The interplay between cognitive styles and organisational change*

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In the process of organisational change, there are two broad categories of employees' reactions: those who are open to change and those who have a difficult time accepting change in general, including organisational change. These differences can be linked to differences in cognitive style. Our hypotheses were tested and confirmed in two companies in different industrial sectors in Serbia (N=265). The results showed that cognitive style was a strong single predictor of general attitudes towards organizational change. We have proposed a procedure for obtaining the index of dispositional readiness for change, which is of critical importance for planning different strategies of change management.

Key words: organisational change, cognitive style, employee's reactions, index of dispositional readiness for change, strategic planning (JEL: J24, L20, M54)

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* Manuscript received: 13.03.2013, accepted: 20.01.2015 (3 revisions)

Acknowledgment*:* This paper is the result of projects No. III 47008 and No. 179018 financially supported by the Ministry of Science and Technological Development of the Republic of Serbia (2011–2015).

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JEEMS, 21(1), 35-59 DOI 10.1688/JEEMS-2016-Durisic-Bojanovic
ISSN (print) 0949-6181, ISSN (internet) 1862-0019

The volatility of the business world significantly affects the relationship between economic, financial and psychological parameters. The basis of effective strategic planning is a sufficiently adequate organisational response to the assumed relevant parameters in the competitive markets environment marked by uncertainty and ill-structured problems (Spiro et al. 1988; Prahald/Hamel 1990; Canas et al. 2003; Bordia et al. 2004; Baron 2006; Santos-Alvarez et al.2012). Faced with the need to find different and new business approaches, some companies are trying to imitate successful ones, others are trying to find original, innovative solutions, and some to combine these two strategies (Barr et al. 1992; O'Reilly/Tushman 2004; Nonaka/Toyama 2002, 2005; Kleinbaum/Tushman 2007; Jansen et al. 2009; Raisch et al. 2009; Powell et al. 2011). Post-socialist economies, or economies in transition, such as Serbia, are facing the challenges of radical ownership alongside strategic, structural, personnel, technological, and cultural changes (Graber/Stark 1997; Bogićević Milikić et al. 2008; Vukonjanski et al. 2012; Poór 2012). Generally speaking, two dominant views influence the direction of strategic actions: the "economic view," and the "cognitive view". The "economic view," assumes that industry structure has a primary influence on strategic action. The economic paradigm of organisational change is focused on economic incentives, restructuring, layoffs and reductions, and the legitimate criterion of success is measured through the value of stock markets. The "cognitive view" presupposes that managerial cognition drives strategic action. That assumption follows the principles of the cognitive approach which focuses on the psychological characteristics, skills and knowledge of the employees. The corporate culture and attitudes and behaviours of employees are crucial for the process of organisational change, and success is measured by the extent to which the organisation learns from the experience of the employees and maximizes their potentials (Schneider et al. 1996; Beer/Norhia 2000; Nadkarni/Bar 2008). We agree with the authors that the above mentioned views are related. However, in both cases the company's success largely depends on organisational and strategic flexibility.

Since organisational and strategic flexibility are important preconditions for sustained development, the cognitive approach and cognitive processes are becoming attractive fields of organisational research. As some authors point out, cognitive styles are becoming crucial for understanding organisational behaviour, since it is manifested in people's behaviour at work in areas such as leadership, interpersonal relationships, entrepreneurship, decision making, collaboration, team work, learning, exchange of knowledge, creativity, innovation etc. (Sadler-Smith /Badger 1998; Nadkarni/Bar 2008; Cools et al. 2009; Armstrong et al. 2011; Santos-Álvarez et al. 2012; Đurišić-Bojanović 2013; Kozhevnikov et al. 2014). Research into cognitive style, cognitive patterns and mental models of individuals, groups and organisation, focused on two groups of questions. Firstly, the aim was to determine the connection between cognitive styles and efficiency and effectiveness in dealing with different types of tasks (Spiro et al.

1988; Rickards 1992; Boland et al. 1993; Messick 1994; Martinsen 1995; Zack 1999; Spiro et al. 2007; Vanderhyden et al. 2010; Santos-Alvarez et al. 2012), and secondly, to examine the relationship between cognitive styles and interpersonal relationships, establishing a good working atmosphere, exchange and collaboration (Teece et al. 1997; Allinson et al. 2001; Shimitzu/Hitt 2004; Van Dum et al. 2008; Cools et al. 2009).

The research which will be presented should clarify the relationship between the individual characteristics of employees and the complex processes of organisational change. More precisely, the subject of this study was to examine the relationship between individual differences in employees in terms of cognitive styles, and their readiness for organisational change. Although there are several research studies that explore the relationship between cognitive styles and attitudes towards organisational changes, numerous aspects of this problem have not yet been explored. In this paper, a new and important dimension of cognitive style will be introduced, which has not been the subject of any study so far. It refers to accepting the plurality of ideas, a construct that largely represents a more flexible cognitive style which will be described in further detail in the text that follows.

Although researchers have noted the importance of cognitive style as a facilitator of implementing changes at work, a review of the literature indicates that we know relatively little about how the cognitive style of members undermines or facilitates readiness for change in organisations. In this paper an attempt will be made to define the impact of the cognitive style, described through the dimension of cognitive flexibility and general attitude towards change. An effort was also made to clarify the complex relationship between the characteristic cognitive style at individual, group and organisational level and the attitude towards change. As the result of the above mentioned research, the exact solution has been offered, the index of general readiness for change, which can be significant at an early stage of implementing the planned changes.

The cognitive view of readiness for organisational change

Change management is a complex strategic and psychological process of creating sustainable development in a highly unstable, not very predictable and competitive market. *Reactions to change* represent a multidimensional psychological construct encompassing cognitive, affective, behavioural, and motivational components (Piderit 2000; Oreg 2006). “That is, change is not simply changes in technical or operational aspects of the job; change is also a cognitive process of re-evaluating the old way of doing things” (Bernerth 2004, p. 48). *Employees’ readiness for change* is defined as willingness to change the way you work and the working conditions according to the strategic decisions of the organisation. Readiness for change is a cognitive state that includes beliefs, views and intentions related to changes, and is reflected in the attitudes of the organisation

members (Armenakis et al. 1999). However, as some authors pointed out, many change efforts fail since change agents underestimate the importance of the cognitive-affective nature of change (Calori et al. 1994; Walsh 1995; Bovey/Hede 2001a; Shimizu /Hitt 2004; Ertuk 2008; Wittig 2012). According to the data obtained from a number of analyses conducted during the past decade, around two-thirds of planned changes fail to accomplish the planned goals (Koterr 1995; Beer/Nohria 2000; Pieterse et al. 2012). As Burke (2008) points out, even though we would like to manage organisational changes and to control them, they often move in unwanted directions. The major reason for that lies in the "deep" and less visible structure of the system, which is made up of people (Gersick 1991). Employees' reactions to change are considered critical for the success of change efforts (Armenakis et al. 1993; Piderit 2000; Bovey/Hede 2001; Burke 2008; van Dam et al. 2008).

Research studies into readiness for change indicate that organisations encounter numerous forms of *resistance to change*: cognitive, affective, and behavioural (Piderit 2000; Oreg 2006). What matters are the relationships between different kinds and levels of resistance. For example, cognitive resistance may cause passive or active modes of resistance. Hence, an employee may be absent-minded in a meeting that he or she expects to be unfruitful. In the case of labour strikes, triggered by employees' dissatisfaction with the organisation, both affective resistance and cognitive resistance could be related to behavioural resistance (Armenakis et al. 1993; Vince/Broussine 1996; Piderit 2000).

Resistance can be classified into several categories: resistance to change at the organisation level, at the group level and the individual level (George /Jones 2002; Rafferty et al. 2013). Psychological findings point out that people perceive and treat organisational changes in significantly different ways. However, we are faced with the fact that the same organisational environment elicits different psychological and behavioural reactions in employees.

Since a person's cognitive style is a fairly consistent way of perceiving and interpreting information from the environment, it is easy to understand that the initial individual responses to a change will be largely determined by the person's characteristic cognitive style. Individual resistance stems from individual assessment of information which in turn reflects personal cognitive characteristics (Schroder 1970; Santos-Álvarez et al. 2012). The results of the analysis of the factors responsible for failure point to individual cognitive characteristics as the most important reason for such an outcome (Calori et al. 1994; Shimitzu/Hitt 2004). The complex relationship between the characteristic cognitive style at individual, group and organisational level is established by communication. A more flexible cognitive style, which is characterised by the acceptance of plurality of ideas, is a critical precondition for constructive communication at all levels. Since the acceptance of plurality of ideas is the ability to change the perspective from which problems are observed, as well as the ability to consider the

arguments for the opposing options, i.e. those that we disagree with but are not obliged to agree with, it should contribute to the process of change and make it easier. In contrast, a dogmatic and rigid style can be a serious obstacle to implementing organisational change (Đurišić-Bojanović 2009).

Researchers agree that within a group and in the workplace formal and informal leaders have the greatest influence on group members' behaviour (Hambick/Mason 1984; Barr et al. 1992; Boland et al. 1993; Calori et al. 1994; Hayes /Allinson 1994; Walsh 1995; Canas et al. 2006; Riggio et al.2008; Chaleff et al. 2009). One of the explanations relates to establishing characteristic mental models or cognitive maps in organisation. To be more precise, it concerns the discrepancy between the current process of change and our mental model of how that change is supposed to take place (Van de Ven/Sun 2011). Individual estimations can be changed to a greater or lesser extent under the influence of a group. Group resistance and organisation level resistance are both induced by the specific complex dynamics of external and internal interactions (Savatić/Đurišić-Bojanović 2012).

Therefore we suggest an approach which will contribute to the understanding of the interplay between cognitive styles and readiness for organisational change at individual, group and organisational level. We will try to show how cognitive flexibility, represented by employees' acceptance of plurality of ideas, is important for the organisational and strategic flexibility of the company.

Individual and organisational cognitive flexibility and readiness for change

Readiness for change is alteration to cognitions of individual mental sets, as well as collective cognitions among all employees (Armenakis et al. 1993). The construct of cognitive style helps us to understand not only the individual, but also the group functioning at work (Davies 1995; Buffinton et al. 2002). Witkin (1977) for example defined *cognitive style* as the characteristic method of problem solving, the characteristic way of thinking, learning and dealing with other people. Hence, it does not refer to the level of intellectual capacity, but the typical perceptions, processing, interpretation and evaluation of information that are received from the environment. One of the most important individual differences concerning cognitive functioning relates to the level of cognitive flexibility.

The differences in the level of cognitive flexibility are seen in the range of options, as well as in the way people and groups consider them. Those persons who present and tackle a task from multiple perspectives may show greater cognitive flexibility. Therefore they have the ability to quickly restructure their knowledge thus adapting their response to changing situational and environmental demands (Calori et al. 1994; Spiro et al. 1998, 2007; Canas et al. 2006; Oreg 2006; Martin et al. 2011).

We may pose the question as to how the cognitive style participates in the readiness of an individual, group or even the entire organisation to make decisions concerning changes to strategic and organisational activities. In this process the individual cognitive flexibility becomes part of the specific dynamics of the organisational and strategic flexibility of the company. *Strategic flexibility* is the ability of an organisation to perceive external changes and react swiftly and adequately by changing the course of strategic actions; in other words it is *"*organisational preparedness to reverse ineffective strategic decisions"(Shimizu /Hitt 2004).

Organisational flexibility refers to the ability of an organisation to make structural, process and procedural changes to support strategic change. The condition for this is the cognitive flexibility of the employees, especially the managers (Shimizu/Hitt 2004). *Cognitive flexibility* is reflected in the ability to recognize the signals that point to potential problems, but also opportunities, and also in the ability to adequately evaluate and finally constructively question and choose adequate actions. *Cognitive flexibility* is also reflected in the capability to make decisions that carry certain risks and which redefine and change the established patterns in work, learning and doing business (Chattopadhyay et al. 2001; Shimizu/Hitt 2004; Oreg 2006; Canas et al. 2006; Cools et al. 2009).

Cognitive flexibility theory defines cognitive flexibility as the ability to present the task from multiple perspectives, hence restructuring your own knowledge and usual approaches in problem solving in order to make an adaptive response to radically changed conditions and demands (Spiro et al. 1988). The strategic flexibility of the company may be identified with sensibility to negative feedback (Shimizu/Hitt 2004). For example, according to available empirical data, when CEOs are not flexible enough and have a rigid cognitive style, this can lead to inadequate identification of problems or business opportunities. In such cases, the consequences are the absence of adequate or timely reaction, postponing the change or choosing the less effective or ineffective strategy in working conditions that have undergone a change (Barr et al. 1992; Chattopadhyay et al. 2001; Canas et al. 2003; Mitchell et al. 2002; Shimizu/Hitt 2004; Baron 2006; Barbosa et al. 2007; Cools et al. 2009; Santos-Álvarez et al. 2012; Kozhevnikov et al. 2014). CEO cognitive maps are the factors responsible for such failure and indicate the importance of the cognitive dimension of individuals in this outcome (Calori et al. 1994).

The source of the above mentioned differences is directly related to the dimension of cognitive flexibility. Thus, in the chain of organisational communication, decision making and the participation of employees, there is an interplay between individual cognitive styles which leads to the establishment of a certain group and organisational cognitive scheme which represents more or less rigid cognitive styles, mostly with those persons who have, formally or informally, the most influential positions in the organisation. It is the most common mecha-

nism for establishing a link between individual, group and organisational levels of cognitive functioning (Calori et al. 1994; Spiro et al. 1998, 2007; Shimizu/ Hitt 2004; Canas et al. 2006; Oreg 2006).

We have identified *Acceptance of plurality of ideas* (API) as a cognitive indicator of individual as well as organisational cognitive flexibility. Acceptance of a plurality of ideas is a general acceptance of the differences between people and their different viewpoints. That is the ability to consider two or more options referring to the same controversial topic (Đurišić-Bojanović 2009). This means that organisational change, representing a new situation, will be more psychologically acceptable to those individuals who are generally more open to diversity and multiple perspectives (Barr et al. 1992; Calori et al. 1994; Chattopadhayay et al. 2001; Shimizu/Hitt 2004; Baron 2006; Barbosa et al. 2007; Cools et al. 2009; Huber/Lewis 2010; Santos-Álvarez et al. 2012). *Acceptance of plurality of ideas* is the most prominent characteristic of cognitive flexibility and the precondition for constructive communication; communication where different ideas are presented and opinions are exchanged about dealing with certain tasks. This is how we have conceptualised the first assumption in this research. *Hypothesis 1*:

> *H1: readiness for change will be more evident in those employees who accept the plurality of ideas to a higher degree.*

Resistance to change as a psychological variable in the cognitive domain is defined as the level of cognitive inflexibility (Oreg 2006). We have identified *dogmatism* as a cognitive indicator of cognitive inflexibility (Đurišić-Bojanović 2009). A cognitive representation of dogmatism is characterised by beliefs and disbeliefs about reality and the denial of facts, events and ideas contradicting and threatening one's belief system. An inflexible, closed organisation may provide a framework for patterns of intolerance; both cognitive and emotional (Rokeach 1970). The next characteristic of the dogmatic inflexible cognitive style is the need for cognitive closure, manifested as a desire for predictability, discomfort with ambiguity, decisiveness, preference for order and structure, and close-mindedness (Webster/Kruglanski 1994; Martin et al. 2011). In the organisational context it means that a person will seek out routine and more familiar, trusted solutions thus narrowing down the scope of possible new, more adequate options. Uncertainty and unclear situations cause a high level of anxiety, and those are the most frequent situations in the process of change (Bordia et al. 2004; Gilbert 2005; Oreg 2006; Bareil et al. 2007). This explains the tendency to be inactive as an effort to stick to "well known solutions". Those individuals who demonstrate a high degree of dogmatism will show a higher degree of resistance to change. This is how we have conceptualised *Hypothesis 2*:

> *H2: resistance to change will be more evident in those employees who are characterised by inflexible, dogmatic cognitive styles.*

Research in the field of cognitive style and organisational change demonstrated that the socio-demographic characteristics of the employees could be important factors for accepting changes. Two individual-level characteristics, openness to job changes and organisational tenure, showed significant relationships with resistance to change (van Dam et al. 2008). Research results concerning cognitive style and experience in solving realistic complex problems demonstrated that the experience can have different effects on people of different cognitive styles (Martinsen 1995). An interesting finding states that higher education contributes to a better readiness for change, but on the other hand, more experienced experts prove to be less flexible than beginners (Anzai/Yokoyama 1984). This is how we have conceptualised *Hypothesis 3:*

> *H3: more educated people will be generally more apt to accept organisational change and Hypothesis 4:*
>
> *H4: people with more work experience will be less willing to accept organisational change.*

As regards gender, Allinson and Hayes (1994) found differences concerning the characteristic cognitive style. Sadler-Smith et al. (2000) partly accepted the above mentioned findings. Lai et al. (2012) also points to gender differences concerning the cognitive style. However, there is not enough consistent empirical data to confirm the relationship between gender and readiness to change, or those which refer to the connection between gender and different aspects of work behaviour (Eagly/Wood 2013). That is how the zero *Hypothesis 5* is formulated*:*

> *H5: there will be no differences in resistance to organisational change in terms of gender.*

The research was meant to test the following assumptions. Firstly, there is a relationship between certain cognitive characteristics of employees and specific attitudes towards organisational changes. Secondly, there is a relationship between employees' inflexible cognitive style, represented by dogmatism, and their resistance to organisational changes. Thirdly, there is a relationship between employees' flexible cognitive style, represented by API, and their readiness for organisational changes. Fourthly, a socio-demographic variable can, more or less, contribute to differences in the cognitive patterns of employees, which will be expressed in the general attitude towards organisational change. The results of our empirical research are presented and discussed below.

Method

The research was designed as a correlation study. The data were collected in the form of a questionnaire. One of the reasons for using a questionnaire is being economical with the time participants should spend when compared to some other methods, such as qualitative research methods. Since the testing was per-

formed during ownership change, along with different forms of structural, organisational, and personnel changes that cause a high level of uncertainty, anxiety and insecurity when it comes to, for example, changes to tasks, demands, requirements and even keeping one's job, employees are unlikely to feel free to openly express their opinions about such changes. Therefore, another advantage of questionnaires is that they provide anonymity. It is assumed that in that way employees will be less anxious to freely express their opinions.

Sample and context

Since the research was conducted in major public companies in Serbia, we will present certain contextual data pertaining to the research conditions. Serbia entered the transition process in 2000 by introducing political changes, becoming an independent state in 2006 after the breakup of the Socialist Republic of Yugoslavia. In the early 2000's the transformation of public property was commenced through the privatisation process. The year 2003 saw the greatest number of privatisations of public companies (around 1000). In a large number of cases, the privatisations included making people redundant and providing some kind of financial compensation and the right to own stocks in accordance with years of service. According to the latest data, out of 2,500,000 members of the working-age population in Serbia, more than 23% are unemployed (The National Employment Service 2012). In Serbia, the social changes, especially the privatisation process and the high unemployment rate, have intensified the sense of uncertainty and, in many cases, negative emotions toward both the present and the future. A research study conducted within the scope of a world study of values has shown that Serbia ranks high in the group of examined states in relation to interpersonal distrust and distrust in institutions (Pavlović 2006). High volatility and an impoverished economy are typical for so-called economies in transition. Since numerous state companies underwent serious crisis in the past two decades, many of them stopped working. In the case of the two companies used for our research, there are perspectives of development. Since the research was carried out in the period of ownership change along with different structural, organisational, and personnel changes, it is assumed that the research will be carried out in a real situation where the change occurred, so in that aspect it will contribute to the ecological validity of the study. We have provided some of the reasons why these companies were chosen for the research.

The research was conducted with all necessary permissions and cooperation from HR. The employees had the possibility of deciding for themselves whether they would like to participate in the research by filling out a questionnaire. The process was anonymous. A convenience sample was used. It was made up of employees working in two companies with different ownership structures (N=265; F=108; M=157).

Company 1 (N1=125; F=72; M=53) is a state majority-owned company in the process of reorganisation and ownership transformation, whose field is the research and production of pharmaceuticals. The data were collected in 2011. The period 1990-2005 was a difficult one for the company marked by numerous political and economic problems. During this time the company underwent various structural, organisational, proprietary and other changes. In 2005, Company 1 entered the next stage of its development with over 2500 employees. During the research period, the company was focused on dealing with ownership issues in the restructuring process. New business policy was directed at solving inherited financial problems, and increasing production capacities in order to develop and expand the market. Personnel changes were underway, especially in management. The main goals were to develop good quality management, to improve the quality products and to offer a wider selection. Part of the new policy was to provide several training seminars for all the employees. From the standpoint of the process of organisational changes, the employees were in the stage of implementing radical, discontinuous organisational changes. The questionnaires were forwarded electronically and completion required no more than 10-15 minutes. We were satisfied with the questionnaire response rate (83%).

Company 2 (N2=140; F=36; M=104) is a company in the process of reorganisation and ownership transformation. Company 2 is one of the biggest companies which specialises in the energy sector in southeast Europe with about 9000 employees. The process of structure reorganization and ownership transformation was underway and the employees were feeling uncertain since although the privatisation process had been announced, they were not familiar with the details. There was information that the state would keep the major part of the shares and the other part would be taken over by a business partner from abroad. This created conflicting expectations in the production unit where the research was conducted. On the one hand, it was assumed that there would be redundancies and significant personnel changes, particularly in management structures, while on the other, the ownership transformation was expected to contribute to better business, since the company had ended the financial year with losses.

The research was conducted in 2010, after obtaining the necessary permission from the company. The data were collected by means of a “paper and pen” questionnaire, using a suitable sample. The employees completed the questionnaires with a 98% response rate. Since it did not take very long to complete them and the questions were about their own opinions, the employees were very interested in taking part in this research. The sample structure is displayed in more detail in Table 2.

Instruments

Based on the theoretical conceptualisation of the pluralistic, flexible cognitive style, the author of this paper has constructed an *Acceptance of plurality of ideas*

scale (Đurišić-Bojanović 2009). Acceptance of plurality of ideas comprises the following features: accepting the existence of different ideas in discussions and the legitimate existence of different explanations for many phenomena, accepting political pluralism, an inclination towards finding good things in the ideas that an individual generally does not accept, an interest in different movements in many fields of human creativity, an inclination towards a wide range of interests, an inclination towards seeking information from different sources, allowing for the possibility that different, even opposite attitudes can be acceptable from their viewpoint at least to a certain extent, a belief that persons who have considerably different attitudes towards significant problems can function as a team, and openness to finding friends even among people who are not like-minded. A four-point Likert-type scale consisting of 27 items followed the Likert procedure. For example: "The co-existence of various attitudes towards social problems leads to chaos" (1 = completely agree, 2 = mostly agree, 3 = mostly disagree, 4 = completely disagree). A higher total score in this case represents a higher level of acceptance of plurality of ideas. The reliability of the acceptance of the plurality of ideas scale was measured by the Cronbach's alpha coefficient (Company 1 α=0.86, Company 2 α= 0.85). The Kaiser-Meyer-Olkin measure of sampling adequacy KMO= .855 and Bartlett's test of sphericity (χ2= 2315,590 df) allowed the use of factor analysis. The extraction method was applied in order to verify factor validity. Principal Component Analysis with unrotated solutions, as well as Direct Oblimin rotation with Kaiser Normalization, yielded 5 components, explaining 49.70% of the variance. The first component called the *Rejection of plurality of ideas* explains 24.442% of the total variance, while the second, the *Acceptance of plurality of ideas*, explains 9.260%. The third factor, *Rationalisation (Self-justification) for the rejection of plurality of ideas,* explains 6.110% and the fourth, *Difference as a chance, 5*.641% of the variance. The fifth factor, called the *Rejection of opponents,* accounts for 4.253% of the variance.

Dogmatism was tested by the scale which was developed by Bojanović (2004). It is operationalised with the following indicators: believing there's only one truth, a closed system of beliefs, reluctance to consider different views, intolerance and rejection of people and views that are significantly different from one's own. A four-point Likert-type scale was used and 11 items were presented. For example: "Only one world view can be true" (4 = completely agree, 3 = mostly agree, 2 = mostly disagree, 1 = completely disagree). A higher total score in this example represents a higher level of dogmatism. Cronbach's alpha in this research was α= 0.85 for both samples. The Kaiser-Meyer-Olkin measure of sampling adequacy KMO = .813 and Bartlett's test of sphericity (χ2=708,535 df 55 $p< .0001$) allowed the use of factor analysis. The extraction method was applied in order to verify factor validity. Principal Component Analysis with unrotated solutions, as well as Direct Oblimin rotation with Kaiser Normalization, yielded 3 components, explaining 50.27% of the variance. The first component called *Truthfulness of only one point of view* explains 30.818% of the total variance.

The second factor, *Rejection of the alternatives*, accounts for 9.990%, and the third, *Reluctance to question the accepted view,* 9.461% of the total variance.

Change readiness has been defined as an individual's "beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organization's capacity to successfully undertake those changes" (Armenakis et al. 1993, p. 681). In order to measure the global and cognitive aspect of readiness for change a scale was originally constructed by Grubic-Nešic (2005) and adapted by Savkovic (see: Djurisic-Bojanovic/Savkovic 2010). The conceptualisation of the scale is based on the concept of the desired competences of employees in contemporary learning organisations whose chief principle of survival is based on the ability of the organisation to adapt to changeable, unforeseeable circumstances, and of the employees' ability to change and solve non-routine problems. The four-level scale, consisting of 29 items, followed the Likert procedure. For example: "In today's world, change is essential for survival", "I like to examine new ideas and new approaches to problems" (4 = completely agree, 3 = mostly agree, 2 = mostly disagree, 1 = completely disagree) where a participant's choice of 'completely agree' represents a higher level of readiness to change. The reliability of the instrument, as measured by Cronbach's α, was found to be Company 1 α=0.77; Company 2 α= 0.78. The Kaiser-Meyer-Olkin measure of sampling adequacy KMO= .781 and Bartlett's test of sphericity ($\chi 2$=368,303 df 78 $p< .0001$) allowed the use of factor analysis. The extraction method was applied in order to verify factor validity. Principal Component Analysis with unrotated solutions, as well as Direct Oblimin rotation with Kaiser Normalization, yielded 5 components, explaining 51.48% of the variance. The first component called *Risk avoidance* explains 16.39% of the total variance. The second factor, *Cognitive curiosity,* explains 11.68%, and the third, *Rigidity in interpersonal relations,* 9.57% of the total variance. The fourth factor, called *Willingness to learn novelty,* explains 7.06 %, while the fifth, *Accepting the unknown,* accounts for 6.78 % of the total variance.

Statistical analysis

Standard measures of descriptive statistics, Cronbach's α coefficients and Pearson correlations were applied for the variables studied. The significance of the relationships between the dispositional characteristics of acceptance of plurality of ideas and dogmatism as predictor variables and readiness for change as a criterion variable was tested by linear regression analysis. In order to determine the significance of the differences in terms of demographic characteristics (gender, years of service, level of education) and readiness for change, one-way analysis of variance (one-way ANOVA) was used. The statistical analysis was completed using the software package SPSS 17.0.

Results and discussion

Based on the results obtained from the two samples, the initial research hypotheses were confirmed. It was proved that we can identify the cognitive predispositions which may be used to predict, with statistically significant accuracy, the general readiness of employees to embrace change. We will first present the descriptive statistics – the means and standard deviations of the participants' scores on the acceptance of plurality of ideas (API) and the dogmatism variable in the two companies from the sample and the relationship between readiness for change and dispositional characteristics (Pearson's correlation coefficients matrix) as can be seen in Table 1.

Table 1: The relationship between readiness for change and dispositional characteristics (Person's correlation matrix) and descriptive statistics*

Dispositional characteristics	*Readiness for change*							
	Company 1 (N=125)				*Company 2 (N=140)*			
	r	M	SD	range	r	M	SD	range
Dogmatism	-.346**	25.94	6.29	1-4	-.357***	25.83	7.28	1-4
API	.410 ***	77.76	10.47	1-4	.408***	72.23	8.26	1-4

* Author's calculations
***p< .01*
****p< .001*

The next step was to apply the procedure of regression analysis. Acceptance of plurality of ideas and dogmatism as predictor variables and readiness for change as a criterion variable were tested by linear regression analysis. Model summary procedure was used to calculate R Square .491, R Square .483 with the standard error of the estimate 3,866 which explained 48.3 % variance if dogmatism and API were predictors of readiness for change as a dependent variable.

The results showed that the acceptance of plurality of ideas was a significant predictor of general positive attitudes towards organisational change for both companies: Company 1 (β=.432 *SE*=.083 t=5.645 p=.000) and Company 2 (β=.420 *SE*=.079 t=5.865 p=.000). *Hypothesis1,* employees who are more willing to accept plurality of ideas are also more willing to accept change, was thus confirmed. This implies that individuals with a pluralistic, flexible cognitive style have a tendency to accept diversity, think flexibly, and are more open to novelty and change. Since the API represents a willingness to examine a wider range of options outside one's own point of view, to consider the arguments that support the opposite view, and to establish contacts and cooperation with opponents, the results were expected and consistent with the theoretical assumptions. Each of these indicators is an essential condition for the general acceptance of

change. Therefore, the results obtained in terms of organisational change were expected.

The results showed that dogmatism was a significant predictor of general negative attitudes towards organisational change for both companies: Company 1 (β= -.368 *SE*=.081 t= -4.815 p=.000) and Company 2 (β=-.378 *SE*=.073 t = -5.279 p=.000). The results agree with the theoretical assumptions hence *Hypothesis 2* was confirmed. The measured relationship between readiness for change and dogmatism suggests that individuals who are prone to rigid thinking patterns, who form exclusive and extreme opinions and believe in the truthfulness of only one point of view (their own), which is never questioned, will not be interested in trying out new strategies. Rigid beliefs and prejudice prevent people from observing problems and reacting in a timely manner. For a person of inflexible dogmatic cognitive style, organisational changes present a threat in the emotional sense and block a person at an intellectual level. He or she becomes intellectually less efficient, which refers both to blocking creativity and innovativeness. As Shimizu and Hitt (2004) pointed out, in a highly uncertain and changing business environment managers should have the strategic flexibility to be able to respond to problems quickly (Barr et al. 1992; Calori et al. 1994; Hayes/Allinson 1994; Walsh 1995; Canas et al. 2006; Armstrong et al. 2011). Empirical evidence indicates that dogmatism and the need for cognitive closure reduce receptivity to diversity (Martin et al. 2011). Responses to change by employees and managers include strategies of avoidance, blame and scepticism. Their responses are characterised as denial, scapegoating, and manoeuvring, as well as rejection of the reconsideration of the incompatible or dissonant perspectives of others (Rokeach 1970; Bojanovic 2004; Schein 2004; Đurišić-Bojanović 2009; Erwin 2009). Thus, reducing the number of alternatives decreases the choices of optimal solutions. Still, change is only sustainable when new ways of thinking are sustainable and become part of the organisational culture (Boland et al. 1993; Kotter 1995; Schneider et al. 1996; Alavi/Leidner 2001; Schein 2004; Cools et al. 2009). The most commonly perceived obstacle to schema change is the stability of current cognitive schemas and personal characteristics (Arzenšek 2011; Shao-Hsi et al. 2012). That is the reason why, when faced with novelties or change, individuals with a dogmatic cognitive style have a difficult time accepting them (Shimizu/Hitt 2004).

The research into the relationship between socio-demographic characteristics and readiness for change showed inconsistent results. The more educated participants generally showed a higher level of readiness for change, but this relationship was not linear. The participants with the highest levels of education (individuals with PhDs, Masters and specialist degrees) had lower scores on the scale of readiness for change as can be seen in Table 2. This may be explained in terms of anxiety about their careers and the prospects of holding on to the top

positions. The second possible explanation may be sought in concern about their increased responsibilities. Thus *Hypothesis 3* was partially confirmed.

Table 2: Descriptive statistics for employees' socio-demographic characteristics and readiness for change*

Socio-demographic characteristics	*Readiness for change*					
	Company 1			*Company 2*		
	N	M	SD	N	M	SD
Gender (Female)	72	89.99	7.33	36	88.22	7.12
Gender (Male)	53	90.12	8.12	104	89.71	8.09
Level of education						
Secondary school	36	87.43	8.38	58	87.29	7.32
BA	64	92.64	6.92	59	90.01	7.56
PhD, MS/specialist	25	90.11	7.83	13	89.59	8.02
Total	125	90.06	7.70	140	88.96	7.60

* Author's calculations

The research into the relationship between years of service and readiness for change also failed to yield consistent results. Thus *Hypothesis 4* was partially confirmed. While in Company 2 the employees in the older groups showed a significantly higher level of resistance to change (F 24.678 df 136 $p<0.01$), which was expected due to highly developed routine approaches to work, this trend was not evident in Company 1 (F 3.929. df 121 $p>0.05$). A possible explanation may lie in concern about expected redundancies. One of the inconsistencies that can be found in socio-demographic characteristics and readiness for change, particularly in terms of work experience, seems to be linked to the social and economic situation of the surrounding. For example, the study which was carried out on the employees' readiness for organisational change during the period of economic sanctions and serious economic situation in general, the group of older participants with high school education (45-55 years of age) demonstrated a greater readiness for change compared to the younger participants with a higher level of education (Grubić-Nešić 2005). In the second study which was conducted when the economic situation had improved, in 2010, that trend had changed and the data were more similar to those from economically developed areas (Đurišić-Bojanović/Savković 2010). Nevertheless, the research results concerning education are the most consistent in terms of a general trend – a higher level of education has a positive correlation with readiness for change. The explanation we found the most acceptable is that education encourages cognitive curiosity, and readiness to master new knowledge and skills and to "broaden" one's perspective. That is a precondition for readiness for change.

As far as gender is concerned, there were no substantial differences between the attitudes of men and women towards change in either Company 1 (F .087 df 123 p>0.05) or Company 2 (F 1.060 df 138 p>0.05). Thus *Hypothesis 5* was confirmed.

The results of the research in this field show that the establishment of mental models at group and organisation levels is carried out through the process of social exchange where collective interpretations are produced. Information concerning differences in individual characteristic perceptions of different stimuli provides support for that process (Santos-Alvarez 2012). However, in order to foster effective communication within an organisation and to have the wanted changes accepted, several conditions need to be fulfilled. The most important one is to establish flexible mental models which respect individual interpretations and group dialogue (Boland et al. 1993). By establishing a more flexible mental model the organisation is more likely to be successful at dealing with complex challenges, since creating more alternatives increases the choices for optimal solutions (Barr et al. 1992; Calori et al. 1995; Canas et al. 2003; Nadkarni /Barr 2008, Santos-Alvares et al. 2012). The authors of several empirical studies concluded that managers easily get trapped in the circle of rigidity, routine and postponing reactions to change. „In situations where a person should be flexible in order to deal with changes in the environment, but fails to do so, we speak of cognitive inflexibility. An example of this inflexibility occurs when actions that have shown to be effective in previous situations are insistently carried out in new situations where they are ineffective" (Canas et al. 2003, p. 2). That fact explains why the projects are not successful, when internal or external changes are not anticipated in time, or when they are misinterpreted or there is no timely reaction. The results clearly show that cognitive style, tolerance of ambiguity, and proactivity all have an effect on the effectiveness of strategic decision-making and the outcomes of organisational activities (Calori et al. 1994; Nonaka/Toyama 2002, 2005; Baron 2006; Barbosa 2007; Santos-Álvarez 2012). As Barr et al. (1992, p. 5) argue: "Organisational renewal requires that a firm's top managers make timely adjustments in their mental models following significant changes in the environment." However, the results of longitudinal analysis conducted by Gilbert (2005) were interesting. Gilbert concludes that in situations when an external threat is perceived, there is a tendency to overcome resource rigidity – failure to change resource investment patterns. However, at the same time the routine rigidity is increased – failure to change organisational processes that use those resources.

Therefore, it is important to further investigate the relationship between cognitive rigidity and willingness to change. As Gilbert (2005) suggests there is a need for a multi-perspective and contextual approach in examining the above mentioned relationship.

The data obtained from the descriptive analyses were used to calculate the value of the Index of Readiness for Change IRC, which is proposed by the author of the study, as can be seen in Table 3. The Index of Readiness for Change was calculated as the ratio of empirical mean value obtained from the participants' scores on the acceptance of plurality of ideas scale *(Me)* and the scale/construct mean scores theoretically obtained from the acceptance of plurality of ideas scale (*Ms)*. In the cases of Company 1 and Company 2, the IRC value could be rated as high to moderate (the expected value from .4 to 1.6).

Table 3: General cognitive readiness for change*

	General cognitive readiness for change						
	N	Min	Max	Me	Ms	SD	IRC
Company 1	125	68	112	90.06	72.5	7.70	1.24
Company 2	140	67	110	88.96	72.5	7.60	1.22

* Author's calculations
Me – empirical mean value
Ms – scale mean value IRC- Index of Readiness for Change

The Index of Readiness for Change obtained in this way is vital for managers and professionals involved in the process of change planning and management, since dispositional readiness/resistance demands entirely different strategies and techniques of change planning and implementation. Its critical importance is based on the following facts: (1) acceptance of plurality of ideas is a reliable predictor in the assessment of the level of employees' readiness for change (2) dogmatism is a reliable indicator of resistance to change.

In spite of the significant contribution of the presented research in identifying cognitive flexibility and predicting the acceptance of organisational change at individual and group level, there are some limitations. The first limitation refers to the conditions that were present while the research was being carried out, because both companies were in the initial stages of reorganisation, when ownership and personnel changes were being implemented, particularly in management. Since the direction of changes was not completely clear, it was a situation that could have provoked the participants to give socially accepted answers. There is an issue as to whether the perception of socially accepted answers contributes, and in which way, to the motivation to accept changes, which would be considered as a wanted attitude in this specific situation.

Another limitation stems from the fact that the information was collected through questionnaires. Even though this method provides anonymity, a person's opinion might not necessarily correspond to their behaviour.

The following limitation relates to socio-demographic and contextual factors. It would be useful to find the connection between the relationship of the socio-demographic characteristics of the employees and their readiness for change and

the nature of the work task, or to determine whether the changes require adaptation or exploration (Spiro et al. 1988; Martinsen 1995). It would be useful for further research to introduce additional socio-demographic parameters, such as the unemployment rate and economic development/underdevelopment in the region (Pinquart et al. 2009). Finally, there are indicators that suggest that it is important to distinguish between internal and external demands, as in the case of differentiating between resource and routine rigidity (Chattopadhayay et al. 2001; Gilbert 2005).

Research contribution and potential implementation

In spite of the limitations of this study, we are dealing with results that indicate that there is a stable relationship between certain personal characteristics and readiness for change (Judge 1999; Oreg 2006; Đurišić-Bojanović/Savković 2010). That fact is extremely important for managing organizational changes. Confirmation of the theoretical assumption given in this work provides important potential for understanding cognitive style as a link in the complex relationship of an individual with his/her surrounding (Barr et al. 1992; Calori et al. 1994; Shimizu/Hitt 2004; Cools et al. 2009; Kozhevnikov 2014). Furthermore, this research offers valid and reliable instruments for collecting the initial information which is strategically important. As Shimizu and Hitt (2004) point out, in times of uncertainty and change, it is very important for managers to be able to react in a timely manner and make adjustments in strategic decisions. In order to achieve that, it is important to have insight into the psychological barriers to organisational flexibility (Judge et al. 1999; Shao-Hsi et al. 2012). We agree with the conclusion drawn by Nadkarni and Barr (2008) that it is equally important to establish the relationship between different cognitive styles as determinants of different cognitive representations, not just for understanding the complex relationship between industry context, managerial cognition, and strategic action, but also for planning adequate interventions in the process of managing changes. Organising appropriate training to increase sensitivity to „weak relevant signals" to combine and recombine information, data and knowledge and their integration to good solutions rely on reliable identification of the cognitive styles of the participants (Scott/Jaffe 1988; Canas et al. 2004; Spiro et al. 2007). Data concerning individual and group cognitive patterns are of extreme importance (Teece 1997; Alavi et al. 2001; Nonaka/Toyama 2002, 2005; Nielsen, 2006).

In this research, we proposed an index of general cognitive readiness for change as a measure that could be particularly useful for planning interventions in the process of preparing and implementing organisational changes. If the value of the *general cognitive readiness for change* index is greater than 1, it implies that proactive strategies of change management will yield optimal results. These involve the participation of employees, communicating mission and vision, and forming executive teams for implementation etc. As Huber and Lewis (2010)

pointed out, the more open one is to ideas and different perspectives on a change initiative, the more likely cross-understandings are to lead to positive outcomes. This means there is a "psychological logistics" for creating mental models and social networks that will support novelties and innovations (Kleinbaum/Tushman 2007).

If employees' resistance is more prominent, i.e. the index is lower than 1, it is more likely to establish a mental model for supporting familiar solutions and promoting a conventional approach. In this case it is necessary to plan techniques for reducing anxiety and uncertainty, as well as for strengthening and reinforcing self-efficiency (Shimizu /Hitt 2004). In that case, the dominant strategies are those of employee strengthening. The second approach could be focused on employee training so as to practice and simulate real life problems and encourage a multidimensional approach (Jacobs/Dominowski 1981; Spiro et al. 1988; Rickards 1992; Zack 1999; Mitchell 2002; Cañas et al. 2003; Shimizu/Hitt 2004; Sutton 2004; Nonaka/Toyama 2005).

It would be very useful to carry out further research into the complex interaction between cognitive style and work environment, organisational learning, teamwork and leadership and prediction of employees' behaviour in the process of organisational change (Cools et al. 2009; Armnstrong, 2011). We assume that a mixed research design, which includes data obtained from both quantitative and qualitative research, could contribute more to understanding the phenomenon of employees' readiness for change. The results of our research could encourage HR management to think of many activities, starting with recruiting, selection, training, teambuilding and the implementation of planned and unplanned organisational changes.

Conclusion

Organisational cognition and cognitive style represent a fundamental variable for understanding individual and organisational behaviour in the field of industrial and organisational psychology (Walsh 1995; Kozhevnikov 2007). The distinction between employees' characteristic cognitive patterns as dominant mental models within an organisation play a significant role in understanding key organisational processes of development and change. The aim of this research was to create a more precise insight into the complex interplay between cognitive styles and organisational change. We concluded that the stability of the relationship between employees' cognitive style and readiness for change in an uncertain and unstable setting in economies in transition may provide considerable support in predicting organisational flows and change outcomes. Further verification of these assumptions, particularly those concerning the complex relationships between strategic and psychological flexibility, would certainly be of great practical and theoretical importance.

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