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**TYOLOGY OF THE THIRD AGE INDIVIDUALS AND
INCREASING EMPLOYMENT OF OLDER WORKERS**

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Abstract

The article addresses the issues of involving the third age individuals in the labor market of the Republic of Karelia, as there is a growing need for such involvement resulting from the intensification of the population aging. The empirical basis of the research comprises results attained via surveying 527 respondents living in the city of Petrozavodsk and the Medvezhiegorsk and Sortavala municipal districts. It has been established that the potential of the employment level increase among the studied category of citizens in the Republic of Karelia amounts to 18.5 percentage points. It has been determined that age, number of family members, income level and education, as well as health indicators, are significant factors that affect the continued employment in retirement age. On the basis of discriminant analysis, we have developed a typology for labor policies aimed at the third age population, which includes the behavioral patterns of 78.9% of the group in question. The paper proposes a number of measures to reproduce the regional labor potential by increasing the level of employment among seniors. All activities are differentiated depending on the capacity characteristics and the population motivation level. This paper would be of interest to the workers of the state and municipal authorities, for heads of employment services and businesses. The activities presented in the paper can be implemented in order to improve the economic policy in the field of increasing the employment level in the region.

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Keywords: Employment, seniors, ageing, ageism, motivation to work.



1. Introduction

Demographic population aging occurring in developed countries and the Russian Federation in particular forces governments to adjust the existing healthcare and pension systems. However, today, many economic and social problems remain unresolved. The most acute issues are associated with labor markets and the depletion of labor potential in particular.

This paper is aimed at investigating the possibility of reproducing the region's labor potential through the third age population involvement. In the Russian Federation, the greatest number of older workers is involved in the field of education, healthcare, social services, agriculture, hunting and forestry (Zabelina, 2018). The desire to continue working is primarily determined by personal income and average income in the district (Vasilyeva & Karginova, 2018), as well as the pensioner's health quality (Lyashok & Roshchin, 2016; Popova & Terent'eva, 2014). Studies have shown that employment termination and retirement are accompanied by a reduction in consumption both in Russia and in other countries (Stephens & Unayama, 2012). At the same time, not every older worker that is ready to work can maintain employment or become employed. Reasons for dismissal (denial of employment) may include person's health and education level (Dobrokhleb, 2008; Elshina, 2015), ability to learn and speed of adapting to modern technologies (Brunello & Comi, 2015; Lovász & Rigó, 2013; Malul, 2009), including information technologies (Meyer, Sit, Johnson, Mead, & Walker, 1997). It is worth noting that a significant role in the refusal to hire senior workers is played by existing stereotypes about their poor performance (agism) (Levy & Macdonald, 2016; Tisch, 2015; Dobrokhleb, 2008). At the same time, in some countries, unemployment of the third age population is not caused by discriminatory attitudes but instead is associated with respect and the existing traditions of younger generations caring for older ones (Martin, 1990).

In spite of the large number of scientific papers dedicated to the identification of factors impeding or facilitating the career development of senior workers, these factors have not been compiled into a system that would allow for predicting the labor behavior of the studied age group. It cannot be ignored that the regional labor capacity differs greatly among the federal subjects of Russia (Migranova & Toksanbaeva, 2014; Popova & Terent'eva, 2014; Terent'eva & Toksanbaeva, 2015). In this regard, it seems extremely important and relevant to compile a typology of the older population behavior at the level of a particular region of the Russian Federation in order to develop differentiated measures for increasing employment.

2. Problem Statement

In the last decades, many developed countries have witnessed the intensification of the population aging processes, and in this case the Russian Federation is not an exception. These processes are particularly noticeable in the northern regions of Russia. From 1995 to 2016, the Republic of Karelia saw the population of retirement age increase in absolute value by up to 25000 people. During the same period, the region's population of working age decreased by 22.6%, from 447000 to 346100 people, which has caused a change in the population age structure, where the proportion of the retirement age population increased by 8.2 percentage points.

Undoubtedly, these dynamics are not conducive to the development of the regional economy, mainly due to the shrinking of the labor market and the consequent fall in investment attractiveness and reduction of budget revenues associated with the growing social security expenditure (Timakov, 2017). Hence, the issue of involving the retirement age population in the labor market appears to be of interest, as it could partially smoothen the listed negative consequences.

Despite the fact that the retirement age is determined by the existing legislation, scientists have identified a part of elderly people who are capable to continue working. In order to distinguish among the retirees who can and cannot be employed in the labor market, the terms "third age" and "fourth age" are used. Persons of the third age are elderly people who are able to continue working, are in good health and have enough stamina; the fourth age identifies persons in need of care and assistance (Neugarten, 1974).

3. Research Questions

In order to elaborate a comprehensive economic policy for increasing employment levels in the region, it is necessary to understand the current quantitative and qualitative characteristics of employed and unemployed persons of the third age.

Taking this into account, this paper aims to elaborate on the following questions:

- Which factors determine motivation to work among the third age individuals?
- Which labor strategies of the third age population are considered the most typical ones?
- What is the current potential for employment level growth among the third age?
- What measures will allow for an increase in the employment level?

4. Purpose of the Study

The aim of this research has been to study the economic behavior of the third age individuals in the labor market for developing differentiated measures to increase the employment level of the studied category of citizens. Differentiation of measures and taking into account the pensioners' health and education characteristics, their income level, as well as financial and non-financial motivation, will increase the effectiveness of the policy in place. In turn, employing seniors will allow for reproducing the labor potential in the regions.

5. Research Methods

Seniors from the Republic of Karelia, men aged 55 to 72 and women aged 50 to 72, were selected as the research subjects. The lower limit corresponds to the age starting from which, under the current legislation, people from the districts referred to as the Far North, have the right to early retirement insurance benefit. The upper limit is determined in accordance with the statistics of the Pension Fund of the Russian Federation, which demonstrates that the probability of continuing working upon reaching the age of 72 is considerably lower.

The laborbehavior quantitative and qualitative characteristics of the older population of the Republic of Karelia were obtained by means of a questionnaire. The Medvezhiegorsk and Sortavala municipal districts were selected, as the ratio of the employed people and the total number of pensioners

corresponds to the average number for the region. The survey was also conducted in the city of Petrozavodsk, the capital of the Republic of Karelia, which accounts for 44% of the region's population. As in the Republic of Karelia only a little over 200 thousand people belong to the selected age group, for this sample to be representative of the whole group, it is sufficient to study a sample of 400 and more individuals (Mogilchak, 2015). During the fourth quarter of 2017, 527 respondents answered the questionnaire in the framework of the survey. This sample is considered representative, as the age-sex structure, the ratio of urban and rural population, as well as the share of employed and unemployed pensioners, were taken into account.

A discriminant analysis aimed at identifying the variables that distinguish the existing groups was conducted in order to determine and forecast the labor behavior strategies of the third age people. Conducting the aforementioned analysis is possible in case the dependent variable is categorical (nominal) and the discriminant variables (predicates) are interval. Taking into account the purposes of the study, involvement in the labor market was selected as the dependent variable: the respondent is employed or unemployed. The respondents' age is the interval variable in the framework of this survey. The number of household members was calculated based on the provided description of the family composition (individuals living together with the respondents). The approximate average monthly pension of the respondents (expressed in thousands of RUB) was defined as the average of the maximum and minimum values of the selected interval. Given that discriminant variables were determined, the analysis was carried out using forced inclusion. Upon calculating the weight of the discriminant variables, the discriminant function was formulated.

6. Findings

In the framework of the conducted survey, the current employment indicators for the third age people were defined (table 01). 179 respondents are involved in the labor market (34.0% of all respondents). Consequently, 348 respondents are currently not working (66.0%).

Table 01. The distribution of answers to the question "What is currently your main occupation?"

Main occupation	Number of respondents	Share of respondents, %
Entrepreneur, self-employed etc.	15	2.8
Employed pensioner (work by agreement, contract etc.)	164	31.1
Unemployed, searching for a job	54	10.2
Unemployed, not searching for a job but with a great desire to work	43	8.2
Not willing to work and not working (resting upon retirement)	251	47.6
Total	527	100.0

In order to create a discriminant function that would allow for predicting how the decision to continue or terminate employment is made, the following characteristics of the third age people affecting

their strategy choice were considered: age; number of family members; monthly pension in thousand RUB. Using the Pearson rank correlation coefficient, it was confirmed that these characteristics are not correlated. The values of the discriminant functions coefficients (Table 02) were obtained through a discriminant analysis. The standard deviation of error was less than 0.05, which demonstrates significance of the identified groups.

Table 02. Values of the discriminant functions coefficients

Discriminating variables	Discriminant function coefficient
Age, years	0.167
Number of household members	-.0580
Amount of monthly pension, 1000 RUB	0.039
Constant	-10.942

Therefore, the discriminant function is as follows:

$$f = 0,167 \cdot x_1 - 0,058 \cdot x_2 + 0,039 \cdot x_3 - 10,942,$$

where x_1 is the pensioner's age expressed in years;

x_2 stands for the number of household members;

x_3 is the amount of monthly pension expressed in thousand RUB

The function value should be compared to the distribution diagram (Figure 01). If the function value is in between -1 and -0.5, it means that the employment probability is at its highest.

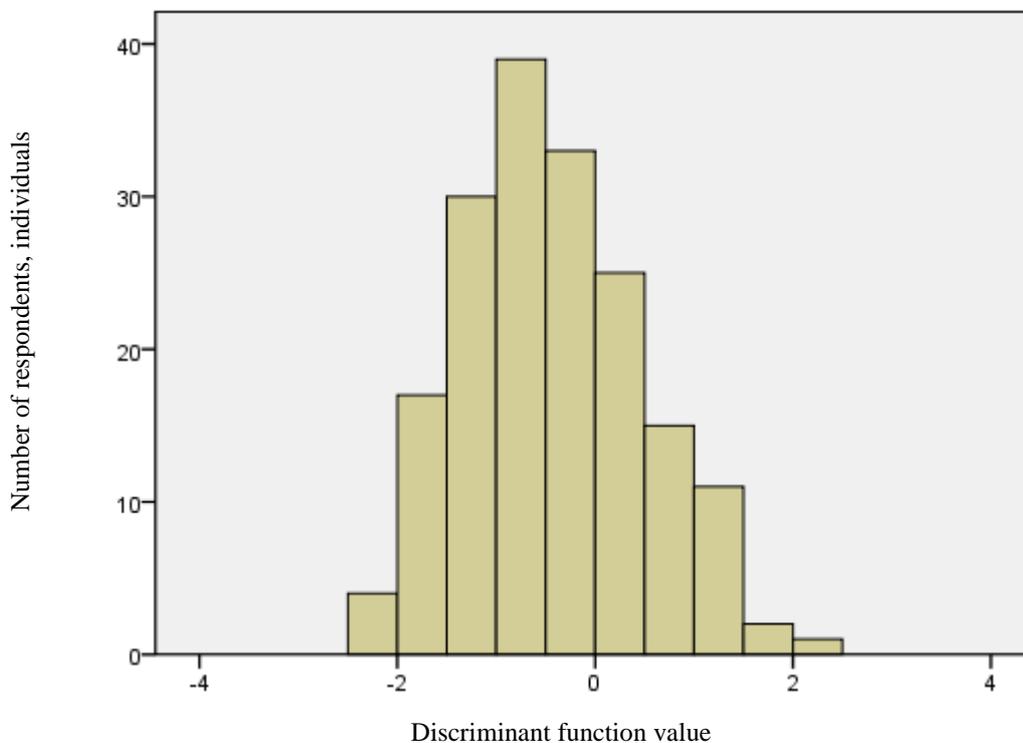


Figure 01. Diagram of discriminant function value distribution for the employed respondents

To calculate the quantitative values for the employment probability, we could use the posterior probability formula, constructed using the ratio of the Mahalanobis distance to the centroids of the employment groups (the employment group centroid is -0.443; while the unemployed group centroid is 0.227).

The comparison allows for predicting the labor strategy of a third age individual, as well as the growth in the employment rate in case one of the determining factors shows a positive development. It is worth noting that given the limited number of factors taken into account by the discriminant function, the classification accuracy, amounting to 63.7%, is not great. This indicator was calculated as a ratio of the number of respondents with the prediction matching the actual employment data to the total number of respondents (Table 03).

Table 03. Comparison of the actual employment of the respondents and its predictions based on the discriminant function

Indicator	Employment of respondents		
	Actual	Based on the discriminant function	Coincidence of the actual values and the values determined by the discriminant function
Number of respondents: Employed	177	249	118
Unemployed	346	274	215
Respondents share: Employed in the labor market, %	33.8	47.6	22.6
Unemployed in the labor market, %	66.2	52.4	41.1

For a more accurate prediction, in the further research, it would be reasonable to use a more elaborated questionnaire, which would include a greater number of integral indicators. At the same time, we shall emphasize that for a number of cases the prediction significance proved to be greater. For instance, the discriminant function value for a person aged 52, with four household members and a monthly pension of 17 250 RUB, amounts to -1.82. This corresponds to a high employment probability (equal to 75.9%). The discriminant function calculated for a person aged 69, living on their own and receiving a pension of 45 000 RUB, is equal to 2.28. This value indicates a low probability of employment (probability equals to 16.9%). Compared to the 69-year old senior's data, the employment probability for a person aged 57, living on their own and receiving a pension 45 000 RUB, demonstrates an increase by 26.9 percentage points, reaching 43.8%.

The following typology of the third age people behavior (Table 04) was compiled, based on determining the significance of such factors as age, household size and pension level.

Table 04. Indicators of the third age individuals identifying their behavior types

Indicator	Group 1	Group 2	Group 3	Group 4	Group 5
Share of the group respondents from the total, %	27.5	8.2	4.6	24.5	14.2
Average age, years	58.8	57.8	60.0	62.8	64.3

Standard deviation for age, years	5.2	5.4	4.5	5.6	5.1
Live, %:					
<i>on their own</i>	28.3	23.3	45.8	33.3	34.7
<i>as a married couple</i>	41.4	46.5	37.5	49.6	54.7
<i>with children</i>	24.8	20.9	16.7	15.5	5.3
Average retirement benefit, RUB	16 118.97	15 965.12	13 989.13	17 717.05	16 743.33
Standard deviation of the retirement benefit, RUB	4 837.38	4 971.52	3 489.82	6 208.72	4 957.26
Estimate their health as, %					
<i>very good</i>	0.7	4.7	0.0	0.8	0.0
<i>good</i>	34.5	32.6	12.5	23.3	0.0
<i>satisfactory</i>	59.3	58.1	70.8	65.9	65.3
<i>poor</i>	5.5	4.7	16.7	8.5	32.0
<i>very poor</i>	0.0	0.0	0.0	1.6	2.7
Know how to use modern technologies, %:					
<i>only the general ones</i>	71.7	86.0	70.8	48.8	54.7
<i>the specialized ones</i>	12.4	7.0	26.7	7.0	10.6
<i>do not know how to use them</i>	15.9	7.0	2.5	44.2	34.7

Group 1 includes individuals employed due to their financial motivation to work (27.5% of all seniors). The average age of the members of this group is 58.8 years. Most of them live with a spouse. Out of all the studied groups, this group enjoys the greatest percentage of people living with children (24.8%). The average retirement benefit amounts to 16 118.97 RUB.

This group representatives have the highest education level (higher education - 36.3%, secondary professional education - 37.9%). 12.4% of the group know how to use specialized information and production technologies. At the same time, a relatively low age (lower than the sample average) explains the high level of health quality, which stands out in comparison to other groups. These two factors make it possible to continue working. Apart from that, the fact that the group members live together with their children may indicate a generally low level of family income and the parents' desire to help their children financially.

The majority of this group representatives (67.6%) continue working at the same place where they worked before reaching the retirement age. More than half of the group members work in the public sector.

Group 2 unites individuals searching for a job for financial incentives (8.2% of the total number of seniors). The representatives of this group are the youngest: the average age is 57.8 years, and the estimated health quality levels are the greatest. The percentage of individuals living on their own is the highest in this group (23.3%) in comparison to all other groups. Their pension is lower than the one of Group 1: on average it amounts to 15 965.12 RUB. Apparently, in many cases, the financial incentive can be determined by the low pension and the need to independently manage a household. This group enjoys the greatest working potential: it is characterized by good or satisfactory health, the number of people with secondary education is the highest (44.2%) and the number of people not able to use new technologies is the lowest.

These individuals explain the fact of their unemployment by the lack of a suitable job (95.3%). At the same time, they state that the main reason for being denied a job are managerial stereotypes ("young workers are more efficient"). However, we could assume that the high level of education implies expectations of a higher wage, which the employers are not always able to meet.

Group 3 consists of individuals willing to work for financial incentives but desperate to find a job (4.6% of the total number of seniors). The representatives being 60 years old on average, the age of the group represents the average of all groups. Most of the group members live on their own (45.8%), which is the highest share of such individuals among all groups. The pension amounting to 13 989.13 RUB on average, this group is the poorest of all.

The individuals desperate to find a job also note the lack of a suitable job and age discrimination. However, it should be noted that it is more difficult for them to find employment: the education level for this group is not very high (45.8% have a secondary professional education, 25.0% have received basic vocational training and only 8.3% have a higher education), the majority state that their health quality is "satisfactory" and very few members estimate their health as "good". At the same time, their undeniable competitive advantage is represented by the high level of competence with new technologies: only 2.5% of the respondents in this group do not know how to use them, and 26.7% can use specialized information and production technologies.

The representatives of Group 2 can be referred to as the intelligentsia, whereas Group 3 could be characterized as the working class. The demand for workers of the third age in all areas of employment is one of the lowest, which probably caused the representatives of this group to terminate the search for potential employment.

Group 4 consists of unemployed workers that do not work due to having other priorities in life, such as a family, a hobby etc. (24.5% of the total number of seniors). These are people aged 62.8 on average, living with a spouse (49.6%) or without a partner (33.3%). They enjoy the greatest pension, amounting to 17 717.05 RUB on average.

Group 5 is represented by individuals unemployed as a result of low health quality or lack of psychological readiness (14.2% of all seniors). The average age being 62.3, this group is the oldest of all. The majority lives with their spouse (54.7%) or on their own (34.7%). The retirement benefit is considerably high, amounting to 16 743.33 on average. Almost one third estimates their health quality level as "poor" and many representatives have disabilities.

Based on the presented typology, the following groups of measures have been identified for reproducing the labor potential in the region (Table 05).

Table 05. Measures aimed at involving seniors in the labor market depending on the group

Measures	Group 1	Group 2	Group 3	Group 4	Group 5
1. Increasing the quality of labor potential.					
1.1. Forming and developing competences in working with specialized technologies.	B	B	K	A	A
1.2. Ensuring a high level of health.	B	B	B	B	B
2. Increasing the motivation: at the state level (improving the veteran status, indexing pensions for	B	B	B	B	B

employed pensioners, providing information about the labor market) and carrying out individual measures (promoting involvement in the labor market, institutionalizing the practices of knowledge transfer etc.)					
3. Increasing the institutional and organizational capacity for working. 3.1. Adjusting the workspace.	B	-	-	-	-
3.2. Employment services should allocate jobs to the persons of the third age in the framework of a separate institutionalized area of work; the personnel from the employment services should be able to travel to remote districts.	A	B	K	A	A
3.3. State support of the enterprises that employ older workers	B	B	B	A	A
3.4. Setting lower rates for pension insurance contributions for employees of retirement age	B	A	A	-	-
3.5. Providing protection against age discrimination.	B	B	K	A	A
3.6. Providing support for the self-employed.	B	K	B	A	A

Note: K - the key group, B - the basic group, A - the auxiliary group.

The key group should be given highest priority, whereas the basic one can be considered as a secondary group and the auxiliary one can be assigned the lowest priority.

For instance, there is no doubt that competences in working with specialized technologies should be formed and developed for all workers and job seekers. At the same time, the priority should be given to those whose competence level is currently the lowest and who experiences difficulties in finding a job caused by this issue (Group 3). However, it is desirable that the training is available also to those groups of people that are currently not motivated to work. Earlier studies showed that these individuals can return to work but learning without maintaining appropriate skills (lifelong learning) presents a great challenge (Brunello & Comi, 2015).

The presented typology describes behavioral strategies of 78.9% of the third age population. It is clear that financial motivation implies taking more action in search of employment. Being financially motivated to work, only one out of three seniors did not search for a job. As for the respondents without a financial incentive, they would not search for a job in half of all cases. On the other hand, non-financial motivation plays a great role in entrepreneurial activities. A third of the current self-employed individuals of the third age are driven by non-financial reasons (desire to fulfill their potential, a habit to work etc.). For comparison, the number of the employed people motivated by non-financial factors is half as great (17.2%). Thus, when elaborating the measures to develop entrepreneurship and self-employment, which contribute to the arrival of new production plants and jobs, non-financial motivational factors should be taken into account.

The generalization of the findings derived from the data analysis for the Republic of Karelia and their implementation in other regions of the Russian Federation is restricted by the fact that all Russian regions differ among themselves in the retirement age, the number of urban and rural population, and

demand for labor, due to the differences in the regions' economic potential. However, it must be stated that the reasons for employment termination in the Russian regions are the same.

According to the data from the sociological monitoring of the labor potential quality among the Vologda oblast population, which was conducted by the Social and Economic Institute for Territory Development of the RAS in 2016, 36.8% of pensioners are motivated to work (Chekmareva & Rossoshansky, 2017). This figure is almost equal to the one from the city of Vladimir in 2002-2003 (39.2%). In this case, the main motivational factor is the insufficient retirement benefit (17.3% of respondents) and desire to earn remuneration (16.7%). The main reasons for terminating employment are deterioration of health (13.8%), company downsizing (7.3%) and desire to rest (4.6%) (Dobrokhleb, Khotkina, & Bochkareva, 2014).

The share of individuals willing to continue working is higher in the Republic of Karelia (52.5%) although the health quality does not differ greatly. The main motivation to continue working may be explained by low income. On the one hand, the possibility of earlier retirement in accordance with the Law of the Russian Federation from February 19, 1993 №4520-1 "On state guarantees and compensations for persons working and living in the Far North and equivalent areas", lowers the threshold age for the retirees, including a greater number of individuals who retained interest in working. However, 35.9% of respondents view this law as an opportunity for earlier retirement and employment termination, and 8.6% are willing to reduce the workload and compensate the decrease in wages by receiving the retirement benefit. Therefore, for 44.5% of the respondents, earlier retirement serves as an additional factor to reduce or terminate employment.

7. Conclusion

To sum up, we can conclude that the intensification of population aging is already a rather acute problem that forces the governmental authorities to take certain measures in order to involve the third age population in the labor market. Since the proposals of the Government of the Russian Federation to raise the retirement age were presented after the survey stage of our study, this question remains beyond the scope of this article. However, the public debate that followed the aforementioned proposals and the results of our work demonstrate that the labor market is not yet prepared to implement the suggested changes. Raising the retirement age does not negate the need for institutional and organizational transformations for adapting the working environment to the peculiar characteristics of senior workers, as well as adapting these workers' capacity to the demand of the labor market.

The results of the processed questionnaire coincide with the findings of similar studies in other regions, which proves that the main factors of the continued employment among the older generation are the level of income and health quality. Third age workers prefer not to change jobs. However, in case of changing the job, this group of people has to face manifestations of agism and lower wage offers.

The Republic of Karelia has a great potential to increase the employment level by increasing the involvement of the third age population in the labor market. Enhancing organizational and institutional employment opportunities will ensure the growth of this indicator by 10.2 percentage points, as well as build trust in employment services and their efficient work by additional 8.2 percentage points. At the same time, in both cases, it is necessary to strengthen the population's health (provide regular medical

examinations, organize health groups, provide free medicine, reprofile doctors etc.) and develop the population's skills, particularly with the help of educational programs offered by employment services and leisure centres.

The suggested typology containing five groups describes behavioral strategies of almost 80% of the third age population. However, the low predictive ability of the discriminant function lying at its core demonstrates the need for improving the function by including additional factors other than age, retirement benefit size and the number of family members. Therefore, further research will be conducted in order to search for factors and elaborate specific measures to increase the employment level for each of the identified types of laborbehavior.

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