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CORPORATE CULTURE AS A PERFORMANCE FACTOR OF INNOVATION ACTIVITY

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Abstract

The present study analyses the importance of how a company forms an innovation-oriented corporate culture in order to support the development and implementation of various types of innovations. The study aims at summarizing the approaches presented in foreign scientific literature and practical activity in order to describe the influence of certain corporate culture factors on the innovation activity of companies. The research set and solved the problem of identifying these factors, as the corporate culture has a key impact on the innovation activity of employees for Russian companies in various fields of activity. The research was conducted in two stages. The first stage consisted in several focus groups held with experts and personnel managers of various companies in order to form a preliminary list of characteristics of the corporate culture that affect the innovation activity of employees. The second stage included a questionnaire survey of owners, managers, and employees of 104 Russian companies, students of MBA programs of the Russian Presidential Academy of National Economy and Public Administration. The research identified three most important factors: understanding the goals and the mission of the company in terms of public benefit, the just approach in assessing the work of innovators and a constructive, friendly atmosphere within the company. The analysis of the correlation between the choice of factors and such respondents' characteristics as the size and type of activity of their companies, the status of the respondent in the hierarchy of the company was conducted with the use of methods of categorial analysis and calculations of Yule's measure to show the connection between nonnumeric characteristics. According to the results of the survey, there was no significant correlation between the respondents' answers and different demographic characteristics of the companies, and therefore, it was recommended to reduce the number of factors. The results of the survey suggest the conclusion that commitment to public benefit and increase of activity awareness are main motives for innovation creativity.

Keywords

Corporate culture – Innovation-oriented organization – Innovation strategy – R&D cost performance

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Introduction

One of the classic approaches to studying the influence of corporate culture on the company's activity performance and its cost is to consider the corporate culture as a component of its intellectual capital. In this approach, corporate culture is an intangible asset, which increases the value of a business and needs investment¹. In the most modern studies², corporate culture is viewed as a subcomponent of a process capital subsystem which creates favorable conditions for the human capital development. The influence of corporate culture on the potential increase of the value spreads in three directions: motivation increase and employees' involvement in the working process, company's reputation increase, and ethics communication improvement between a company and customers, or partners³. This leads to productivity increase, employees and partners' loyalty, innovation activity and better performance. Therefore, there is an impact of corporate culture on other components of intellectual capital - innovation capital and partner, network capital. The study of the influence of corporate culture on the innovation performance and innovation capital of the organization is the objective of the paper.

Innovation performance is one of the key characteristics of the company's management in the modern post-industrial economy. There are a lot of factors that make the company truly innovation-oriented: an innovation strategy, a top management vision of the business, a deep understanding of the client, employees' talent, but a more important factor among the abovementioned is a corporate culture - a set of patterns of behavior, meanings and values, peculiar to the members of this organization. According to the survey of 600 top managers of the world's leading innovation companies⁴, the most important factor in the innovation costs performance is the support of an innovation strategy by the corporate culture. There was also compiled a complete set of financial results for each company, including sales volume, operating profit, net profit, science and development costs retrospectively, market capitalization, and dividend volume. All the companies were distributed among 9 industries and 5 regions. The costs of research and development were normalized according to the industry average values obtained from the World Bank and the International Monetary Fund.

According to the results of the research, apparently, there is no direct statistical correlation between the amount spent on research and development (innovation costs) and financial results of companies.

According to the participants' points of view, the ability to take risks, creativity, openness, and cooperation are crucial for success in the global innovation economy. Only 47 percent of the top managers surveyed claimed that the corporate culture of their companies complies with the top management innovation strategy.

¹ T. Shultz, "Human Capital", The International Encyclopedia of the Social Sciences. New York, Vol: 6 (1968): 92-138.

² I. V Ivashkovskaya, Modeling the value of the company. The strategic responsibility of the board of directors. Chapter 4 (Moscow: Infra-M, 2009) y E. R. Baiburina, "Methods of analysis of intellectual capital for the modern sustainable development of the company", Corporate Finance, num 3 (3) (2007): 85-101.

³ E. E. Pervakova, The influence of corporate culture on labor productivity and business performance. Chapter 4 (Moscow: Max Press, 2012).

⁴ B. Jaruzelski; J. Loehr & R. Holman, "The Global Innovation 1000. Why Culture is Key?", Strategy + business (Booz & Company), Vol: 2 (2011): 26-45.

In retrospective, at the end of the 20th century the concept of corporate culture firmly occupied one of the leading places in the literature on the theory of organization, due to the studies of prominent foreign researchers Denison⁵, Robbins⁶, Hofstede⁷, Cameron⁸. A significant contribution to the study of the theory of corporate culture influence on the business performance and specific features of the Russian corporate culture formation was made by Russian scientists such as M.N. Pavlova⁹, I.D. Ladanov¹⁰, T.Yu. Bazarov¹¹, V.A. Spivak¹².

The discussion of the corporate culture influence on innovation activity was increasingly active in the studies of foreign scientists in the second half of the 90s of the last century.

The greatest importance was given to such a factor of corporate culture as a style of leadership¹³. The main attention was paid to the methods of material and psychological incentives of employees, as well as the creation of organizational structures to support innovation, budget allocations.

Some authors believe that supportive, humane, democratic, and collaborative leadership styles are useful for the development of an innovation organization, and a strong authoritarian leader restrains innovation¹⁴. According to other researchers¹⁵, strong power promotes the authority of the leader, the integrity of the corporate culture; under the authoritarian control, there can be competition among employees who, with good management, will promote innovation.

The present paper claims that the most appropriate theoretical approach to describing innovation leadership is the concept of a “transforming” leader¹⁶. A transforming leader is a forward-looking, open, dynamic person who uses strategic planning methods. While firmly maintaining his authority, he nevertheless allows employees to put forward and

⁵ D. R. Denison, *Corporate Culture and Organizational Effectiveness*. Chapters 1-3 (New York Wiley, 1990).

⁶ S. Robbins & P. Stepher, *Essentials of organizational behavior*. Chapter 3 (Printice-Hall, New Jersey, 1994).

⁷ G. N. Hofstede, *Cultures consequences: Comparing values, behavior, institutions and across the nation*. Chapter 2 (New York Doubleday, 1996).

⁸ K. Cameron, & R. Quinn, *Diagnostics and Change in Organizational Culture*. Chapter 3 (St. Petersburg, 2001).

⁹ M. N. Pavlova, *Methods of diagnosing the formation and development of organizational culture*. The author's abstract on the degree of candidate of social sciences (Moscow, 1995).

¹⁰ I. D. Ladanov, *Psychology of market structures management*. Chapter 3 (Moscow: MTC Perspektiva, 1997).

¹¹ T. Yu. Bazarov, *Social and psychological methods and technologies of personnel management of the organization*. The author's abstract on the degree of psychological sciences (1999).

¹² V. A. Spivak, “Images of the innovation organization”. Collection of reports on the results of the international scientific and practical conference, Moscow March 29-April 9, 2010.

¹³ R. A. Cooke & J. L. Szumal, “Using the Organizational Culture Inventory to understand the operating cultures of organizations”, *Handbook of organizational culture and climate*, Vol: 4 (2000): 1032-1045.

¹⁴ I. Janis (Boston: Houghton Mifflin, 1982).

¹⁵ N. King & N. Anderson, *Innovation and Change in Organization*. Chapter 2 (New York: Routledge, 1995).

¹⁶ K. Jaskyte, “Transformational Leadership, Organizational Culture, and Innovativeness in Nonprofit Organizations”. *Nonprofit Management & Leadership*, Vol: 15 num 2 (2004): 15-32.

implement their own ideas. He uses charisma, inspiration and intellectual stimulation to encourage the creativity of employees. The theory of transforming leadership defines five basic principles of innovation incentive:

- avoid conventional ways;
- create a common vision among employees;
- give employees the opportunity to act in accordance with their vision;
- model ways for performing tasks;
- encourage employees by recognizing their achievements.

At the end of the 20th century, the earlier proposed alternative approach devoted to the role of a leader in the innovation activity of the organization was further developed. Supporters of this approach suppose¹⁷ that it would be simplistic to assume that the innovation-orientedness of the organization is determined preferably by the leader since leadership is a subjective phenomenon and elements of the external environment can substantially distort the visible effects of leadership. Therefore, when studying corporate culture influence on the performance of the organization's innovation activity, it is necessary to take into account a much larger number of factors than the style of leadership. Many researchers believe that the most important ones are the mission, values, beliefs of organization's members, as well as the degree of coordination of horizontal and vertical interactions. A leader can promote the development by creating new areas of common values such as, for example, taking risks and using creativity.

The newest research is devoted to the concept of an innovation organization. The authors of the concept believe that it is not sufficient to provide a structure for the promotion of ideas; it is not sufficient to have an innovation management strategy or innovators to obtain high innovation activity as well. They believe that it is also necessary to provide a special innovation environment for maintaining creativity and sharing ideas.

The classical approach to corporate innovation-orientedness recommends maximum exclusion of bureaucracy, various controlling structures, communication barriers reduction that prevents the spread of new ideas. The experience of real companies proves that such transformations must be applied with caution, otherwise the organization can become disorganized or chaotic¹⁸. Successful innovation companies use tools and technologies that keep a balance between formal and informal elements of the management structure. Personal and team competition is allowed to a certain limit. It requires cooperation between departments and teams within companies. Good communication between subordinates and superiors, and an effective organization within teams are also welcomed. There should be a common material interest of all members of the organization in the effective implementation of innovations.

Theoretical studies in the field of innovation values focus on providing moral support and inspiration for innovators. The accusatory type of the corporate culture, where the author of unsuccessful projects is labeled a "scapegoat", is denied; it is suggested that mistakes should be considered as an opportunity for company's learning and development. Some companies try to build corporate history as a history of successes of individual employees,

¹⁷ M. Hannan & J. Freeman, "Structural Inertia and Organization Change", *American Sociological Review* (1984): 214-226.

¹⁸ J. Heskett, *The Culture Cycle. How to shape unseen force that transforms performance*. Chapter 4 (New Jersey: FT press, 2012).

who made new proposals and advance the company forward. The main motivating factor here is the person's desire to "leave a trace in the world" and receive recognition from colleagues and superiors¹⁹.

However, the study of the successful experience of the world's largest innovation corporations brings to the forefront other factors of creating an innovation climate²⁰. Representatives of the vast majority of successful foreign innovation companies point out the following as the most important corporate values:

1. Strong communication with buyers. This implies not only customer orientation in its literal meaning but also the inclusiveness of the consumer in the very process of developing innovation, studying and actively forming his needs, taking into account the consumers' opinions in the process of selecting options and improving product samples.

2. Pride in your product and your company.

There are different ways of how the labor process can be organized as well as the structures which support the innovation climate and internal entrepreneurship.

Recently, most attention has been paid to the need to allocate a certain amount of working time and a certain limit of financial resources for the implementation of employees' own ideas, their experimentation, and creativity. Indeed, innovation corporations demonstrate a high level of trust in employees and implement the principles of diversity, teamwork, and accessibility of ideas in special campuses.

However, a more thorough study of the experience of successful innovation companies²¹ gives data to specify the conditions necessary for their high performance:

- a careful and deliberate choice of employees who are engaged in the formation of corporate innovation values;

- selecting and inviting people who have both a professional and individual initiative to use the money and time resources for the implementation of their projects in accordance with the overall objectives of the organization, as well as "sell" the results of their projects to the management and other members of the organization; employees of the innovation company must possess creativity, the ability to apply an unusual (sometimes paradoxical) approach, rapid adaptability in the business environment, analytical skills to deal with existing situations, barriers and problems, holistic conceptual vision of the strategy, effective self-organization, the ability to manage team motivation.

- a special strategy for building creative teams of employees with different experience and basic education that could ensure the introduction of ideas on a collective basis. The most important ways to support the innovation spirit are to discuss the objectives and vision with employees, maintain their involvement in the innovation process. For this purpose, the companies should be clear and consistent with the company's overall mission, i.e. the overall objective of the activity in terms of public benefit.

¹⁹ R. M. Steers; C. J. Sanchez-Runde & L. Nardon, Management Across Culture. Challenges and Strategy. Chapter 1 (Cambridge: Cambridge University Press, 2010).

²⁰ B. Jaruzelski; J. Loehr & R. Holman, "The Global Innovation 1000. Why Culture is Key?". Strategy + business (Booz & Company), Vol: 2 (2011): 26-45.

²¹ J. Heskett, The Culture Cycle. How to shape unseen force that transforms performance. Chapter 4 (New Jersey: FT press, 2012).

The most important factor in the growth of the organization's innovation activity is the involvement of customers in the process of creating innovations. Creativity is peculiar not only to producers but consumers as well.

Materials and methods

The task of this study is to identify the factors of corporate culture, which according to the opinion of Russian specialists and managers significantly affect the innovation activity of Russian companies. The research was carried out by the authors of the article with the support of the employees of the Department of National Economy of the Economic Faculty of the Russian Presidential Academy of National Economy and Public Administration.

At the first stage of the research (2012-2013), a series of in-depth interviews and focus groups were conducted where owners, managers and HR specialists participated in the study in order to identify the main barriers to the initiation and implementation of innovations in Russian companies, as well as identify a set of factors of corporate culture that have the greatest impact on the innovation activity of the organization's employees²². The in-depth interviews were attended by consultants from the management consulting company Alt, teachers of the Economic Department of the Higher School of Economics, employees of the Department of National Economy of the Russian Presidential Academy of National Economy and Public Administration. In total, 9 in-depth interviews were conducted. Two focus groups were held on the basis of the training center of the company "Stins-Coman", they were attended by 22 HR managers and directors responsible for the corporate development of companies in the innovation sphere of information technology. The task of the in-depth interviews and focus groups was to form a list of the corporate culture factors, which have the greatest impact on the innovation activity of the staff.

The second stage of the study (2014-2016) was a questionnaire survey among owners and managers of Russian companies - students of MBA programs and students who get the second university degree education in the Russian Presidential Academy of National Economy and Public Administration. The study was devoted to revealing the importance of these factors in the innovation activity stimulation of employees and the formation of an innovation climate in a company. The main objectives of the study were:

1. Identification of the most significant factors affecting innovation performance and its costs.
2. Hypotheses verification of the relations of priorities when choosing factors of corporate culture which include demographic characteristics of the survey participants and their companies.
3. Study the possibility of reducing the number of factors based on the stable correlation in the participants' responses.

104 companies from various regions of Russia participated in the survey. The distribution of companies based on the business size is shown in Table 1.

²² E. E. Pervakova, *Corporate Culture as a Factor of Innovation Activity of Companies*. Chapter 3 (Moscow; Max Press, 2013).

Large companies	Medium-sized companies	Small companies
44	28	22

Table 1

The distribution of companies based on the business size

In the demographic part of the questionnaire, the question was also asked about the area of activity (the type of business) of the company; the survey participants could also choose several areas of their companies' activities. The results of the distribution based on the business type are shown in Table 2.

Industry	Service	Commerce	Finance
40	44	20	11

Table 2

The results of the distribution based on the business type

Table 3 shows the distribution of survey participants according to their official status in their companies:

Managers and specialists	Top managers	Owners
67	16	17

Table 3

The distribution of survey participants according to their official status in their companies

To solve problem 1 of the research task each participant of the survey was asked to mark those factors of corporate culture, which, in his opinion, significantly affect the innovation activity in the organization. Marking the factor in one questionnaire brought him one score. The scores for each factor were summed during the processing of all the questionnaires.

To solve problem 2, which is the study of the relations of priorities in choosing key characteristics of an innovation corporate culture which include demographic characteristics of companies and respondents, several basic (null) hypotheses were formulated:

- the choice of key factors of the corporate culture of an innovation organization does not depend on the type of company activity;
- the choice of key factors of the corporate culture of an innovation organization does not depend on the size of the company's business;
- the choice of key factors of the corporate culture of an innovation organization does not depend on the official status of the respondent.

When testing hypothesis 2, all companies were divided into 2 extended groups: production and non-production companies.

When testing hypothesis 3 devoted to the dependence of priorities when choosing innovation factors of corporate culture according to the official status of respondents, all respondents were divided into two extended groups: 1) managers and specialists, 2) top managers and business owners.

To analyze the influence of the company size on the choice of factors, all companies were divided into two large groups: large companies - 44; small and medium-sized companies - 50.

The last comparative analysis was devoted to the business areas of the companies which participated in the survey. All companies were divided into 2 groups: 1 group - industry (40 companies), 2 group - commerce, services, and finances (75 companies). It should be noted that some respondents noted that due to the diversity of their activities, their company can be attributed to several areas at once.

The hypothesis testing was carried out on the basis of the program application Statistica²³.

Two methods were used. The first method is categorial analysis with the calculation of the Yule association coefficients of hypothesis testing to identify the correlation between the factors based on the calculation of Student's statistics (t).

The Yule coefficient is calculated for each pair of factors separately according to the following formula: $Q = (AD-BC)/AD+BC$, where A is the number of respondents' questionnaires, in which both studied factors are not significant (not marked as influencing innovation activity), B is the number of questionnaires, where the first factor is significant, and the second is insignificant, C is the number of questionnaires in which the first factor is insignificant, and the second is significant, D is the number of questionnaires in which both factors are significant. Thus, A, D increase the correlations between the factors, B, C decrease it.

The Yule coefficient can take values from -1 to 1, and as the value approaches 1, the connection increases. The negative value of the Yule coefficient indicates the opposite correlation. The criterial table of the Yule coefficient has the following more precise form:

The value of the Yule coefficient	Interpretation
up to 0,2	very weak association
from 0,2 to 0,5	weak association
from 0.5 to 0.7	average association
from 0,7 to 0,9	high association
over 0.9	very high association

When calculating the Yule coefficient for a particular pair of factors, it is necessary to check its position in the confidence interval, which indicates the statistical reliability of the calculations.

A comparative method is used to show the association of the frequencies of the choice of factors in the general sample of the survey with the frequencies of the choice of the relevant factors in a narrower demographic sample.

Let us consider in detail, for example, the basic hypothesis about the irrelevance of choice based on the size of the company for factor 13 - (the ability to take responsibility).

For statistical analysis, the companies are divided into two larger groups: large companies - 44; small and medium-sized companies - 50.

²³ I. I. Eliseeva & M. M. Yuzbashev, General Theory of Statistics. Chapter 11 (Moscow: Finance and Statistics, 2004).

The relative frequency of mentioning the factor in the main sample is denoted as m/n , where m is the number of questionnaires with a mention of this factor, n is the total number of questionnaires. For the “responsibility” factor $m = 64$, $n = 104$.

The relative frequency of mentioning the factor in the subsample under consideration is denoted by m_0 / n_0 . In a particular case, a sub-sample of small and medium-sized companies is considered, $n_0=50$, $m_0=23$ (number of references to the “responsibility” factor among representatives of small and medium-sized companies).

As a criterion for checking the basic (null hypothesis), a comparison of the quantity is used

$$(1) \quad Z = \frac{\frac{m}{n} - \frac{m_0}{n_0}}{\sqrt{P(1-P)\left(\frac{1}{n} + \frac{1}{n_0}\right)}}, \text{ where}$$

$$(2) \quad P = \frac{m + m_0}{n + n_0}$$

with the critical value of the Laplace function at a significance level of 0.95. If the Z value of the criterion value is exceeded, the null hypothesis is rejected. The value of the Laplace function at 95% confidence equals 1.96. Consequently, the value of Z does not exceed the critical value, and the main hypothesis is accepted, that is, the hypothesis of the irrelevance of the choice of the “responsibility” factor based on the size of the companies.

The third task of the study was to test the dependency of the choice of individual factors on the corporate culture and the possible decrease in the dimension of the factor space. The solution of this problem was carried out on the basis of the Method of the dominant component of factor analysis with the help of the Statistica program²⁴.

The essence of the analysis consisted in breaking up the factors into larger groups - the components (Factor), within which the factors which are most often encountered simultaneously are located.

Results

Based on the results of the first stage of the study, 13 factors of corporate culture were formulated, which, according to the opinion of the participants in focus groups and in-depth interviews, have the greatest impact on employee innovation activity. The factors are located in Table 4.

²⁴ V. E. Gmurman, Probability Theory and Mathematical Statistics. Chapter 2 (Moscow, “Higher School”, 2003).

№	Factor	Nature and type of influence (manifestation)	Comments
1.	Transparency of objectives	The employee understands and accepts the mission of his company, i.e. the company's objective in terms of public benefit, the benefit that his company brings to society.	It should be noted that the mission declares solely public benefit without mentioning the benefits for a particular person.
2.	Common values	The employee knows and shares the true values of the "top officials" and shareholders of the company, as well as their vision of the future.	As a rule, this is the most difficult task, because these values should be sincere, positive and able to inspire the rest of the employees.
3.	Optimism	The employee believes in the future of his company, is confident in the accuracy of the direction chosen by the authorities and his ability to successfully walk in this direction	It is necessary to have progressive images of the future, a transition to a new quality of life
4.	Democratic leadership style	The leader enjoys authority, but at the same time his management style is not too authoritative, i.e. he is ready to receive feedback and suggestions from his subordinates.	However, too much delegation of authority, lack of control over the implementation of the decisions of the manager causes chaos and does not contribute to the effective implementation of innovations
5.	A well-established communication channel and a degree of mutual understanding with the authorities	The employee has the opportunity to quickly and easily bring his innovation ideas to the company's management.	The culture of communication, when the chief responds promptly to subordinates' letters and addresses, is of great importance as well as the fact that decisions made at meetings are actually monitored and implemented
6.	Favorable atmosphere	The company has a dynamic, cheerful, professional and competent atmosphere.	It is important that there is no confrontation between the main functional and service departments
7.	Mutual assistance, cooperation	The company practices mentoring, it is possible to consult with more experienced colleagues, discuss their ideas and find help in the process of the idea implementation.	The informal leader is welcome in case he is on good terms with the authorities
8.	Project-team approach to the implementation of development tasks	The company has developed teamwork, there is a practice of building teams for specific projects, and the team list varies depending on various projects objectives.	
9.	Limitation of personal competition	The company does not develop and does not welcome personal competition, but team competition is encouraged.	

№	Factor	Nature and type of influence (manifestation)	Comments
10.	Self-esteem, self-realization	The employee feels his importance, he feels that his opinion is considered, he is listened to, the leader shows a personal interest in him. Management takes care of the working conditions of employees.	It is necessary to carry out activities in which employees can express their opinion and make suggestions for improving their activities
11.	Absence of vertical functional obstacles	The company has a well-established horizontal information flow, there is a high level of communication culture	At the same time, there is a minimum amount of tedious bureaucracy in obtaining management approvals.
12.	Justice	The employee-initiator of innovations is sure that in case of successful implementation of his proposals, his priority will decrease and he will receive adequate material compensation.	
13.	Responsibility	Employees are accustomed not only to participate but also take responsibility.	

Table 4
13 factors of corporate culture

These factors became the basis of the questionnaire, in which each participant of the second stage of the survey was asked to identify those factors which, in his opinion, affect his innovation activity and his colleagues'. The number of marked factors was unlimited. Each marked in one questionnaire was assigned with one score. Table 5 shows the total number of scores for each factor, i.e., the number of respondents who consider this factor to be important for the innovation activity.

N факт.	1	2	3	4	5	6	7	8	9	10	11	12	13
Баллы	72	42	53	60	61	68	63	43	13	61	24	69	64

Table 5
The total number of scores for each factor

The most significant factors turned out to be “Transparency of objectives and understanding the mission of the company”, as well as the “Favorable atmosphere” and “Justice” factor.

Participants in the survey were given the opportunity to expand the list of factors of corporate culture that affect the innovation performance. The following factors were additionally proposed:

- employees' readiness to receive new knowledge and improve personally and together with other employees;
- presence of feedback when proposing new ideas;
- incentives for personal professional growth of employees;
- possibility to build up a career in a short time.

When solving the second task of the study - studying the correlation of respondents' answers to their demographic characteristics (the size and type of business, and the situation in the company), the following results were obtained.

The ratings of factors for specialists and managers (67 respondents in total) are given in the table 6.

N of factor	1	2	3	4	5	6	7	8	9	10	11	12	13
Scores	52	27	36	38	37	43	44	25	8	33	13	42	39

Table 6
The total number of scores for each factor

For employees of a lower official status, the most significant were 1, 7 and 12 factors which relate to the mission, cooperation, mutual assistance, and justice.

The results obtained for top managers and owners (33 respondents) are presented in the following table:

N of factor	1	2	3	4	5	6	7	8	9	10	11	12	13
Scores	23	11	15	22	20	21	25	9	4	16	5	18	16

Table 7
The results obtained for top managers and owners

Senior managers also prefer the presence of the organization's mission, cooperation, and mutual assistance. The value of the justice factor and incentives for innovation proposals is less, while the value of the democratic leadership style increases.

The results of the survey for large companies are presented in the following table:

N of factor	1	2	3	4	5	6	7	8	9	10	11	12	13
Scores	29	14	24	27	26	32	27	20	6	26	9	28	33

Table 8
The results of the survey for large companies

The most significant factors were the presence of the mission and the ability to take responsibility.

The same table is presented for medium-sized and small companies and it gives the following results:

N of factor	1	2	3	4	5	6	7	8	9	10	11	12	13
Scores	31	16	18	24	24	26	27	18	4	25	8	29	23

Table 9
The results for medium-sized and small companies

For the representatives of small and medium-sized business, the mission is also crucial, but the factor to take responsibility gives way to the presence of mutual assistance and cooperation in the company. This may be due to the fact that in a small business the degree of team cohesion is very crucial to maintain competitiveness in the market.

When analyzing the dependence of the choice of innovation factors, the companies were divided according to their business area and other types of activity.

This is the table of factor choice for companies in the industrial area:

N of factor	1	2	3	4	5	6	7	8	9	10	11	12	13
Scores	29	14	21	20	22	29	21	19	4	21	7	25	28

Table 10

Factor choice for companies in the industrial area

In this case, the mission factor and the ability to take responsibility come first.

For representatives of companies in other areas of activity the table is below:

N of factor	1	2	3	4	5	6	7	8	9	10	11	12	13
Scores	52	33	43	44	48	50	47	28	9	46	16	52	40

Table 11

Representatives of companies in other areas of activity

The factors of the mission and justice get the highest value in stimulating innovation activity in the employees' opinion of non-production companies.

In spite of the fact that the visible analysis of the tables shows certain differences in the choice of different groups of respondents, a statistical criterion was tested to identify the degree of coincidence of the answers for different demographic groups.

The results of checking the statistical hypotheses on the dependence of the choice of the factor on the demographic parameters of the participants showed that there is no significant correlation between the choice of respondents and the characteristics of their business activities, the size of the business and the respondent's status in the hierarchy.

It can be eventually concluded that the choice of priorities among the factors of corporate culture that affect innovation activity does not depend on the size of the company, the area of activity (the type of business).

The hypothesis of the dependence of the choice on the official status was not confirmed by any of the factors of corporate culture. The results of our pilot study show that the choice of priority factors of innovation corporate culture does not depend on any demographic characteristics of companies and respondents.

The third task of the study was to identify the possibility of extending groups of factors and reducing their number on the basis of the method of categorial analysis and the method of dominant component analysis.

During the analysis with the help of the Yule coefficient the largest values were obtained for four pairs of factors:

1. Transparency of goals and the mission (1 factor) and common values (2 factors). The Yule coefficient was 0.625 at the confidence interval (0.32, 0.93).
2. Transparency of objectives, and the mission (1 factor), and optimism (3 factors). The Yule coefficient was 0.667 at the confidence interval (0.4, 0.93).
3. Favorable atmosphere (5 factors), mutual assistance, and cooperation (6 factors). The Yule Coefficient is 0.675 at the confidence interval (0.44, 0.91).
4. Justice (12 factors), mutual assistance, cooperation (6 factors)

The Yule coefficient is -0.633 at the confidence interval (0.37, 0.89)

Thus, the most dependent parameters have an average correlation measure.

The results of the analysis based on the dominant component method were further obtained.

The most reasonable decomposition was obtained for the 4th components. The calculation of factor loads, i.e., the values of correlation coefficients of each of the initial characteristics with each component, is given in Table 12:

	Factor 1	Factor 2	Factor 3	Factor 4
Transparency goals	-0,00688	0,7167 *	0,216865	0,121021
Common values	0,100058	0,681764 *	0,0183	0,093553
Optimism	0,333419	0,54183 *	0,291435	-0,30321
Democratic leadership style	0,797482 *	-0,11767	0,121938	0,022833
Well-established communication channel	0,41341	0,018383	0,467962	0,314049
Favorable atmosphere	-0,04185	0,098933	0,809042 *	-0,01197
Mutual assistance, cooperation	0,690968 *	0,287297	0,016404	0,096427
Project-team approach to the implementation of development tasks	0,247828	-0,108	0,550444 *	0,211489
Limitation of personal competition	0,09638	-0,05	0,202308	0,734471 *
Self-esteem, self-realization	0,046222	0,292233	0,629863 *	-0,04455
Absence of vertical functional obstacles	0,070652	0,398717	-0,10187	0,66808 *
Justice	0,515071 *	0,374301	0,162526	0,077274
Responsibility	0,169445	0,285088	0,415945	0,037719

Table 12.

The values of correlation coefficients of each of the initial characteristics with each component

When choosing the maximum value in each row of the table, indicated by *, one can determine which component this factor should be attributed to.

As a result it is possible to divide the factors into 4 groups of joint choice:

1. “Democratic leadership style”, “mutual aid cooperation”, “justice”.
2. “Transparency of objectives”, “common values”, “optimism”.
3. “Favorable atmosphere”, “project-team approach to the realization of development tasks”, “self-respect and self-realization”.
4. “Absence of functional obstacles” and “restriction of personal competition”.

The factors “Established communication channel and the degree of mutual understanding with the authorities” and “Responsibility” cannot be clearly attributed to any of the enlarged groups.

Discussion

All the factors of corporate culture can be relatively divided into 4 groups. The first group includes the most significant factors. The factor “Transparency of the objectives”, which presupposes the understanding of the mission by employees, the meaning of their activities from the point of view of public benefit, got the highest score. Such result draws a conclusion that the desire to increase the meaningfulness and the public benefit of someone’s activity is the main stimulus for innovation behavior. The mission of the innovation company, therefore, should demonstrate a clearly expressed desire to bring concrete benefit to the society, the declared superiority of ethical values over the task of making a profit, and the absence of an upper limit in aspirations and ambitions.

The first group of highly significant factors includes favorable atmosphere (the company has a dynamic, cheerful, professional-competent atmosphere) and justice (the awareness of the employee that his contribution is recognized and adequate material compensation can be gained for this).

There is an opinion that the successful innovation activity is promoted by the presence of personal and general competition in the organization. However, the research has shown that a favorable atmosphere of cooperation and mutual assistance within the company are the most important stimuli for innovation behavior. The presence of an “accusatory” culture, when an employee becomes a “scapegoat” in case of an error or failure, can completely block the process of creating and introducing innovations. In more friendly corporate cultures, where mistakes are seen as opportunities for learning and strategy development, the development process of innovation goes easier.

The factor of “Justice”, which is also part of the leading group, is specific for Russian business. Since legislation and real legal application in the field of intellectual property are still in their initial state of development, it is quite common for the author of an innovation proposal not to receive material rewards, as they are attributed directly to the head or director of the organization. The innovator often does not have an opportunity to participate in the introduction of innovations within the company or open his own business to develop an innovation idea. The second group included factors of relatively high significance: a democratic style of leadership, an established channel of communication with the authorities, mutual assistance, cooperation, and the ability to take responsibility.

It should be noted that the ability to take responsibility and risk are the main characteristics of employees from leading innovation companies in the world.

In the present study, this factor got into the second group of significance, as owners and managers of Russian companies possibly pay insufficient attention to the selection of personnel with a high level of personal initiative and readiness to take risks.

The third group includes factors of average importance: optimism, common objectives, project-team approach to problem solving.

Finally, the fourth group includes factors of low significance. This is a restriction of personal competition and the development of horizontal information flow. It should be noted that both these factors are very significant in the studies of Western researchers. It can be assumed that there is a lack of awareness of these factors in the Russian business community.

With the help of statistical analysis of the correlation between the choice of factors of innovation behavior and the demographic characteristics of companies, it was concluded that there is no correlation between the size, type of business and priorities in the choice of factors of innovation activity of this employee. This allows us to conclude that the chosen factors of innovation activity are typical for companies of any size, any field of activity.

The result obtained during the study of the connection between the employee's status in the organization (owner, top manager, specialist) and priorities in the choice of innovation factors is surprising. The relation between the status and priorities of choice was not confirmed. At the same time, international studies of companies in developed markets show that owners and employees rank the factors of innovation activity differently. For example, owners highly value the "Common objectives" factor, while ordinary employees give more importance to "the atmosphere in the team".

The third objective of the study was to try to reduce the number of factors by aggregating similar factors.

The use of the factor load method helped classify four groups of factors. The first group includes factors characterizing the attitude of employees to the management, the second - the mission and vision, the third - the relationship with colleagues, the fourth - the organizational structure. This suggests the possibility of reducing the number of factors in a further and major study.

Conclusion

In conclusion, it is worth pointing how the most significant factors influence innovation activity, innovation capital and, consequently, the growth of the company's value. The research confirms the opinion of foreign and Russian researchers that the mission (the purpose of the organization from the point of view of public benefit) and the vision (ways to achieve this objective) are inspiring factors for the innovation business team and the conditions for applying their best efforts to promote innovation. A common vision with a motivating potential allows achieving a significant increase of innovation capital, which is expressed in increasing the quantity and quality of technological and organizational know-how, new business concepts. A favorable business atmosphere is an important factor in shaping the organization's ability to achieve agreement and cooperation. It improves the

quality of relations between the company's management and personnel within the company, relations with counterparties, owners, the state. A favorable atmosphere contributes to the assets of the relations quality, which is a component of the company's value.

The most important conclusion for companies which want to transform their innovation costs into product success and significant financial achievements and a stable market position is that traditional factors, such as permanent investment in development, are no longer sufficient. Companies must provide a corporate culture that does not only support innovation but also accelerates the process of its implementation. Moreover, in such companies, the innovation strategy should be explicitly discussed by all members of the organization from top to low-level managers as well as research laboratory staff. It is necessary to align the role of technical directors with other top managers and provide technical managers with real participation in the governing bodies. It is necessary to ensure the transition of innovation ideas to a specific action plan on a short-term interval and focus on those opportunities which will allow maintaining a good market position.

The rigid link between strategy, culture, and innovation allows the company to create an additional asset to convert innovation costs into market payoff and long-term financial achievements.

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