INDIVIDUAL PREFERENCES TOWARDS KNOWLEDGE CREATION AND KNOWLEDGE SHARING: FIRST EMPIRICAL RESULTS FROM KNOWLEDGE-INTENSIVE COMPANIES

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Abstract:
Both knowledge-creation and knowledge-sharing are viewed as very significant for competitiveness of an organization in modern knowledge economy. Contemporary literature usually treats these two processes as either independent or positively related. However, analyzing various organizational conditions for efficient course of these processes, we proposed that in some cases they may contradict each other. Thus on micro-level of analysis we hypothesized that there were two distinct non-overlapping groups of individuals – those more disposed towards knowledge creation, and those more disposed towards knowledge sharing. This hypothesis was examined with empirical data from employees of 5 knowledge-intensive companies.

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1. INTRODUCTION

Managing knowledge-related processes in organizations is one of the hotly discussed themes of the last decade. Both management practitioners and academics claim that it is namely these processes that are crucial for creation and maintenance of the competitive advantage in the post-industrial era (e.g., Nonaka, 1994, Davenport, Prusak, 2000). Another topical issue for contemporary organizations is managing their human resources, as people are recognized nowadays as being the most valuable asset of the modern organizations (e.g. see Becker, Gerhart, 1996; Lepak, Snell, 1999). Interestingly, tasks and problems of these two approaches to sustaining competitiveness of contemporary companies, knowledge management and human resources management, are deeply interrelated with each other, as efficiency of knowledge employment highly depends on the good will of individuals working for organizations (Husted, Michailova, 2002; Minbaeva et al., 2003; Storey, 2005). Yet, despite obvious significance of individual-level factors for knowledge management, they are poorly discussed in contemporary literature and lack empirical evidence (Foss, Felin, 2006).

Though considered relevant for most of contemporary organizations, these issues are especially critical (and even more intertwined) for so called "knowledge-intensive organizations" - firms whose main activity is based on the employment of knowledge (Starbuck, 1992; Alvesson, 1995; Nurmi, 1998). In fact, employees, their knowledge and skills, form the key capital of such a company and determine its unique competitive advantages so that its other assets play only additional role. Thus understanding of individual knowledge-related behaviour and grounded design of human resource management practices are strategically important for competitiveness of knowledge-intensive firms (KIFs) (Boxall, Steeneveld,1999; Robertson, Hammersley, 2000; Swart, Kinnie, 2003).

This paper presents some findings from research in Russian knowledge-intensive companies, aimed to shed more light on peculiarities of individual behaviors related to two key knowledge-related processes – knowledge creation and knowledge sharing. We start with the presentation of the theoretical grounds of our research that include critical analysis of the relationship between knowledge creation and knowledge sharing, discussion of the role of an individual in these processes and the formulation of our research hypothesis. Further on, we present our research strategy, including data collection methods and sample characteristics. Then we turn to research findings and conclude the paper with their discussion and implications for further research and management practice in knowledge-intensive organizations.

2. THEORETICAL GROUNDS AND HYPOTHESIS

2.1. Relationship between knowledge creation and knowledge sharing processes in organization.

Contemporary management theory views knowledge as one of the key sources for creation and maintenance of sustainable competitive advantage in post-industrial economy (Kogut, Zander, 1992; Grant, 1996; Teece, 2004). Consequently, the tasks of managing various knowledge-related processes in organization are brought to the forefront. Two knowledge-related processes – knowledge creation (Nonaka, 1991) and knowledge sharing (mainly meant as intraorganizational sharing of existing knowledge) (Szulanski, 1996) – dominate in the literature on the issue, at least by the number of

publications. New knowledge allows company to leave the competitors behind by undertaking innovative actions, and thus to appropriate the so called Schumpeterian rents (Schumpeter, 1934). A number of economists believe that namely innovation-based competition can serve as a ground for successful development in the post-industrial knowledge economy (Romer, Kurtzman, 2004). Sharing existing knowledge within organization helps the company to use available resources in the most efficient way by transferring the best practices, those that proved to bring good results, lower costs or very satisfied customers, from one department to another, from one project or client to another, etc. Thus both of these processes are viewed as very significant for competitiveness of an organization in modern knowledge economy.

How these two processes are related to each other? The literature usually treats them as independent from each other and equally important for an organizational knowledge management strategy. However, if one takes a closer look, for example, at Nonaka's four-stage model of organizational knowledge creation (Nonaka, 1991), one can see that two of the proposed stages, in fact, represent knowledge sharing processes, though Nonaka does not use the term "knowledge sharing" in his model. The first phase, socialization, includes intensive sharing of tacit knowledge among employees, mainly among close colleagues. The third phase, combination, concerns sharing of explicit knowledge that may involve broader number of employees through the whole organization. Taking into account that Nonaka postulates each stage of his model as essential for successful knowledge creation, we can conclude that in his view efficient knowledge sharing processes are one of the prerequisites for efficient knowledge creation in organization. Hence, according to Nonaka knowledge creation and knowledge sharing processes are closely interrelated, and this interplay is positive.

For the sake of further discussion it is necessary to identify the outcomes these processes are expected to bring, if they are well-tuned or "successful". In other words, how can we judge about efficiency of these processes? Knowledge sharing is often expected to result in replication, i.e. in transfer of some best practice from one context to another (Szulanski, 1996). In fact it means intra-organizational "copying". Knowledge creation is usually expected to bring some type of innovation either in product or technology or organization. However, the degree of knowledge "novelty" can be very difficult to identify. For example, should we treat as innovation a product that was developed on the basis of the already existing one, though involving certain modifications, or divisional organizational structure that is not an innovation itself but was never used before in this particular company? This problem raises a question on drawing the line between replication and innovation which deserves a separate discussion. That is why, for the sake of brevity, we will not approach in this paper the "boundary" types of innovation and replication, and treat them as the two opposite poles, replication being *exact* copying of something, and innovation being creation of something new. Taking all these into account and returning to the problem of interrelationship between knowledge creation and knowledge sharing, one can propose that knowledge sharing in organization may lead to two different results. Seen as a part of knowledge creation process, it may lead to innovation, while seen independently, it may lead to replication.

As both knowledge creation and knowledge sharing are considered as being very significant for contemporary companies, a practical question arises: what should managers do in order to ensure the best possible flow of these processes in their companies? Prerequisites for or, conversely, barriers to knowledge creation or knowledge sharing are intensively discussed in the literature (e.g., Nonaka, Konno,

1998; Brown, Duguid, 2002, etc.). A huge stream of this discussion is focused on various organizational conditions, or factors, that may influence these processes, with organizational culture (DeLong, Fahey, 2000; Alavi et al., 2006), organizational structure (Hedlund, 1994; Miles et al., 1997; Tsai, 2002), work space design (Davenport et al., 2002), and others.

Most of this literature supposes that managers should make efforts to increase efficiency of knowledge sharing and knowledge creation *simultaneously*, irrespectively whether the authors understand these processes as independent or positively related (where knowledge sharing represents a part of knowledge creation). However, more detailed comparative analysis of organizational conditions and recommendations for managers, developed by "knowledge creation" and "knowledge sharing" authors, reveals some contradictions.

Let us take organizational culture as an example. Nonaka and Konno stress that in order to support innovations in organization, managers should nurture special culture that treats innovation as a key value and intensively encourages innovative processes (Nonaka, Konno, 1998). At the same time Szulanski and Winter note that strong innovation-oriented culture makes employees and whole departments be more focused not on replication, i.e. not on intensive knowledge sharing and application of others' experience in their work, but rather on development of competencies and solutions of their own (Szulanski, Winter, 2002).

Thus we can see potential contradiction between managers' efforts aimed to support innovative and replicative processes. Organizational conditions that promote creation of new knowledge may become barriers to knowledge sharing. And vice versa, factors aimed at facilitating knowledge sharing may suppress or, at least, not support innovation. Despite the fact that the conflict between knowledge creation and knowledge sharing processes is not evident on the conceptual level, turning to another level of analysis, that of applied conditions for intensification and efficiency of these processes, we can suppose that the relationship between them is more complex than it is usually understood, and in some cases they may contradict each other. Hence, we can formulate a hypothesis that the same factors may influence knowledge creation processes positively and knowledge sharing – negatively, and vice versa.

2.2. Role of the individual in knowledge creation and knowledge sharing.

One can distinguish two different levels of analysis within discussion on factors that support or hinder knowledge creation and knowledge sharing processes – organizational and individual levels. While the former concerns organizational conditions mentioned above, the latter focuses on issues of knowledge-related behaviour of an individual – his/her intentions, motives, fears, etc. (for example, Husted, Michailova, 2002; Bock et al., 2005; Cabrera et al., 2006).

The cited above organizational factors for knowledge creation and knowledge sharing can be viewed as organizational conditions that can be purposefully created by company managers. Though they differ in efforts and time needed to change them (for example, it is relatively easier to change organizational structure rather than organizational culture), still they mainly depend on manager's will and are defined by his vision.

But taking into account only these factors oversimplifies the essence of managing knowledge, as not only managers, but every employee can significantly influence knowledge-related processes in organizations. Knowledge and experience in an organization initially belong not to organization itself, but to individuals it employs. Though organizational knowledge is not a simple sum of knowledge of its employees, and transformation of individual knowledge into organizational is one of important tasks for companies (e.g. Tsoukas, Vladimirou, 2001; Nonaka, 1991), still many authors admit that the extent to which knowledge can be detached from an individual is very limited (Grant, 1996; Flood et al., 2001). That is why efficiency of knowledge employment highly depends on the good will of an individual – both to share knowledge and to apply it in the best way. Thus knowledge creation and knowledge sharing processes highly depend not only on management decisions but on personal features and preferences of company employees.

Despite obvious significance of these individual factors, they are poorly discussed in contemporary literature (Foss, Felin, 2006). Foss and Felin emphasize the importance of development of this direction and call for more research on micro-foundations of knowledge-related processes. Our research project was designed to fill this gap by focusing on individual-level factors of knowledge-related processes.

Kelloway and Barling (2000) propose a model in which efficiency of knowledge-related processes depends on three factors: individual ability, motivation and opportunity, which, in their turn, are suggested as functions of certain managerial interventions – training, rewards systems, job design, development of trust, etc. We agree with these authors on the importance of these factors and their influence on the intensity of knowledge-related processes. Yet, thinking of individual ability and motivation with reference to knowledge-creation and knowledge-sharing, we suggest that these two factors are not mere functions of managerial decisions but also heavily depend on an individual's attitudes and beliefs that are difficult to change for an employer. We assume that individual ability depends not only on specific education and training in certain field but also on personality characteristics that either help or prevent individual to engage in certain activities. Similarly, individual motivation comprises both reaction to external stimuli (e.g., managerial interventions) and intrinsic desire to engage in some actions. Moreover, we suggest that these two intrinsic components of ability and motivation are closely interrelated. That is why within the framework of our research we treated these two factors are a single variable and labelled it individual "inclination" or "preference" to participate in certain knowledge-related processes.

In order to see if we can justify our hypothesis about potential contradiction between conditions for knowledge creation and knowledge sharing on individual level of analysis, let us turn to the overview of the literature. Theory and research on creativity consider, among other issues, features of an individual that support knowledge creation (e.g., Barron, Harrington, 1981; Ford, 1996; Oldham, Cummings, 1996; Ruscio et al., 1998; Amabile et al., 2002). For example, Sternberg distinguishes the following components (features) of creativity of an individual based on his research: lack of conventionality, unorthodox thinking, readiness to question common norms, ability to put old information together in a new way and make connections between seemingly different things, aesthetic taste and imagination, flexibility (including ability to change directions), drive for accomplishment and recognition (Sternberg, 1986). Other authors mention similar features, along with originality of thinking, risk taking, internal locus of control, metaphoric thinking, ability to find order in chaos, emotional

instability, etc. (Barron, Harrington, 1981; Amabile, 1988; Woodman, 1993; Oldham, Cummings, 1996; Amabile et al., 2005).

Now let us consider features of an individual that is disposed to knowledge sharing and is capable to participate in it successfully. Inclination to put forward and develop one's own idea and orientation to self-interests are considered to be significant individual barriers to knowledge sharing (Husted, Michailova, 2002). In contrast, orientation to group interests and group recognition, inclination for cooperation, importance of group relationships, emotional stability and extraversion facilitate participation in knowledge-sharing (Husted, Michailova, 2002; Bock et al., 2005; Cabrera et al., 2006). Figure 1 presents brief summary of the comparative analysis, where we tried to group some of the mentioned above features in logical pairs:

Figure 1: Characteristics of an individual, inclined to one of the knowledge-related processes

Characteristics	*Inclined to knowledge creation, oriented on innovation*	*Inclined to knowledge sharing, oriented on replication*
Thinking	Original	Standardized
Group behaviour	Independent, non-conformist	Group affiliation, conformist
Authority	Self-oriented	Oriented on external authorities
Motivation	Self-actualization, recognition	Safety, group affiliation
Value system	Values achievement	Values relations
Attitude to goals	Hard-hitting goals motivate	Hard-hitting goals de-motivate

Comparing two columns of the table one can conclude that an individual can hardly simultaneously combine features that support knowledge creation and knowledge sharing, as it would imply inclination towards contradictory values and behaviours. Thus, the table provides vivid illustration to our idea that factors, promoting knowledge creation and knowledge sharing, may contradict each other. So, based on the above analysis, we have formulated the following hypothesis to be examined:

There are two clusters of individuals: those more inclined towards knowledge creation, and those more inclined towards knowledge sharing. These two clusters are non-overlapping, meaning that a person cannot be oriented to both innovation and replication at the same time.

We suppose that an individual can switch his/her orientation from one process to another during his/her life, but at the every specific moment he/she is inclined towards behaviour that mainly supports only one of the knowledge-related processes in question. We were also interested to discover whether this orientation to one of the processes depends on socio-demographic characteristics of an individual. The results of the research are presented in the following sections.

3. RESEARCH STRATEGY

We explored this hypothesis within the research project that was conducted by the author during 2006-2007 and covered a wide range of questions on knowledge

management in Russian knowledge-intensive companies. In this section we will introduce research methodology issues that are relevant to the above hypothesis.

We have chosen to focus our research on knowledge-intensive companies for two reasons. First, by the very nature of their business, such companies represent a fertile field for any research on knowledge-related processes and, in particular, on individual participation in these processes as it constitutes core business activities in such companies. Second, as we have mentioned in the introduction to our paper, understanding of individual knowledge-related behaviour is of strategic importance for competitiveness of knowledge-intensive firms.

Focusing on knowledge-intensive companies, we needed to empirically identify them – as the object of our research. This question does not have a self-evident solution as this type of the firms "does not lend itself to precise definition or delimitation", as noted by Alvesson (2000, p. 1103). On conceptual level this category of organizations is usually referred to those where most work is of an intellectual nature and where knowledge is more important than other resources (Starbuck, 1992; Alvesson, 1995). Yet on the level of empirical research the common approach is to define such companies as having well-educated, qualified employees as the major part of the workforce (Alvesson, 2000). For instance, Starbuck (1992) empirically defines knowledge-intensive firm as a company, in which not less than one third of the workforce consists of the specialists with the higher education and experience of the doctoral degree level. We believe that such empirical approach is not unproblematic (for discussion, see, e.g. Swan, Kinnie, 2003). One of counterarguments is that the doctoral level education has different easy of access in different countries, thus similar companies from different countries may differ significantly according to this criteria. Russia is the very case for such situation, where university- and doctoral level education had been widely accessible (Andreeva, 2007). That is why in our research we followed approach proposed by Swan and Kinnie, who defined knowledge-intensive firms "as the organisations … that employ highly skilled individuals and therefore create market value through the application of knowledge to novel, complex client demands" and urged to apply these criteria to each individual organization (Swan, Kinnie, 2003, p. 15).

3.1. Research procedures.

We developed a questionnaire for gathering data on our hypothesis. To meet the research goals, based on literature analysis (Barron, Harrington, 1981; Sternberg, 1986; Amabile, 1988; Oldham, Cummings, 1996; Ford, 1996; Ruscio et al., 1998; Amabile et al., 2002; Husted, Michailova, 2002; Amabile et al., 2005; Bock et al., 2005; Cabrera et al,. 2006) we formulated a number of questions (21 in total) covering different aspects of individuals' preferences towards participation in knowledge creation and knowledge sharing processes. The questions were primarily of closed multiple choice type. Designing the questionnaire we shuffled randomly characteristics representing knowledge creation and knowledge sharing profiles in order to avoid respondent biases.

If the different groups of individuals exist as we hypothesised, we were also interested to discover along which characteristics they differed from each other. That is why we added to our questionnaire two more sections – one on socio-demographic characteristics of respondents (age, education level, years of experience in profession, etc.) and another – on work-related motives. Measuring motivation for work is not an

unproblematic issue, and knowledge work is not an exception (Kubo, Saka, 2002; Amar, 2004; Hendriks, Sousa, 2006). Among the array of various theories of human motivation developed by psychology scientists, A.Maslow's pyramid of human needs (or, more accurately, the need to revise the order of needs) has been often cited in relation to knowledge work (e.g. Miller, 2002; Brelade, Harman, 2003; Dunkin, 2003). That is why we decided to base our motivational section on A. Maslow's 5-factor motivation model (though not replicating it precisely), and our questions on motives referred to five following motives: stability, material well-being, group affiliation, social recognition and self-actualization. The motivational section of our questionnaire cannot be treated as a comprehensive tool for studying work-related motivation as it may provide only a limited partial insight, but we believe that it fits the purposes of the given research that has other issues within its main focus.

The questionnaire was pilot-tested with a number of experts as well as with a number of employees from knowledge-intensive companies. The follow-up interviews with these respondents suggested some minor improvements in questions' wordings and format to ensure that they will be properly understood. The samples of the questions from our questionnaire are provided in Appendix 1. The questionnaire was run with the help of the web-interface in order to ensure anonymity of answers.

3.2. Research sample.

As our research involved individuals from various knowledge-intensive firms, we may speak about two samples within our data – one of the individual employees, and that of the companies. Let us present them briefly.

Companies' sample. Taking into account described above considerations on the empirical identification of knowledge-intensive organizations, we used selective approach to choose the companies for our research, with the first stage involving analysis of secondary information about target companies, as well as primary information obtained in direct contact with companies' members to make sure that the company fits our criteria. For the current stage of our research, we ended up with 5 participating firms – small and medium sized Russian companies (from 20 to 200 employees), having knowledge-based activities as the core of their business, employing highly skilled individuals and regularly dealing with novel and unique client demands. Industry-wise, two of them work in management consulting, the other two offer engineering services, and one is engaged in software development.

Individuals' sample. 120 respondents filled in the questionnaire, with 42.5% women and 57.5% men among them. 69% of the sample represents 20 – 34 years age range. Majority of the respondents have at least one higher education degree (84%). 34% of the sample have been working in their profession for 4 to 10 years, and 29% - for 1 to 3 years.

As far as we will further discuss significance of financial motives for the respondents, let us highlight the level of material well-being in the sample. With regard to average monthly income per family member, none of the groups dominates the sample: 25% of the respondents reported about 300 – 450 euro and 23% - about 600 – 900 euro per month per family member.

One limitation of our sample lies in the number of firms within our companies' sample which is quite small. Yet as our hypothesis is focused on individual level factors, and our individual level sample is much bigger, we believe that this limitation of our sample does not substantially affect the validity of our conclusions.

4. RESEARCH FINDINGS

4.1. Individual orientation towards different knowledge-related processes.

In order to examine our hypothesis, we performed consequent factor and cluster analysis of our data. Factor analysis of our data showed that the questionnaire we had developed measured characteristics of an individual behaviour along three independent, non-overlapping axes (factors). Further on we performed cluster analysis, taking three identified factors as variables. Its results are provided in Figure 2.

Figure 2: Identified clusters of individuals

Cluster, #	Number of respondents	Sample %	Valid sample %
1	***43***	***35.8***	***58.1***
2	1	.8	1.4
3	4	3.3	5.4
4	***25***	***20.8***	***33.8***
5	1	.8	1.4
Total*****	74	61.7	100.0

* Total number of cases (individuals) that were involved in our cluster analysis is smaller than our total sample size (74 versus 120), as the rest of the cases were excluded as having missing data along some of the factors.

As one can see from the Figure 2, our cluster analysis resulted in five-cluster solution, within which two clusters (#1 and #4) are big enough in their size. The other three clusters are too small so we disregard them from our analysis. Further we compared these two groups of respondents along three factors identified earlier, as represented in Figure 3.

Figure 3: The significance of differences between clusters #1 and #4

	t-criterion of equality of means		
	t	Degrees of freedom	Significance (2-sided)
Factor 1	.107	66	.915
Factor 2	1.244	66	.218
Factor 3	12.255	66	*.000*

Figure 3 demonstrates that these two clusters differ significantly along only one factor – factor 3. Analyzing the content of the questions within each factor, we identified them as follows: factor 1 – individual orientation to group interactions in knowledge-related processes; factor 2 – individual orientation to independent (self-dependent) work in knowledge-related processes; factor 3 – individual orientation to creative, innovative activities or to replication.

Figure 4: Descriptive statistics for factor 3

Factors	Clusters	Cluster size	Mean	Standard deviation	Standard mean error
Factor 3	#1	43	.6733220	.57427753	.08757650
	#4	25	-1.0850069	.56371864	.11274373

The figure 4 shows that the cluster #4 statistically significantly differs from cluster #1, but only along one factor, namely factor 3. Taking into account the essence of the factors, it means that cluster #4 unites individuals, more inclined towards innovation, while cluster #1 involves individuals, more inclined towards knowledge sharing and replication. Thus our hypothesis about two non-overlapping groups of individuals – more inclined towards knowledge creation and more inclined towards knowledge sharing – is confirmed within our sample.

4.2. Differences between identified clusters.

As far as we addressed this hypothesis within the frameworks of big research project on specifics of knowledge management in Russian knowledge-intensive companies, our project questionnaire included also a number of questions on work-related motives of individuals. Detailed discussion of the results of this stream of our research project are beyond the focus of current paper, so here we would like to concentrate on our findings related to the clusters of individuals we have identified.

We were interested to check whether our suppositions concerning significance of different motives for individuals with different preferences towards knowledge-related processes worked in our sample. Based on the literature analysis we proposed (see Table 1 above) that employees more inclined towards knowledge creation value more self-actualization, while employees more inclined towards knowledge sharing value more group affiliation. The results of the data analysis are presented in Figures 5 and 6.

Figure 5: The significance of differences in motives between clusters of respondents

		t-criterion of equality of means		
#	Factors (Motives)	t	Degrees of freedom	Significance (2-sided)
1	*Motive of group affiliation*	*2.345*	*65*	*.022*
2	Motive of stability	1.591	65	.116
3	*Motive of self-actualization*	*-2.133*	*65*	*.037*
4	Motive of social recognition	.406	65	.686
5	Motive of material well-being	.490	65	.626

Figure 6: Descriptive statistics for motives 1 and 3

Factors (Motives)	Clusters	Cluster size	Mean	Standard deviation	Standard mean error
Motive of group affiliation	#1	43	.3347992	.93898099	.14319326
	#4	24	-.2029679	.82463946	.16832883
Motive of self-actualization	#1	43	-.1312698	1.17351283	.17895903
	#4	24	.4203101	.62980875	.12855917

One can see from the above tables that the clusters we identified statistically differ in significance for them of two motives – motive of group affiliation and motive of self-actualization. Individuals from cluster #4 (those more inclined towards knowledge creation) attribute comparatively higher value to motive of self-actualization, while individuals from cluster #1 (those more inclined towards knowledge sharing and replication) attribute comparatively higher value to motive of group affiliation. These results prove our suppositions about specific features of individuals belonging to the clusters we identified.

We were also interested to check whether individual affiliation with one of the identified clusters was related to his/her socio-demographic characteristics. Data analysis revealed no relationships between individual inclination towards one of knowledge-related processes and such characteristics as sex, age, level of education, and work experience. Statistically significant differences between two clusters of respondents were found along “average monthly income per family member” variable: this income is found to be relatively higher for the cluster #4 (those more inclined towards knowledge creation) than for the cluster #1 (those more inclined towards knowledge sharing) ($p = 0{,}012$ by Mann-Whitney criterion). This finding looks very interesting in the light of common thinking that creative orientation of individual does not depend on his/her material well-being (so called “hungry artist paradox”). Probably potential explanation of this result may be found following the opposite logic – it is not better material well-being that stimulates creativity, but it is inclination to knowledge-creation that finally brings better salaries, as people with such inclination may purposefully seek specific jobs that are usually better paid by knowledge-intensive organizations.

The clusters showed differences along one more variable – “number of companies the respondent has worked for during his/her professional life”, though they stay only at the level of statistical trend ($p = 0.060$). Most part of individuals from cluster # 1 (inclined towards knowledge sharing) has worked in less then 3 companies, while most part of cluster #4 members (inclined towards knowledge creation) has worked in 3-5 companies. One of potential explanations is that individuals oriented towards knowledge creation are more inclined to change their jobs more often in the search for new tasks and new experience. Still, this cluster correlates with not the highest number of companies an individual has worked for in our measurement scale. Probably it is because higher rate of changing jobs (over 5 companies, taking into account that 69% of respondents are under 35 years old) would rather indicate not aspiration for new things but inability to settle down, adapt in any organization.

5. DISCUSSION AND CONCLUSIONS

In this section, we first propose some implications of our findings for knowledge management theory. Next, we formulate some implications for management of knowledge-intensive organizations.

5.1. Implications for knowledge management theory.

Our findings suggest that individuals can be more inclined towards either creating new knowledge or sharing and applying the existing one, and a person can hardly be inclined to (and therefore, efficient in) both processes at the same time. It means that at least on the micro-level of analysis, there are certain contradictions between knowledge creation and knowledge sharing processes. This idea challenges common view in the contemporary literature that usually treats knowledge creation and knowledge sharing processes as either independent or positively interrelated. Evidently the research presented and its results have certain limitations in terms of sample size and data collection tools. Yet we believe it can serve as a first step for further discussion and research on this topical issue that will lead to more comprehensive understanding of the interrelationship between two key knowledge-related processes.

We also suggest that our results are interesting for another conceptual discussion, namely, for definition of the "knowledge worker" phenomenon. Despite this term has been circulating in the literature for a few decades already (starting from Drucker, 1959), up to now there is no single and precise understanding of it (Kelloway, Barling, 2000; Joseph, 2005). Various authors use different characteristics to identify this group, for example, the share of mental work within carried activities (Flood et al., 2001), the level of education, more precisely - the higher education degree (Flood et al., 2001; Starbuck, 1992; Drucker, 2002), the professional characteristic (profession itself) (e.g. Davenport et al., 1996). "Capability to create new knowledge" is one of such characteristics which is very often ascribed to knowledge workers. For example, Miller suggests that knowledge workers are the "workers who are not normally following a defined procedure, but exploiting all their creativity, knowledge and skills to move the business forward" (Miller, 2002, p.17). The respondents within our sample can be qualified as knowledge workers along few criteria but above all due to the fact that they all perform knowledge work as they are engaged in knowledge-intensive companies. Yet our findings suggest that individuals who work from knowledge may differ in their inclination towards knowledge creation, and thus such criterion can be used for defining this group of employees with great care.

5.2. Implications for management of knowledge-intensive organizations.

On practical level existence of two non-overlapping groups of employees with different orientations towards knowledge-creation and knowledge sharing processes has a number of implications for managerial practices in knowledge-intensive firms, especially in the human resources management area.

First of all, we suggest that a KIF needs to analyse from this point of view its particular industry/business as well as its strategy in order to understand which of the two knowledge-related processes – knowledge-creation or knowledge-sharing and replication – is more critical for achievement of its current strategic goals. Despite KIFs

are commonly envisioned as focused on knowledge-creation, the answer to this question is not as evident as it may seem. For example, a company's priorities between these two processes may change over time as the company passes through different stages of its lifecycle. Using Greiner's model as a framework (Greiner, 1972), we speculate that on the stage of growth through creativity (1st stage in Greiner's model) knowledge-creation will be the key, while on the stage of growth through co-ordination (4th stage) knowledge sharing and replication will come to the foreground. Another example of the shift in priorities between these two processes may arise with the changes in competitive environment when with the maturing of a company's industry and/or with the intensification of the price competition in it focus on knowledge-creation may become too costly and deteriorate a company's bottom line. Yet even KIFs operating at the same time within the same industry may have different priorities regarding knowledge creation and knowledge sharing depending on their strategy. For instance, in the management consulting industry, some companies focus on providing standardized services, while others position themselves as providers of unique client solutions.

Further on, a company's HRM priorities need to be aligned with its strategic focus on one of these knowledge-related processes. We believe that any knowledge-intensive organization needs both types of the employees we have identified, yet their optimal proportions within total workforce may vary across different organizations depending on their current strategic focus as we described above. Moreover, the intensity of demand for employees either more inclined towards knowledge creation or towards knowledge replication may vary across different departments within the same organization. Thus, staffing decisions need to fit into an organization's strategic priorities regarding knowledge creation versus knowledge sharing, and at the same time to ensure that both types of employees are represented in a company. Though this recommendation may sound self-evident, both our current research and consulting experience of the author demonstrate that knowledge-intensive organizations tend to over-focus in their staffing policies (especially in their selection procedures) on the individuals more inclined towards knowledge creation irrespectively of the realistic needs of their business that in its turn results to frequent (and sometimes costly!) cases of "reinventing the wheel".

Another implication of our findings for HRM practices in knowledge-intensive organizations is that managers should not expect and require from all their employees equally high performance in both processes. This understanding has to be incorporated into employee assessment criteria and procedures, as well as into remuneration schemes. For instance, we have observed in our research a knowledge-intensive company that desperately needed to focus on replication in order to cut product costs and maintain its competitive position yet its bonuses system included only bonuses for various types of knowledge creation, like proposals of new product solutions, etc.

Extrapolating our findings from the individual to the organizational level of analysis of interrelations between knowledge creation and knowledge sharing and replication, we suggest that managers' efforts to develop organizational structure, culture, communication systems, etc. aimed to support these knowledge-related processes cannot focused on both of these processes simultaneously in order to be efficient. However this proposition needs further empirical research.

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Appendix 1. Samples of Questions

The original questionnaire is in Russian. This translation was not validated for research purposes.

1. Which of the two opposite statements describes you best?

a)

I like working with what I already have and do not spend time on fantasies	*or*	I like working with imaginary situations

b)

I try to control any situation, it makes my actions more efficient	*or*	I do not spend efforts on controlling all situations, uncertainty always means some new chances

c)

Most valuable ideas for my work were inspired by different fields unrelated to my profession	*or*	Most valuable ideas for my work I borrowed from colleagues and experts in my field or from special literature in my field

Next 3 questions have the following scale:

Fully agree	*Rather agree*	*Find difficult to estimate*	*Rather disagree*	*Fully disagree*

2. I enjoy solving totally new, atypical tasks
3. I like working in constantly changing environment, when I cannot predict how the situation will change and which task will become topical
4. I enjoy revising customary work methods constantly

5. How do you typically solve the tasks that are new for you?
Scale:

Very rarely	*rarely*	*sometimes*	*often*	*Very often*

I perform task analysis and find solution on my own
I start from task analysis on my own, then check my ideas with colleagues and experts, and then formulate solution
I search for experts who have already faced similar tasks and adopt their experience
Such tasks are solved in group work and solutions are developed by group
Other (please indicate what)

6. If you feel a need for development of your professional knowledge, what do you usually do?
Scale:

never	*very rarely*	*rarely*	*sometimes*	*often*	*very often*

I enter for some education programs
I search our company information base
I search for books, manuals, information in the Internet and study them on my own
I turn to my colleagues from my department for their advice and experience
I turn to experts in the field I am interested in for their advice and experience, irrespectively to which department of my company they belong
I turn to experts from other organizations (to my professional community) for their advice and experience
I turn to my direct boss for his advice and experience