

# Small industrial enterprises in Russia: survival in conditions of hypercompetition

E.D. Vaisman<sup>1,\*</sup>, and M.V. Podshivalova<sup>1</sup>

<sup>1</sup>South Ural State University, Chelyabinsk, Russia

**Abstract.** Nowadays, we can already see that Russian industry steady transition into postindustrial economy causes the development of hypercompetition in a number of sectors. The study focuses on the main characteristics of hypercompetition as the consequence of traditional industrial enterprise environment characteristics changing from bad to worse. The authors also provide the results of degree evaluation of hypercompetition resistance of small enterprises in 5 main industries of manufacturing sector. It is also shown that the small firms that produce electrical equipment have a higher probability of success in protecting their competitive advantages. Pulp and paper production as well as printing and publishing industries have the lowest chances of success. To protect enterprises from hypercompetition, the authors offer a model of enterprise's dynamic capability development on the basis of resource-based view. From this point of view, they classify enterprise's resources according to the degree of their influence on the competitive abilities of the latter. More-over, an approach to the evaluation of position of the point of making proactive management decision is formed.

## 1 Introduction

Over the last years, scientists have actively been discussing the problem of searching fundamentally new industrial enterprise management techniques due to significant environment changes.

L. Makarov states that "The problems with transformation of Russia's enterprise management are quite common, and thus, the administration of many domestic - owned firms should analyze how the character of strategic management corresponds to the requirements of forming postindustrial and global economic environment" [1].

Postindustrial economy with its Knowledge economy (KE) that nowadays is recognized as the highest stage of development causes a number of changes, among which innovative development and globalization process play a core role. J. Schumpeter wrote long ago that creative destruction is peculiar for innovation decisions [2], and in the conditions of rapid development of Information Technologies (IT) and globalization, wide spread of new information that prompts such destruction takes place.

All these changes led to emerging of such phenomenon as global competition or hypercompetition. The term was introduced by Richard D'Aveni. According to him, the latter is characterized by "constantly increasing competition in form of rapidly appearing product innovations, decreasing time for research and development, aggressive price and competency competition as well as experimenting with new approaches to meet consumer requirements" [3]. According to the experts' evaluations, Russia will face

with hypercompetition in the majority of its markets in mid-term perspective, but today some industries are already experiencing its threats. The aim of our research is to assess the resistance potential to hyper-competition threats in the sector of small manufacturing enterprises as well as to develop the directions of management improvement considering the characteristics of hypercompetition.

## 2 Importance of the issue

The importance of hypercompetition threat proves the traditional analysis of external environment state from a perspective of its four characteristics: interconnectedness of environment factors, its complexity, mobility and uncertainty. Let's characterize within this framework the current changes peculiar to postindustrial economy and reflecting, according to the majority of the specialists, currently emerging characteristics of hypercompetition.

The first characteristic, interconnectedness of environment factors, is connected with reciprocal effect of the latter on one another. As defined (for example, [4]) it is a level of the power with which the change of one factor effects the others. Enhancement of factor interconnectedness turns the environment of today's enterprises into aggressively changing one.

At the moment the growth of interconnectedness of environment factors led to technological convergence. The brightest examples of interdisciplinary research in the past were The Manhattan Project, the USA, and nuclear project in the USSR. Today such research plays a particular role as it is recognized that interpenetration

\* Corresponding author: vaisman\_elena@mail.ru

will significantly speed up the processes of innovation emergence. Thus, in the EU the Seventh Framework Programme for Research and Technological Development (2007-2013) the idea of convergence formed the basis for support of nanoscience and nanotechnology, further development in IT field and new technologies of information society, biotechnology and ecology. The research of convergence and non natural sciences has been planned, in particular, of enhancement of prognostic activities in social sciences, expansion of research in the fields of ethical implications in computer technologies [5]. The increase of interconnectedness of environment factors led to emergence of competition in some activities, particularly connected with high technologies. It begins to appear simultaneously on different levels: product markets; in resource area; between different entrepreneurial concepts; as a part of enterprise integration, etc. This led to forming such characteristics of hypercompetition as its multi aspect character.

The second characteristic of the environment is complexity which is a number of factors on which the enterprise must react as well as the degree of variability for each of them. Increase of environment complexity is connected both with the development of market institutions meaning the growth of the enterprise contacts, number of transactions, use of more complex, various and more rapidly developing technologies, its expansion on the market, and with virtually constant changes of the "rules" of doing business, that is particularly true for Russian economy. The complicacy of the environment led to such characteristics of hypercompetition as aggressive competitors' behavior, mostly, in price formation [6]. Along with the aggressive price formation a number of goods and technologies imitations are growing; new production processes, brands and competent employees are growing out of control of enterprises.

The third characteristic is mobility that is the speed with which the changes occur in external environment of an enterprise. The rapid development of informational support is inevitably leading to the growth of environment mobility. It should be noted that the complexity of the decision making in such conditions is also connected with the fact that the speed of changes is different in different industries and even in different subdivisions of the same enterprise. All this causes the change of the structure of enterprises, closing one businesses and opening the other, rapid assortment turnover of enterprise products, reduction of life time of both products and enterprises. Thus, the analysis of the changes in the list of top 100 US enterprises with the biggest capitalization over the last fifteen years has shown that for the first five years their number decreased on 24 enterprises, for the second - on 26 and for the third - on 41 [7]. All this is the development of such characteristic of hypercompetition as market development dynamics which caused the significant decrease - maximum to 2 years - terms of forecasting activities.

The fourth characteristic of enterprise's external environment is its uncertainty depending on the number

of information that an enterprise has about this or that factor on the one hand, and the reliability of this information on the other one. Today's business faces with the increasing degree of un-certainty of the environment among other things because of globalization, and consequently the complexity of effective management decision making is growing. Thus, according to P. Trist, "surviving is becoming fatefully connected with the knowledge level of the organization about its environment [8]. The growth of environment uncertainty appears in the next characteristic of hypercompetition - reduction of life time of the competitive advantage and simultaneous coverage of several fields by competition: expenses, quality, terms, market barriers, "know-how", etc.

It is clear that the characteristics of hypercompetition appear, firstly, to a greater or lesser extent depending on the industry and type of activity. Secondly, this or that characteristic in each industry can be more or less expressed. In any case, hypercompetition significantly complicates functioning of the enterprise and makes it search new methods and management tools as the traditional tools of strategic management in this case are not effective.

### 3 The assessment of small industrial enterprise hypercompetition resistance potential

One of the issues of enterprise survival in hypercompetition conditions is the business scale. Alvin Toffler in his 1980 book *The Third Wave* advanced an idea on ten key elements of new economy of postindustrial world, among which, apart from the increasing role of knowledge, innovation, system integration, escalating competition, he noted the significance of small-scale enterprises. As far as postindustrial society is developing, large enterprises, according to Toffler, will be getting out by small ones [9]. Our government, apparently, thinks that small enterprises must become a more sustainable power. Thus, according to the Concept of Long-Term Social and Economic Development of Russian Federation until 2020 to conduct structure changes of production to the benefit of competitive and high-tech sectors, we need to form "the powerful layer of small and medium enterprises playing the significant role on the global markets" [10]. Let's give a closer look at the current state of small manufacturing enterprises from this perspective as the main "powerhouse" of structure changes in industrial field and the growth of economy competitive ability.

The data of the official statistics of Federal State Statistics Service, economic reviews on small enterprises of the RF and its entities, the overall results of sampling analysis and expert estimations as well as the information of international statistics show that domestic small business in manufacturing industry cannot be considered developed. Thus, according to Federal State Statistics Service's estimates, the percentage of small and medium manufacturing enterprises in SME structure

since 2008 has been changing insignificantly and accounted for, as a rule, no more than 10%. In comparison with European countries the number of such enterprises in 138-million Russia is in 2 times lower than, for example, in Italy (61 mln. population) [11].

Another big difference of Russian SME sector of manufacturing industry is extremely low percentage of micro-enterprises (20 people maximum) - less than 20%, whereas in European countries their percentage is not lower than 80%. According to Federal State Statistics Service, the percentage of small enterprises with maximum 9 people is in total number of SME in the last 10 years was not lower than 90% [12].

The contribution of SME into manufacturing industry of the RF accounts for 21%, whereas in EU countries this index is in the range of 46%-60%, and 80% in Republic of Korea. The SME contribution to industry sales is minor: Russian SME provides only 16%, whereas EU countries - in 2-3 times more [13].

Regional differentiation that makes Russian small business different as a whole is peculiar for small manufacturing enterprises. Thus, according to Federal State Statistics Service, there are 40% of all small manufacturing enterprises in nine Russian regions - Saint Petersburg, Moscow, Moscow Region, Sverdlovsk Region, Novosibirsk Region, Republic of Tatarstan, Rostov Region, Samara Region, Krasnodar Territory, furthermore, a half of this share is in Moscow, Moscow Region and Saint Petersburg [11].

In total, financial condition of small manufacturing enterprises can be characterized as unstable. Mid-year sales growth rate in the period of 2010–2013 was gradually decreasing from 13% to 5% considering mid-year inflation rate in this period 6.6% per annum. Taking into account the dynamics of employment and fixed investment, we can say that there is no real expansion of production in the industry for the last 5 years observed. Every fifth small manufacturing enterprise is unprofitable. Low profitability of assets is preserved against the background of considerably high level of financial dependence and comparatively low indices of Current Ratios that on the whole is peculiar for small enterprises due to the financial resources scarcity and their need for “tax optimization” [11].

Among manufacturing sector, small enterprises are more developed in food industry, metallurgical production, pulp and paper, machinery and equipment production as well as electrical equipment production. Together these 5 industries provide more than a half working places in manufacturing sector of small business and give more than a half of the country’s sales. The structure was unchanged during 2011–2013. We use Entrepreneur Confidence Index (ECI) of small industrial enterprises for the indirect assessment of environment uncertainty degree. According to Federal State Statistics Service, among the five key industries of manufacturing, optimistic estimates for the last 5 years were observed only in electrical equipment production, benign optimism - in food production. Chronic pessimism was observed in machinery and equipment, pulp and paper and metallurgical production [11].

The difficulty in functioning of small industrial enterprises on the medium term perspective will be worsened not only by threats of increasing hypercompetition but also by the institutional constraints peculiar to national economy. Let’s take a closer look at the latter.

1. Administrative barriers. The presence of this type of constraints is recorded by many all-Russian and regional surveys of small and medium enterprise managers [11, 13, 14, 15, 16, 17]. According to OPORA Russia (All-Russian NGO of Small and Medium-sized Businesses), one third of small manufacturing enterprises consider administrative barriers such a heavy burden that it is impossible to adapt to them. Every fifth manager says about the pressure from inspectors that “they don’t allow business to keep afloat and develop”. About one fourth of the surveyed consider venality to be a usual thing in getting a state order, being inspected, getting the land, getting state aid and joining infrastructure [13].

2. Undeveloped infrastructure including the support infra-structure. According to OPORA Russia survey, every third small manufacturing enterprise notes that the transport infra-structure of the region has either a lot of drawbacks or it doesn’t correspond to business requirements at all. Small enterprises also see major obstacles for development in energy infrastructure as for the majority the connection to the electricity grid is not available and the electricity tariffs are very high [13].

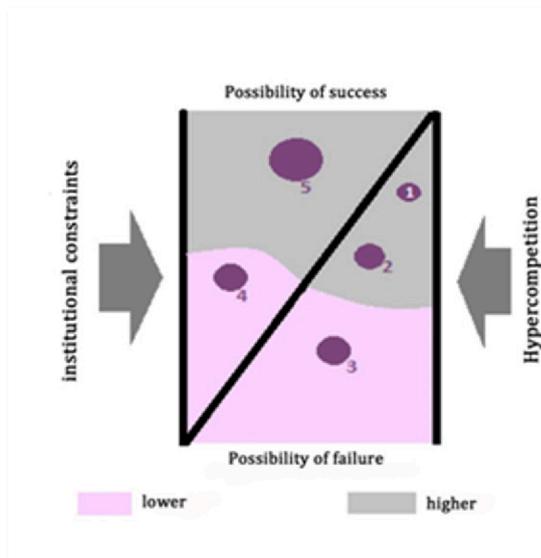
3. Taxation system. The problem of high taxes is, probably, the most paradoxical and popular at the same time. By calling it popular we mean its high ratings in top 5 key problems of domestic small business within 20 years of its development. By calling it paradoxical we mean that judging by Index of Economic Freedom tax burden in Russia for the last 20 years is significantly lower than on the average in the world and in many developed countries in particular [18]. This paradox can be explained by the fact that a particular tax payer is interested in the burden not on the macro level, but its assessment in a particular case. For this very reason according to Federal State Statistics Service’s survey in 2010–2013, on the average every fourth small manufacturing enterprise considered taxation level to be very high [11].

4. Low demand is one of the monumental and deep-rooted problems of Russia’s small business, in production sector in particular. The problem of lack in demand was and still is pressing, mainly concerning domestic market as only few small firms as a rule mastered the international market. Therefore, there is a tendency of worsening the situation. Thus, according to Federal State Statistics Service in 2002–2003, only 38% of small enterprises surveyed considered that the factor had limited the production growth in industry, in 2004–2008 -41% of the surveyed thought the same way and in 2010–2013 - every second manager of a small manufacturing enterprise (in recession year 2009 this index reached 61%) [11]. According to OPORA Russia survey, production distribution is a certain problem for small manufacturing enterprises as the channel of distribution access is limited for many of them [13].

Taking part in the state procurement as a way to form inner demand on the products of domestic SME cannot be named common nowadays. Thus, according to Federal State Statistics Service, among SME entities in 2009–2013 on the average no more than 17% of all orders were in the form of price indication request. In other variants of Federal Acquisitions this index was 2-3 times lower [11].

5. Low investment activity. Chronic lack of demand on the products and services of small industrial enterprises is one of the main reasons of lack of equity funds to expand the output and innovation. From 2006 to 2013 no more than 40% of the surveyed managers noted the lack of financing as a factor limiting the growth of manufacturing production [11]. However, in recent regional surveys of small business owners, the image is more depressing. Thus, for example, in the Republic of Tatarstan 80% of the surveyed announced about the lack of effective interaction between credit- and banking system and small business, artificial and unmotivated obstacles to get bank loan [15].

We can generally say that the perspectives of Russia's small industrial enterprises survival in the conditions of increasing hypercompetition and existing institutional constraints will be defined by its investment and innovation activity.



**Fig. 1.** Small industrial enterprises in the “clutches” of constraints and threats. Note: 1 – pulp and paper production, printing and publishing, 2- metallurgical production, 3 – food production, 4- machinery and equipment production, 5 – electrical equipment production. The diameter is calculated as the ratio of percentage of enterprises introducing technology innovations of the corresponding industry to the similar index of pulp and paper industry.

As for the investment activity of small enterprises, in manufacturing it is focused, mostly, on providing simple reprocessing, and insignificant extensive growth in the sector is not based on innovations. Thus, according to Federal State Statistics Service, 26% of all small enterprises invest in increase of their production capacity, 19% in change of worn-out equipment, and only 5% in introduction of new

manufacturing technologies [11]. Analyzing the data of official statistics, we cannot call innovation activity of small manufacturing enterprises as a whole and in particular in 5 main industries, high. Thus, no more than 5% of small manufacturing enterprises introduce technological innovations, and the percentage of innovation products is insignificant (no more than 2%). Product innovations were lower than industry average level in pulp and paper, food and metallurgical production, higher in machinery and equipment production. And only one industry – electrical equipment production – had innovative activity significantly higher of the average not only among manufacturing but other types of production. There are significant differences in patterns of spending on technology innovations. Thus, in food industry more than 80% of all technology innovations were connected with the purchase of equipment, in pulp and paper – 71.6 %, metallurgical – 52 %. In machinery and equipment production as well as in the production of electrical equipment the spending on research and development of new products (about 39%) prevailed. It is worth noting that this index was also comparatively high in metallurgical production – 20.5% [11]. Thereby, we can summarize that the quality and depth of innovational processes in machinery and electrical equipment production is significantly higher than on the average in the sector analyzed.

Thus, we can talk about the significant potential of successful functioning in the conditions of hypercompetition only considering one industry of small manufacturing enterprises – the production of electronic, optic and electrical equipment. The outsider of manufacturing industry is pulp and paper production, publishing and printing industry. To be fair, we also note that considering the latter such state of business can be also explained by its position on the final stage of its life cycle. Machinery and equipment production, metallurgical production despite the sustainable entrepreneurial pessimism, introduce technological and product innovations approximately on the industry average level. Food production that has every fifth ruble from the whole distribution of manufacturing SME is characterized by benign optimism and innovation activity is below industry average level.

Hence, the probability of success/failure in the “clutches” of hypercompetition and institutional constraints is differentiated in the industries (fig.1). A diagonal and four colored areas on the picture show the degree resistance capacity: high probability of failure (pulp and paper, printing and metallurgy), low probability of failure (food industry), low probability of success (machinery-producing industry) and high probability of success (electrical equipment). It is notable that in Failure zone we included the industries with probability of successful resistance to the threats from hypercompetition and institutional constraints from 0 to 50%. In Success zone – from 50 to 100% respectively.

#### 4 Development of enterprise's dynamic capabilities: resource-based approach

If institutional constraints is a systemic factor, uncontrolled from the side of the business, the survival in the conditions of hypercompetition depends on the efficiency of industrial enterprise management system. As the majority of specialists note, the tools and methods of the strategic management in these conditions become virtually useless and success/failure in a competitive struggle depends only on the speed of assortment renewal, assimilation to innovation products and technologies, decision making how to destroy the competitor's advantages. Such management corresponds to the modern concept of dynamic capabilities.

If to accept that dynamic capability of an industrial enter-prise appears in its capability to form, develop and rearrange resources in accordance with the opportunities and environment threats [for example, 19, 20], then, considering the characteristics of hypercompetition, it is quite logical to classify all business resources into three groups according to the subject of their influence to competitive ability:

- basic – minimal set of resources which is necessary to enter this or that market and function on it;
- competitive – resources providing an enterprise with competitive advantages in the current period of time depending on the activity type it can be: access to certain types of resources, unique competences, expertise, unique technologies, etc.;
- strategic – resources providing an enterprise unique opportunities for development in the future and conquering the future leadership on the market.

It is clear that with the course of time one type of resources can be transformed into another one. Thus, the strategic resources formed in the past period are currently transforming into the competitive ones, replacing or adding to already existing ones competitive advantages of an enterprise. Resource structure can be changed depending on whether the enterprise has time to change its market conduct and accept a proactive decision to provide its activity with strategic resources.

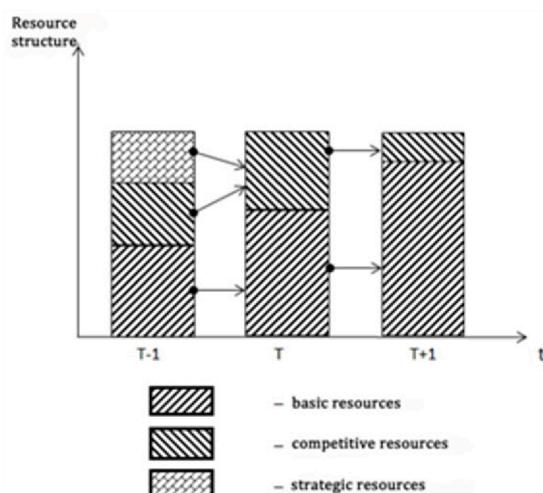


Fig. 2. Resource structure changing in the situation of delay.

If we imagine the situation of delaying when in hope (or, how it usually happens in real practice, ungrounded certainty) on long-term keeping of competitive advantages conquered in past, the enterprise doesn't make proactive decisions to change strategic resources, the structure of resources is changing the way it is shown on fig. 2. The interpretation of the picture is as follows: as we can see, the refusal from a proactive decision in the current period of time led to the resource structure change and as a result the percentage of basic ones increased and the percentage of competitive ones decreased. In the future resource structure can become worse without making proactive decisions up to the complete loss of competitive advantages of the enterprise.

The system can provide an enterprise with competitive advantages when in every preceding period the changes in outer environment are predicted and the decision to change market conduct with attracting all the necessary strategic resources and their transformation into competitive ones is made rapidly.

We consider it reasonable to introduce the term of SP-point (Strategic Prediction Point) that is the strategic point of predicting future changes. Accepting proactive decisions at the moment will allow the enterprise to get competitive advantage in a rapidly changing environment. On the conceptual level we offer to define the time coordinate of the point of making proactive decision on the basis of the following reasoning.

The later the decision about changes will be made the quicker the enterprise will lose its position on the market, and consequently, first, market share will decrease at the cost of a part of consumers choosing the competitor's products instead, then the sales will drop and the profit will decrease. At the same time in such conditions the expenses on changes will grow. Let's put Y1 as the correspondence of the profit loss to the period duration from the moment of making changes.

On the other hand, the earlier the decision about the changes is made the bigger the value of transaction costs will be needed to get ready to these changes. From our point of view, predicting the changes will require in this or that degree virtually all types of transaction costs. Correspondence of transaction cost growth to the changes in the enterprise activities will be marked with Y2.

Then cumulative costs including the total loss because of delay in decision Y1 and transaction costs connected with pro-active decision Y2, will be marked as Y3 (fig. 3).

The correspondence of Y1 and time can be shown as follows:

$$Y_1 = k_1 \cdot k_2^{(k_3 \cdot x + k_4)} + k_5 \quad (1)$$

then

$$x_1 = \frac{\log_{k_2} \left( \frac{Y_1 - k_5}{k_1} \right)}{k_3} \quad (2)$$

The correspondence of transaction cost value  $Y_2$  and time in general will be as follows:

$$Y_2 = \frac{k_6}{(k_7 \cdot x + k_8)} + k_9 \quad (3)$$

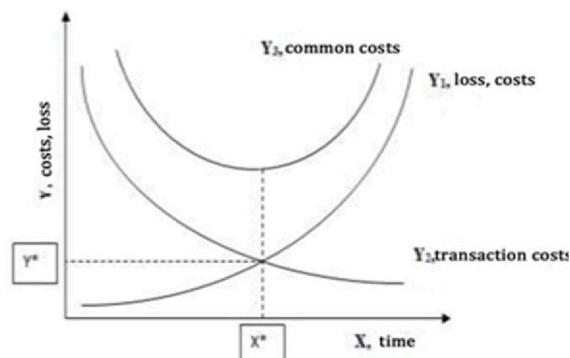


Fig. 3. Defining the moment of proactive decision making.

hence

$$x_2 = \left( \frac{k_6}{Y_2 - k_9} - k_8 \right) / k_7 \quad (4)$$

desired point  $[X^*; Y^*]$  if  $x_1 = x_2$

$$\frac{\log_{k_2} \left( \frac{Y_1 - k_5}{k_1} \right)}{k_3} = \left( \frac{k_6}{Y_2 - k_9} - k_8 \right) / k_7 \quad (5)$$

derivative of the formula to define the moment of proactive decision making:

$$Y_3 = k_1 \cdot k_2^{(k_3 \cdot x + k_4)} + k_5 + \frac{k_6}{(k_7 \cdot x + k_8)} + k_9 \quad (6)$$

where  $k_1 \dots k_9$  – coefficients characterizing transformation spending and losses and transaction costs.

Hypercompetition characteristics mentioned above virtually require from the process of making proactive management decisions constant tracing of the state and predicting the tendencies of changes of different areas: resource market, consumers' and competitors' behavior, product feature, market prices, technology development, etc. The ability to detect coming changes and rapidly transform strategic resources and competitive or, in fact, dynamic capabilities is the key condition of enterprise's survival in today's environment.

## 5 Conclusion

Hypercompetition is an inevitable threat for today's business and the probability of successful resistance to it, as

it was shown, is significantly differentiated not only within the business scale, according to Toffler's ideas, but also the types of activities of industrial enterprises. Nowadays, among Russia's manufacturing small enterprises, electrical equipment production has the greatest chances to protect and develop their competitive advantages. Machinery and equipment production has a little lower chances. As for the observed method of protection from the growing tension of hypercompetition, it is useful for the enterprises of any scale and activity type, but for small enterprises of food production, pulp and paper, metallurgical production its introduction can be considered the key factor of survival.

The work was supported by Act 211 Government of the Russian Federation, contract № 02.A03.21.0011.

## References

1. L.M. Makarov, [http://www.orekhovasv.ru/Is\\_PDF/E/E7.pdf](http://www.orekhovasv.ru/Is_PDF/E/E7.pdf).
2. J.A. Schumpeter, *Theorie der wirtschaftlichen Entwicklung: e.Unters, ber Unternehmervergewinn, Kapital, Kredit, Zins u. d. Konjunkturzyklus*, von Joseph Schumpeter (Duncker und Humblot, Berlin, 1987)
3. R. D'Aveni, *Hypercompetition: Managing the Dynamics of Strategic Maneuvering* (The Free Press, New York, 1994)
4. [http://www.inform.od.ua/articles/examen/vn\\_sreda.htm](http://www.inform.od.ua/articles/examen/vn_sreda.htm).
5. <http://protown.ru/information/hidden/4455.html>.
6. M. Brun, Problems of the theory and practice of management, **3**, 104 (1998)
7. G. Hamel, *Das revolutionäre unternehmen*, (Econ Verlag, München, 2000)
8. <http://www.nanonewsnet.ru/nanoweek>.
9. A. Toffler, *The Third Wave* (Pan Books Ltd, London, 1981)
10. <http://base.consultant.ru/>.
11. Small and medium enterprises of Russia (Rosstat, Moscow, 2014)
12. [http://www.emitentes.pt/images/media/docs/200\\_logos\\_19991209\\_ForEC\\_Relatorios\\_sobre\\_PMEs.pdf](http://www.emitentes.pt/images/media/docs/200_logos_19991209_ForEC_Relatorios_sobre_PMEs.pdf).
13. [www.opora.ru](http://www.opora.ru).
14. [http://www.gsom.spbu.ru/images/cms/data/faculty/gem\\_2013\\_final20\\_all.pdf](http://www.gsom.spbu.ru/images/cms/data/faculty/gem_2013_final20_all.pdf).
15. V.V. Shlyichkov, Herald of economics, law and sociology, **2**, 97-102 (2015)
16. <http://www.trust.ru/sme/indexmsb/>.
17. <http://rscme.ru/ru/library/show/8464>.
18. <http://www.heritage.org/index/>.
19. K.M. Eisenhardt, J.A. Martin, Strategic Management Journal, **21(10-11)**, 1105-1121 (2000).
20. D. Dzh. Tis, E. Shuen, Vestnik SPBGU. Ser. Management, **4**, 133-184 (2003)