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**VALUE READINESS FOR ORGANIZATIONAL CHANGES AND
LABOR INVOLVEMENT OF ENGINEERING STAFF**

Irina S. Leonova (a)*, Lyudmila N. Zakharova (b), Anna S. Zaladina (c), Roman A. Zolotov (d)
*Corresponding author

(a) University of Granada, calle Rector Lopez Argueta, s/n, Granada, Spain, irina_leonova@list.ru, +7 920 077 78 31.

(b) National Research Nizhny Novgorod State University n.a. N.I. Lobachevsky, 7 University st., Nizhny Novgorod, Russia

(c) National Research Nizhny Novgorod State University n.a. N.I. Lobachevsky, 7 University st., Nizhny Novgorod, Russia

(d) National Research Nizhny Novgorod State University n.a. N.I. Lobachevsky, 23 Gagarin av., Nizhny Novgorod, Russia,

Abstract

Results of theoretical and empirical studies on labor involvement and value readiness for organizational changes of pre-retirement and retirement aged, middle-aged and young male and female engineering employees are presented. The term “socio-psychological age” was introduced. Readiness for organizational changes and labor involvement are considered as indicators of the socio-psychological age, opposed to age and gender stereotypes. In conditions of the transitive economy, there are enterprises with different viability depending on the involvement level in innovation processes. They have different organizational conditions and organizational culture. Therefore, it is necessary to study the influence of organizational conditions on characteristics of the socio-psychological age of the staff. The Cameron-Quinn organizational culture assessment instrument (OCAI) was used to study value readiness for changes. Labor involvement as an indicator of labor motivation was studied using the M. Kuhn & T. McPartland twenty statement test. The statistical significance of differences between groups was calculated using non-parametric statistical methods. Labor activity is an area that confirms discrepancy between the chronological and socio-psychological age, which makes relevant further development of the concept of social psychological age, disclosure of its indicators and organizational determinants. In different organizational cultures, the staff discovers readiness for multidirectional organizational changes. Male and female personnel belonging to the same organizational culture have common characteristics and some specific differences. Within one organizational culture, the staff, regardless of gender and chronological age, has more similar characteristics of the socio-psychological age than their peers and even younger colleagues in another culture.

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1. Introduction

Modern society has entered an era of global economy, geopolitical uncertainty and economic instability. The ability to live in the conditions of changes is a prerequisite for success and prosperity of an enterprise (Hamel, 2003). Experts of the Organization for Economic Cooperation and Development (OECD) predict a very moderate growth of the Russian economy by 1,5-2% within the next two years. Among the most significant factors preventing the economy from growing are low labor productivity and labor reduction. If low labor productivity results from innovative backwardness of Russian enterprises which are incapable of advanced organizational changes, labor reduction is due to the aging of the population. Both factors threaten the viability of enterprises and the economy as a whole. The search for psychologically viable employees has age and gender dimensions. Employers are subject to age and gender stereotypes manifested in discriminatory practices against women and older workers. The pension reform in Russia is aggravating the situation in the labor market.

2. Problem Statement

Multifactorial and long-term studies reveal the links between employment of older workers, the size of the national GDP and life expectancy after 65 years. Data collected and analyzed by J. Johnson, N. Sargsyan, and J. Williamson for 1980–2010 showed that countries with a higher rate of older workers in the labor market have a higher life expectancy level. Participation of older people in labor activities suppresses government expenditures.

However, employment of older people is not an easy task. A good worker can keep his job, but it is more difficult to find a new one. Gender and age stereotypes reinforce the problems of female employment and make women's presence in the organizational space more problematic, except for organizational cultures based on values which are close to women (Cameron, 1999)

The studies do not confirm a total decrease in mental functions and changes in attitudes in the majority of elderly people (Kunze, 2013; Kornadt, 2016). A key feature explaining sustainability, intergenerational transmittability and impacts of social stereotypes is their belonging to unconscious phenomena (Aronson, 2011; Myers, 2012; Nelson, 2004). There are research results indicating that age characteristics are very conditional. The concepts of biological (Nakamura & Miyao, 2003; Jylhävä, 2017), psychological (Montepare, & Lachman, 1989; Staudinger, 2015) and social ages (Rose, 1972; Stodd, 2016) have been introduced. The chronological framework of reproductive and marriageable ages is changing (Moore, Sailor, 2017; Gewirtz-Meydan, & Ayalon, 2017). Many cultural, economic, and psychological factors determine the psychological age of a particular person (Staudinger, 2015). It seems that the concept of socio-psychological age is even more constructive.

Social psychological age is both a subjective and a social phenomenon. On the one hand, it fixes person's well-being based on self-perception of physical, intellectual and social competences correlated with typical characteristics of a younger or later chronological age. On the other hand, this phenomenon includes a set of characteristics of person's perception by representatives of society, including employers and colleagues.

Like any other psychological phenomenon, the sociopsychological age is contextually determined (Guimond, 2010). The context is organizational culture (OC). It is based on the values of workers

manifested in behavioral patterns based on these values (Sapienza, 1985; Schein, 1992; Cameron, 1999; Bellou, 2010; Montani, Odoard, & Battistelli, 2014). OC analysis can help identify contextual factors which contribute to or interfere with thinking and behavior stereotyping.

It is known that various organizational cultures accumulate employees of all official positions with certain psychological qualities and preserve these qualities determining the psychological vitality of staff, which is a condition for the viability of enterprises (Cameron, 2003; Bell, 2002; Masten, 2009; Mowbray, 2014; Zakharova, Leonova, & Korobeynikova, 2017). To date, the first results have been obtained. They revealed the influence of organizational conditions on social psychological characteristics which are the essence of the socio-psychological age of employees (Bellou, 2010). The type of the OC of Russian enterprises depends on the level of their technological effectiveness and involvement in innovative processes. A hierarchical market OC is typical of enterprises with a pre-reform management system experiencing significant modernization difficulties (traditional enterprises). In enterprises which overcame difficulties of transition to a new model of economic development, an innovation-market OC prevails. Different forms of viability and different susceptibility of social stereotypes are typical of the personnel of these enterprises, (Zakharova, Leonova, & Korobeynikova, 2017).

3. Research Questions

1. Are there stereotypes of old age, unreadiness of older employees for promising changes and their weak labor motivation operate in all OCs of the transitive economy?
2. What are general and distinctive characteristics of value readiness for changes and labor motivation of mixed age personnel in various OCs?
3. How does the gender specificity of labor motivation and value readiness for changes manifest in different types of OC?

4. Purpose of the Study

The study aims to identify age and gender characteristics of the value-motivational readiness of workers for organizational changes. As an example, the engineering staff was studied. The interest in this category of employees is due to their key role in the development of the enterprise.

5. Research Methods

The type of organizational culture of enterprises, basic values of its current state, the type of a preferred organizational culture and its corresponding values were studied using the OCAI organizational culture assessment instrument Cameron-Quinn. Values were considered as behavior predictors (Scott, Herbst & Houmanfar 2009; Schwartz, 2012) which makes it possible to analyze and predict possible vectors of enterprise development.

Personal involvement in the labor process as an indicator of labor motivation has been studied using the M. Kuhn & T. Mc Partland twenty statements test. Employees (engineers) of innovative and traditional production enterprises were research subjects. From each type of enterprise, 25 men aged 35-55 to 60-70 years and 25 women aged 35-50 to 55-65 years (200 workers) took part in the study. The results are presented in Tables 1-3.

Table 01. Characteristics of organizational and cultural preferences and personal involvement of the mixed age engineering staff

Specifications		Traditional enterprises						Innovative enterprises					
		M		U	W		U	M		U	W		U
		age			Age			age			Age		
		35-55 (25 per.)	60-70 (25 per.)	35-50 (25 per.)	55-65 (25 per.)	35-55 (25 per.)	60-70 (25 per.)	35-50 (25 per.)	55-65 (25 per.)				
Group numbers													
		1	2		3	4		5	6		7	8	
Current OC	K	22.4	16.1	T	20.7	23.9	-	16.1	16.8	-	19.2	15.5	*
	A	10.4	11.4	-	12.6	13.9	-	28.3	25.6	-	29.2	26.6	-
	M	25.5	29.4	-	24.8	21.0	-	40.4	35.9	T	38.2	40.5	-
	H	41.7	43.1	-	41.9	41.2	-	15.2	21.7	T	13.4	17.4	*
Preferred OC	K	30.2	32.8	-	36.8	32.6	-	20.8	16.6	*	24.8	25.5	-
	A	18.2	15.8	-	18.6	20.3	-	33.2	30.6	-	26.6	24.4	-
	M	25.4	23.0	-	18.6	20.9	-	35.4	35.0	-	34.6	30.6	T
	H	26.2	28.2	-	26.0	26.2	-	10.6	17.8	*	14.0	19.5	T
The act S-I	F-P	1.6	1.75	-	1.8	1.9	-	0.9	1.2	-	1.4	1.6	-
	P-O	1.35	1.25	-	1.2	1.0	-	1.9	1.7	-	1.5	1.5	-
Prom S-I (5 years)	F-P	2.4	2.65	T	2.0	2.3	-	0.6	0.9	-	1.2	1.6	-
	P-O	0.6	0.3	*	0.9	0.6	T	2.2	2.0	-	1.7	1.4	*

In Table 1-3: M - men, W - women; C - clan, A - adhocratic, M - market, H - hierarchical components of the organizational culture (%); The act S-I - actual self-identification, Pr S-I - promising self-identification; F-P - family and private life, P-O - professional and official roles (the number in the first three positions of the list, in points); U statistical significance of differences (Mann-Whitney U-test); * - $p \leq 0.05$; ** - $p \leq 0.05$; T - trend; - - no statistically significant differences.

Table 02. The statistical significance of differences between indicators of organizational and cultural preferences and personal involvement of the mixed age engineering staff

Groups	Indicators											
	OC								PI			
	Current				Preferred				Current		Preferred	
	C	A	M	H	C	A	M	H	F-P	P-O	F-P	P-O
1-3	-	-	-	-	T	-	T	-	-	-	T	-
1-4	-	-	-	-	-	-	-	-	-	*	-	*
1-5	*	**	*	*	*	*	*	*	*	*	*	*
1-6	*	*	*	*	**	*	*	*	*	*	*	*
1-7	-	**	*	*	*	*	*	*	T	*	-	*
1-8	*	*	*	*	*	*	*	*	-	-	-	*
5-7	T	-	-	-	-	-	-	-	*	*	-	-
5-8	-	-	-	T	-	-	-	-	*	T	*	-
6-7	-	T	-	*	-	-	-	*	-	-	T	-
6-8	-	-	-	*	-	-	-	-	-	-	*	*
2-3	-	-	*	-	-	-	T	-	-	-	*	*
2-4	*	-	*	-	-	-	-	-	-	-	-	T
2-5	-	*	*	**	*	*	*	*	*	*	-	*
2-6	-	*	*	*	*	*	*	*	*	*	*	*
2-7	-	**	*	**	*	*	*	*	*	*	*	*
2-8	-	*	*	*	*	*	*	*	-	-	*	*
3-5	*	*	*	*	*	*	*	*	*	*	*	*
3-6	*	*	*	*	*	*	*	*	*	*	*	*
3-7	-	*	*	*	*	*	*	**	T	T	*	*
3-8	-	*	*	*	*	T	*	*	-	T	*	*
4-5	*	*	*	*	*	*	*	*	*	*	*	*
4-6	*	*	*	*	*	*	*	*	*	*	*	*
4-7	*	*	*	*	*	*	*	*	*	*	*	*
4-8	*	*	*	*	*	*	*	T	*	*	*	*

Table 03 The statistical significance of differences between indicators characterizing the OC-preferences of the engineering staff (W-criterion)

Table 03. The statistical significance of differences between indicators characterizing the OC-preferences of the engineering staff (W-criterion)

Compare Indicators	Group numbers							
	1	2	3	4	5	6	7	8
Cc-Cp	*	*	*	*	-	-	*	*
Ac-Ap	*	T	*	*	T	T	T	-
Mc-Mp	-	**	T	-	-	-	T	*
Hc-Hp	*	*	*	*	-	-	-	-

Notes: c - current, p - promising (desirable for the respondents) state of the organizational culture; W – Wilcoxon criterion; * - $p \leq 0.05$; ** - $p \leq 0.01$, T - trend; - - no statistically significant differences.

6. Findings

Evaluation of the staff of traditional enterprises is a sign of the hierarchical market OC with a pronounced clan component. These estimates are typical of men in both groups and young women. There are few statistical differences in OC estimates between staff groups of traditional enterprises (Table 2). For example, older men feel the demands of market relations more strongly than younger and older women. Older men feel the positive influence of relationships. Older women prefer the hierarchical clan OC with a pronounced market component. Older women want the value of relationships to be dominant, at least in their relationship with each other and management. In innovative enterprises, all workers prefer the market-adhocratic OC which speaks for uniform and, if necessary, personalized management requirements for employees.

OC components in the estimates of the staff of traditional and innovative enterprises are different. This is particularly pronounced in relation to the adhocratic component of OC. Thus, differences in this indicator in young men make up 10,4% in traditional enterprises versus 28,3% in innovative ones ($p \leq 0.01$). Young men have lower estimates of innovation activities in the enterprise. They feel this feature of organizational conditions more acute. It is not by chance that the group of young women of innovative companies has the highest estimates of innovation activities (29,2%). It is due to their emotional perception of innovation. As for a clan component, the estimates given by senior male workers of traditional enterprises are close to the estimates given by all personnel groups of innovative enterprises. This fact deserves attention. Ordinary things for innovative enterprises are perceived by older men of traditional enterprises as insufficient warmth of relations.

If we consider OC-preferences, we can see that in traditional enterprises, the staff, regardless of gender and age, share clan-hierarchical values. The clan hierarchical OC is desirable for workers. Young men and women prefer this type of culture with a pronounced market component, and older respondents wish the market component to be equal to the adhocratic one whose presence in the estimates of all groups is minimal. Although this share is small, almost all groups of workers of traditional enterprises want to strengthen this component. The difference between the indicators of adhocracy in the current and desired states of the OC is significant, except for older men whose desire to increase innovation does not reach the level of statistical significance (line AA-Ap of Table 3). In the group of older women, in contrast to their

male peers, the desire for innovation is pronounced. This might be due to the fact that older women feel more comfortable in the company than older men. A lower level of organizational stress contributes to the support of organizational changes.

At the same time, this desirable level of innovation for employees of traditional enterprises is statistically lower than the achieved level of OC adhocracy in innovative enterprises (Table 2). For traditional enterprises, the maximum desirable level of innovation is 18,6-20,3%. These are female groups who emotionally perceive organizational changes: compared to men, they can experience stagnation (statistically insignificant). The level of adhocracy in the staff of innovative enterprises is more than 25%. That high level determines the desirability of growth (33,2%) in the group of young men to the existing level in the group of older women. In no group does the growth of indicators reach the level of statistical significance, remaining at the level of trends. The high level hinders the possibility of further growth.

There are certain gender nuances, but they do not change the picture. Women, regardless of age and the type of OC, want to strengthen the value of relationships in organizational conditions. However, in innovative enterprises these desires are not strongly expressed compared to those in the traditional enterprises. If for women in traditional enterprises, the desired level of the clan component reaches 32,6 – 36,8%, for women in innovative ones, the level is only 24,8–25,5%. In traditional enterprises, men are close to women in their desires for the clan component of the OC. This indicator is almost the same for women: 30,2–32,8%, while in innovative enterprises, men believe that the clan component at the level of 16,6–20,8% is sufficient. In innovative enterprises, older men and women want to enhance the level of order. Their desires correlate with the severity of this component ranging from 10,6 in young men to 19,5% in older women, while in traditional enterprises the level of desirable hierarchical relations is no less than 26%.

Innovative enterprises have other value priorities: innovation and market organizational conditions. There are some nuances: both men and women of the younger age group want to enhance the innovation component of the OC, and older men and women appreciate a balance of the market and innovative components. They are more cautious and restrained with respect to ongoing changes> However, they approve them and do not want to establish more conservative organizational conditions.

The data in Tables 1 and 2 show that employees of traditional enterprises are committed to family social roles and private life. Exceptions are young male workers of traditional and young female workers of innovative enterprises. Young male workers of traditional enterprises want to pay more attention to the family: the indicator varies from 1,2 to 2,4 points, and the indicator of young women in innovative enterprises varies within the statistical error from 1,4 to 1,2 points. This dynamic commitment can be considered as disbelief in organizational change: these indicators are close to those of older men and women. In general, of workers of traditional enterprises, regardless of gender and age, a statistically significant decrease in official and professional self-identification from 1,0-1,2 points in older groups to 0,3-0., points in young groups ($p \leq 0.05$) is typical.

The data on self-identification speak for disbelief of employees in development prospects.

In innovative enterprises, the involvement of the staff in labor activities is significantly higher. Adherence to official and professional roles varies from 1,5 points in older groups to 1,7-1,9 points in young groups and even increases, it is not statistically significant, but it approaches the level of statistical

significance: in young men, it varies from 1,9 to 2,2 points, in young women, it varies from 1,7 to 2,0 points, in older men, it varies from 1,5 to 1,7 points. The exception is older women: the indicator varies from 1,5 to 1,4 points, significantly lagging behind the younger employees and men of their age group ($p \leq 0.05$).

Thus, the data on personal self-identification supports the data on the value priorities of employees and makes the picture of readiness for changes which is an indicator of the socio-psychological age, more complete. Staff groups are similar within one OC and differ significantly from the staff of enterprises with a different type of the OC. Moreover, workers of traditional enterprises do not believe in feasibility of organizational changes.

7. Conclusion

1. Psychological characteristics of the staff of traditional enterprises correspond to gender and age stereotypes existing in society. For innovative enterprises, workers of the same chronological age and gender have significant psychological characteristics different from gender and age stereotypes which bridge the gap between older employees and younger employees.

2. Despite working in different organizational cultures, workers of traditional and innovative enterprises have one common characteristic. This is a high value of relationships within the team which is natural for any social groups. There are a lot of distinctive features. First of all, fundamental differences in innovative values can be attributed to the main ones. If innovation is a system-forming value of an organizational culture for employees of innovative enterprises, the staff is committed to this value, for employees of traditional enterprises, innovation is irrelevant. The second feature is the staff readiness for multidirectional organizational changes. The staff of innovative enterprises is ready to maintain the existing organizational culture, moderately increasing its adhocratic component. At the same time, workers of traditional enterprises are ready to return to the clan-hierarchical OC model which is a sign of resistance to management efforts.

3. Organizational culture is a significant social regulator of gender manifestations of the socio-psychological age of workers. Male and female employees within one organizational culture have common features and specific differences.

Characteristics of managers have not been studied in conditions of different types of organizational cultures. Nevertheless, differences in the characteristics of the staff of homogeneous groups require deepening studies on personnel management in different organizational cultures.

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