

## **ORGANISATION MANAGEMENT IN SUPPLY CHAIN WITH DYNAMIC EFFECT OF ORGANIZATIONAL RULES**

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**Abstract.** *The traditional organizational structures and processes along the value chains on a world wide scale in turbulent business environment have to continuously adapt to new conditions. Business environment puts pressure on organizations to effectively meet the fundamental changes. We focused on the major technical and technological changes which evolve rapidly. In global competition information technology (IT) has unique impact on competitive climate, it is changing the nature of classic competition and adds a new dimension of competition-interrelatedness. Competitive and technological forces do not permit any single organization to enjoy sustainable competitive advantages just from use of information technology, but they arise from the human, organizational and system innovations. Organizational rules are instruments (mechanism) which arise from institutional and organizational settings. Changing the system of rules changes the behaviour of members of the organization so that the members actually obtain new knowledge through the process of learning the new rules, which are the carriers of knowledge. Institutional and organizational settings are sources of rules and factors in the continuous changing of rules. The dynamic quality of the changes is the reason for continuous learning, which results in changes in the behaviour of members of the organization. In the environment of permanent technological changes, the dynamic effect of rules is an important mechanisms that can be used to co-ordinate the flow of knowledge and influence the behaviour of members of organizations which are creators of information - strategic business resources and pillars of sustainable competitive advantages arisen from human, organizational and system innovations, foundations of knowledge based management Therefore the core of our research model is the dynamic effect of rules on the behaviour of members of organizations in environment of permanent technological changes.*

**Key words:** *Organizational and business rules, institutional and organizational settings, dynamic effect of rules, organizational behaviour, management, human resource management, strategic management, supply chain management*

Information technology (IT) which consists of a powerful collection of elements that have wide and significant applicability as modern information technologies, especially via the Web, provide inexpensive, fast, capable, reliable means of supporting communications, network computer systems, require significant changes in organizations processes and roles played by individual employees. Information technology basically has the ability (capacity) to alter fundamentally the nature of work in all work classes. The traditional organizational structures and processes along the value chains on a world wide scale in turbulent environment do not have to stay the same, organizations have to adapt to new conditions. Bogataj, M., Bogataj, L. and Vodopivec, R. (2004) By carrying out activities, organizations move from one state of capacity to another. The transition from state to state is not limited by natural laws, but by organizational and especially business rules, which in various ways affect the behaviour (carrying out of activities) of the organization and its members. The organization is a composite structure which can be seen as a set of organizational rules and resources, a set of routine social practices, and people who are engaged in regulated interactions within spatial and chronological limits (Rosenbaum 1997). Membership in an organization is based on organizational rules, their application and resources and their interaction in the simultaneous reproduction of structural conditions which allow the possibility of their interaction (Yates and Orlikowski 1992). The large capacity of modern organizations is ascribed to their ability to create and implement organizational codes in an imaginative way, which reflects the lessons of their experiences and behaviour and which symbolizes the organizational regulations and rules. In some cases, the codified rules are followed in a very deliberate and precise manner. In other cases, the following of rules within the organization occurs unnoticeably, since the rules become an internal unspecified premise of the activities or are not organizationally instituted. The difference between organizational rules and organizational regulations can be explained by the fact that rules affect the existence of a high degree of accuracy and clarity, both individually and canonically, while in regulations these elements are more general. Rules are present throughout human behaviour, but they are especially visible in formal organizations and can usually be seen as prototypical instruments of organization and coordination (O'Reilly and Chatman 1996, Schauer 1991, Hauser 1995, Elster 1989). As such they must be treated as an explicit managerial mechanism for defining and limiting the behaviour of the organization and its members (March et al. 2000, Schulz 1998, Weick 1995, Weber 1978, Hayek 1973). Rules function through organizational routines and standard operating procedures and act as their background (Pentland and Feldman 2002). Through organizational routines and standard operating procedures (algorithms) they are implemented in the software of business information systems. Rules of behaviour have long been considered an alternative to anarchy (Parsons 1982). Organizational rules are a substitute for management supervision, or rules become a substitute for direct influence on situations (Zhou 1997). In the conditions of the use of information technology these statements require no elaboration. Organizations realize that following their own rules and paying attention to their changes is an essential strategy, although there are also assertions that rules are the source of action, but owing to variations in context they do not determine performance (Taylor 1993). From another point of view, organizational rules are a special form of organizational knowledge – explicit knowledge which is coded in the wording of the rules. They represent accumulated learning and the problem-solving process (March et al. 2000, Feldman 2000), which reflects learning within a given organi-

zation. They are the framework for the development of organizational knowledge as a response to internal and external pressures and demands. They also serve to encourage and initiate learning (Krstov and Pivka 2005).

Once they are collected, classified, modelled and codified as declarative statements, rules can be used in various ways: in routines and standard operating procedures (as instructions for everyday work), to support the taking of business decisions or implemented as "business logic" in the software of information systems. Due to the fact that they are a framework for knowledge, business rules are also interesting as methods in the field of knowledge management (Schreiber, Wieliga et al. 1993, Argote and Ingram 2000, Nelson and Winter 1982), that have numerous shared features with methods of developing information systems (Sharp 1994), and it would be useful to consider the potential advantages of integrating them (Chen, Kendal et al. 1997). Below we present organizational rules and describe their functioning in institutional and organizational setups. We then demonstrate their effect on the behaviour of members of organizations in the context of dynamic adaptation on the basis of a set of internal and external rules which are changed and improved in an interactive process in which information and knowledge are transferred. We conclude with findings and a discussion of the importance of the implementation of rules in the conditions of the use of information technology.

#### ENVIRONMENT WITH PERMANENT TECHNOLOGICAL CHANGES

Business environment is turbulent and puts pressure on organizations to effectively meet the fundamental changes that occur in social, political, technical, economic environment. We focused on the major technical and technological changes which evolve rapidly.

Every economic era, from the Agricultural Age, to the Industrial Age, to the Information Age, has its paradigms and principles, along with its technologies. The Agricultural Age had a paradigm of "managed" land and crops with principles of cultivation - technology was cultivation tools. The Industrial Age paradigm was "managed" work with principles of mass production and specialized labour - technology was power and machines applied to work. The Information Age paradigm is one of "managed" information with principles of resource management and collaborative work. The full power of information technology cannot be fully realized until business and information systems management comprehend and apply principles of resource management and collaborative work to information. (English L. 1999)<sup>1</sup>

IT has become inescapably intertwined with the operations of organizations, i.e. IT guarantees a breathtaking amount of power in reconfiguring the nature of work and the social conditions which regulate production and coordination activities. Costs of IT have dropped and organizations are focused with radically different trade offs over time as was trade off between processing power of IT and human effort with which organizations best meet the organizations objectives.

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<sup>1</sup> The notion of data as a byproduct of business processes is giving way to information as a direct product that has value beyond its immediate processes. Organizations that fail to recognize and manage information as a strategic business resource will fail in the realized Information Age.

IT which consists of a powerful collection of elements that have wide and significant applicability as modern information technologies, especially via the Web, provide inexpensive, fast, capable, reliable means of supporting communications, network computer systems, like the Internet, intranets, and extranets, are the enabling platforms that support communication. Technologies that followed built upon them. Electronic mail (e-mail), chat programs, newsgroups, listservs (electronic mailing lists), electronic bulletin boards, and inexpensive, effective desktop video conference systems for effective uses and the benefits of videoconferencing (Donston D. 2002)<sup>2</sup> require significant changes in organizations processes and roles played by individual employees.

IT basically has the ability (capacity) to alter fundamentally the nature of work in all work classes. Changes occur in process of production work and in the process of coordination activities. The use of information technology in production change a typical clerical work (ordering and paying) as well as work of engineers, designers, market researchers, which add value to the original information. (Financial transaction can be made in global markets anywhere in the world from any city). The use of information technology changes also the work of coordination activities, sharing distance and time. Organization memory (corporate data base) is future coordination activity, constructed for better management of organization.

The traditional organizational structures and processes in turbulent environment do not have to stay the same, organizations have to adapt to new conditions. All dimensions of an organization will have to be re-examined while implementing information technology and organisational change. Different groups within the organization have an essential role in ensuring efficiency in implementation of the information system. Patterns of technical and social system – coordinated change (or) alignment take place early, when the users pull the appropriate technology.

In global competition supply management emerges as a process of integrating the existing business activities (Vodopivec R. (2002a) Vodopivec, R. (2002b). Information technology has a unique impact on competitive climate. It is changing the nature of classic competition and it adds a new dimension of competition-interrelatedness. Competitive and technological forces do not permit any single organization to enjoy sustainable competitive advantages just from the use of information technology, but they arise from the human, organizational and system innovations.

Changes caused by permanent technical and technological changes can be managed with traditional theoretical approach of reengineering of business process, focused on structured coordination of people and information-change formal organization<sup>3</sup>. However, this takes time and as they accomplish the reengineering that process becomes stale.

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<sup>2</sup> The use of desktop videoconferencing systems has grown dramatically in the wake of the events of September 11, 2001. Even three-dimensional television systems have entered the market. Most of these technologies operate on the Web/Internet. Collaborative technologies that include the latest communication developments of electronic meeting systems (EMS) and electronic conferencing systems and services, generally use the Internet for connecting decision-makers.

<sup>3</sup> It is top down and assumes that it is easy to codify value creation and that organization compete in predictable environment. Business process reengineering initiatives usually replace the vertical, functional management paradigm with horizontal, process, or value-chain management principles.

The second approach is to adapt to the permanent technical and technological changes by knowledge management - business, that could capture the knowledge embedded in their organization. Using ideas and experience of employees, customers and suppliers to improve the organizations performance (Skapinker 2002). Information and communication technology facilitate explicit knowledge flows such as designing portals, intranets and group decisions support systems. A key objective is to create an environment for continuous learning and problem solving allowing the latest knowledge to be shared quickly.

To learn effectively employees need to interact with the environment in which the learning is to be applied so that the context from which they create meaning is relevant (Dewey, J 1916/1966). Technology solutions are frequently used to provide tools and techniques to capture, create, structure, communicate and effectively make use of knowledge resources. Existing technologies offer organizations a way to improve their efficiency and effectiveness mainly through explicit knowledge sharing.<sup>4</sup> They have to use the latest technology and tools available which allow quicker knowledge acquisition and knowledge transfer or otherwise they cannot successfully compete in global competitive climate. Organizations which learn more successfully (and quicker) than others can enjoy sustainable competitive advantages. For knowledge to flow across boundaries (functional, structural, cultural and national), there need to be appropriate 'translation mechanisms'.

Rules, procedures, taxonomies and operating policies are standard mechanisms that can be used to co-ordinate the flow of knowledge. Technology provides the standardization mechanism for sharing learning and knowledge across organizational boundaries, which is the key to improving capability, the use of rules and procedures as an efficient way of converting tacit knowledge into readily comprehensible explicit knowledge (Grant, 2002). Therefore in the environment of permanent technological changes, the dynamic effect of rules is an important mechanism that can be used to co-ordinate the flow of knowledge and influence the behaviour of members of organizations which are pillars of knowledge based management.

#### ORGANIZATIONAL RULES

The word rule is used in broad and varying contexts and understood in various ways (March et al. 2000). Some organizational rules refer to the operations of an organization, while others refer to other organizational concepts. Institutional and organizational culture, norms, customs and values could be viewed as types of non-business (soft) organizational rules which create and trigger a set of behavioural mechanisms. For organizations the most important rules are those which set limits and guidelines with regard to business processes (hard) and within them with regard to business transactions.

Organizational rules which limit and guide the behaviour of the operations of an organization are defined as the business rules of the organization (BRG 2000, March et al. 2000, von Halle 2002, Date 2000, Ross 2003). Hodgson (1997) states that the main characteristic of rules is that they are defined by a logical structure (condition/action): in cir-

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<sup>4</sup> De Santis G and Gallupe R.B. 1987 Classifying IT communication support technologies.

cumstance (condition) X, do Y. If *condition* then *action* or else *action* is a clear, simple expression of a rule which can be "understood" by the average user.

Computer programs are full of such statements, which set algorithms for the behaviour of computer programs, and through this also of business processes. This is appropriate and understandable as long as they are not connected with organizational rules and various perspectives on them. A written sentence is only the technological implementation of business rules in the syntax of a certain procedural programming language and is far from the notation of rules in an organizational context. 'Business rule' is an organizational category, and only the subset of the organizational rules which have been adopted by the organization is included in its information system. Therefore definitions (Bevington 2004, Herbs et al. 1996, Elmasari and Navathe 1994, Widom and Ceri 1996), which present rules simply as some sort of demand with respect to the building of an information system are not suitable. From the organizational point of view rules are the formal codified elementary business statements (expressions and facts) and limitations (including conditions), implemented in organizational practice, which limit and maintain the behaviour (carrying out of activities) of the organization (Krstov 1995), (Krstov 2007).

#### INSTITUTIONAL AND ORGANIZATIONAL SETUPS AS SOURCES OF RULES

Organizations can be viewed as closed systems with recognizable, normative and regulated structures, which originate in the external environment (Scott 1995). Changes to external structures usually result in isomorphic changes in the behaviour and structure of an organization. The appearance of more sophisticated behaviour patterns is a direct consequence of a higher number of interactions and forms of hierarchy within the organization and external institutions. Rules play an active role in framing the institutional notation of legitimate behaviour. At the same time, human activities are guided by cultural notations of legitimacy, which are reflected in rules. From the institutional viewpoint, rules articulate and maintain the established structure of legitimacy. On the other hand, suitable rationality of the behaviour of the individuals within an organization is achieved if their behaviour is aligned with "internal models" of behaviour (Holland 1998). Internal models assist the individual in creating assumptions and accepting expectations about what constitutes appropriate behaviour in a given situation. Using their "natural" abilities and capacities for learning, individuals search for ways of conducting themselves appropriately in new situations by ordering schemes of assumptions and mental pictures of future events.

The environment in which the organization is developed, established and functions constitutes a "social activity system" (Skok and Legge 2001). The environment of an organization and the organization itself have their own setups, such as: institutional legal order, national and organizational culture, professional standards, organizational routines, standard operating procedures, organizational regulations and rules, within which the organization must function. Institutional and organizational setups are the fundamental sources of organizational rules and as such have a major influence on their functionality, see figure 1.

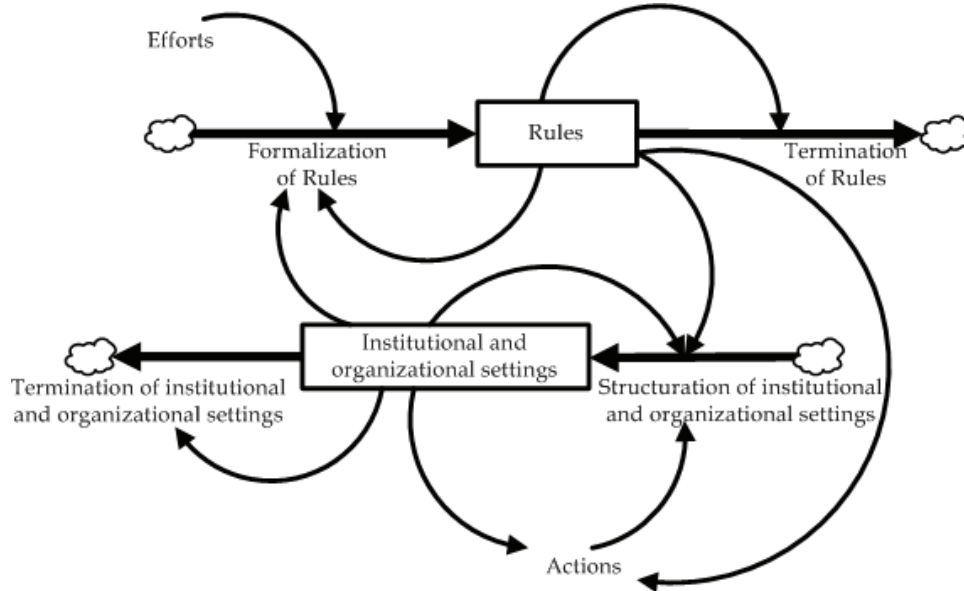


Fig. 1. The effect of institutional and organizational setups on rules

Changes in institutional or organizational setups cause changes in rules. Feedback about the capacities (knowledge is the main factor of capacity) of an organization provides the support for the repeat imposition of rule-forming mechanisms. The organization's positive capacities promote the rules' becoming more permanent; they therefore become routine and part of procedure. This is a more tangible form of support for rules, since when the organization's capacities are positive, the organization understands the rules as useful. It is more satisfied with the rules and there is no interest in deviation. If the results are good, there is no reason to change. If the capacities are not increased, the organization sees the reason for this in the fact that there is insufficient and unsuitable interaction with the rules.

Changes in the institutional environment cause changes in the rules. Rules are eliminated and consciously substituted. The elimination of rules is a consequence of non-functionality in new circumstances.

THE DYNAMIC EFFECT OF ORGANIZATIONAL RULES  
ON THE BEHAVIOUR OF THE ORGANIZATION

An organization is an adaptive evolutionary system that includes various participants, various capabilities and capacities for interaction, adaptation, responding and constant changing of behaviour patterns and structures which are helpful for achieving the set objectives. It carries out a large number of organizational processes, which are a set of logically connected executive actions for achieving defined business results. In general, work processes are more or less well-researched and explained.

Analysing what the organization does (or more precisely what its members do) can be viewed as an excellent starting point for finding out what the organization should be doing.

One of the ways of describing, at a detailed level, what the organization should be doing, is to describe behaviour. Behaviour is the alignment of one or more actions with their conditions. Carrying out a task is the result of the possible implementation of a specific behaviour.

This result includes the actions which take place, the effects which are achieved through these actions and the instructions on how the actions are supposed to take place in connection with individual instances of implementation. The actions are the intentional and reasonable behaviour of human beings. People engage with the world in order to create something different. An important distinction is made between the results of actions and the effects of actions (Goldkuhl and Melin 2001).

The *results* of actions lie within the scope of the efforts of the participants. The *effects* of actions can appear as a consequence of the actions and are out of the control of the participants. The actions can be communications acts or physical acts. Physical actions are considered to be social actions if they are aimed directly at other persons (Goldkuhl and Melin 2001). Depending on its environment or on internal indeterminacy, a specific behaviour can be implemented in numerous different ways.

However, in organizational operations there may not be various undefined ways, but several ways which are formally and completely determined in advance by rules. When we use the expression behaviour of an organization (alternative expressions used to describe behaviour are transactions, activities, processes), what do we have in mind? That the organization is carrying out activities? Or that the members of the organization are carrying out activities? In fact, we are thinking that one and the other activity are being processed at the same time at the level of the individual member of the organization and at the level of the organization. Here the effects of each individual member are not counted separately; what we are considering is the synergistic effect at the level of the organization. Organizational activities are always performed by a person with her or his co-workers or other organizational entities on behalf of the organization, i.e. human activities in an organizational role (Ahrne 1994, Taylor 1993). Or as Nelson and Winter state (1982: 72), there is a "weighted equivalence between the value of an individual behaviour as a metaphor for organizational behaviour".

In their view, organizational behaviour includes routines which are metaphorically equivalent to individual experiences. As experiences, routines represent a permanent ordering of actions, which are triggered by precisely defined triggers, in a precisely defined context, and are in some sense the memory of the organization in which they are carried out. On the basis of these definitions, it can be stated that a performed action is at the same time the action of the organization and the action of the members (authorized personnel) of the organization. A model which shows and generates explanations for behaviour (carrying out activities) on the basis of organizational rules is shown in figure 2.

The model includes the effects of understanding rules and their effects on the behaviour of members and vice versa. It emphasizes two types of processes: the process of validation of rules and the process of validation of behaviour. These two processes are mechanisms with which members of an organization align the models of rules and be-



haviour, which then represent the real situation. The basic mechanism used is comparison and alignment of a perceived model of behaviour with the perceived rules.

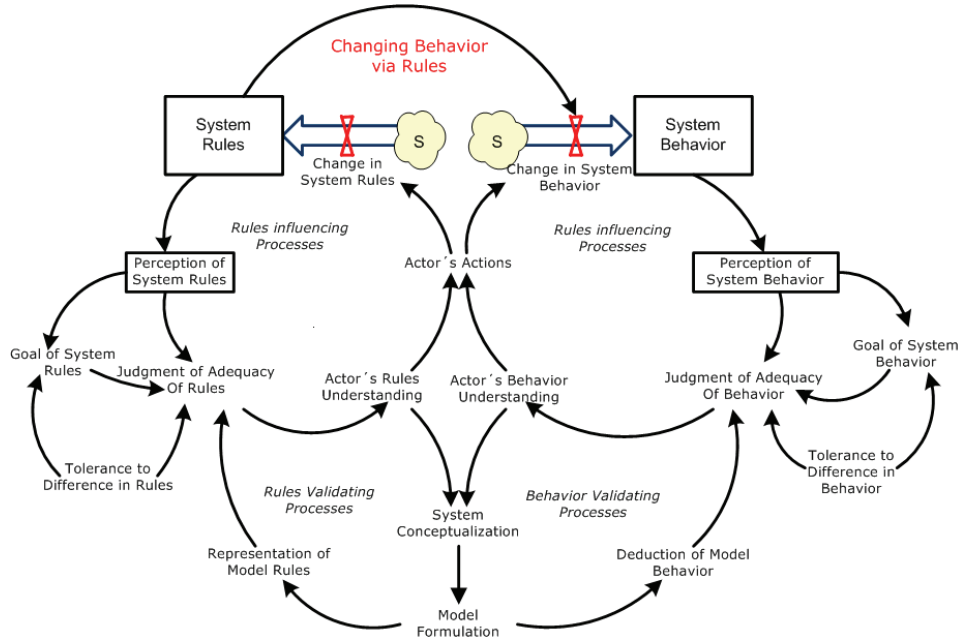


Fig. 2. Dynamic effect of rules on the behaviour of an organization

The process of influencing behaviour loop is identified by a method by which, as a result of being aware of the rules, the members obtain a cue for reality and generate actions or adapt their behaviour. These actions have to become of a type which could be called the parameters of adapting behaviour, which does not however change the rules. This loop can be connected with what Argyris and Schön (1996) call a "simple learning loop".<sup>5</sup>

The process of affecting the rules loop is connected in a similar manner as the process of affecting behaviour loop, but is linked with an established system of rules. The manner of learning about the system of rules and behaviour and changing them must be structured. The above-described processes help to identify two different "simple learning loop" processes: simple learning of behaviour loop and simple learning of rules loop.

<sup>5</sup> *Single-loop learning* occurs when errors are discovered and eliminated, while the organization continues with its current policy and in the framework of its existing system of rules. According to Dodgson (1993), single-loop learning can be equated with activities which add specific competences or routines to the knowledge base of the organization without changing the basic nature of the organizational culture, policies, routines, procedures and rules. Single-loop learning can also be seen as low-level learning (Fiol and Lyles 1985), adaptive learning or copying (Senge 1990) or as non-strategic learning (Mason 1993).

## SIMPLE LEARNING OF BEHAVIOUR LOOP

Models of behaviour based on established organizational rules help individuals to form assumptions and accept expectations about what constitutes appropriate behaviour in a given situation. Then, the general knowledge becomes fixed in the individual or organizational memory. People learn what sorts of behaviour are acceptable and what are not. Selection schemes function through rules and routines which are more or less explicit and which determine in advance the occasion of the testing of specific variants and the elimination of others (Miller 1999).

Using their "natural" abilities and capacities for learning, individuals search for ways of conducting themselves appropriately in new situations by ordering schemes of assumptions and mental pictures of future events, i.e. they create routine behaviours. Routine behaviours are based on "routine thinking", i.e. on the subconscious application of rules which allow the individual to save mental effort. In order to avoid confusion and indicate the complexity of collective, repeating patterns of activity, the expression 'routine behaviour' is used instead of 'routine'. People think and act schematically. This means that they store information in their memories as schemes and recall them when they are needed (Isenberg 1984, Hastie 1981, Kellogg 1995).

The schemes and patterns play a key role in theories of cognitive informatics and their roles in the management of organizations (Manheim and Isenberg 1987, Manheim and Fritz 1998, Medina 1999). Patterns are desired templates for thinking and behaviour. Some patterns are derived from observed schemes in the process of reformulating tacit knowledge into explicit knowledge, while other patterns are derived from theory and practice in the field, as summaries of conclusions and/or through individual or collective thinking and discussion (Alexander 1979, Gamma et al. 1995, Rising 1998, Medina 1999).

Still other patterns can be derived from normative acts, i.e. are patterns that reflect organizational objectives, policies and rules. Patterns are keys to the support of knowledge management and increasing individual or organizational knowledge. Medina (1999) shows the interaction between schemes and patterns, which reflect Nonaka's theory of creating knowledge and learning (Nonaka and Takeuchi 1995).

It is clear that tacit knowledge is implicit in the schemes, while the patterns reflect explicit knowledge. In numerous practical applications, patterns are usually grouped into clusters called knowledge clusters (Medina 1999). Since the clusters place the patterns into mutual relations, they appear as entities which are thus easier to understand and can be taught more successfully than a large number of unorganised and disconnected patterns.

## SIMPLE LEARNING OF RULES LOOP

Carrying out activities is not static but dynamic, and individuals attempt to find satisfactory ways to do their own work. Activities are carried out within an organization – internal activities or external activities vis-à-vis other organizations in the framework of institutional and organizational setups. Each member of an organization makes selections more or less automatically, through a learning process of accretion, while performing their everyday work. The process of learning from mistakes creates knowledge which

accumulates and is implemented in organizational rules, procedures and routines (Levitt and March 1988, Mills and Murgatroyd 1991).

This knowledge creates a "mental model" which is a "vision of the world" (Carlsson and Eliasson 1994), which connects certain actions with certain results in the memory of the members of an organization, i.e. contributes to the pattern of the internal selectable environment. Organizational routines, procedures and rules play the role of an information filter. This process explains the appearance and development of organizational routines, procedures and rules. The level of satisfactoriness depends on the selected pressures and aspirations of the management (highest level (top)) and the perceptive abilities of the members of the organization (Nelson and Winter 1982).

In reducing the amount of potential combinations it is especially important how the rules are combined within routines and standard operating procedures. In the phase of combining successive activities, a large number of rules can reduce the field of allowable successive activities and consequentially reduce the ambiguity which arises when there are several possibilities or a large number of outlets (Weick 1976, p. 6).

In order to avoid a flood of combinations, the range of possibilities must be reduced. The need to achieve congruence between the specific components, production routines and demands affects the existence of "deep structure" (Drazin and Sandelands 1992), which is a set of rules about how to combine routines and procedures in a production cycle.

Deep structure arises from successful interactions of positive production feedback from routines, i.e. the feedback of useful applications of knowledge and behaviour. In this way a sort of "generative grammar" is shown as a large number of described or structured rules for a collective space, while an "interactive grammar" defines the limits in practice. Grammar and order are well-known concepts in the literature on organizational dynamics (Pentland 1995, Pentland and Reuter 1994).

In the same way, these two learning processes could be treated as a type of "single loop", as long as the variability of the main sources of learning – systems of rules and systems of behaviour – are seriously defined.

#### CHANGING BEHAVIOUR THROUGH CHANGING RULES LOOP

The loop of changing behaviour through changing rules identifies a trend in which members change a system of behaviour by making changes to the system of rules, and is connected to what Argyris and Schön (1996) call "double-loop learning".<sup>6</sup> The members of an organization assess the perceived and assimilated behaviours and system of rules (with regard to the objectives and standards), in order to generate activities through which they could change the perceived reality. The activities will be triggered when the existing gap between the perceived actual situation and the target is larger than tolerance which

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<sup>6</sup> *Double-loop learning* occurs when in the process of discovering and eliminating errors, an organization questions and changes its existing culture, policies, routines, procedures and rules. Double-loop learning includes changing the organizational knowledge base or the organization's specific competences and routines (Dodgson 1993). Double-loop learning can also be considered as high-level learning (Fiol and Lyles 1985) or strategic learning (Mason 1993).

the members have for the existence of such a gap. Lower tolerance and a larger gap must in fact trigger mechanisms aimed at changing the actual situation (in our case rules and behaviour). A theoretically "super tolerant" member would never take measures to respond to the gap, since for him the gap is an insufficient reason for taking action. On the contrary, an "intolerant" member will immediately set off a profusion of uninterrupted activities as a response to small perceived differences. During implementation the activities and their effects are closely monitored. Continuous monitoring sometimes allows the possibility of changing the activities during implementation.

Interests within the organization are clearly disparate, and members use the available inclinations, interpret them and apply them not always in accordance with management objectives; from the top down they can bend the rules for their own individual interest. The expectation that every member will be prepared to subordinate themselves to rules in which they do not believe and do not comprehend on a personal level is more than illusory.

Of course, drawing absolute conclusions from these findings would be inappropriate. The interpretation of the rules would then generate conflict between management and members. Regulation within the organization is clearly conditioned by the intensity of the battles in this area, and the rules which arise are also the result of the strategies of the participants. Crozier and Friedberg (1977) emphasize this argument in defining "zones of uncertainty" in connection with organizational rules. The authors demonstrate that hierarchically stronger persons interpret the rules depending on their possibilities more or less accurately (for example observing arrivals at work) and use them as a source of power, since they can change their "tolerance" in order to gain the cooperation of the members and if necessary they can threaten them with even more rigorous application of the rules.

The question automatically arises of whether it is possible to change the rules on the basis of changing behaviour. The processes through which members change or eliminate existing rules and actuate the changing of behaviour are not always understandable, clear and in accordance with management policy. Although routine behaviour creates stability, at the same time it also creates instability and change, when employees use the existing rules in order to search for solutions to unexpected and unknown problematic situations for which the currently existing rules are insufficient (March et al. 2000). Within the limitations of formally defined roles, the members of an organization cannot refuse responsibility for organizational expectations without risk.

The formalizing of obligations for every role (behaviour of members) is carried out with the help of routines, rules and standard operating procedures. As a consequence, the organization can face its members with the high "importance of behaviour", behaviour with which it is not necessary that the members of the organization agree.

In such cases this can lead to the creation of "spontaneous" organizational rules (Hayek 1978), which are not formalized organizational rules and instruments of the organization, but are potential "material" from which the organization, if it accepts them, creates organizational rules. It is difficult to imagine spontaneous actions of members of organizations employed in accounting or information systems, and such actions are also less acceptable.

## CONCLUSION

Business environment is turbulent and puts pressure on organizations to effectively meet the fundamental changes that occur in social, political, technical, economic environment. We focused on the major technical and technological changes which evolve rapidly.

Every economic era, from the Agricultural Age, to the Industrial Age, to the Information Age, has its paradigms and principles, along with its technologies. The full power of information technology (IT) cannot be fully realized until business and information systems management comprehend information as a direct product that has value beyond its immediate processes and apply principles of resource management and collaborative work to information. Organizations that fail to recognize and manage information as a strategic business resource will "fail", because in global competition IT has a unique impact on competitive climate. It is changing the nature of classic competition and adds a new dimension of competition - interrelatedness.

Competitive and technological forces do not permit any single organization to enjoy sustainable competitive advantages just from use of information technology, but they arise from the human, organizational and system innovations. IT has become inescapably intertwined with the operations of organizations, i.e. IT guarantees a breathtaking amount of power in reconfiguring the nature of work and the social conditions which regulate production and coordination activities. Information technology costs have dropped and organizations are focused with radically different trade offs over time as was trade off between processing power of IT and human effort with which organizations best meet the organizations objectives.

IT basically has the ability (capacity) to alter fundamentally the nature of work in all work classes. The traditional organizational structures and processes in turbulent environment do not have to stay the same, organizations have to adapt to new conditions. Changes caused by permanent technical and technological changes can be managed with traditional theoretical approach of reengineering of business process, focused on structured coordination of people and information-change, formal organization but this takes time and as organizations accomplish the reengineering that process becomes stale. The second approach is to adapt to the permanent technical and technological changes by knowledge management - business, that could capture the knowledge embedded in their organization.

Information and communication technology facilitate explicit knowledge flows such as designing portals, intranets and group decisions support systems. Technology solutions are frequently used to provide tools and techniques to capture, create, structure, communicate and effectively make use of knowledge resources. Existing technologies offer organizations a way to improve their efficiency and effectiveness mainly through explicit knowledge sharing. A key objective is to create an environment for continuous learning and problem solving allowing the latest knowledge to be shared quickly.

Organizations have to use the latest technology and tools available which allow faster knowledge acquisition and knowledge transfer or otherwise they cannot successfully compete in global competitive climate. Organizations which learn more successfully (and quicker) than others, can enjoy sustainable competitive advantages. For knowledge to flow across boundaries (functional, structural, cultural and national), there need to be ap-

propriate 'translation mechanisms'. Rules, procedures, taxonomies and operating policies are standard mechanisms that can be used to co-ordinate the flow of knowledge. Technology provides the standardized mechanism for the use of rules and procedures as an efficient way of converting tacit knowledge into readily comprehensible explicit knowledge across organizational boundaries, which is the key to improving capability.

Organizational rules are instruments (mechanism) which arise from institutional and organizational settings. Changing the system of rules changes the behaviour of the members of the organization so that the members actually obtain new knowledge through the process of learning the new rules, which are carriers of knowledge. Institutional and organizational settings are sources of rules and factors in the continuous change of rules. The dynamic quality of the changes is the reason for continuous learning, which results in changes in the behaviour of members of the organization. Therefore in the environment of permanent technological changes, the dynamic effect of rules is an important mechanisms that can be used to co-ordinate the flow of knowledge and influence the behaviour of members of organizations which are creators of information - strategic business resources and pillars of sustainable competitive advantages arisen from the human, organizational and system innovations, foundations of knowledge based management.

The above stated is an "espoused theory" which are not guaranteed mechanisms for the implementation of organizational rules, i.e. is not a guarantee that the rules are active in the procedures and routines within the business context. This, however, is the subject of further research.

#### REFERENCES

1. Ahrne, G. (1994) *Social Organizations, Outside and Between Organization*, Sage, London
2. Alexander, C. (1979) *The Timeless Way Of Building*, Oxford University Press, NY
3. Argote, L. and Ingram, P. (2000) Knowledge Transfer: A Basis for Competitive Advantage in Firms, *Organizational Behavior and Human Decision Processes*, Vol. 82, No. 1, p. 150-169
4. Argyris, C. and Schön, D. (1996) *Organizational learning II: Theory, Method, and Practice*, Addison-Wesley, NY
5. Argyris, C. and Schön, D. (1974) *Theory in Practice*, Jossey-Bass, San Francisco,
6. Bevington, D. (2004) ASL - A Formal Language For Specifying A Complete Logical System Model (Zachman Row 3) Including Business Rules, *Business Rules Journal*, Vol. 5, No. 1 (January 2004), URL: <http://www.BRCommunity.com/a2004/b167.html>
7. Bogataj, M., Bogataj, L. and Vodopivec, R. (2004) Stability of perishable goods in cold logistic chains. *Int. j. prod. econ.*
8. Bogataj, M., Bogataj, L. and Vodopivec, R. (2003) Modelling the influence of human resources and investments in North Adriatic Ports Area over oligopoly position of these ports. V: The international workshop on Harbour, maritime and multimodal logistics modelling & simulation: HMS 2003, September 18-20, Riga, Latvia. Riga: DMS, Riga Technical University; Genova: DIP, Università, p. 40-45, ilustr.
9. Bogataj, M., Bogataj, L. and Vodopivec, R. (2004) Net present value of the global supply chain activities in the distance functions of lowry-like models. V: BOGATAJ, Ludvik (ur.), CHIKAN, Attila (ur.), FAHRNI, Fritz (ur.), GELDOF, Bob (ur.), GRUBBSTRÖM, Robert W. (ur.), HENNET, Jean- Claude (ur.), HINTERHUBER, Hans H. (ur.), KINGSMAN, Brian G. (ur.), LUNDQUIST, Jenerik E. (ur.), O'BRIEN, Christopher (ur.), PECCATI, Lorenzo (ur.), RAICH, Margit (ur.), ROS MCDONNELL, Lorenzo B. (ur.), SCHNEEWEISS, Christoph A. (ur.), SILVER, Edward Allen (ur.), TABUCANON, Mario T. (ur.), TWOMINEN, Markku (ur.), WYBARK, Clay D. (ur.), WIJNGAARD, Jacob (ur.), ZAPFEL, Günter (ur.). *Pre-prints: thirteenth international working seminar on production economics:*

*papers scheduled for Tuesday February 19 8.45am to 21.15pm in Kongresszentrum IGLS Innsbruck, Austria. Volume 1.* Innsbruck: Kongresszentrum IGLS, 2004, p. 47-58, ilustr.

10. Business Rules Group (2000) Defining Business Rules-What Are They Really?, Final Report rev.1.3.
11. Carlsson B. and Eliasson G. (1994) The nature and Importance of Economic Competence, *Industrial and Corporate Change*, 3(3), 687-711
12. Chen, X., S. Kendal, et al. (1997). "Towards an Integrated Method for Hybrid Information System Development." *Software Engineering. IEE Proceedings* 144(5-6): 261-269.
13. Date, C. (2000) *What Not How: The Business Rules Approach To Application Development*, Addison Wesley Longman Inc
14. De Santis G and Gallupe R.B. (1987) *A Foundation for the Study of Group Decision Support Systems*, Management Science, Vol. 33 No5.
15. Donston D. (2002) "Web conference call eWeek" July 1
16. Drazin R. and Sandelands L. (1992) Autogenesis: A Perspective on the Process of Organizing, *Organization Science*, 3(2) 230-249
17. Dewey, J (1916/1966) *Democracy and education*: New York The Free Press
18. Elmasri R. in Navathe S. (1994) *Fundamentals of Database Systems*. The Benjamin/Cummings Publishing Company, Inc., Redwood City, CA
19. Elster J. (1989) *Nuts and Bolts for the Social Sciences*. Cambridge University Press, Cambridge
20. English L. (1999) *Improving Data Warehouse and Business Information Quality*, John Wiley & Sons, Inc. New York
21. Feldman, M. (2000) Organizational routines as a source of continuous change, *Organization Science*, 11(6) 611-629
22. Fiol, C. and Lyles, M. (1985) Organizational learning. *Academy of Management Review*, 10(4) 803-813.
23. Gamma, E., Helm, R., Johnson, R. and Vlissides, J. (1995) *Design Patterns: Elements Of Reusable Object-Oriented Software*. Addison-Wesley, Reading, MA.
24. Hastie, R. (1981) Schematic Principles in Human Memory v (Higgins, E., Herman, C. in Zanna, M. (ed.): *Social Cognition, The Ontario Symposium On Personality And Social Psychology*, Lawrence Erlbaum Associates, Hillsdale, NJ
25. Hauser, M. (1995) Better Rules for Better Decisions. *Sociological Methodology*, 25, p. 175-183.
26. Hayek, F. (1973) *Law, Legislation and Liberty*. Vol. 1: Rules and Order. Routledge & Kegan Paul, London
27. Herbst, H., Knolmayer, G., Myrach, T., in Schlesinger, M. (1994).The specification of business rules of selected methodologies: *IFIP Working Group 8.1 Conference CRIS 94*, University of Limburg, Maastricht, p. 29-46.
28. Hodgson, G. (1997) The ubiquity of habits and rules. *Cambridge Journal of Economics*, 21(6) 663-684
29. Holland, J. (1998) *Emergence, From Chaos to Order*, Oxford University Press, Oxford, UK
30. Isenberg, D. (1984) How senior managers think, *Harvard Business Review*, November-December, p. 81-90.
31. Krstov (1995) Unpublished Master's thesis
32. Krstov (2007) Unpublished Ph.D. thesis
33. Krstov, L. and Pivka, M. (2005) Organizacijska pravila kot nosilci in spodbujevalci organizacijskega znanja, *Sinergija metodologij*, 24. mednarodna konferenca o razvoju organizacijskih znanosti, Portorož, Slovenia, 15.- 17.3.2005, p.896-903
34. Levitt, B. and March, J. (1988) Organizational learning. *Annual Review of Sociology*, 14, p. 314-40.
35. Manheim, M. and Fritz, M. (1998) Information Technology Tools to Support Virtual Organization Management: A Cognitive Informatics Approach, v (Sieber, P. in Griese, J. (ed.): *Organizational Virtualness, Proc. of the VoNet Workshop*, April 27-28, Simowa Verlag, Bern, p.98-114
36. Manheim, M. and Isenberg, D.(1987) A theoretical model of human problem-solving and its use for designing decision support systems, in *Proc. 20th Hawaii Intl Conf. On System Sciences* (Stohr, K. and Edward, A.ed.s.), Vol. I, Western Periodicals Co, North Hollywood, CA, p. 614-627.
37. March, J., Schulz, M. and Zhou, X. (2000) The dynamics of rules. *Studies of change in written organizational codes*, Stanford University Press, Stanford, CA
38. Mason, R.M. (1993) Strategic information systems: Use of information technology in a learning organization. *Proceedings of the Twenty-Sixth Hawaii International Conference on System Sciences '93*, CA: IEEE Press, 840-849.
39. Medina, V. (1999) *Patterns of Work: Exploring Ways of Working in Logistics Management*, Unpublished Ph.D. dissertation, Northwestern University, Evanston, Illinois

40. Miller, D. (1999) Selection processes Inside Organizations: the self-reinforcing consequences of success. In J.A.C. Baum and B. McKelvey (ed.). *Variations in Organization Science*, p.93-112
41. Mills, A. and Murgatroyd, S. (1991) *Organizational Rules: A Framework for Understanding Organizational Action*, Milton Keynes, Open University Press
42. Nelson, R. and Winter, S (1982) *An Evolutionary Theory of Economic Change*. Harvard University Press, Cambridge, MA
43. Nonaka, I. and Takeuchi, H. (1995) *The Knowledge-creating Company*. Oxford University Press, New York
44. O'Reilly, C. and Chatman, J. (1996) Culture as social control: Corporations, cults, and Commitment, *Research in Organizational Behaviour* 18, p. 157-200
45. Pentland, B. and Reuter, H. (1994) Organizational routines as grammars of action. *Administrative Science Quarterly*, 39(3)484-510
46. Pentland, B. T. (1995) Grammatical Models of Organizational Processes. *Organization Science*, 6(5) 541-556.
47. Pentland, B. and Feldman, M. (2002) Organizational Routines as a unit of analysis, *Industrial and Corporate Change*
48. Rosenbaum, H. (1997) Notes on a structural view of digital information in organizations. Working Paper No. WP-97-06, Bloomington, Indiana USA  
<http://php.ucs.indiana.edu/~hrosenba/Papers/ASIS971.html> /10.12.2003
49. Ross, R. (2003) *Principles of the Business Rule Approach*, Addison-Wesley Information Technology Series
51. Skapinger M. (2002) *The change agenda*, London: CIPD
52. Schauer, F. (1991) *Playing by the Rules: A Philosophical Examination of Rule-Based Decision-Making in Law and in Life*, Clarendon Press, Oxford
53. Schreiber, G., B. Wieliga, et al. (1993) *KADS: A Principled Approach to Knowledge-Based System Development*, Academic Press.
54. Schulz, M. (1998) Limits to bureaucracy growth: the density dependence of organizational rules birth, *Administrative Science Quarterly*, 43, p.845-876.
55. Scott, W. (1995) *Institutions and Organizations*, Thousand Oaks, Sage Publications, CA
56. Senge, P.M. (1990) The leader's new work: Building learning organizations. *Sloan Management Review*, Fall: 7-23.
57. Sharp, H. (1994) *Knowledge Acquisition or Requirements Analysis? Proceedings of The Second International Conference on Expert Systems for Development*. Los Alamitos, CA, USA, *IEEE Computer Society*: 63-65.
58. Skok, W. and Legge, M. (2001) Evaluating enterprise resource planning systems using an interpretive approach. *Proceedings of the 2001 ACM SIGCPR conference on Computer Personnel Research*, San Diego, April 2001, p.189-197.
59. Taylor, R. (1993) *Rethinking the Theory of Organizational Communication: How to Read an Organization*, Ablex, Norwood, UK
60. Vodopivec, R. and Jelaska, M. (1988) *Management information system*, Institute of Transportation Ljubljana,
61. Vodopivec, R. (2002a) Economic integration and regional economic development in Northern Adriatic region. V: Cicin-Sain, B. (ur.), Pavlin, I. (ur.), Belfiore, S. (ur.). *Sustainable coastal management: a transatlantic and Euro-Mediterranean perspective*, NATO science series, Earth and environmental sciences, vol. 12, No. 4. Dordrecht; London: Kluwer Academic Publishers, p. 161-172.
62. Vodopivec R. (2002b) The Napan project: globalisation and development of intermodal logistics in the North Adriatic region. *Financ. times FT Business (Lond. ed.)*, October/November, 12-13, London
63. Vodopivec, (R. 2002c) Intermodal logistics and the regeneration of ports in the NAPAN project. International conference network, June 4-7, London: World free zone convention, London
64. Von Halle, B. (2002) *Business Rules Applied: Building Better Systems Using the Business Rules Approach*, John Wiley & Sons
65. Weber, M. (1978) *Economy and Society*, University of California Press, Berkeley, CA
66. Weick, K.E., (1976) Educational Systems as Loosely Coupled Systems. *Administrative Science Quarterly*, 21, 1-19.
67. Weick, K. (1995) *Sensemaking in Organizations*. Thousand Oaks, Sage, CA
68. Widom, J. in Ceri, S. (1996) *Active Database Systems: Triggers and Rules for Advanced Data Processing*, Morgan Kaufmann, San Mateo, USA



69. Goldkuhl, G. and Melin, U. (2001) Relationship Management vs. Business Transactions: Business Interaction as Design of Business Interaction, *10th International Annual IPSERA Conference*, Jönköping International Business School, p. 9-11
70. Yates, J. and Orlikowski, W. (1992) Genres of organizational communication: A structural approach to studying communication and media. *Academy of Management Review*, 17(2) p.299-326.
71. Zhou, X. (1997) Organizational decision making as rule following, In Shapira, Z. (ed.) *Organizational Decision Making*. Cambridge University Press, New York, p. 257- 281
72. Zuboff, S. (1988) *In the Age of the Smart Machine: The Future of Work and Power*, Basic Books, New York

## **MENADŽMENT ORGANIZACIJE U LANCU SNABDEVANJA SA DINAMIČNIM EFEKTOM ORGANIZACIONIH PRAVILA**

**Robert Vodopivec, Ljupčo Krstov**

*Tradicionalne organizacione strukture i procesi uz lance vrednosti širom sveta u turbulentnom poslovnom okruženju, moraju se neprestano prilagodavati novim uslovima. Poslovno okruženje nameće pritisak organizacijama da efektivno izlaze u susret fundamentalnim promenama. Fokusiramo se na glavne tehničke i tehnološke promene koje se brzo menjaju. U globalnoj utakmici informacione tehnologije imaju jedinstven uticaj na konkurentnu klimu, one menjaju prirodu klasične utakmice i dodaju novu dimenziju konkurentnosti - međusobnu povezanost. Konkurentstke i tehnološke sile ne dozvoljavaju nijednoj organizaciji da uživa u održivoj konkurentskoj prednosti samo upotrebom informacionih tehnologija, već i upotrebom ljudskih, organizacionih i sistemskih inovacija. Organizaciona pravila su instrument (mehanizam) koji proističe iz institucionalnih i organizacionih podešavanja. Institucionalna i organizaciona podešavanja su izvor pravila i faktora u kontinuiranoj promeni pravila. Dinamički kvalitet promena je razlog za kontinuirano učenje, koje rezultira u promenama ponašanja članova organizacije. U uslovima permanentnih tehnoloških promena, dinamički efekat pravila je bitan mehanizam koji se može koristiti za koordinaciju tokova znanja i uticaj na ponašanje članova organizacije, koji su kreatori informacija - stratejski poslovni resursi i održiva konkurentska prednost proistekla iz ljudskih, organizacionih i sistemskih inovacija. Zbog toga je srž naših istraživanja dinamički efekat pravila na ponašanje članova organizacija u uslovima permanentnih tehnoloških promena.*