An organisation theoretical framework of knowledge organisations*

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SUMMARY

In this article the organisation is defined as a knowledge organisation when its capital predominantly consists of human capital and its main performance is knowledge or knowhow that cannot be defined as mass-, series-, or single product nor tangible service. Presumably, the management of knowledge organisation differs from the management of other types of organisations and is not yet known sufficiently. Main differences are due to incompatibility of business and professional demands and the looseness of processes and structures from each others. In this article, theoretical connections of knowledge organisation with recent developments in organisation theories are outlined.

Organisation is a tool for goal attainment. The hierarchy of an organisation is understood as a mechanism of reduction of transaction costs of individual actors as opposed to those acting on the markets. This individualistic point of view and the importance of human capital, knowledge intensive production technologies and products of knowledge organisations take us to see an organisation as a goal-oriented loosely coupled system that makes reasonable decisions.Jorma Lehtimäki, Leila Kontkanen, Raimo Nurmi

1 INTRODUCTION

The society is quickly moving from an industrial society into an information society. Transitions in the economic structure of society, philosophy of science and values of man point to the same direction: the industrial-mechanical-materialistic constellation is being complemented by an information based, interactionistic, spiritual constellation (Nurmi, 1986). Information as human capital has been introduced as the fourth factor of production to the traditional three: nature, labour and capital. These can be seen in the structure of e.g. Finnish society and politics (Uusitalo, 1985, 168). Or it has been claimed to be even the most important resource as it guarantees power and hence information may be a future object of global power struggle (Lyotard, 1985, 14). Information has been compared with goods with exchange value: it is produced in order to be purchased.

The new society is bringing forth a new kind of a company. This company lives on processing data or information and transforming them into knowledge or even a step further, wisdom or understanding. There are companies whose main task is to add value to data in order to produce information, value to information in order to produce knowledge and even more value to knowledge in order to produce wisdom. This kind of companies are called in this article knowledge organisations (see Alvesson, 1989, Sveiby & Risling, 1987).

Before treating specific definitive issues of knowledge organisation as organisational contingency factors its premises need to be understood: what is an organisation? Why are there organisations and what are the most typical features of organisations in general?

2 PARADIGMS FOR UNDERSTANDING THE KNOWLEDGE ORGANISATIONS

31 What is an organisation: a tool for reasonable action

Organisation can be defined as a tool in achieving goals and objectives. The goals of an

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organisation are set by the top management of the organisation. So the organisation can be seen as a tool of top management. In practice, however, goals are set by every actor in an organisation. Also actors in the lowest level in the hierarchy do set goals for their organisation. Organisation is thus a multigoal tool. It is more the tool of the top than the tool of the bottom of the hierarchy, but it is also the tool of the latter. Neglecting to see an organisation as a tool of somebody's goal reaiization may have led many organisational studies to the myopic or even false conclusions.

Perrow (1979, 13) writes: »A tool is something you can get something done with. It is a resource if you control it. It gives you power that others do not have. Organisations are multipurpose tools; there are a great many things that one can do with them. For example, through an organisation you may get your ego flattered by subordinates; or you may be able to provide a respectable place in the occupational system for your relatives or friends. More important, however, organisations are tools shaping the world as one wishes it to be shaped. They provide the means for imposing one's definition of the proper affairs of men upon other men. The person who controls an organisation has power that goes far beyond that of those lacking such control». But organisations are leaky vessels (Perrow, 1979, 16).

The principle of economic man is fairly well accepted in economics (e.g. Mueller, 1979, 4). The rationality concept of the goal-oriented action includes that an actor has to have value(s) expressed as goal(s) or objective(s). By maximizing (or perhaps satisfying, see later) the achievement of this goal the actor is acting rationally. Rational perspective has been criticized to be unrealistic (e.g. Lyotard, 1985). Formulating a coherent set of values is often seen to be impossible due to its elasticity and due to always existing conflicts among vaiues. Regarding the analysis of the means to achieve the goal, it is easy to make the conclusion that perfect gathering of information for choosing the right alternative action is also almost impossible (Braybrooke & Lindblom, 1970, 16, van Vught, 1989, 25).

Abandoning the rationalistic perspective due to the deficiencies of the moment does not take into account the constraints of the limited interest, energy, time and place of decision-makers. Assuming that the choice of action has to be made just at a fixed time — as a decision always is made both theoretically and in practice — the choice will be directed to an alternative which seems to maximize the utility of the actor. Thus, even if the action — especially decision-making — would be cybernetic, incremental, individualistic etc., the rational concept remains as the basis of behaviour. E.g. adapting, because of a feedback process, is only a new decision-making situation where an actor has new information about the means to reach the goal or to evaluate the objective.

Organisation was defined above as a tool, a coordinated collective action. There is, however, a continual contest of decision power in the organisation. Organisation may thus be defined as an actor or a group of actors seeking rational solutions for its values, seeking its utility. Utility may be seen as maximation or optimation of profit. For an individual, utility may be a function of the variables affecting his wellbeing, e.g. income, prestige, professional satisfaction and permanence of the job. Utility includes also so called value rationality. An individual in an organisation acts goal rationally under constraints of other actors, time, place and so on. These constraints lead in practice to bounded rationality. This Simon's (1979) notion of bounded rationality is not alien to the rationality tradition in economics. Simon indeed enlarges rather than reduces the scope for the analysis of rationality. Bounded rationality is behaviour that is »intendedly rational» but only limitedly so (Simon, 1979, 25). On the other hand an individual in search of utility with self-interest implies a chance to opportunism, allowance for guile. The rationality maximizing utility of an individual or a group does not exclude a need for rational choices of the whole organisation which overcome the choices of individuals or groups. This is an idea of extreme importance for management thinking of knowledge organisations emphasizing otherwise looseness. It is this very idea that makes the organisation goal-oriented and a tool for actors that have control over the organisation.

Thus, every member in organisation tries — with his bounded rationality and to different degrees — to use organisation as a tool of his utility, i.e. s/he tries to get results, which s/he values. Better term than bounded rationality, which is strongly connected with the concept of »economic man» in economics, would be reasonable action and decision making. In organisation everybody tries — and has the right to try — to maximize his utility in accordance

with the reasons, which are in his, and hopefully also in others', opinion reasonable. If conflicting arguments of more authoritative actors are more reasonable in their opinion, then the former actor has to abide by them even if his own opinions are in conflict with them. This does not mean that an employee would be a kind of a subject that could not carry out values which oppose those of his own. Also work is often only a tool to achieve a possibility to realize one's private goals outside the work.

22 Why an organisation: the transaction cost approach

Why to use an organisation as a means for achieving the goal instead of acting as an individual for the purpose. One answer is that it is impossible to work alone because of short of the necessary knowledge, power and capital. The basic advantage in working as a collective, as a coordinated actor, is cost benefits due to a minor number of transactions. The basic idea is explained in transaction cost approach (Williamson, 1989).

»The basic distinction of transaction cost approach among different organisational forms is the distinction between markets and hierarchies, which are forms of economic organisations. Given the division of labor, economic organisations control and coordinate human activities» (Suomi, 1990, 63).

The concept of knowledge organisation as defined in this paper implies that the personnel is the operating core of the organisation. The personnel is the resource of both capital (human capital) and R & D, production and marketing. In addition it has a central role in products. Then, commitment of the personnel (both professional, organisational and business), as well as the motivation and knowhow are vital. All these imply transaction costs like recruiting, training and education costs. Even production costs in knowledge organisations deal much more with human capital than in other industries. Due to the low real capital intensity, it is even possible to establish a firm of one's own in knowledge business. All in all, transaction cost theory is a suitable paradigm for the research of knowledge organisations, even if it is very difficult to measure the costs.

In accordance with transaction cost theory, an actor chooses and accepts his being subjected to hierarchical organisation instead of acting in market because s/he gains cost advantages. On the other hand, an actor leaves the hierarchical organisation or moves to the other hierarchy, if the former creates too much of a burden. This issue can also be seen from the employer's viewpoint. Is it feasible to employ a task in the hierarchy or to buy it from the outside?

Transaction costs are a friction of economic activity. The useless increase in transaction and production costs decreases efficiency and effectiveness. The goal is an organisation or a group of organisations in which the sum of transaction and production costs are minimized (Mäkelin & Vepsäläinen, 1989, 22).

Even if one prefers hierarchy to market control, the problem of the internal hierarchical structure remains. This problem can also be approached with the concepts of transaction costs theory. The fragmented parts of an organisation can be seen as customers to each others. E.g. in the university a teacher/researcher, an administrator and a student give their contribution as far as s/he gets substitute in return. The more s/he gets the more s/he gives. If utility ratio is small or biased, independence and looseness are enhanced and vice versa. The inducement-contribution balance cannot be quite equitable due to the need of asset specificity and uncertainty. Asset specificities are site (buildings), physical assets (expensive equipment), human assets (customer or product knowhow and familiarity), and dedicated assets (information technology) (Reve, 1990, 140). Human assets cause also power distinctions and (human) resource differences. Uncertainty is caused by environmental turbulence, complexity of technology or performance and unexpected behaviour of people. Power distinctions are based on the differences in significance or substitution possibilities of the partners and on the differences between available resources. These are the reasons which develop the hierarchy; i.e. order and goal control instead of market control. Hierarchy stabilizes the differences between unequal transaction partners saving transaction costs at the same time. Hierarchy is, however, diminished in the loosely coupled organisation.

23 What kind of an organisation: hierarchy, decision making and contingency factors

The real superiority of hierarchy compared to

market control depends on the success of its activities in practice. An appropriate hierarchy does not guarantee a successful implementation. Activities can be inappropriately identified with structure. This creates negative characteristics of bureaucracy such as too many problems passing up and down the hierarchy, bypassing, poor task setting, frustrated subordinates, anxious managers, wholly inadequate performance appraisals, personality problems and so forth (Jaques, 1990, 131).

Jaques (1990, 127—133) aptly presents the crucial feature of efficient hierarchy. He illustrates managerial hierarchy as in the figure 1. In it, the time span means the longest responsibility or task for each position. Although official organisation chart is like the one in the left part of the figure, the right part might, however, correspond with reality. The sketched hierarchy is, except A, far too close. Levels are too near to each others, official supervisors breath down each others' necks without the esteem of the subordinates. Only A has the recognized authority to add value to the work of his subordinates. In order to be able to do this, he has to be at least one category higher in cognitive capacity and in problem complexity. Minor differences can be seen in pay rises and other incentives, but not in responsibility hierarchy. Jaques maintains that there is a cut off at e.g.

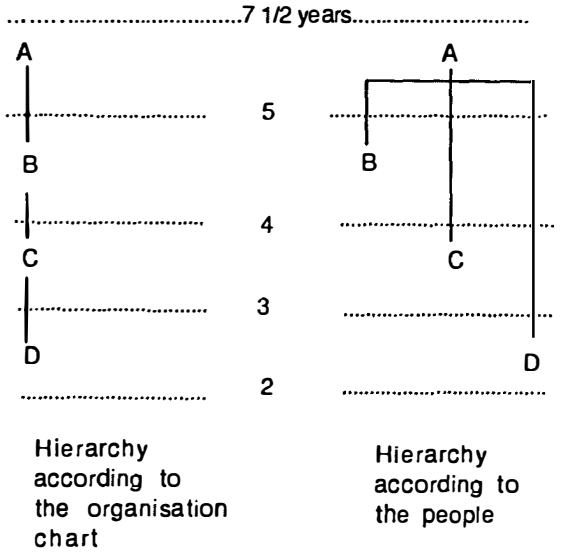

Figure 1. Managerial hierarchy in fiction and in fact.

2, 5 and 7,5 years so that the ones with time spans of less than five years feel they need a manager with a responsibility time span of more than five years. But the manager D, with a time span of under 3 years, does not feel that C, with a time span of three to four, is hierarchically distant enough to give orders to D (Jaques, 1990, 131).

Hierarchy can be treated as an economic issue instead of a managerial one. In that case, the altematives are downstream integration, upstream integration, scale and scope. The shaping of reasonable boundaries for an organisation (downstream, upstream, horizontal and diversification alliances) (Reve, 1990, 149—151) is both an organisational and an economic problem.

Operating as an organisation is impossible without some kind of a division of labour and coordination mechanisms. It necessitates a hierarchy — greater or smaller -where individuals can not act totally freely. The hierarchy is a characteristic of an organisation. As a concept it has to be distinguished from the processes of an organisation. 'Clan' control by Ouchi (1980) between hierarchy and market control will not be discussed in this article, even if it is quite an interesting idea.

Thus the necessity of hierarchy, which solves authority in conflict situations, should not prevent us from seeing that there are activities that do not follow hierarchy. Operations take a form of processual flows irrespective of the administrative structure. Seen from the reversed angel, a structure is just a stable illustration of unstable real processes; most important of them are horizontal (task division) and vertical (decision making authority) division of labour and coordination processes. The design of the structures is dependent on contingency factors like environment, age, size and technology of the organisation (Khandwalla, 1977). In the following, knowledge organisation is discussed.

Transactions in this article include also knowledge transactions between managers and subordinates. So also theories (especially Hayek, 1979) concerning the formation of knowledge and dispersion of knowledge in the society or in the firm, which is a special miniature society, may be used.

The tendencies towards creative, motivated, or committed reasonability and minimal transaction costs lead us to argue that knowledge organisations are loosely coupled systems. This argument is elaborated in chapter 4.

3 THE CONCEPT OF KNOWLEDGE ORGANISATION: ONE CONFIGURATION OF CONTINGENCY FACTORS

»Naturally all companies possess and have access to knowledge. But the extent of this knowledge, its intensity, its direction and focus, and the way in which it is embedded in the company all differ considerably. We thus have good grounds for classifying companies by reference to the knowledge factor» (Ekstedt, 1989, 3).

In the knowledge organisations the knowledge is a production material or a resource, a final product and finally a capital asset. Knowledge can be defined as a concept that includes facts, styles of thought, intellectual skills, occupational, historical, process and concept knowledge (Clark, 1983, 12). So knowledge can be understood as a technology of an organisation including both production process, material and product and even capital. Other organizational contingency factors are at least environment and demography, e.g. age, size and type (Khandwalla, 1977).

31 Knowledge as a product

A product satisfies a want (Kotler, 76, 5). The performance of knowledge organisation satisfies a need of knowledge. Production can be classified into production of goods or services. The former, and partly also the latter, can be divided into mass production, series production and single unit production. The product can be classified into consumer goods, durable goods or capital goods and tangible service. The knowledge product as defined above is none of these. The consumption of a knowledge product requires cognitive participation of a seller or a buyer. Knowledge product or performance is service or at least like a service. It is not, however, a tangible service, which can be standardized or industrialized. It is knowledge intensive service. For example Mäkelin & Vepsäläinen (1989, 14) divide service production by these definitions.

Of course in particular cases the definition of boundaries is difficult. The above definition implies that when an original knowledge product enters (for instance as a software package) into series production or becomes a durable good or a tangible service, it is not any more a knowledge product as defined in this paper. The primary product of the firm is the distinctive feature in classifying an organisation as knowledge organisation. Many knowledge organisations produce goods and tangible services as auxiliaries. They may be even necessary for the primary product. For instance an edp-consultant (knowledge product) can supply also equipment and programs (goods) and install and maintain them (tangible service).

32 Knowledge as material and production technology

Sveiby & Risling (1987, 16) regard creativity, non-standardization, high dependence on individuals and complex problem-solving as distinguishing features of the production of the knowledge organisation. In this kind of a production raw material and technology are personnel oriented. Knowledge is both a product and raw material. Production technologies of the knowledge organisation can be classified according methods of preserving, conveying, discovering or applying knowledge.

33 Knowledge as capital

Considering knowledge as capital Ekstedt (1989, 8) has classified companies as seen in figure 2.

Lyotard (1985, 15) has compared information with money concluding that in a postmodern society information circulates like money and could be classified like money into working capital used in everyday functions and investment capital needed for creating future possibilities. The circulation is becoming more and more efficient because of new technology by which information is produced, transformed and stored. So, information technology will do to information what transportation technology did to traveling and communication technology did to moving of voice and images (Lyotard 1985, 12).

There are subtypes within each category in the figure 2. So, also knowledge organisations can be divided into at least two subgroups: small (more flexible) and large (more bureaucratic) knowledge organisations.

24 Summary of the definition

A knowledge organisation can be characterized as follows: its capital consists

	Low real capital intensity	High real capital intensity
Low knowledge intensity	Service company (tangible services)	Traditional (mature) industrial company
High knowledge intensity	Knowledge company	High-tech company

Figure 2. Types of companies.

predominantly of human capital; there is high standard of knowhow of the personnel; its product or performance is knowledge, which is transmitted or preserved in written, oral, audiovisual or electrical form. The consumption of this product requires cognitive participation of a seller and/or a buyer. The product has utility value but not immediate exchange value to the customer. Production technologies of the knowledge organisation can be classified according to methods of preserving, conveying, discovering or applying knowledge.

Knowledge organisation can be included in the service sector. But the key factor is knowledge intensity instead of the quality of service as such.

Knowledge organisation is also a so called a professional organisation. The latter is a broader concept, however, as the professional organisation can produce also goods or tangible services. According to the above definition at least the following firms are regarded as knowledge organisations: consulting, software and editorial companies, publishers, hospitals, private clinics, universities and schools, lawyers', auditor's and architect's offices.

4 LOOSELY COUPLED SYSTEMS

Organisation has defined before as a reasonable rationality seeking entity. Transaction cost theory reduces the rationality to an argument of choosing between hierarchy and market control. Classical, administrative human relations, open systems or even contingency theories are not adequate organisation theories for knowledge organisations, which try to minimize their production and transaction costs. This also holds true when judging newer theories like the institutional theory (Meyer & Rowan, 1977), or the resource dependency theory (Pfeffer & Salancik, 1978). Population ecology theory (Hannan & Freeman, 1977) does support the idea of examining knowledge organisation as a specified population. Instead of these theories goal-oriented loosely coupled systems theory would seem to be better for describing or even prescribing organisational processes and ideologies.

Most definitions of organisation consist of at least two components: 1) a source of order which unites diverse elements and 2) the elements or fragments to be united. When organisations are defined as monolithic corporate actors, order is overemphasized and elements are underemphasized; when they are defined as mere aggregates of individuals, elements are overemphasized and order is underemphasized. The loose coupling concept in its dialectical form is a more subtle and intricate definition of organisation (Orton & Weick, 1990, 216—218).

The idea of loosely coupling system includes rationality and indeterminacy simultaneously without giving either of them a predetermined

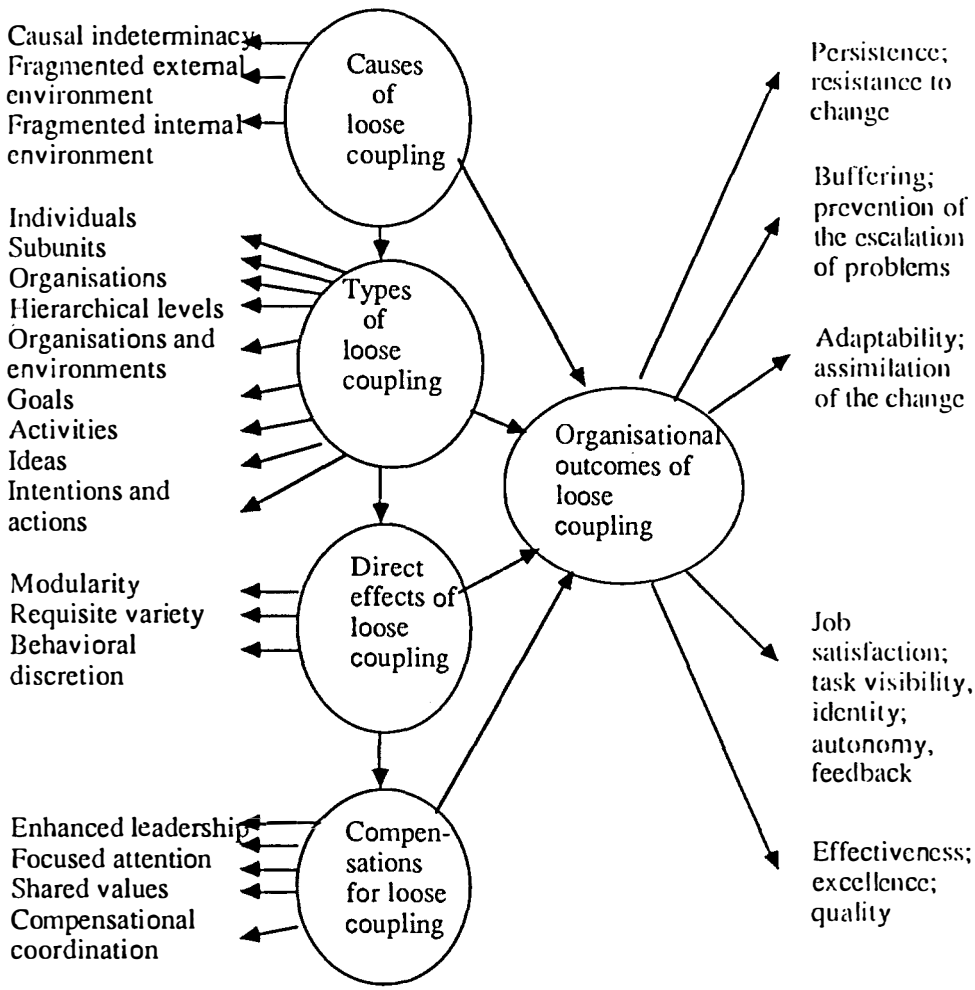

Figure 3. Loose coupling theory: some orgnisational variables.

role. According to Orton & Weick (1990, 204) loose coupling suggests that any location in an organisation — strategic apex, middle, operating core, technostructure or supportive units, in Mintzberg's (1979) terms, — »contain interdependent elements that vary in the number and strength of their interdependencies. The fact that these elements are linked and preserve some degree of determinacy is captured by the word coupled in the phrase loosely coupled. The fact that these elements are also subject to spontaneous changes and preserve some degree of independence and indeterminacy is captured by the modifying word loosely. The resulting image is the system that is simultaneously open and closed, indeterminate and rational, spontaneous and deliberate.»

Coupling tightly or loosely thus are not polar points of a scale. Instead, they constitute a dialectical interpretation of loose coupling. Organisations are not considered organisms or mechanical systems, as they have goals and objectives (intentions). This kind of a system can be called a goal-oriented loosely coupled system. The weaknesses of the open system theory and organism metaphor is that it implicitly excludes goal-direction; this important point is not discussed further in this article.

Orton & Weick (1990) mention eight types of loose coupling: individuals, subunits, organisations, hierarchical levels, organisations and environments, activities, ideas, intentions and actions. Quinn (1988) expresses the same idea by representing the competing values as a frame-

work for organisational understanding. He uses two variables — from flexibility to control and from internal focus to external — figuring four quadrants in two axes. Each quadrant of the framework represents one of the four major models in organisation theory. They are: human relations model, open systems model, rational goal model and internal process model. All the models are relevant in different stages of organisations. These emphases are often dialectical, contradictory or paradoxical. So, they have not the same emphasis in a fixed moment. They rather compete in a loosely coupled system organisation. The combination is depending on the life cycle, business, age and cultural area of the organisation and the task of an individual or group element of the organisation. Effectiveness of the organisation is supposed to be dependent on the dynamic balance of these models between coupled elements of organisation. Modifying Orton and Weick's (1990, 217) figure loosely coupling theory can be illustrated by the figure 3.

5 CONCLUSION

A theoretical context of a framework for the organisation theory of knowledge organisations

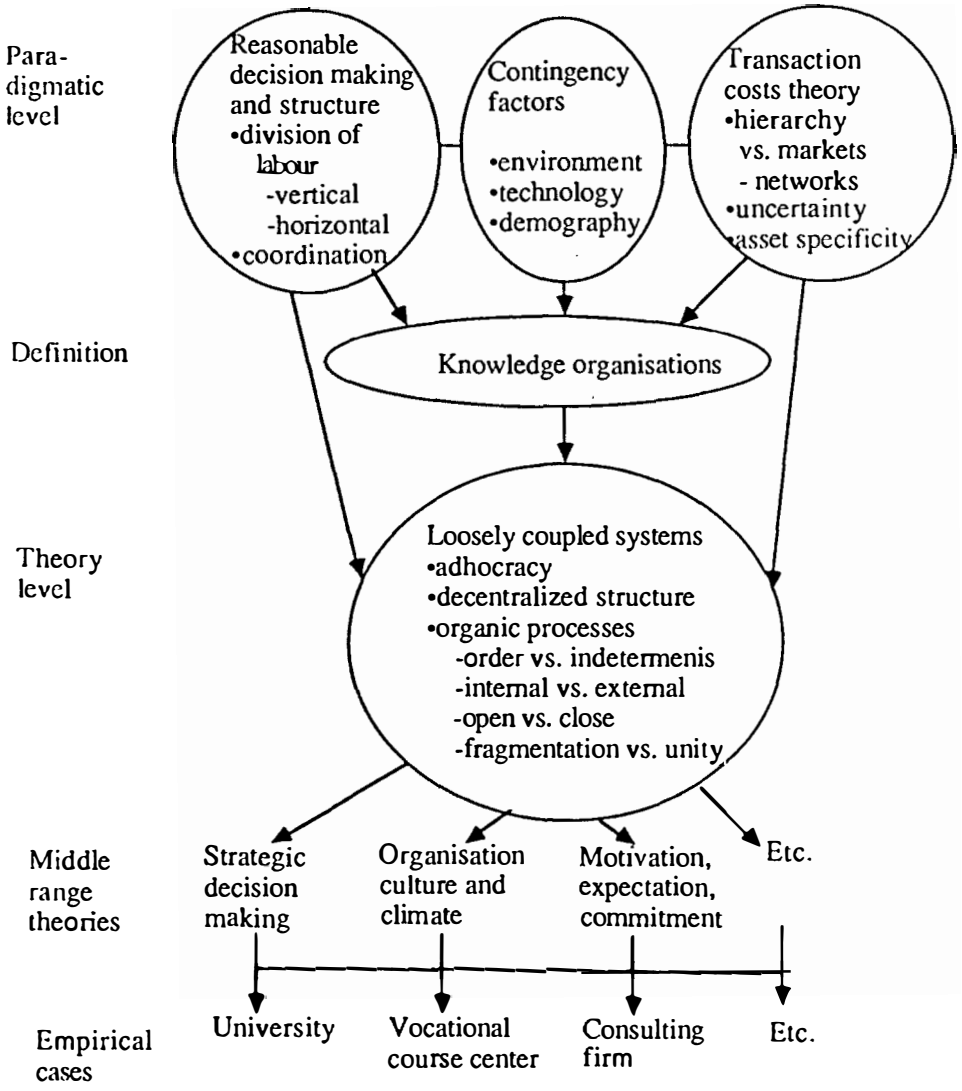

Figure 4. An organisation theoretical framework of knowledge organisations.

is presented in figure 4. In this figure the middle range theories are generally accepted as metaphors or concepts by which the concrete research subjects are studied. Reasonable (boundedly rational) decision making, transaction costs and contingency theories form in this framework basic principles of organisational structure and behaviour. Loosely coupled systems theory constitutes the additional principles needed to understand the behaviour of the knowledge organisation. In this framework the latter theory is based on the three former ones.

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