

The Supply Chain Strategy in Society and Active Longevity in Russia

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Abstract- Born from multidisciplinary roots that include logistics, marketing, management, and sociology, SCM has developed into a distinct field of study over the past fifty years. SCM theory has only recently reached a state of maturation where it produces operationalisable concepts and tools, but progress is being made in advancing both the overarching field of SCM and the specific issues that fall under the SCM umbrella. The authors investigated supply chain strategy as an active longevity's policy and quality of life of elderly population in the Russian Federation. Factors of the active longevity and reasons that reduce the level of life quality and society of elderly population in 2014-2016 have been discovered. The offered normative and evaluative model of life quality of elderly population and a list of strategies of active longevity are a novelty of the research. A practical importance of the research results is in the using its results to solve national economic issues and to provide the active longevity in Russia.

Keywords- *supply chain strategy, active longevity, a quality of life of elderly population, an integral and statistical measuring instrument and monitoring.*

1. Introduction

The realities addressed by supply chains reflect phenomena arising from the changing nature of the international economy during the latter half of the 20th century. As Morgan Stanley's analysts have counted the ageing of population is a problem that includes economies with 78 per cent of world's GDP (64 per cent is the GDP with purchasing capacity). Two people celebrate their 60 year anniversary each second in the world. The number of people over 60 years old doubled for the last 25 years. According to the rating outlook the amount of the mentioned age cohort will increase twice by 2050. Its growth rate leaves behind the growth rate of other age groups. A list of countries with more than 8 per cent of population over 65 years old enlarges with each year. Recently developed countries of Europe as well as Japan had status "age-related" countries.

Nowadays the situation has completely changed: India, the Republic of South Africa, Indonesia, Mexico, Turkey, China, Argentina, the South Korea, the USA, Russia and Canada have already exceeded the pointed extreme value. Some of the mentioned countries have exceeded it twice. According to the Federal State Statistics Service of Russia the number of people over 65 years old was 14 per cent in 2017.

Supply chains emerged when issues related to materials flow were first introduced. Since the 1990s, however, the term showed an exponential rise in popularity, along with its corresponding concept of supply chain management, introduced by consultants in the 1980s. In this connection the world growth of working-age population slows down. There was 1 per cent in 2016 against 1.6 per cent annually on average for the last 20 years. It leads not only to the demographic loading (number of pensioners and children towards the employed) but to the ageing of workers themselves. The part of workers of 55-64 years old from current 13 per cent will increase to 15 per cent for the next decade against the stable 10 per cent during the previous 50 years. As to the USA, the Eurozone, Japan, China and Great Britain that have the largest economies the problem of ageing is very sharp. It is from 17 per cent to 21 per cent in 2030.

Not only developed countries faced the ageing of population. The developing countries also face this problem. They can get old faster than they manage to become rich. For example, in Thailand and Korea the employable population will reduce by a quarter in the nearest 35 years and the amount of pensioners will triple. The number of pensioners will be more than the number of children in Russia in 2030. As McKinsey notes the slowing down of economic growth will lead to the decreasing of the income growth of population and level of life.

The problem of ageing becomes more acute with the unfavorable situation on labour market, with reducing the number of economically active population and increasing deficit of Pension Fund in Russia. Despite of the fact that in a number of Federal Laws [1]-[9] the government policy to the aged population is reflected, there is no comprehensive approach to solve the problem with elderly people. It is considered that such an approach is fulfilled in developed countries by realization of the active longevity's policy "as a reaction on demographic ageing, lack of labour resources, and crisis of pension systems" [10],[27]. That is why the development of the strategy of the active longevity for Russian aged people is an important national economic task that decides current issues for its development: ageing of population and labour force and reducing of economic growth in its economy.

2. Factors of the active longevity

The active longevity is a relatively new concept. It appeared in the middle of 90-s of the 20th century. It allows to shift a focus of political discussion on the

consequences of ageing from negative expectations of increasing pressure on public finance and economy to discussion the possibilities of more active use of potential of elderly people [11]. The First World Assembly on Ageing was held in Vienna in July-August, 1982. The Madrid International Plan of Actions on Ageing was accepted during the Second World Assembly on Ageing in April, 2002. It was oriented on improving the environmental conditions for people of older age, on strengthening their health, well-being and their active involvement in society. The plan of actions calls to change the policy, practice and attitude to elderly people in the 21st century in order to use more actively a great potential of such a category of population. The First Conference of ministers of the Economic Commission for Europe (ECE) UNO on Ageing was held in Berlin in September in the same year. The Regional Implementation Strategy of the Madrid International Plan of Action on Ageing was accepted at the conference. Later the Conference was held in Leon in 2007 and in Vienna in 2012. A concept of active ageing accepted by the Madrid Plan is directed at the increasing of level of physical and mental well-being of people, at optimization of ageing policy in different spheres such as participation of elderly people in labour market, their social integration and health protection. According to the World Health Organization (the WHO) an active ageing is first of all a process of optimization the opportunities for providing with health, taking part in social life and protecting a person in order to improve the quality of his life during ageing [12],[2].

The interpretation of the active longevity in the framework of the concept of active ageing of the World Health Organization (the WHO): “active longevity is a process of optimization the opportunities in terms of health, participation and safety to improve the quality of life during ageing” [13].

Much attention is given to the problems of ageing and public policy of active longevity in scientific works by different foreign and native scientists [14]-[17]. The American researches Bernice Neugarten and Ethel Shanas singled out two new social and demographic groups in the group of elderly population - the Young Old and the Old in the beginning of 70-s of the 20th century [18]. In the beginning of 90-s the English demographer Peter Laslett suggested to divide a life cycle of a modern person into four stages the last two from them are “the third age” and “the fourth age” – correspond to “the Young Old” and “the Old” [19].

Referring to the experience of developed countries the experts call the first factor of active longevity is a physical activity. Different programs and tools of the government policy that allow to raise the physical activity of the elderly population have become quite popular in many countries during the last ten years, for example, in Great Britain, Finland and Canada they have national character [20]-[21].

The second factor the experts single out is an informative technology as a new type of business communication and means of communication. There is

a low number of elderly people who use the Internet at least once a week in Russia. According to the sampling survey of population on using the ICTs that was done by Rosstatin 2014 among the Russians at the age of 55-59 years old there are only 5.8 per cent of active users of the Internet and there are 4.3 per cent of users at the age of 60-72 years old. A positive thing is a realization of the project “An electronic citizen” in the regions of Russia by which the elderly people have got an opportunity to acquire the basics of computer literacy.

The third factor is a social activity. Here the possibilities of elderly people to continue to work and become self-occupied are observed. This factor is determinant because are formation of pension legislation in Russia means a significant growth of retirement age.

The available values of the active longevity index based on the Russian data indicate that at least 41.5 per cent of the Russians at the age of 55 years old and older do not suit the major criteria of the active longevity defined by the WHO [22]. This point is an important argument to work out and introduce a comprehensive approach to the ageing problem for the Russian taking into account the most significant factors of the active longevity in Russia.

The achievement of the active longevity in Russia is not an end in itself. The main point is that 33.8 million of native citizens of retirement age have a possibility to spend the rest of life not worse than elderly Europeans and Americans. For this it is necessary to:

- provide pensioners with deserving level of employment;
- create conditions for aged people to participate in volunteering activity without difficulties;
- solve a problem with living separately (nowadays 52 per cent of pensioners live separately. It is less than in any country of the European Union);
- form efficient institutions of psychological and moral support to war-veterans and labor veterans;
- introduce modern forms of intensification of social contacts for aged people with society (only 40 per cent of people over 55 years old meet with friends, relatives or colleagues several times a week);
- make accessible and free high-qualified medical care for elderly people [23].

3. Strategies of active longevity for Russian elderly people

Main directions, tools and key factors of success of active longevity in modern conditions are introduced in the program reference of the United Nations Economic Commission for Europe #13 on Ageing “Active ageing” (16p.) in 2012 [12].

The first direction “participation in labour market” implies the increase of retirement age and increase of scale of pension in case of pension delay

for each additionally worked year to the required age. It is offered to use the instruments of labour market for successful realization of such a strategy. They are encouragement the employers for organizing work places (production environment) to age-related workers; assistance the education and retraining during the whole life; working out and introducing anti-discrimination policy and making an image of elderly workers. This strategy is actively discussed in Russia because of the propositions of the Russian government to raise the retirement age.

The second strategy “a social integration” supposes an active participation of the elderly people in volunteering activity, social activity and generation interactions. The institute of family plays a great role in this strategy in Russia.

The third strategy “a physical longevity” implies renovation of the policy of health care, introduction of prophylactic measures and mechanisms of community treatment. The intergenerational approach (considering the results of policy for different age-related groups), covering the whole life cycle (considering future possible results of policy for the individual life conditions) and gender and oriented approach (considering gender differences by policy consequences) should provide an appropriate attention on balanced base to such a difficult demographic phenomenon as ageing of population.

The Introducing the international experience and recommendations on implementation a comprehensive approach by carrying out the policy of the active longevity in modern Russia should take into account that the level of life quality of elderly people is lower in Russia in comparison with developed countries. The evaluation of life quality of elderly people is based first of all on the index of quality of life of elderly people (Global Age Wath Index) in the international practice. It is published yearly from 2013 (the organization of research is “Help Age International”) [24]. It is a multifold index that characterizes material well-being, state of health and lifetime after 60 years old, psychological well-being and living conditions. Russia took the 65th place in this index in 2015 by the criteria “Life expectancy at 60” that is how many years a 60 year old person can live 17 years. By the criteria " Healthy life expectancy aged

60” that is an average number of years during which a person can expect to have good health – 13.8 years. By the criteria “Pension coverage” that is a % of people over 65 years old who get pension – 100 per cent. The leader of the rating from Switzerland has the index of 25 years, the second one is 19 years. The Russian elderly people have a high level of evaluation according to the level of occupation (50.1 per cent) and according to the level of education among elderly people (79.1 per cent) and according to the presence of pension coverage (100%). A low level of evaluation is connected with a degree of poverty at elderly age (9.7 per cent), with low satisfaction of safety (37 per cent), with freedom (55 per cent) and transportation (57 per cent), with accessibility of health care, with life expectancy after 60 years old (17 years) and healthy life expectancy after 60 years old (14 years). They have lower levels than an average regional index has.

Thus, in comparison with developed countries the level of quality of life of elderly people is lower in Russia and it confirms a high urgency to work out and realize strategies of active longevity in our country. The growth of life quality of elderly population should become a goal of these strategies.

4. The life quality in supply chain

Any one organization can be part of numerous supply chains. Wal-Mart, for example, can be part of the supply chain for candy, for clothing, for hardware, and for many other products. This multiple supply chain phenomenon begins to explain the network nature that many supply chains possess. From the mentioned above and from the development of government statistics of Russia the authors singled out four criteria of life quality (Figure 1). Each of them is shown by optimal set of objective indices during current stage that characterizes the most significant aspects of life quality of elderly population. Statistical, calculating and expert methods are used for determining the value of indices of the quality of life. The evaluation of the life quality supposes the building of an integral indicator when using the objective approach [25].

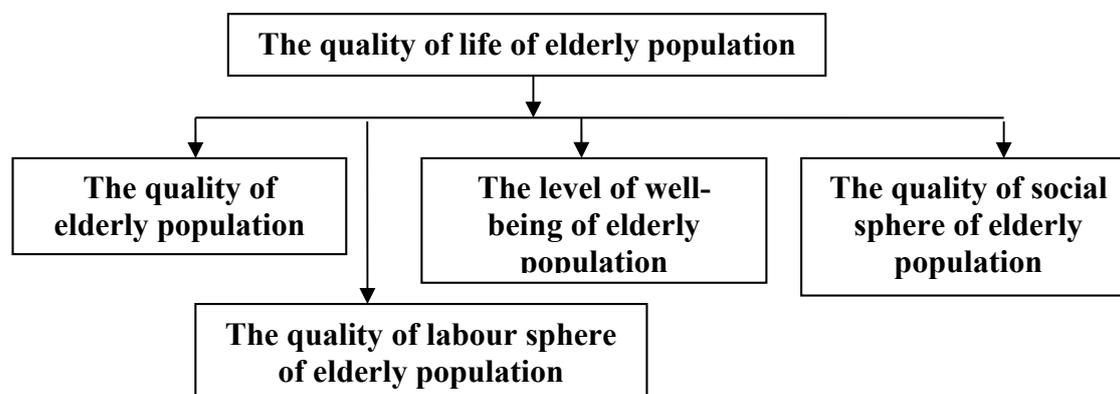


Figure 1. The structure of the quality of life of elderly population as an object of statistical research

10.The number of people of senior ages who participated in entertaining activities	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
11.The number of people of senior ages who participated in sports activities	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
12.The number of institutions for people of elderly age and disabled people	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	0	0	-1	-1	-1	0
13.The amount of pensioners who receive social additional payment to pensions in order to bring the level of material providing of a pensioner to the size of living wage in the Russian Federation	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	0	0	-1	-1	-1	0
14.The number of pensioners who have seniority and have received a material support for treatment and medicals	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
15.The number of pensioners who have seniority and have received a material support for tickets for a group tour, transport, treatment and rest	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
16.The consolidated expenditures of the subjects of the Russian Federation and municipal unions on realization the measures of social support to the pensioners and people of senior age	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
17.The citizens of elderly age and disabled people who use all types of social services at home	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	0	0	-1	-1	-1	0

The model implies that incommensurable indices in statistics become commensurable in dynamics. There are examples of using the method of dynamic standard in modern science works and publications [26]-[27].

I.M. Syroezhin noted that incommensurable characteristics of national economy in statistics become commensurable in dynamics. The dynamic standard (DS) offered by him is an ordered set (system) of indices according to the rate (coefficients, indices) of growth (basic or valuable) that in order to support the given order of indices in dynamic standard for long interval of time provide maximization of integral evaluation. The ranking of indices (giving ranks) is a form of expressing the regulating of indices. If it is not possible to coordinate the order strictly then a form of presentation of the dynamic standard is a graph of preferences and/or a corresponding matrix of preferences. In this case an integral indicator has a type of a normative model. In this case the quantitative level of the integral indicator (the integral evaluation) is a fraction of number of fulfilled correlations between rates (indices) of growth of real indices that characterize a concrete object under study to the number of given correlations in the normative model. Accordingly the received quantitative levels change from 0 to 1. The closer the value is to 1, the higher the quantitative level of evaluation is. The algorithm of building the normative models is described in details in works [28], [29].

Having calculated of quantitative levels of the integral indicator of the life quality of elderly population with the help of the author's program (T.A. Burtseva's program) and having used the offered normative and evaluative model (table 2) and

information on indices of the quality of life of elderly population (table 1) the quantitative evaluations of quality of life of elderly population in Russia were received for the periods of 2015 and of 2016 (in comparison with 2014). They were 0.5615 and 0.5077 (minimum = 0, maximum = 1). This result means that established normative correlations of indices of indicators in the normative and evaluative model are fulfilled by 56 per cent in 2015 and by 51 per cent in 2016. It means that the quantitative level of the quality of life of elderly population in Russia reduced in 2016 in comparison with 2015. A factorial decomposition of growth rate of the quantitative level $((0.5077 - 0.5615) / 0.5615) \cdot 100\% = -9.589\%$ by indicators of the normative and evaluative model is used to find out the reasons of reducing (table 3). This method allows to find out the influence of factors on the change of the quality of life of elderly population (picture 2).

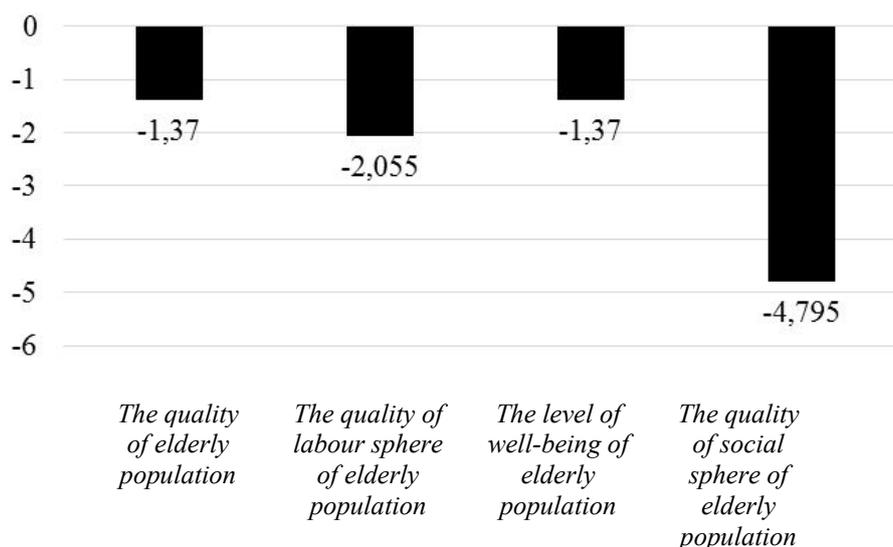
5. Conclusion

SCM as a management framework is now at a stage where the definitions, subject, purpose, and perspective are largely unified. These common grounds emerged from the multidisciplinary sources of SCM, and researchers have leveraged these commonalities to consolidate the plurality of frameworks on SCM. However, there is still variance when it comes to the operational concepts and, correspondingly, the operational implementation of SCM. We review some of the most widely cited unifying frameworks of SCM. Summing the research up we can make the conclusions: the dynamics of factors of life quality of elderly population is negative in 2015-2016. Most of

all it refers to the factor “the quality of social sphere of elderly population”.

Table 3. The factorial decomposition of growth rate in the quantitative level of integral indicator of life quality of elderly population in Russia

№	Index	The growth rate of integral indicator, %
<i>The quality of elderly population</i>		-1,370
1	Life expectancy of elderly population	-2,055
2	The number of people of elderly age	0,685
3	The number of indices of the Internet users at the age of 60-72 years old	0
<i>The quality of labour sphere of elderly population</i>		-2,055
4	The duration of seniority after retiring on a pension in accordance with age	0
5	The real arranged income of households consisting of pensioners	-2,055
<i>The level of well-being of elderly population</i>		-1,370
6	The volume of paid social services provided to the aged citizens and disabled people per head	0,685
7	The real size of living wage	-2,055
8	The evaluation as “a very bad” condition of the occupied accommodation by pensioners	-0,685
9	The number of people of senior ages who participated in entertaining activities	0,685
10	The number of people of senior ages who participated in sports activities	0
<i>The quality of social sphere of elderly population</i>		-4,795
11	The real size of granted pensions	-0,685
12	The number of institutions for people of elderly age and disabled people	-0,685
13	The amount of pensioners who receive social additional payment to pensions in order to bring the level of material providing of a pensioner to the size of living wage in the Russian Federation	-4,11
14	The number of pensioners who have seniority and have received a material support for treatment and medicals	0
15	The number of pensioners who have seniority and have received a material support for tickets for a group tour, transport, treatment and rest	0
16	The consolidated expenditures of the subjects of the Russian Federation and municipal unions on realization the measures of social support to the pensioners and people of senior age	0
17	The citizens of elderly age and disabled people who use all types of social services at home	0,685
Total		-9,589



Picture 3. The influence of factors on the change of life quality of elderly population in the Russian Federation (2016 to 2014 in comparison with 2015 to 2014)

Taking into account the mentioned above we offer a sophisticated list of strategies of active longevity for Russian elderly population:

Strategy 1 – “The integration of elderly people at labour market”

The aim and target indicators: to provide pensioners with a deserving level of employment that allows to have a wage level no less than 40 per cent from the average wage in the economy.

Strategy 2 – “The integration of elderly people in the social activity”

The aim and target indicators: to create conditions for aged people to participate in volunteering activity without difficulties and in the interaction of generations; to introduce modern forms of intensification of social contacts for aged people with society via the development of informative and computer literacy (no less than 50 per cent of elderly people should use the Internet technologies).

Strategy 3 – “The integration of aged people in new spheres of economic activity.

The aim and target indicators: to create motivational mechanisms for retraining aged people and mastering computer competences to increase their financial literacy (no less than 50 per cent of elderly people should use the Internet technologies in banking).

The changes were fixed in the behavior of aged people from 2015. This facts how’s the benefit of the offered strategies. The elderly people master modern technologies when managing their own finances. According to the survey of the leading retail banks there were 5-7 per cent of aged people who used the financial service through the Internet in 2014 but it increased till 10-11 per cent by 2016 and it was about 12 per cent in 2017. The growth is not so exciting in mobile banking. The number of older people grew from 2-3 per cent to 5-6 per cent in 2014.

Thus, for successful realization of the offered strategies it is necessary to realize projects of digital

literacy not in the whole country but among elderly people. It should be reflected in program documents, for example, in the government program “The informative society”. The success of implementation of the offered strategies depends on the government activity and society as the more active and smarter the old people are in the country, the higher the level of its development and its investment attractiveness is. The last one will be positively reflected on the economic growth in total and on its competitiveness.

The researches are funded by the Russian Fund of Fundamental Researches(# 18-010-00672A “The development and substantiation the strategies of the active longevity in the Russian Federation”).

References

- [1] no. 1032-1-FL “On the employment of population in the Russian Federation” from April 19, 1991.
- [2] no. 181-FL “On the social protection of disabled people in the Russian Federation” from November 24,1995.
- [3] no. 5- FL “On the veterans” from January 12, 1995.
- [4] no. 82- FL “On the social communities” from May 19, 1995.
- [5] no. 135- FL “On the charity activity and charity organizations” from August 11, 1995;
- [6] no.442-FL “On the basics of social service in the Russian Federation” from December 28, 2014.
- [7] The decree of the Government of the Russian Federation #296 “On the confirmation of the government program in the Russian Federation “The social support of citizens” from January 15, 2014;
- [8] <http://www.kremlin.ru/acts/assignments/orders/46594>
<http://www.gaidarforum.ru/news/view/novosti11/Naselenie-otvetilo-na-krizis-smennoj-strukturny-potrebleniya/>;
- [9] The decree of the Government of the Russian Federation #164-r“Ontheconfirmation of the

- strategic actions in the interests of citizens of the older generation in the Russian Federation till 2025” from February 5, 2016;
- [10] M. G. Kolosnitsina, and N. A. Khorkina, “*The government policy of active longevity: what the world experience witnesses*”, The demographic survey Publ., ML #4, pp. 27-46, 2016.
- [11] A. A. Ermolina, “*The index of active longevity as a tool of evaluation of the policy towards the elderly people in Russia*”, <https://csils.hse.ru/seminari>: A report on scientific and practical seminar “An active longevity in the context of social policy: problems of measurement”. Moscow (accessed 10.03.2015);
- [12] The program reference of the UNECE # 13 on Ageing “The Active ageing” // The United Nations Economic Commission for Europe. 2012. 16 p.
- [13] The WHO “*Active Ageing: a policy framework*”, Geneva, Switzerland, 2002. URL: http://whqlibdoc.who.int/hq/2002/who_nmh_nph_02.8.pdf (accessed 26.06.2018);
- [14] A. Zaidi, K. Gasior, M. Hofmarcher, O. Lelkes, B. Marin, R. Rodrigues, A. Schmidt, P. Vanhuysse, E. Zolyomi, “*Active ageing index 2012*”, Concept, methodology and final results. Project: Active Ageing Index (AAI). The UNECE Grant ECE/GC/2012/003. 68 p, 2013.
- [15] S. Chansarn, “*Active ageing of elderly people and its determinants: empirical evidence from Thailand*”, Asia-pacific social science review, vol. 12, no. 1, pp. 1-18, 2012.
- [16] E. Karvinen, P. Kalmari, H. Starck, A. Urtamo, M. Säpyskä-Nordberg, U. Salminen, A. Havas, and V. Farin, “*Strength in old age – health exercise program for older adults (2005–2015)*”, 2014. The Age institute. URL: <http://www.ikainstituutti.fi/binary/file/-/id/3/fid/402> (accessed 08.04.2016);
- [17] L. Zasimova and M. Sheluntcova, “*Measuring active ageing for government policy planning: a case of Russia*”, Working papers by NRU Higher school of economics. Series PA "Public administration". WP BRP 11/PA/2014. 11.
- [18] B. L. Neugarten, “*Age groups in American society and the rise of the young old*”, The Annals of the American Academy of Social and Political Science, vol. 415, pp. 187–198, 1974.
- [19] P. Laslett, “*What is old age? Variation over time and between cultures*”, Health and mortality among elderly populations. Ed. by Caselli G. and Lopez A. New York, Oxford University Press Publ, pp. 21–38, 1996.
- [20] A literature review of evidence on physical activity for older people and a review of existing physical activity guidelines for older people. The University of Western Sydney, New Zealand Guidelines Group Publ., 302 p.
- [21] E. Karvinen, P. Kalmari, H. Starck, A. Urtamo, M. Säpyskä-Nordberg, U. Salminen, A. Havas, V. Farin, “*Strength in old age – health exercise program for older adults (2005–2015)*”, 2014. The Age institute. URL: <http://www.ikainstituutti.fi/binary/file/-/id/3/fid/402> (accessed 08.06.2018);
- [22] L. Zasimova, and M. Sheluntcova, “*Measuring active ageing for government policy planning: a case of Russia*”, Working papers by NRU Higher school of economics. Series PA "Public administration". WP BRP 11/PA/2014;
- [23] T. Burtseva, A. Pacula, and T. Timashkova, “*Basic socio-economic strategies of active longevity in the Russian Federation*”, International Journal of Innovative Technologies in Economy, pp. 42-46, 2015
- [24] The rating of countries in the world according to the quality of life of elderly people. The center of humanitarian technologies. <http://www.helpage.org/global-agewatch/> (accessed 03.04.2018);
- [25] S. N. Gagarina, “*The economic and statistic evaluation as a tool of managing the quality of life of population in order to have a stable development of the region*”, Ed. Gagarina S.N., Chaurov N.Yu. // The Vestnik of the University (The state University of Management) Publ, vol. 12, pp. 5-11, 2016.
- [26] T. A. Burtseva, “*The indicative model of monitoring the investment attractiveness of the region*”, Questions of statistics, no. 6, pp. 37-45, 2009.
- [27] T. A. Burtseva, “*The normative model of statistical evaluation of the effectiveness management by the development of municipal region*”, The theory and practice of social development, no. 8, pp. 324-329, 2012. URL: <http://www.teoria-practica.ru/-8-2012/economics/burtseva.pdf>;
- [28] Yu. A. Pogostinskii, “*The normative model of systematic analysis of the economic activity of the enterprise: Monograph*”, Saint-Petersburg, the Saint Petersburg State University of Economy and Finances Publ, 1999.
- [29] T. A. Burtseva, and N. Yu. Chaurov, “*Measurement of Scorecard Balance*”, Mathematics Education IEJME, vol. 11, no. 9, pp. 3361-3370, 2016. Article Number: iejme.2016.275 URL: <http://iejme.com/makale/1532>.