and sales
- service
- firm infrastructure
- human resource management
- technology development
- procurement.

Information:

Information is defined as signs that are being used within the social context of the virtual organisation in order to create value. A sign is everything that stands to somebody for something in some respect or capacity to someone in some community or social context [Peirce, 1931-1935; Stamper, 1993].

We will describe information by the aspects of signs and the way they are used, as they are ordered in the Semiotic Framework: the physical, empiric, syntactic, semantic, pragmatic and social aspects which together build the technological platform and the human information function of the social information system. With respect to the social aspects, the shared social norms need to be established, communicated and adjusted in the process of value creation, in the form of beliefs, expectations, commitments, contracts, etc. We need to know what is established in the social world by the value-creating process. With respect to the pragmatic aspects, the intentions of the participants need to be communicated, negotiated and adjusted. We need to know how these intentions are established and how they are communicated or pursued. The semantic aspects concern establishing shared meanings which are needed in order to enable organisation, coordination and effective communication. We need to know how the relevant things to act upon are identified and communicated within and outside the organisation, and how justification of their meanings in terms of this action takes place. With respect to the syntactic aspects, formal structures need to be establihed and represented. We need to know what formal structures are established, how they are represented, and what are the rules both for establishing and representing them. If we look at the empiric aspects, patterns in physical and social behaviour within and outside the organisation need to be identified, represented and transmitted, taking into account coding and decoding, channel capacity, noise, redundancy etc. We need to know what relevant patterns are identified, represented and transmitted and how this takes place. And finally, with respect to the physical aspects there needs to be a physical infrastructure of physical components for production and communication, with its related aspects like physical distinctions, component density etc, in order to enable the value-creating activities to be performed anyway, both the substantive activities and the representational activities. We need to know what these components and their characteristics are.

4. The research results

4.1. How does a Virtual Organisation create value?

4.1.1. The Virtual Organisation

A Virtual Organisation (VO) is a specific kind of T-form organisation, which relies mainly on electronic replacement of physical functions, the so called virtual components.

The goal of the VO is to maximise corporate resources and satisfy customers. The VO uses technology to create new, possibly temporary, arrangements among employees, suppliers, customers, or other important partners to rapidly exploit new opportunities with greater efficiency and lower cost.

A VO is an organisation which value cannot be calculated by its physical assets. The most important assets in a VO are knowledge, customer databases, service delivery systems, information brokerage functions, communications networks, customer relations, and producers' networks. These are all non-tangible assets. That is what characterises a VO: a lack of substance, a lack of physical assets. It is very difficult for an accounter to deal with a VO. Its vital assets are very abstract, so they do not fit in the patterns of the traditional accounting. All the accounting schemes that accounters learn in school are no longer valid when it comes to VO. The assets are both real and tangible, but their true value and importance is tangible. So, an accounting looking only over the physical assets would be very inadequate and untrue.

Usually, VO join forces with each other in networks and strategic alliances. They make extensive use of information systems and information technology, and they need partly different information systems for accountings and for management.

The interplay between IT, IS, and organisational form and structure grows.

In the VO there are a lot of participants working together in the process of value creation: the suppliers, the customers, and several different companies co-operate in order to reach a better final product. With the development of information technology, VO can outsource knowledge and expertise from everywhere in the world. The organisation can divide the whole production of a product into small tasks, and hire experts in each one of those tasks to perform it the best way they can. The VO just needs to know where to find those experts, and have the ability to co-ordinate and manage all the different people and companies working for them. With the outsourcing of knowledge and expertise from all over the world, VO can achieve high levels of expertise for a wide scope of businesses.

For the VO, the satisfaction of the customer is the most important thing. And to satisfy the customer, the VO needs to know what the customer wants. So, it is crucial to have the customers feedback on the products. In this way, the customer is also going to help the production process, because he is also providing information about the product. The customer often becomes a co-producer, a producer and a consumer at the same time: a prosumer. He consumes what he helped to produce. Value is created in interaction with the customer. It is the closest to perfection in marketing, enabling the client to help produce what he really wants. There must always be a constant communication between the VO and the customer.

The VO works as the link between the customers and the suppliers. A certain customer goes to a company and orders a certain product. The company does not produce that product itself. The company does not have the raw materials, neither the production line to produce that product. What the VO has is the contacts of other companies or free lancers that will do that product. The VO has the suppliers databases, the customers databases, the knowledge to find and outsource experts for that specific product, and the ability to manage all this process. After hiring lots of different people to do what they are best at, they collect every *piece* of the final product and deliver it to the customer as if it had been totally produced for the VO. The customer does not know where and by who the product was made. Actually, the customer gets the idea that the product has been produced by the company he talked to, because he ordered something to a company and that company puts the product in the customer's hands. So, the organisational structure that the client perceives of the company - the logical structure - does not correspond to the real physical structure of the VO.

The capacity of the new technology to create new affordances for the consumer is often the key to a VO innovation. The orchestration of a global team of companies can deliver to the customer a wider range of co-ordinated products (sizes, materials, colours, etc.) that do not come from the same industry (knitwear, tailoring, leather, jewellery, etc.). Rapid assembly of complex packages of services (train, flight, reading matter, business services, meeting rooms, taxis, hotels, clean clothes, etc.) become possible via the new IT. Complex assurance packages can be assembled and, more to the point, put rapidly into effect in any part of the world. Scanning of the market, even for diverse consumer items, to find best prices and quality, with purchasing facilities and a guarantee of performance, is now much easier.

The inputs of a VO are always information. Information to know what to outsource, who are the experts in what, where to find them. The transformation process consists of actually performing all these activities: dividing the process of production into smaller tasks, getting in contact and hiring knowledge and expertise through outsourcing, and managing all these co-operators. The output, the product, may be a physical product, a service, or a non tangible product, as information or knowledge itself.

Even though theoretically, VO do not need any technology to exist, the advances in information technology are an important platform for the formation of the virtual organisations. The internet, the electronic mail, the electronic data interchange, the electronic or videoconferencing, the fax, and many, many other new information technologies contribute and are crucial to the communication and linking within and between companies, creating interorganisational systems, and allowing managers to be in a more direct and straight contact with their employees. The internet provides an effective information conduit through which an organisation's knowledge can flow. It has a wide range of tools available for slicing and dicing information, generated within the organisation and between itself and its important public.

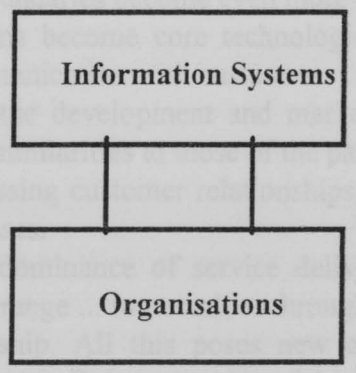


Figure 4.1.1 - New organisations require new IS. And new IS/IT enable organisations to develop [Hedberg, 1991]

Efficiency, productivity, flexibility, and speed are four of the main advantages of the VO. Critical success factors are client satisfaction, financial balance, and organisational effectiveness.

An example how a VO might take advantage of the Internet is a consulting firm that has a half dozen professionals who work at home offices and client sites. Even the owner of the consulting firm could work in a home office and communicate and collaborate daily with the other members of the firm. Employees could perform their work and send e-mail memos and reports to the owner, who in turn would supervise the operation and meet with the other members face to face, say, once a week for a breakfast meeting or as needed. Some of the team might subscribe to a listserv or Usenet information resource to obtain advice or even locate specialists for project work. This strategic use of the Net reduces overhead costs and commuting time while increasing flexibility, speed, and overall effectiveness.

Information technology permits work to be carried out and co-ordinated wherever wires can be connected to a computer terminal - at home, at a customer's site, at a hotel, at a coffee shop, at a vacation resort. So rather than establishing a place of work in an office building with preallocated square footage of work area per employee, an alternative emerged where historic limitations of time and space can be overcome by equipping the worker with a lap-top computer and a cellular phone.

Advertising used to mean hiring an ad agency, creating a commercial for electronic media or artwork for print media, scheduling and running the ad, and waiting for the results. The process could take several months for a major campaign. For direct marketers, it would take an army of people and a major financial investment to produce a large colour catalogue for mailing. The VO could utilise a small group of freelancers, located in different parts of the country - or even the world - to create a World-Wide-Web site with a colourful, animated catalogue of the organisation's products or services. The company could update the catalogue daily and take orders directly from consumers using the system. Expenses are greatly reduced, lead times are shortened, inventory is better managed, and an important direct connection is established with the customer.

Using these new information technologies, companies can cross the barriers of time and distance. Time zones become irrelevant and the physical boundaries of the traditional

offices disappear. With the emergence of networks, alliances, shared information sources, and delivery systems, boundaries become even more difficult to define..

Information systems become core technologies and business takes place through interorganisational communication with customers.

The dynamics of the development and marketing of services require information systems with rather few similarities to those of the past. Companies try to develop life-long and ever-more encompassing customer relationships. And the strategic importance of the customer database increases.

And so does the dominance of service delivery systems. First reach ... into the customer market ... then range ... more values through the channels ... and then duration ... a long-lasting customership. All this poses new challenges to those who design and develop information systems. Relevant and useful information systems in many VO must cover much more than internal operations. They must cover the whole value-added network which mediates between producers and prosumers.

4.1.2. The process of value creation in a VO

One of the profound consequences of the ongoing information revolution is its influence on how economic value is created and extracted. Specifically, when buyer-seller transactions occur in an information-defined arena, information is accessed and absorbed more easily, and arranged and priced in different ways. Most important, the information about a product or service can be separated from the product or service itself. In some cases, it can become as critical as the actual product or service in terms of its effect on a company's profits.

Every business today competes in two worlds: a physical world of resources that managers can see and touch, and a virtual world made of information. The latter has given rise to the world of electronic commerce, a new locus of value creation. This new information world is called the *marketspace* to distinguish it from the physical world of the *marketplace*. The marketspace is a virtual realm where products and services exist as digital information and can be delivered through information-based channels.

So we can make a distinction between businesses that provide value through:

1. *physical goods and services*
2. *information products and services*

The growth in the information sector has made the latter very important. Both kinds of business can be served by IT, but only the second can be delivered to the customer that way.

Executives must pay attention to how their companies create value in both the physical world and the virtual world. But the processes for creating value are not the same in the two worlds. Value comes from the:

a. comsumption of *physical goods and services* (1)
b. direct enjoyment of *information products and services* (2)
c. *information products and services* (2) making possible access to or financial saving on *physical goods and services* (1)

By understanding the differences and the interplay between the value-adding processes of the physical world and those of the information world, managers can see more clearly and comprehensively the strategic issues facing their organisations. Managing two interacting value-adding processes in the two mutually dependent realm poses new conceptual and tactical challenges. Those who understand how to master both can create and extract value in the most efficient and effective manner.

Companies that don't understand the marketspace will miss opportunities even as they build information-defined relationships with their customers.

Managers face two critical challenges:

- to recognise the full potential of the marketspace transactions in a coherent manner
-to choose the best means to make money in this new arena.

Rayport and Sviokla [Rayport and Sviokla, 1994] have developed a model that illuminates how the conventional value proposition can be disaggregated in three basic elements:

- content, what companies are offering
- context, how they are offering it
- infrastructure, what enables the transaction to occur.

In the marketplace, brand equity is established and managed by manipulating content, context, and infrastructure through the traditional marketing-mix. The three elements are usually aggregated. Customers and managers see a brand as a representation of customer-perceived value that is provided by the product/service, as well as the communications programs, pricing strategy, and channel activities related to that product/service.

Value depends not only on the enjoyment of the goods, services or information, but also on the capacity to enjoy them, and this depends on many psychological factors. Advertising aims to change values, and marketing, in the right context, will alter perceptions and adjust the values people attach to what they are consuming or experiencing.

In the marketspace, however, content, context, and infrastructure can be disaggregated to create new ways of adding value, lowering costs, forging relationships with non-traditional partners, and rethinking ownership issues. In the new arena of the marketspace, content, context, and infrastructure are easily separated. Information technology adds or alters content, changes the context of the interaction, and enables the delivery of varied content and a variety of contexts over different infrastructures.

Managing in the marketspace - and the hybrid world of marketplace and -space - means combining content, context, and infrastructure in new and creative ways based on the important premise that the interaction, or interface, between customer and company has radically changed. As a result, customer loyalty in the marketspace looks very different than it did in the marketplace.

In mature marketspace environments, it is possible to mix and match content and context in ways that may at first seem unrelated to the core transaction.. Once the consumer is in the marketspace and loyal to a particular context, the potential for related transactions may be limited only by the imagination of the strategic members involved.

The implications and difficulties of managing in the marketspace become increasingly relevant as more and more products and services, marketing-management processes, and even markets themselves move from place to space.

The first challenge for executives and strategic planners is to understand how the transition from marketplace to marketspace is unfolding in key industries. Which competitors are establishing a presence on the networks? Who is using the network to market products or provide after-sales services? Which companies are adding value to their commodity products by providing superior information about that product or service? More than 20 million people have daily access to information services globally over the Internet. Managers will need to understand what the implications of these marketspace presences are for their individual businesses.

The second challenge is to discover and act on new opportunities in the marketspace. This task may not be an easy one. Learning to manage in the marketspace requires a radical shift in thinking: from markets defined by physical place to ones defined by information space. Companies must carefully examine what they are offering, how they are offering it, and what enables the transaction to occur. Then they must decide which mix and emphasis will best serve their purposes.

What is critical to understand about marketspace strategies is that they are dynamic. It is possible to develop a strategy that focuses primarily on one layer of the model. Then, it is possible to develop a strategy focused in another layer, in addition. While a single-layer strategy can be profitable, it may make sense early in the life of a market to launch a full proprietary system at all three levels and to hone in on one speciality later.

As we have seen before, the *value chain* is a model that describes a series of value-adding activities connecting a company's supply side with it's demand side. By analysing the stages of a value chain, managers have been able to redesign their internal and external processes to improve efficiency and effectiveness.

The value chain treats information as a supporting element of the value-adding process, not as a source of value itself. To create and extract value with information, managers must turn to the virtual world of the marketspace. Although the value chain of the space can mirror that of the place - buyers and sellers can transfer funds over electronic networks just as they might exchange cold, hard cash - the value-adding processes that companies must employ to turn raw information into new marketspace services and products are unique to the information world. In other words, the value-adding steps are virtual in that they are performed through and with information. Creating value in any stage of a virtual value chain involves a sequence of five activities: gathering, organising, selecting, synthesising, and distributing information. Just as someone takes raw material and refines it into something useful, so a manager today collects raw information and add value through these steps.

Each activity is a stage in a virtual value chain that occurs through and with information and mirrors a stage in the physical world. The company's managers must continue to oversee a physical value chain, but they must also build and exploit a virtual value chain.

Rayport and Sviokla [Rayport and Sviokla, 1994] have studied scores of companies in a variety of industries attempting to do business in both the place and the space and have found that organisations making money in the information realm successfully exploit both of their value chains. Rather than managing one series of value-adding processes, they are actually managing two. The economic logic of the two chains is different. A conventional understanding of the economies of scale and scope does not apply the virtual value chain in the same way as it does to the physical value chain. The two chains must be managed distinctly but also in concert.

According to Rayport and Sviokla [Rayport and Sviokla, 1994], companies adopt value-adding information processes in three stages:

- *Visibility*, in which companies acquire an ability to "see" physical operations more effectively through information. At this stage, managers use large-scale information technology systems to co-ordinate activities in their physical value chains and in the process lay the foundation for a virtual value chain. The information collected by these systems about steps in the value chain has helped managers to plan, execute, and evaluate results with greater precision and speed. In recent years, managers have been able to gain access to the information generated in the course of traditional operating activities, and that information helps them see their physical value chains as an integrated system rather than as a set of discrete though related activities. In this way they can gain new insight into managing the value chain as a whole rather than as a collection of parts. The company executes actions in the marketplace while it monitors and co-ordinates those actions in the marketspace.

- *Mirroring capability*, in which companies substitute virtual activities for physical ones. They begin to create a parallel value chain in the marketplace. Once companies have established the necessary infrastructure for visibility, they can do more than just monitor value-adding steps. They can begin to manage operations or even to implement value-adding steps in the marketspace - faster, better, with more flexibility, and at lower cost. When companies move activities from the place to the space, they begin to create a virtual value chain that parallels but improves on the physical value chain. The virtual value chain makes a much more integrated process possible. Traditionally, companies have gotten more for less by exploiting vast economies of scale in production while focusing on raising levels of quality. When scale economies do not apply, as in many service-sector business, managers seeking better performance at lower cost can tap the mirror world, in which the economics are altogether different. On the virtual value chain, companies may find dramatic low cost approaches to delivering extraordinarily high-value results to customers.

- *New customer relationships*, in which managers draw on the flow of information in their virtual value chain to deliver value to customers in new ways. Companies must do more than create value in the space: they also must extract value from it. They can often do so by establishing space-based relationships with customers. Once companies become adept at managing their value-adding activities across the parallel value chains, they are ready to develop these new relationships. Today, thousands of companies have established sites on the WWW to advertise products or elicit comments from customers. Some have gone further and have actually automated the interface with the customer, thus identifying and fulfilling customers' desires at lower cost. Other companies view their challenge as that of managing each individual customer relationship in both the marketspace and the marketplace. Those that succeed have an opportunity to reinvent the core value proposition of a business.

The new relationships that companies are developing with customers spring from a matrix of value opportunities. Each stage of the virtual value chain - as a mirror of the physical value chain - allows for many new extracts from the flow of information, and each extract could constitute a new product or service. If managers want to pursue any of these opportunities, they need to put into place processes to gather the information, organise it for the customer, select what's valuable, package it, and distribute it - the five value-adding steps unique to the information world. In effect, these value-adding steps, in conjunction with the virtual value chain, make up a *value matrix* that allows companies to identify customers' desires more effectively and fulfil them more efficiently. When a company can shift its R&D activities from the physical value chain to the virtual value chain, it becomes more possible for the company to exploit the matrix by engaging customers in the new-product-development process even if they are located around the world. The company could gather, organise, select, synthesise, and distribute information drawn from the R&D process to create a computer simulation for customers, who could then enter the virtual space and give feedback - which in turn could be used to add value in the production process of the product. The value matrix guides managers as they consider how to establish the processes necessary to exploit new opportunities. By thinking in terms of a virtual value chain and a physical value chain, the company's managers look at far more opportunities for creating and extracting value than they would have by considering the business exclusively from the point of view of a traditional physical value chain. Thinking about a business in terms of its value matrix can allow managers to go beyond changing the rules of the game: they can reinvent an industry.

Managers must consciously focus on the principles that guide value creation and extraction across the two value chains separately and in combination. These two value-adding processes are fundamentally different. The physical value chain is composed of a linear sequence of activities with defined points of input and output. The virtual value chain is non-linear - a matrix of potential inputs and outputs that can be accessed and distributed through a wide variety of channels.

To succeed in this new economic environment, executives must understand the differences between value creation and extraction in the marketplace and in the marketspace; they must manage both effectively and in concert.

A company's executives must embrace an updated set of guiding principles because in the marketspace many of the business axioms that have guided managers no longer apply. There are five new principles here:

- *The law of digital assets*: digital assets, unlike physical ones, are not used up in their consumption. Companies that create value with digital assets may be able to reharvest them through a potentially infinite number of transactions, thus changing the competitive dynamics of their industries.
- *New economies of scale*: the virtual value chain redefines economies of scale, allowing small companies to achieve low unit costs for products and services in markets dominated by big companies.
- *New economies of scope*: in the marketspace, businesses can redefine economies of scope by drawing on a single set of digital assets to provide value across many different and disparate markets.
- *Transaction-cost compression*: transaction costs along the virtual value chain are lower than their counterparts on the physical value chain. Lower transaction costs

allow companies to control and track information that would have been too costly to capture and process just a few years ago.

Rebalancing supply and demand: the world of business increasingly demands a shift from supply-side to demand-side thinking. As companies gather, organise, select, synthesise, and distribute information in the marketspace while managing raw and manufactured goods in the marketplace, they have the opportunity to "sense and respond" to customers' desires rather than simply to make and sell products and services.

4.2. What is the role of information in value creation?

Information is defined as signs that are being used within the social context of the virtual organisation in order to create value. A sign is *everything that stands to somebody for something in some respect or capacity to someone in some community or social context* [Peirce, 1931-1935; Stamper, 1993].

In previous chapters, while discussing the Semiotic approach of Stamper, the main focus has been on the static and dynamic aspects of communication. This is not too surprising as Stamper developed an organisational view with the intention to apply it to the study of information systems development. Because communication is an important attribute of information systems, the explanation of the Semiotic Framework is often illustrated in terms of characteristics of communication. However, the applicability of the Framework is not restricted to communication alone, it can be used to study all kinds of substantive organisational processes and products as well. Here we will use the Semiotic Framework to study the process of value creation.

Value is a very abstract concept. The value of a product depends on many things, and varies from person to person. In the process of value creation, managers of a company try to increase the value of their products to the eye of the consumer. Managers must have in attention the indispensable role that society and its culture play in the communication process between them and the consumers. All the actions taken by the managers in order to increase their products' value must be perceived in a correct way by the consumers.

The Semiotic Framework helps us analyse all the aspects of the signs used by the managers in the process of value creation.

4.2.1. The semiotic framework applied to the physical value chain

As we have already seen, the value chain is a model created by Michael Porter, that describes a series of value-adding activities connecting a firm's supply side with its demand side. Porter proposed the value chain as the major tool for identifying potential sources of value enhancement. The *physical* value chain corresponds to the process of value creation in the marketplace. It treats information as a supporting element of the value-adding process, not as a source of value itself.

We are now going to analyse all the aspects of the signs used in the process of value creation with the physical value chain, following the Semiotic framework.

Physical world

This level is concerned with using and creating physical materials and phenomena that are needed to transform and exchange physical resources. Physical resources can be

materials and machinery for example; all the raw materials and all the machinery needed to both the primary activities (Inbound logistics, operations, outbound logistics, marketing and sales, and service), and the support activities (firm infrastructure, human resource management, technology development, and procurement). The physical aspects of these signs are, for example, the shape and size of the machines, the space that they occupy, the speed of production.

Empirics

This level is concerned with the statistical properties of physical resources. Issues at this level are concerned with: volumes, storage, transport, failures, defaults, flaws, etcetera.

Syntactics

This level is concerned with forming, combining, and structuring the physical resources into larger structures, such as complex machinery and equipment in a production line. Modularity, reusability, and complexity are among the relevant properties at this level.

Semantics

This level is concerned with the perceptions and categorisation of the physical resources, products and their behaviour and performance. The producers input a certain meaning to the product. They think that that meaning increases the value of the product, so it is essential that the consumer perceives the product with that same meaning.

Pragmatics

This level is concerned with the intentional use of physical resources to create and alter the value of the product and the consumers' behaviour. In this level, the marketing and sales activities are very important. In the process of value creation, signs are used with the intention of capturing the buyers' attention to the product in order to make them buy more.

Social world

This level is concerned with the consequences that a sign produces in a social world. In this case of the value creation, it concerns with the reaction that the new product, with an increased value, will provoke on the consumers. Whether or not they are going to buy it, and in what will that change their lives. In a social community where people share norms, knowledge, beliefs,... the fact of buying a certain product brings a certain *meaning* attached to it, that can alter that person's life in many ways.

4.2.2. The Semiotic Framework applied to the virtual value chain

The virtual value chain considers information as a source of value itself, so the process of creating value in the marketspace is very different from the one in the marketplace through the physical value chain.

Let us analyse that process through the semiotic framework.

Physical world

In the physical world we have all the information and communication technology, like the computers, the telephones, the fax machines, the connections to the net, the speed of transmission of data, the rate of deterioration, etcetera.

Empirics

In this level we can identify some patterns in the behaviour of the physical signs: the storage capacity, the channel capacity, coding and decoding, etcetera.

Syntactics

In this level we concern about the way the signs are organised into larger structures. The type of communication, the language and the exchange format used by the company and by the consumers must be the same.

Semantics

In the marketspace there is no personal contact between the sellers from the company and the consumers. All the information is transmitted through the information technology channels so it is even more difficult to share the same meaning of a sign. Rules have to be established in order to achieve a consensus about the meaning of the signs. In the virtual value chain, meanings are important in the two ways of the communication. First, from the company's side to the consumers, so that the consumers can fully and correctly understand the meaning of the sign representing the product. And second, from the consumer to the company, when the consumer is giving his feedback about the product to the company. It is very important that the company understands the meaning of the signs that the consumer sends, in order to take in account the consumers' opinion about the product, and sometimes also the consumers' proposals to increase the product's value.

Pragmatics

The intention of a company that uses the virtual value chain is to reach a larger number of consumers and faster. Also, it gives a good and modern image of the company,

to be involved in these new technological developments. Another intention is to develop tight and unique relationships with each one of the customers, and get their feedback very fast.

Social world

The value creating process through the virtual value chain can - and probably does - have many consequences in the social world. People start to get used to do *everything* through the information technology channels. Through computers people have access to all kinds of different products and services. They have complete information about the products and services. They can *sail* through that information for as long as they want to, without having to worry about a less friendly attendant or the shop opening hours. Sometimes consumers even have the opportunity to experience simulations of the product, what would be impossible in the marketplace for some products.

4.3. How does a Virtual Organisation use information to create value?

A frame-of-reference to analyse value creation by Virtual Companies

4.3.1. The components

- networked organisations with an IT-platform as a shared backbone (the context of value-creation).
- the value chain concept for value creation (the content on process of value creation).
- the semiotic framework (the use of signs in the physical and virtual value-chain, or the information component of value creation).

4.3.2. The model

4.3.2.1. The physical value chain

As in any case, in the physical value chain we can distinguish between the substantive world (the things going on in the physical and social context which lead to direct changes in the social reality, like mutual obligations, changes of possession of things, changes in power relations, etc.) and the semiological world (using signs representing things in the physical and social world instead of dealing with them directly, and by using these representations changing the social world, like mutual obligations, possession of things, power relations, etc.). This is the area of communication.

In the substantive reality, changes in the social reality take place by making, using, manipulating or exchanging physical goods (things) and services (physical behaviour). In this physical value chain, also signs are used to represent these physical things and behaviour, but not in order to create value in their own respect. The representations are being used as a reflection in order to control and adjust what is going on. The physical goods and behaviours represent themselves (for example when we observe them to see what is going on) or they are represented by other signs (for example when we use status reports on paper or on computer screens). But these representations are not used in their own respect to create value. The value itself is created by what happens with the physical goods and behaviour.

So, the value creation is brought about by providing the physical things and behaviours, and by what they afford or enable the customer to do in the social world. In other words, we use "substantive strategies," strategies to use physical resources in their own respect to bring about changes in the social reality, for example by exchanging them, and by this creating obligations, changes in possession, enabling particular actions, etc.

4.3.2.2. The virtual value chain

In the virtual reality, we can also distinguish between a substantive world and a semiological world. However, in terms of Rayport and Sviokla, what happens here is that "the information about a product or service is separated from the product or service itself."

This is, in semiotic terms, wrong. As information (the use of signs to represent other things) always refers to something else in order to represent it, it is impossible to say that a sign can be separated from what it represents. This is one of the examples where people who do not know much about information express themselves very careless. However, when they explain more precisely what they mean in the rest of the paper [Rayport and Sviokla, 1995], it becomes clear what they should have said. With "information being separated from the product or service itself" they mean that, instead of only a "substantive strategy," companies in the virtual marketspace also develop a "semiological strategy," a strategy of how to use representations in order to bring about changes in the social reality. In such a "semiological strategy" they use signs (which still represent the physical products or services, i.e. other things or behaviours) in order to do things in the social world, instead of using the things or behaviours themselves. To be able to do this, something substantive has to be happening, also, because otherwise the signs would not refer to anything at all. This means that here also a substantive reality is involved, and, to be more precise, in two ways. First, there must be something substantive going on, for the signs to represent something. However, these substantive things (which belong to the physical value chain) are not the things that create the value in this case. What creates the value is the use of these representations in the right way. Changes in the social world are made just by using these representations and not interfering with what is going on in the physical value chain in the first place (of course a company can do both, but it might also outsource it to one of its partners or not deal with it at all). Secondly, to be able to use signs, all kinds of physical things need to be done in order to get the communication system (semiological system) working. But still, this is just a need to be able to use the representations. Manipulating the representations is what creates the value in the first place, without bothering about the many different technical means in order to get the communication system going.

In the next part we are going to look in more detail how this all happens. And here also the semiotic framework will play an essential role.

4.3.2.3. Value creating strategies for virtual companies

Rayport and Sviokla go even further in explaining in more detail how this is done. It is not about "separating" signs and context, but about "combining in a new and creative way the content, context, and infrastructure of the business." In the marketspace, content, context, and infrastructure are easily separated. Information technology adds or alters content, changes the context of the interaction, and enables the delivery of varied content and a variety of contexts over different infrastructures. This is the area where the semiotic framework contributes strongly with respect to what this all involves.

- the content strategy: this strategy deals with the product or service that is provided. Adding value means doing something substantial or semiological that enables the customer to do things in the social reality which are considered valuable (in the theory of Stamper this would be called "creating a valuable affordance for the customer"). This is, in fact, the benefit side of the value adding process: a valuable affordance is created.
- If we look at the transition from the physical value chain to the virtual value chain, what happens is that a transition is made from offering a physical affordance to offering a semiological affordance. These semiological affordances create value by what they represent and how they do that. So, important questions

are:
- what is the substantive physical product, what affordance is offered by it, what does it enable in the social reality?

- what is the semiological product, what affordance is offered by it, what does it enable in the social world?

- the context strategy: this strategy deals with creating the context that is necessary in order to be able to provide the valuable affordance.
  - In the physical value chain, this deals with establishing a context for providing a physical affordance (among which a semiological context for the control and co-ordination of the activities involved). So, arrangements are established in order to create a context for producing the physical affordance for the customer (for example, establishing rules and regulations for using the machines, and management structures). And a semiological context is established in order to produce the physical affordance for the customer (for example, procedures to inform the people about the rules and regulations for using the machines, like establishing rules and regulations for using and understanding the manuals and reports, and establishing contacts with the suppliers and customers, etc.). This deals with establishing shared meaning (semantics), intentions (pragmatics), and behaviour (social norms) as a context for co-operating in a physical production process. But this, in itself, does not create the value. The value is in the physical affordances produced.
  - In the virtual value chain, this deals with establishing a context for providing semiological affordances, which is building a communication system in which the value is created by providing representations to the customer. This deals with establishing shared meanings (semantics), intentions (pragmatics), and behaviour (social norms) as a context for creating value. In this case the communication itself adds the value instead of the physical product that is manufactured by the co-operating people. So, in this semiological production process the value creation itself consists of building shared perceptions, shared beliefs/understanding, shared valuations and shared actions. And of course, in order to do this, especially in a T-form organisation with its IT-backbone, this also involves building the physical infrastructure to be able to make and use the representations. This is what is done in the infrastructure strategy.
- the infrastructure strategy: here, we are dealing with the technical infrastructure in order to create the valuable affordance. For the physical value chain we are dealing with the physical infrastructure to produce the physical products or behaviours (like building the factory, training the operators in using the machines), and to enable communication for control and co-ordination (for example, writing and distributing manuals and status reports). For the virtual value chain we are dealing with the physical infrastructure to enable the use of representations. This strategy deals with the physical, empirical, and syntactical aspects of the semiotic framework in order to build a shared technical platform.

While a single-layer strategy can be profitable, it may make sense early in the life of a market to launch a full proprietary system at all the three levels and to hone in one specialty later.

4.3.3. Examples

Rayport and Sviokla provide us with some examples of companies that concentrated their activities in one, two, or the three basic elements of the value proposition.

4.3.3.1. "America on line" (AOL)* context strategy

A newspaper is an aggregated colection of content (news, business, sports, weather, as well as other information), context (format, organisation, logo, editorial style, and rethorical tone), and infrastructure (printing plant and physical distribution system, including trucks, door-to-door delivery, as well as newsstand sales). In order to create value for consumers, publishers must aggregate all content, context, and infrastructure activities into a single value proposition. Readers cannot access a news item (in other words, content) without interacting with (in effect, paying for) that newspaper's context and infrastructure. Likewise, advertisers cannot reach readers without supplying commercial content that can work within a newspaper's context and that can be delivered through a newspaper's infrastructure.

But AOL has disaggregated content, context, and infrastructure and has thus reconfigured the traditional value proposition. The content belongs to a dozen national newspapers that supply an editorial product. The context is established by AOL to provide an intelligent "front end" for subscribers that allows "readers" to customise the information content they wish to consume. The infrastructure relies on a combination of assets, none of them owned by AOL: telephone lines, electronic networks, as well as consumer-owned Pcs equipped with modems.

So, what does AOL actually sell? AOL doesn't own the infrastructure or the content, so the value proposition - AOL's "brand" - must center on a unique context in which a variety of contents may be consumed.

4.3.3.2. The credit card business various strategies

The content of the credit card includes elements like time-shifted payment, the ability to get cash electronically, and buying power. The context includes customer service, status associated with the card, and speed of credit approval. The infrastructure includes the network of computers, computer software, communications that enable credit approval, electronic funds transfer, and merchants who are willing to accept that particular card.

Given that so many of the possibilities related to content, context, and infrastructure are generic, how do individual card issuers differentiate themselves? They tend to focus on one layer or another.

* - "America on Line" is a company that provides access to the internet.

For example, American Express emphasises the context of service and the prestige of being a member (through newsletters and other inducements to make customers feel as if they are part of the club).

Citicorp's Diners Club uses a variety of value-adding approaches at both the content and the context levels. Content differentiation is based on gift points and frequent-flyer-mile credits based on dollars charged. A lot of network relationships are established between the credit card companies and other companies like airlines, oil companies, telephone companies, hotel chains,etc. Context is built out of newsletters, end-of-year summaries and analyses, consumer tips, rewards programs, and occasional sales promotions for merchandise of interest to Diners users.

Companies such as MasterCard and Visa have a different strategy. They emphasise their superior infrastructure. Visa tells consumers that it is "everywhere you want to be." Visa's advertising campaigns are based on portraying a system that extends its geographic reach and coverage beyond that of the competition, specifically the more elite players like Diners Club and American Express.

Other companies in the credit card business, such as banking companies, offer significant content differentiation in the form of extremely liberal credit policies. These players use a generic infrastructure and invest little to differentiate context. What they are doing is providing the commodity content - buying power - in new ways to underserviced sectors of the market.

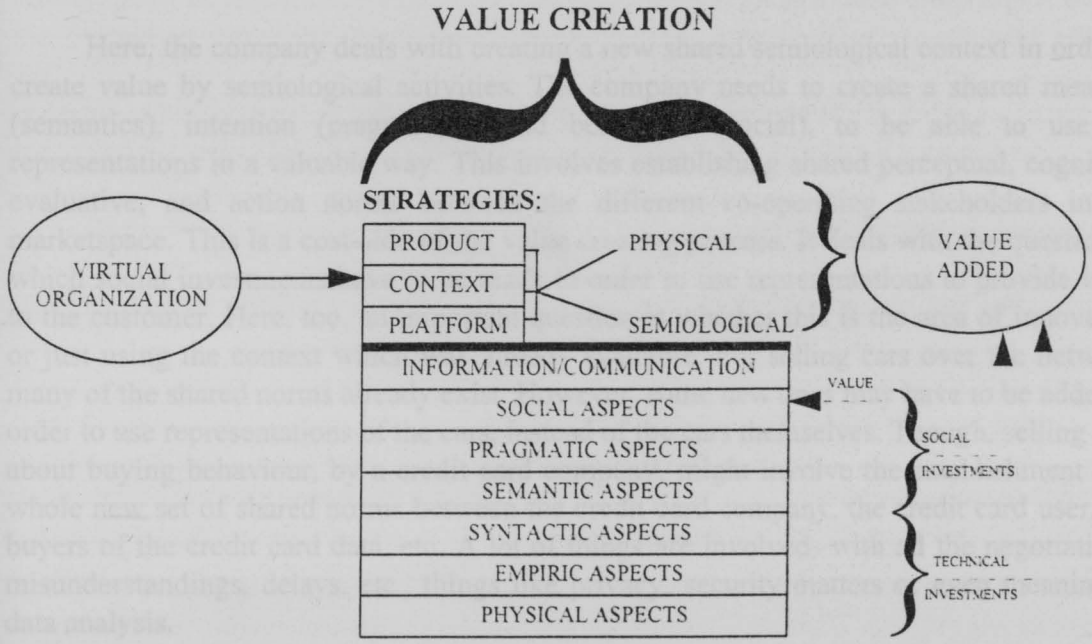


Figure 4.3.1 - The value creation process of a Virtual Organization

4.3.4. Conclusion

So, if we look at the transition from the physical value chain to the virtual value chain, what is involved is:

4.3.4.1. Changing the content (developing a content strategy)

The valuable affordance offered to the customer deals with offering representations and the related semiological activities involved, in other words, representing the substantive social and physical reality. By using the representations in communication, valuable changes in the social reality can be brought about, instead of creating value by directly physically changing this reality. While developing a content strategy, companies are dealing with the benefit side of the value creation , answering the question: what value is created to the customer by offering representations? Is this the area of innovation, or was this value already created along another (non semiological but probably direct physical) way? For example, selling cars is the same substantive social action to the car seller in both cases of the marketplace and the marketspace, only the implementations are different. However, representing buying patterns of customers, by using credit card data, and selling these representations to develop personal marketing approaches, is a new substantive activity to a bank or credit card company.

4.3.4.2. Changing the context (developing a context strategy)

Here, the company deals with creating a new shared semiological context in order to create value by semiological activities. The company needs to create a shared meaning (semantics), intention (pragmatics), and behaviour (social), to be able to use the representations in a valuable way. This involves establishing shared perceptual, cognitive, evaluative, and action norms between the different co-operating stakeholders in the marketspace. This is a cost-side of the value creating process. It deals with the question of which social investments have to be made in order to use representations to provide value to the customer. Here, too, an important question is whether this is the area of innovation or just using the context which was already available. For selling cars over the network, many of the shared norms already exist. However, some new ones may have to be added in order to use representations of the cars, instead of the cars themselves. Though, selling data about buying behaviour, by a credit card company, might involve the establishment of a whole new set of shared norms between the credit card company, the credit card user, the buyers of the credit card data, etc. A lot of things are involved with all the negotiations, misunderstandings, delays, etc., things like privacy, security matters or even meaningful data analysis.

4.3.4.3. Changing the infrastructure (developing an infrastructure strategy)

This strategy deals with creating a technical platform in order to enable the semiological activities. It involves all the physical, empirical, and syntactical aspects of the use of representations. This is also a cost-side of the value creation: what kind of technical investments need to be done to enable the value creation by using representations? Is this the area of innovation or were these facilities available already? Probably, the technical investments for the bank and the credit card company are not that large and innovative, as

they needed to use the facilities already for their administrative purposes. Or there might be some investments involved to link the different technical systems to each other, to be able to share and combine data. For the car seller it might involve many new investments, in order to create a technical infrastructure for making, storing, and distribut-ing data about the cars, among the customers. Or it might involve a shift from using mailings to using Internet.

4.3.4.4. Example

Time Warner produces filmed entertainment and distributes it to the viewing public through movie theaters, cable-television programming, and, ultimately, videocassettes.

Considering the videocassette product, the traditional marketing mix - product, price, promotion, and distribution - provides a convenient way to summarise the task of taking such a product to the market. The videocassette with the film is the product; its price is set either for sale or rental; it is advertised by Time Warner and its channels, such as video rental stores and other media retailers; and its channels bring the product to consumers. This is a pure marketplace transaction.

When Time Warner Cable markets the same film, however, the value proposition to the customer becomes more complex; the transaction occurs in the marketspace, and the traditional marketing mix provides less useful guidance. Consider a customer with a cable system that permits orders to be placed by phone for pay-per-view entertainment selections. While the film itself is the content purchased, both the purchase and the consumption of that content must take place in a context - via a cable channel. Of course, the context in which the company-customer interface is established cannot exist without the cable-TV system. The cable system is the infrastructure of Time Warner's owned and operated cable systems. For Time Warner Cable, then, the content is the film, rather than the video cassette. The context is the premium cable channel. The infrastructure is Time Warner's cable system.

From the customer's perspective, the marketplace operates in a similar fashion. The customer intending to rent or purchase a video could seek a particular content (the movie) in a variety of contexts (video rental stores), with little regard for the infrastructure (manufacturing, distribution, and channel activities) that made this transaction possible. From the company's perspective, however, the marketspace transaction is very different from the marketplace transaction. Time warner has a new opportunity in the marketspace to manage directly its interface with customers at all three levels. It can define and control the contexts through which its content is vended. It can achieve brand differentiation and customer loyalty at both levels, and it may even cement loyalty at the infrastructure level as well.

4.3.5. The Semiotic Framework applied to the Credit Card business

TECHNOLOGY PLATFORM

The technology platform of the semiotic framework is concerned with the infrastructure and the context levels of the value proposition.

Physical world

Consists of the cards themselves, the machines where the merchants introduce the cards in order to make the payment, the computers at the bank, the network connections, the telephones, the speed of connection between the store and the bank system, the speed of transmission of data (allowing the payment or not), etc.

Empirics

The channel capacity of the network, the probability of succeeding, the probability of failing, the storage capacity of the computers at the bank, the coding and decoding system, the flaws of the system, etc.

Syntactics

The words and numbers showing in the screens of the machines or in the tickets that come out of the machines.

THE SOCIAL WORLD

Semantics

In the semantic level it is very important the meaning of the messages sent and received by the machines. The computer at the bank has to interpret the card number, the amount to pay, the place where the transaction is being made. Back at the store, the data received from the bank have to be interpreted with the same meaning that was imputed to them at the bank. The messages on the screen, all the kinds of different noises made by the machine, the words and the numbers printed in paper, etc.

Pragmatics

The first intention in using a credit card is to make a payment. But much more intentions are attached to the use of a credit card: not wanting to carry cash, the need of actually using the credit, instant buying power, showing off a certain status attached to the ownership of a certain card, wanting to benefit of the several advantages of the cards (related with relationships between the credit card companies and other companies like airlines, phone companies, insurance agencies, supermarkets, hotels, etc.)

Social world

The consequences of using a credit card can be the payment itself, the feeling of a certain safety against robbers, a safer way of making business for the merchants, a change in attitude towards the card users due to the status imputed to that card (a certain disdain or suspition if the card is not accepted!).

4.4. Final note

The Virtual Organisation creates value by performing semiological activities, instead of using them only to support the physical activities. It provides information products and information services to consumer, and it adds value by being an information broker in order to make possible for other partners to combine and co-ordinate their activities into a networked co-operation, which would not be possible without this information brokerage.

The Virtual Organisation uses a semiological strategy to create value. It is able to disaggregate the value proposition into its three basic levels - content, context, and infrastructure - and create value from only one of those levels.

What is still unclear is whether a VO can also perform physical activities, and whether a non-virtual organisation can also perform semiological activities. However, if both virtual organisations and non-virtual organisations according to the definition are active in both the physical and the virtual value chain, then, with respect to the value creation there is no difference between virtual and non-virtual organisations. A virtual organisation and a non-virtual organisation can both create value by using the physical value chain and the virtual value chain. In that respect, they are both the same.

In my opinion, both the virtual company and the non-virtual company can use both a semiological strategy and a physical strategy, so that both can be active in the physical and in the virtual business. There is not a real difference between a virtual company and a non-virtual company, but all companies have some virtual and some non-virtual aspects which could be looked at as a scale - some companies have stronger virtual characteristics and some have more non-virtual characteristics. It is more relevant the difference between virtual business (creating value by information products and services, i.e., by performing semiological activities), and the physical business (creating value by physical goods, i.e., by performing physical activities), than between virtual companies and non-virtual companies.

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