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Research Article

**ECONOMIC AND STATISTICAL ANALYSIS IN THE POLICY  
FORMATION TO PROLONGATION THE WORK CAPACITY  
OF OLDER WORKERS**<sup>1</sup>Dmitry Endovitsky, <sup>2</sup>Irina Durakova  
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**Abstract:**

*Purpose: The article is devoted to the extension of the working age of workers in the older age group from the standpoint of the results of a statistical analysis of the situation in which the Russian model for solving this problem should be formed. Discussion: The conditions for implementing the provisions of the "Strategy for action in the interests of older citizens in the Russian Federation until 2025" have not yet received extensive coverage in the scientific literature, which is focused on the labor market, organizational behavior and personnel management. In the process of formation and research base for statistical conclusions about the specifics of a similar phenomenon with respect to individual countries, which slows down the work on its timely diagnosis and development of the vector of transformation of organizational management necessary for subsequent adaptation to Russian conditions. Results: The article substantiates the feasibility of international experience in the development of national policies for the extension of the working ability of older workers. A step-by-step study was carried out, conclusions were drawn regarding the movement of scientific thought about age; contradictions of the theories of aging, explaining both the presence and the absence of a relationship between aging and professional success; disability and ageism. Grounded conceptual approaches to work with older personnel, including in the model "Coming meet with outgoing". An algorithm for operational analysis of the goals of the extension program for older workers is presented, including indicators for measuring goals formulated in the context of human resources management functions carried out in organizations using the "Value Center" model.*

**Key words:** labor market, age workers, ageism, mobbing, extension of working capacity.**Corresponding author:****Dmitry Endovitsky,**  
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**INTRODUCTION:**

On the basis of the “degree of aging of the population”, the countries of the world are classified into “old”, “mature” and “young”. According to the UN scale, the population is considered old, in the structure of which the proportion of residents aged 65 and over is more than 7 percent. The indicator of "old age" is less than 4 percent in the group of such countries as Egypt, India, and Mexico. “Mature” countries with a share of the population aged 65 years and older from 4 to 7 percent - Brazil, Turkey, South Africa. The group of “old” includes the USA, Japan, Germany, Great Britain, Canada.

The aging population and, accordingly, the aging personnel of organizations is a problem that has manifested itself in recent history. Common signs for the states designated by the “old” from the point of view of demography: high level of economic development and related achievements in health care, in the formation of a new standard of working conditions and quality of life, in creating a culture of complete balanced nutrition. Taken together, these factors became reference points that ensured a longer life activity of generations compared to their predecessors.

At the same time, in parallel with the increase in the length of life ahead, the statistics of modern history marked a tendency for the birth rate to decline in the 20th century. This, in turn, explains the reason that each subsequent generation was less numerous than the previous one.

Demographic realities led to the fact that the “shortage of quantity” led to a “lack of quality” - employers began to feel an acute shortage of labor. In the European periodization of the development of personnel management, the year 2005 was marked by the beginning of the “business partnership” stage. In the structure of its content, along with human capital management, competence management, talent management, balance of work and life is highlighted among the dominant ones - the problem of aging work collectives. Complicated by the specifics of social restructuring, the new profile of jobs, the transformation of the value attitudes of new generations, including the choice of profession and employer, she became the subject of research by scientists and the development of effective applied approaches to its solution - practitioners.

Russia, after choosing from other European countries the market model of economic development, received many of the emerging and tracked trends after it. Firstly, it is estimated that in the coming decade, the

Russian economy is projected to decrease the rate of growth of the labor force. Secondly, the digital economy has become an impetus for accelerating the transformation of the profile of the workplace and the competencies required by the employee. Third, there was a steady devaluation of the prestige of engineering and working professions and the growing need to acquire knowledge and skills for employment in the services sector. Fourth, due to a new trend in the revaluation of values, there is a departure from subordination, the desire of those employed to achieve a balance between work and personal life is strengthened. Fifth, despite the fact that according to the indicated signs (the coefficient of population aging, the share of the segment is “the oldest” inhabitants), in comparison with others, Russia remains a relatively “young” state, the prerequisites for increasing the labor force of older workers are increasing.

This justifies the feasibility of studying the experience of managing the extension of the working capacity of those employed in countries that have ensured the competitiveness of workers who have reached and reached retirement age and that corresponds to the demand of an innovative economy in their offer on the market of highly skilled labor.

**DISCUSSION:****Scientific ideas about age and ability to work from the standpoint of Pythagoras, Aristotle, Hippocrates and Erikson**

The extension of human vitality is the traditional area of study of gerontology, medicine, ecology and other sciences. Studying age in the birth-death interval, scientists scaled this interval for certain periods, each of which endowed with certain functional physiological and mental characteristics, identified with the individual's abilities to exist, protect themselves, be independent, participate in the labor process, etc. The basis of age periodization Pythagoras were laid seasons. Summer, in his view, was personified by people aged 20–40, autumn 40–60 years old. Unlike Pythagoras, who represented human life for sixty years, Aristotle and Hippocrates in their works extended it to 70 years, believing that ten seven-year periods were filled with different volumes of “natural” heat, the consumption of which is a characteristic of aging.

E. Erickson developed the stadial life justified by varying degrees of maturation, or "adulthood." In his view, a meaningful life scenario includes early maturity (20–40 / 45 years), average maturity (40/45–60 years), and later maturity (over 60 years). Introducing the element of professional productivity

into periodization, the scientist first connects it with a person's conscious responsibility for the maintenance of his life in front of himself and society, and then (at the stage of late adulthood) with the need to resolve the contradiction between demand and supply of labor. In the segment of the proposal, he notes two components - the surviving ability to work and the ability to bring benefits; in the segment of demand - the lack of demand for both.

Identifying these different ideas about the employer's expectation regarding the employee and the employee himself regarding his labor potential, Erickson shows the movement of scientific thought from the extension of vitality to the preservation and extension of the ability to work. Using the category of "personal neoplasm", characterizes the opposite sources of its acquisition. Choosing from one of them passivity, distrust to the world, a person acquires an increment of one property. The increment of another property, if the treatment is focused on the source with initiative, competence, openness to the world and trust in it. The personality neoplasm accumulated from the second source, according to the position of the scientist, during the period of "late adulthood" allows a person to evaluate and resolve the indicated contradiction between the desire to work and the position of the employer to counteract this.

"Natural heat", cooling to 60-70gg. and "personal neoplasms" acquired for its maintenance - these and other formulated provisions on aging can be considered the basis that allowed the development of scientific ideas about this life stage of a person as social theories.

#### **Scientific discussion on the theories of aging: the choice between a statement of fact, active action and ageism**

Existing social theories of aging can be represented in two groups. The first group combines theories of the statement of the phenomenon. "The theory of programmed aging" focused on the presentation of

aging as a product of the implementation of the genetic program of ontogenesis. The need for this product was that an aging and dying organism made it possible to free up living space and resources for the younger generations. Practically repeated the idea of the differentiation of generations, the "theory of alienation," according to which the more mature generation frees up (transfers) the space to the new generation that succeeds it.

The second group combines theories of action. Theories of positive action - "the theory of activity" and "theory (model) of successful old age." Their appearance is most likely due to changes in living and working conditions. "What is the life activity of individuals, so are they. What they constitute coincides, therefore, with their production - coincides both with what they produce and how they produce." The increase in life expectancy (gerontologists identified three periods - the elderly with an age range of 60-74 years, senile - 75-90 years, longevity age - 90 years and older) allowed us to identify the following ideas: first, the need to maintain professional employment in the older age group identical to other age groups. Secondly, the aging process can be professionally successful.

The theory of negative action - ageism - characterizes the discriminatory view of age employees because of their professional noncompetitiveness, according to the AJ version.

#### **Scientific discussion on working capacity**

Developing the provisions on working capacity, the scientists came to the conclusion that its level is determined by the age of a person, his physical and mental health, depends on gender, state employment policy, realized labor function.

Distinguishing between full and partial, general and professional disability (Table 1), scientists interpret its content with some variations.

Table 1: Classification types of disability

Classification feature	Types of disability
The degree of participation in the performance of the labor function	Full working capacity
	Partial work capacity
Labor vector	Total work capacity
	Professional working capacity

Differences in definitions are associated, among other things, with national specificity. For example, in Italy, France, other states, the measure of ability to work is age. In England, from 2020, the retirement age will begin at 66 years, between 2026 and 2028. its boundary will increase to 67 years, an increase in

life is expected. In Germany, in addition to the age limit, when determining the ability to work, the fact that it is possible to work in the general labor market under normal conditions for at least three hours a day is taken into account. The ability to work, in the American version of its interpretation, is determined

by the ability to make money. Payment in this context implies the fact that the result of labor is a product or service that is in demand in the market.

### Problems and conceptual approaches to working with older personnel

The ability to perform certain types of work assignments, in addition to the legislative state norms of age, medical requirements regarding the state of physical and mental health, also depends on the rules adopted in society that regulate labor behavior.

#### The problem of terminological variation

Table 2 summarizes the terminological designations of the Russian population regarding its presence in

the older groups. Depending on the status and address of the document, it can be "population", "people" or "citizens". Regarding the qualification of the age - "older", "older", "older", "older age groups", "older generation". The considerable scatter of symbols complicates the perception of the category being studied and the assignment of individuals or workers to it. The analysis shows that concretization and detailed study appear with the emerging demand for them, the cause of which is now the intensive aging of the population and the concern of employers regarding the work shift.

Table 2: Classification of terminology designations for older workers

A source of information	Designation
Constitution of the Russian Federation	"Senior citizens"
The concept of long-term socio-economic development of the Russian Federation for the period up to 2020	"Senior citizens", "senior citizens", "elderly population"
State program of the Russian Federation "Social support of citizens"	"Senior citizens"
The concept of the demographic policy of the Russian Federation for the period up to 2025	"Elderly people", "population of older age groups"
Action strategy in the interests of senior citizens in the Russian Federation until 2020	"Citizens of the older generation" "people of the older generation"
Federal target program "Senior Generation" (1997-2004)	"Citizens of the older generation" "people of the older generation"
Strategy of development of physical culture and sports in the Russian Federation for the period up to 2020.	"Senior citizens"

#### Problem: "comers meet with the departing"

In Finland, for example, for the first time in a long history represented in enterprises by one generation, faced with the problem of restructuring the employed labor force. By 2025, according to calculations, workers over 50 years old will have the largest share, less than 25 years old - the smallest. The lack of experience in managing these two groups while minimizing the consequences due to lack of professional knowledge, reduction of income or loss of customers marked the situation that needed to be resolved.

"To grow old" and "become older", according to the opinion of Finnish scientists, are age statuses that have partially different meanings, even if they are used as synonyms. "Aging" describes the chronological period of this process, in other words, it represents "aging" on a calendar, day after day. The

chronological period of aging begins with the birth of a person and ends with his death. Researchers use the term "employee aging" in relation to employees over 45 years of age. This age limit is determined in a practical way, as well as based on research results. This term has a public recognition, it is used in literature and public speaking. "Getting older", on the contrary, means an individual aging process. Each person grows old on his own terms, and this process makes people even more individual during aging. The personal aging process is carried out by various variations of genetics and the environment.

The researchers' conclusion is based on the reasonable assumption that the results of laboratory and real life tests of aging employees are contradictory. Thus, it was found that with decreasing cognitive results with age, the personal ability to solve problems does not weaken in the working

environment. It is almost impossible to measure in the laboratory (with the help of tests, including) such important components as motivation for productivity and performance, social intelligence, personal characteristics, supporting efficiency.

It is revealed that the maintenance of the ability to work in the older group of employees is due to the following tools that the personnel manager must take into account when choosing between “expressive experience” (age) and “ability to update knowledge and skills” (young):

- repetition (duration of work and accumulated experience retain working skills);
- assimilation (switching to tasks that do not show the weaknesses of the employee);

- compensation (achieving the same goal in different ways and using different procedures);
- life management and life planning (wisdom and common sense).

**Problem: the inclination of older workers to dismiss from the organization**

Along with employers who have chosen the path of a compromise job placement policy aimed at retaining age employees, attracting young workforce and forming a corporate culture aimed at intergroup cooperation, according to studies, many prefer to get rid of the older staff group.

The most frequently encountered international approaches to such deliverance are systematized in Table 3.

Table 3: Grouping attitudes towards older workers resign from the organization

An approach	Measures to get rid of workers
<i>Direct attitude of employees to dismiss</i>	
Early retirement	The proposal is a “stimulus package” that can be attractive to an employee and he voluntarily accepts his resignation, or to be an element of age discrimination.
Pension threat	The employer (relevant interested managers) blackmails the employee with the threat of reducing the size of pension payments if he does not leave voluntarily and at a specified time.
Dismissal	The employer forms for dismissal a group of employees that is heterogeneous in age and position. Such a list disguises age discrimination in dismissal.
Non-standard retirement age	In a number of countries, there are exceptions for retirement age, which employers are trying to “ignore”. For example, for firefighters and law enforcement officers. For effective (over the past two years) leaders and senior politicians over the age of 65 who received a pension of at least \$ 44,000.
<i>Indirect inclination of employees to dismiss</i>	
Time cut	Reducing working hours to a minimum with the argument that “no work”.
Job sequestering	Reduction of official duties, restriction of powers of authority, humiliation by assignment of non-compliant positions and competences of tasks.
Position liquidation	Often - change the name of the position and subsequently offer it to a younger employee. A common excuse for getting rid of older employees.
Deprivation of opportunities for professional advancement	Exclusion from the group of applicants for horizontal or vertical advancement due to age. Justification: “will retire soon”, “not enough experience”
Insulation	Exclusion (not inclusion) from the list of participants in business meetings and excursions, meetings, working groups, corporate lunches. Moving the workplace to a remote office, etc.
Tactics “Became stupid” (negative transformation of employee competencies)	Enhanced control, reprimands for minor violations and omissions (which was not the case before) to an employee with a positive reputation and positive feedback on performance as training a leader for defense with the phrase “transformation of competencies”.
Harassment (mobbing)	Manifestations of age discrimination: open statements about aging by the manager and some colleagues, their frequent questions about the employee’s intentions to go on vacation.

**Economic and statistical analysis of increasing the working capacity of older workers in the “Value Center” model in Russian enterprises**

The change of the personnel management model is a

logical movement of the management of organizations for the implementation of increasingly complex business tasks. The economic approach, which with the advent of the models “Service



Center”, “Center for Value Creation”, “Personnel Outsourcing”, and “Project Personnel Management”, is becoming increasingly relevant in the formation of personnel management. “Virtual HRM” focuses on more rational and profit-oriented activities. In addition, the need for this work is due, among other things, to the fact that organizations have a “deep gap between words and deeds. Often, the leadership sings solemn hymns about the worker as the organization’s valuable capital, but the next day these hymns become everyday work. Words differ from deeds. Without criteria and the measurement carried out on them in work with the staff is the same as moving in the fog without a map and a compass.” [9, 10]

The economic approach in personnel management may have a total or partial implementation. Partial implementation involves the selection of such an object of economic analysis, such as a separate function of personnel management. For example, the assessment of external marketing personnel to attract candidates to the organization, followed by the

introduction of accepted into the organization or internal - for calculating costs and determining the effectiveness of working with staff as clients of the organization. The principle of partialness may be relative to a particular program or event. For example, the calculation of the costs of implementing an anti-mobbing strategy in an organization, reducing psychological stress among employees when solving production problems, risks when introducing measures to improve the working ability of older workers.

In the “Value Center” model, operational analysis includes setting a goal, developing measurement indicators and performance indicators for achieving it, formulating current tasks, their priorities, and those responsible for execution.

The layout of the operational analysis of the extension program for older workers in an organization can be presented in the structure and content given in Table 4.

Table 4: Objectives, measurement indicators and options for operational analysis of the extension program for older workers

	Purpose	Sample indicators to measure goal achievement	Operational goal analysis
HR function: staff marketing			
External marketing staff	Positive image and high degree of fame (external evaluation) of the organization as an employer without manifestations of ageism	Ranking of organizations on the degree of loyalty to older workers	Hit in 30 organizations with low rates of turnover of age employees and preferred by them for employment
HR function: recruiting candidates for hiring			
Recruitment	Professional competent recruitment of candidates of the older age group	Quota hiring staff	Quotas for hiring staff from proposals of highly qualified specialists of older age from 25%
Personnel function: use of personnel in the workplace			
Internal marketing staff	Optimal support for employees of the older age group, individual approach and flexibility in determining the conditions of work	The performance of older workers, the limit of absenteeism, limitation of turnover, job satisfaction on the basis of the survey	Labor productivity growth, absenteeism limit less than 5%, yield limit of 5%
Personnel function: staff development			
Training and staff development	Growth of innovative competencies of age specialists and managers, increase of reasonable requirements for corporate management styles and knowledge transfer	Satisfaction with the training and development of workers and managers in the workplace and outside the workplace.	Index of satisfaction with training and advanced training of older workers at least 70%
Personnel function: evaluation of employees			

Employee Evaluation	Development of assessment systems aimed at motivating older employees to learn and continue productive work in the organization	Employee satisfaction with their fair assessment of the survey	Satisfaction index rated at least 80%
Personnel function: employee remuneration			
Employee remuneration	A result-oriented and market model of rates (ratios) of the tariff scale. Consideration of criteria characterizing special competencies of age employees (for example, interpersonal skills, reliability, ability to act in conflict situations)	The level of remuneration, the satisfaction of older workers with wages according to the survey results	Excess wages compared to industry average
Personnel function: the formation of corporate culture			
Corporate culture	Corporate policy, including the formation of intergenerational mentoring programs (mentor programs), conducting trainings on team building, as well as improving individual ability to work in groups.	Cultural index (for example, setting on innovation, customer focus, risks, etc.)	Crop index improvement of 5 percent
HR management			
HR management	Reducing the cost of personnel management	Costs per employee	Reducing the average cost per employee by 10%
Organization of work with personnel: anti-mobbing policy and prevention of ageism			
HR organization	The optimal organization of work with personnel, excluding ageism, due to the relevant competences and conditions of joint activities. Development of an anti-mobbing strategy.	Satisfaction with intra-company collaboration based on employee survey	Reduction of open conflicts by 20%, the index of satisfaction with working together at least 80%

In the countries of the European Union only from 2005 to 2011 employment of the population aged 65-69 years increased from 8.8 to 10.5%, 70-74 –from 4.3 to 5.2% // Income from work after retirement in the EU.- Luxemburg:Publications office of the European Union.- 2012

### CONCLUSION:

A well-grounded appeal to the policy of extending the working capacity of older workers at the state, regional and organizational levels goes into the category of mass social phenomena. This is a guideline for their research in the statistical and economic sciences.

In accordance with the value of the aging coefficient and the indicator, the proportion of the population attributed to the “oldest” group, Russia remains a relatively young state, whose economy in the near future expects a slowdown in labor force growth. The situation is becoming the rationale for the need for growth in the structure of employed workers of older ages.

The approaches to statistical analysis presented in the article - observation, grouping, classifications, sample surveys - allow, first, to form the basis for a detailed presentation of the realities of the effectiveness of

this work, taking into account the indicators of the competitiveness of age personnel in the labor market. Secondly, to have information about the similarities and differences of scenarios developed in the countries of the European labor market, ensuring effective work with older employees to extend their work capacity.

Identified similarities: the problem of labor shortages and the representation of the age employees of a significant component in the personnel structure. Almost the same orientation towards equalizing the state of working capacity of staff in the senior and junior age groups by including relevant measures in the personnel policy. The manifestation of ageism by employers and employees in the recruitment, training and use of older workers. Development and implementation of the “50+” programs at all levels of management, the inclusion of elements of extending the ability to work in the implementation of the functions of hiring, training, use, the formation of corporate culture.

Identified differences: discrepancies in the scientific presentation of disability, the range of its lower and upper age limits. Conceptual inconsistencies in the interpretation of personnel policy with a focus on

age. A distinctive feature of the “Finnish model” of understanding this problem is that the personnel policy should be aimed at coordinating joint activities of the extreme age groups in the structure of employed personnel, both age and young. In another research perspective, there are Finnish scientists regarding the argumentation of ageism, explaining the possibility of age workers to be competitive due to accumulated experience, assimilation, compensation and controlled common sense.

Thirdly, depending on the chosen model of work with personnel in the organization, develop an algorithm for a comprehensive operational analysis of the program for extending the work capacity of older workers, taking into account the stated goal and indicators for measuring its components.

Fourthly, to form personnel policy taking into account the requirements of the time, to use experience and a scientific approach in resolving the contradiction between necessity and the ability to involve older workers, on the one hand, on the other hand, and the manifestation of ageism of employers, on the other.

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