Russian Formula of Corporate Governance: Cognitive Modeling

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Abstract: The article represents some qualitative specifics of the Russian model of corporate governance based on the international trends in corporate reporting management solutions of "standardization" and "mathematization" of cognitive modeling instruments and construction of fuzzy cognitive charts. Basic peculiarities of three qualitative “configurations” of agency problems related to corporate governance in the Russian companies and the specifics of information openness have been analyzed in the article, with the dissonance factors drawn out, thus allowing to systematize semi-structured factors into their relationship and interaction, which affect the quality of management in the Russian companies.

Key words: Corporate management • Agency problem • Corporate reporting • Cognitive modeling • Fuzzy cognitive charts

INTRODUCTION

Rapidly changing global risk factors of the external business environment in conditions of "continuous" information disclosure impact national corporate governance models, determining the dynamics of internal and external management mechanisms, quality of corporate governance and informational transparency of the company.

Global trends in corporate governance associated with the strengthening of the role of different stakeholders, change not only the landscape of interactions the main participants of corporate relations - shareholders, board members, senior managers, but also affect the process of making and implementing the strategic activities of the company based on the variety of corporate risk management tools considering its different levels of implementation of "agency problem" impact on the environment and society as a whole.

Corporate reporting system has been complicated due to increase of its volume, structural division, IT technology of submission and distribution, thus formalizing the transition to «ESG – framework» of corporate governance(environmental, social and corporate management) in order to facilitate the presentation of company stable development, not only in financial, but also non-financial, social, environmental and other aspects. Therefore, the focus is drawn on changing the target parameters and cognitive factors in the company development.

Global transition to integrated corporate reporting forms gives a powerful impact to the process of convergence of national corporate governance models as well as to the need to "fine tune" the internal and external corporate governance mechanisms system parameters.

At the same time, the differences in implementation of corporate models at the national, regional and unit levels through the "network" of common factors of integrated corporate reporting are usually leveled.

In turn, the semi-structured quality factors of corporate governance related to mental models of the organization of corporate accounting and as a result - different levels of implementation of "agency problem" and opportunism top managers - require to use the cognitive modeling techniques in order to enable organization of knowledge about these factors in their relationship and interaction.

From this perspective, there is a need to consider the specifics of the Russian corporate governance model through the lens of cognitive tools based on the information development trends of corporate reporting. This article explores the aforesaid issues.
In 2013, on the proposal of the European Commission in the non-financial reporting have been added indicators characterizing the magnitude of the profits paid income taxes and subsidies received.

**Integrated Reporting**

IRRC released in 2013, a new standard for integrated reporting, based on the relationship between finance, managerial accounting and reporting in the field of sustainable development.

World Business Council for Sustainable Development (WBCSD) is a platform for the study of sustainable development, representing the interests of companies in the field of sustainable development in various forums, working with government agencies and NGOs.

**The Sustainability Accounting Standards Board (SASB)™** is a nonprofit organization that provides standards for the disclosure of significant issues in the field of sustainable development for the benefit of investors and the public.

In August 2013 BS published a new version of the GRI standard G4, which took into account a number of significant changes in the method of reporting on sustainable development, particularly paying attention to the materiality of the information disclosed, and the accountability of the supply chain.

![Fig. 1: Conditions for introduction and use of integrated forms of corporate reporting in 2013](image)

**The Informative Corporate Reporting Trends:**

IT support of corporate activity is increasing annually and according to the G3.1 requirements (sustainable development) and international standards of integrated corporate reporting the amount of reports have been increased significantly.

Ten years ago the annual report of a medium-sized company contained 70-80 pages. Today the annual report counts up to 400-500 pages of information, which is read by about 1% of investors and understood by no more than 0,05% [1].

Enormous number of non-integrated corporate information loses its value both for the stakeholders, shareholders and managers. Basic characteristics of the integrated non-corporate reporting are listed below [2]:

- A retrospective look at the company activity and development (the effect of "Rearview Mirror" in the car when it moves forward);
- Informational redundancy of quantitative and financial data ("overabundance" creates cognitive dissonance in such information processing);
- Lack of correlation between sections of the company corporate reporting in its financial, managerial, environmental and social aspects;
- Various degree of reliability and relevance of corporate reporting for the particular stakeholders of the company (absence of "segmentation" of corporate reporting for different groups of stakeholders: shareholders, prospective investors, regulatory authorities, members of the board of directors, etc.);
- Absence of integration of access channels for corporate reporting (for online internal management decisions, investor presentations and reports for regulatory bodies stakeholders and others);
- Lack of personalization and corporate information importance for the company, on the one hand and for its stakeholders-on the other hand;
- Delays in technology and development of non-integrated corporate reporting, low level of visualization, narrow level of access, etc.

The year 2013 was the most significant time for the creation of pre-conditions for the transition to the integrated corporate reporting forms, in which the coordinated actions of a number of international institutions (Figure 1) helped to create the system basics and the institutional environment for the integrated forms of corporate reporting in national corporate governance modeling [3].

A new stage in the development of integrated forms of corporate reporting is characterized by motivation to balance the financial and managerial information that is shown in the following:

- Indicators reflecting the amount of the profits paid for income taxes, subsidies in the non-financial reporting have been added;
- Optimization of financial and managerial information within the sustainability reports on the financial stability;
Strengthening of the role of corporate responsibility in disclosing information about its strategic steps, business models, environmental and social impacts of economic activities, policies on human rights, etc.

Improving of reporting methodologies on the stationary development of the company, with particular emphasis on the materiality of corporate information and logistical coordination supply chains of goods;

Development of the integrated reporting forms in the NPO sector, formation of "common" internet sites for coordination of interests of NGOs, companies and their stakeholders in the field of their sustainable development.

At the same time, it should be noted that there is an uneven transition to the integrated forms of corporate reporting both within the external and national model of corporate management. For example, approximately 50% of corporations have joined into the integrated corporate reporting forms: 33% in Russia, 9% in Asia, 17% in Africa's, 11% in Australia, 17% in South America, 6% in North and Central America. And this transformation is not straight-lined [4].

Such significant gap in the application of the integrated forms of corporate reporting in the regional "spectrum" can be explained by different levels of transaction expenses of the corporate relations participants within each national model. The lower transaction costs of interaction between the corporate relations participants are, the lower the percentage of the use of integrated forms of corporate reporting is.

However, with the growing number of companies that have transferred into the integrated corporate reporting forms in each country, the level of transaction costs for the "non-aligned" companies will be increasing, creating negative externalities outside, thus encouraging the companies to implementation of the integrated reporting forms.

Moreover, the spread of the integrated corporate reporting forms, particularly in the developing markets and the BRIC countries, facilitates the creation of the strategic platform for future competitive impacts of the investors from the developed countries.

To some extent, the global processes of standardization of accounting policies reflect the need of companies to create the "common" cognitive field of the companies’ information exchange with the external business environment.

At the same time, there are certain objective limits for the effective implementation of standardization activities in the company which are conditioned by the following factors:

Firstly, the economic life of each company is filled with many events and managerial "record" of the economic facts, risk assessments, impact and implications for the future of competitive company’s strategy, is the most important task of the integrated corporate reporting forms. But as for the "format" standards, application of similar techniques to the variety of events may lead to underestimation (or overestimation) of events risks, which is different for shareholders, potential investors and managers. It ultimately contributes to maladaptive evaluation of events and possibility to managerial manipulation in the justification of "new" factors of the company competitiveness with the long-term consequences for the particular stakeholders and shareholders; [5]

Secondly, various business processes have different costs of their "reflections" on the IFRS basis, so it is not uncommon that the costs for "translation" of business processes into the standards language may exceed the efficiency of their use (reporting for the sake of reporting); [6]

Thirdly, development of the unified accounting system of the company is based not only on the standards area?, but also involves application of mathematical tools, which allows to overcome the "linguistic variation" of national accounting systems thus ensuring the achievement of a new level of reliability, availability and integration of management information [7];

Fourthly, integration of corporate reporting framework requires its "specialization" and "segmentation" based on different objectives - strategic, tactical and operational management of economic risks, taking into account potential conflicts of interests within the corporate management -top managers, board members directors, shareholders and stakeholders of [8];

Fifthly, quality risk management of the company depends on the efficiency of application of different types: tangible and intangible company assets (financial, intellectual, industrial, organizational, management, online resources, etc.) that requires a wide range of mathematical techniques to support management decisions based on simulation modeling, business intelligence, expert evaluation, etc. [9].
Thus, in a global context, information corporate reporting trends stay on the "bracket" of two directions - the first is connected with the "standardization" trend of corporate reporting which is based on "prescription" standards of management decisions and, the second one is related to the opposite trend of "mathematization" of corporate reporting based on application of the mathematical tools, capable of overcoming the "linguistic" variability of national systems of corporate accounting and more adapted to the complexity of the administrative tasks of corporate governance.

Cognitive modeling methods can be actively used in the framework of "standardization" trends in corporate reporting to justify the long-term strategy of sustainable development of the companies and within the trend of "mathematization" support of corporate accounting solutions.

Cognitive Modeling of Quality of the Russian Corporate Management Model

National Traits of the Russian Corporate Governance Mode: In contrast to the Anglo-American model (model W - widely held corporation) and the German model (in -blockholder model) Russian model of corporate governance refers to the "mixed" type [10]. Its characteristics are listed below:

- Presence of dense "core entrepreneurial", participants of corporate relations, due to semi-decision "agency problem" [11],
- Significant direct and indirect the state influence as a shareholder. Companies share in which a majority stake owned by the government - 46% [12],
- A high equity concentration in Russian companies, the average share value of the largest owner is 50-55% and the second-largest shareholder - is about 15%. [12],
- The board of directors structure of major Russian companies has formed by 44% of the shareholders or their representatives [12], while for medium and small joint-stock companies has increased (up to 50 people). It is variable, that the Board of Directors stands for as the sole executive body,
- Lack of market development foreign institutions of the national system of corporate management - the market for corporate control, the institution of independent directors, dysfunctional institution of bankruptcy raiding, etc. [12],
- Conservative judicial practice of Russian corporate law, weak protection of minority shareholders' rights [12], etc.

These features of the Russian model of impact on the quality of corporate governance in Russian companies. All of this is accentuated by the manifestations of corporate conflicts in Russian companies, contributes to the protracted nature of their occurrence and leads to a broader involvement in such conflicts of all participants of corporate relations - from stakeholders to employees [13], the most difficult process of resolution and closure.

In order to change the parameters of quality of corporate governance in the Russian economy have identified a number of following factors:

- Firstly, there has been a downward trend in the level of concentration of share ownership in the Russian industrial sector [14],
- Secondly, a new draft National Corporate Governance Code (MCC) was adopted in February 2014, in which the changes are: the responsibility of the board in risk management, the Audit Committee, chaired by an independent director, the protection of the rights of shareholders dividends, payments of "golden parachutes "managers in the amount of no more than a reward for two years, barring concealment of material information from the members of the Board of Directors [15]

Thirdly, the progressive increase in the level of information transparency of Russian companies (as estimated by Standard & Poor's rating in 2011 of information transparency of Russian companies had-56, more than 30% of companies use forms of integrated corporate reporting) [16].

The Russian corporate management model is characterized by semi-separation of the control and ownership under the "agency problem" described in the works of Jensen and Murphy [Jehnsen, Murphy [17].

Russian corporation "agency problem" is particularly acute and it added a few more quality circuits. Three circuit agency problem of Russian companies are reflected in the figure (Figure 2).

The agency problem for Russian companies has several following implementation contours:

- 1 contour line - by shareholders (principals)-top managers (agents),
- 2 contour line - by shareholders (stakeholders),
- 3 contour line - by shareholders - top managers (agents) – principle stuff.
Moreover, the internal struggle for control of the resources of the enterprise among the various actors of corporate governance for Russian companies characterized tough and is manifested in a high "price" control of the company and the stiffness of competition for corporate control, not only through shareholders and top managers, but also between different groups of shareholders and external stakeholders, as well as workers, indicating that the high transaction costs of interaction between participants in corporate governance and impact on the quality parameters of the company's management.

33% Russian companies prepare reports in accordance with (G3.1) and 12% of the companies in accordance with IFRS [16]. The most of companies (86%) present the impact indicators dynamics in a few years, but only almost half of them (46%) report comments on this dynamics. Even more rarely (13%) of corporations found the target values of the reporting period (the correlation of the plan and the fact) and forecast values for future periods -10% (Figure 3) [16].

Reliance reports to the accounting information is largely based on the confirmation of an external independent party. There is no problem with reliable financial information, (the company complies with the law) and the accuracy of the non-financial information (production, human, environmental and other data) can cause users big questions, as only 20% of companies are auditing non-financial reporting, which is due to insufficient disclosure of the company's stakeholders-Figure 4 [16].

The is a weak disclosure of accounting information. The list of reports are listed bellow:

- The specific information about the business and prospects of the companies supporting the implementation of the strategy (target and forecast figures, comments on the dynamics of indicators, etc.).
- The sustainability business information (business model, interaction with stakeholders and others.)
- Synergies between company performance and remuneration of top management.
The action mechanisms in domestic corporations are formed mainly under the influence of the Anglo-American model of corporate management, focused on the most transparent companies, dispersal equity developed market for corporate control, the use of independent directors, preferential protection of the rights of minority shareholders, etc.

At the same time, the specifics of the mechanisms of privatization in Russia deterministic nature of the mechanisms for implementation. It the insiders the corporate management, which manifests itself in the high level of competition on the corporate control of the company arising between shareholders, top managers and external stakeholders, insufficient development of independent directors and the market for corporate control, dysfunctional institution of bankruptcy, etc.

Moreover, the qualitative parameters of "agency problem" generate high transaction costs of interaction between participants of corporate relations and the low quality of these relations in the Russian Federation. All this extents the growth to the basic contradiction of the Russian model of corporate governance, which is expressed in the fact that the mechanisms of action of the Russian model are outsider, but on the other hand, the mechanisms of its implementation are the insider, which is manifested in the absence of synchronization of internal and external corporate governance tools, conflict and corporate risk-relations in the Russian Federation.

### Instruments of Cognitive Modeling in Corporate Management Quality of the Russian Companies:

Cognitive modeling instruments which actively govern the study of semi-structured systems and processes was proposed by R. Axelrod. [18]. The term of "semi-structured" is understood as systems, parameters and laws which "behavior" is described mainly on a qualitative level, while changes in system parameters may lead to unpredictable changes in its structure [19].

Cognitive research model of semi-structured corporate governance problems are made based on the DSS "needle" software. This software applies methods of analytical processing, focused on the study of system structure and receipt of forecast of its behavior under different control actions purposed to synthesize effective management strategies. [20]

Decision support system "NIDDLE" – is a software product designed to analyze and simulate strategies complex, hardly structured systems. It was developed by the scientific staff of the Department "Informatics and Software" in Bryansk State Technical University under the direction of D.A. Korostelyova. [21].

The presented research problem concerns the quality of the Russian model of corporate governance (in terms of controllability, stability to perturbations, emergence, connectivity, sensitivity, etc.) It is mainly reflected in the linguistic form. It has a multi-factors structure. To generate a list of factors (concepts), the data used from abstracts of scientists with a thesis on corporate governance in Russia in the period 2000-2013 years. It allows to allocate 35 different factors affecting the corporate governance quality are listed below:

- The corporate governance value participant’s system
- The low manufactured products' competitiveness
- The lack of financial correlation and management accounting system
- Administrative management methods
- The clear separation unavailability control and monitoring functions of corporate ownership
- The low level of labor productivity
- The behavioral constraint of decision makers
- Low inflow of foreign investments
- Imbalance of innovation and investment activities
- Low monitoring organization and control in the redistribution of company’s resources
- The low enterprise’s profitability
Table 1: The relationships intensity values between concepts

<table>
<thead>
<tr>
<th>Interpretation of the intensity of the influence of the concept</th>
<th>The numerical variable value</th>
</tr>
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<tbody>
<tr>
<td>Minimum</td>
<td>Consolidate 0,1; 0,2 Lighten -0,1; -0,2</td>
</tr>
<tr>
<td>Weak</td>
<td>Consolidate 0,3; 0,4 Lighten -0,3; -0,4</td>
</tr>
<tr>
<td>Moderate</td>
<td>Consolidate 0,5; 0,6 Lighten -0,5; -0,6</td>
</tr>
<tr>
<td>Strong</td>
<td>Consolidate 0,7; 0,8 Lighten -0,7; -0,8</td>
</tr>
<tr>
<td>Maximum</td>
<td>Consolidate 0,9; 1 Lighten -0,9; -1</td>
</tr>
<tr>
<td>Absence</td>
<td>0</td>
</tr>
</tbody>
</table>

- The low enterprise’s capitalization
- The double subordination business divisions
- The low life level
- The concealment of material information
- Low staff motivation
- Inferior access to market participants adequate information about the real enterprise’s economy
- The weak interaction of the stock market and shareholders
- High transaction expenses of interaction between corporate governance and participants
- Low enforcement mechanisms of corporate governance
- Low corporate culture
- Crisis Fundamental corporate crisis in governance research
- Strong corruption
- Strong economic, organizational and legal constraints in the development of corporate governance models
- Low disclosure transparency of management information and low standards
- Low economical growth
- Inefficient mechanisms of corporate knowledge management
- The unbalanced corporate scorecard system
- An ineffective quality management system
- Low flow of domestic investment in the corporate economy’s sector
- Low innovation capacity in production processes
- Unbalanced system of economic relations
- Low shares liquidity
- Limited set of working capital management
- Low company’s reputation

The purpose of constructing the map - is a determining system effect of factors and identify the relationship of factors that affect the quality of corporate governance. Fuzzy cognitive charts [22] reflect the mutual between the factors that differ in their intensity, which may vary over time. Therefore, the intensity of the impact parameter is introduced and in contrast to the classical cognitive chart, fuzzy modification of it, reflects not only the direction of the relationship factors, but also the degree of intensity (weight) of influence between the concepts.

In other words, cognitive matrix is constructed on the basis of the sign and the weights of connections. In fact it is the adjacency matrix of the weighted digraph. Fuzzy cognitive chart of factors influencing the quality of corporate governance is presented on the Figure 5.

In the constructed cognitive map highlights the most important immediate links between concepts that exist in the work of the Russian expert community. However, for a complete analysis of causal relationships quality control mechanism of corporate information is needed on the effects of mutual concepts dissonance and consonance. Analysis of the obtained values, we conclude that the greatest negative impact on the system of corporate governance concepts have: (2) – is the low competitiveness of the products – (3) is the absence of the link between of financial correlation and management accounting system, (15) – is the concealment of material information, (19) – is the high transaction costs of interaction between participants of corporate governance, (20) – is the low enforcement mechanisms of corporate governance. In turn, the greatest positive impact on the system of corporate governance has the concept (1) – is the corporate governance value participant’s system.

The biggest interests for the analysis of the quality of corporate governance are integral indicators of consonance and impact. It mainly impacted by the system, involving the main to the concepts subjects: (8) - is the low inflow of foreign investment, (9) – is the imbalance of innovation and investment activities.
Fig. 5: Fuzzy cognitive map of factors influencing the quality of corporate governance

As in the case of the following concepts (2) is the low competitiveness of the products, (3) is the lack of correlation of financial and management accounting system (15) – is the concealment of material information, (19) are the high transaction costs of interaction between participants of corporate governance (20) – are low enforcement mechanisms corporate governance negatively affects bilateral, creating a negative cycle. This means that the negative impact of these concepts their influence will be weakened, leading to a positive effect for the system of corporate governance in general. And with a positive impact on the concepts of their negative impact on the system of corporate governance over time will increase.

Thus, the need for a positive impact on these concepts provides good opportunities and management actions to improve the quality of corporate governance. Investigation of the structure of the corporate framework can be extended, if we consider the matrix system of indicators "to cut" highlighting key points, classes of concepts, which greatly affect the entire system of corporate governance. Class mutual positive influence at the level of the slice contains 0.9 to 5 points (Figure 6), each of which are the concepts on which it is possible and necessary to bring the system to influence the quality of corporate governance to the desired state.

The mutual positive class influence at the level of the slice contains 0.9 to 5 points (Figure 6), each of which are the concepts on which it is possible and necessary to bring the system to influence the quality of corporate governance to the desired state.

It is necessary to put attention on the first point (2, 16, 19, 11) on the concept. There is a low manufacture good’s competitiveness (2), as well as in the second one (8, 9, 22, 21) it is necessary to put attention on the point (9) – imbalance of innovation and investment activities. On the third (1, 17), forth (6, 7) and fifth (5, 29) points it is necessary to put attention on the following concepts: (1) – is the corporate governance value participant’s system (5) – is the clear separation unavailability control and monitoring functions of corporate ownership (6) is the low level of labor productivity.

There is the bilateral negative impact on the system of corporate governance at the level of 0,99, where concepts combine at following points: 1, 13, 26, 19, 35, 10, 6, 5, 14, 15, 7, 29, 33, 32, 18, 29, 11, 21, 2, 23, 9, 8, 27, 4, 16, 25, 30 – Figure 7.
It was found out that, the concepts of: (6) – is a low level of productivity; (11) – is low profitability; (22) – is a crisis of fundamental research on corporate governance are present simultaneously at the sites of positive and negative interferences. This implies that the negative effects of managerial leadership on these factors requires great care, taking into account their specific actions within the system performance of fuzzy cognitive chart.

Analysis of indicators of cognitive charts in the system of corporate governance revealed as the most conducive impediments. By the dominant factors of mutual dissonance (Figure 8) are listed below: (29) - is an inefficient system of quality management; (19) – is the high transaction costs of interaction between participants of corporate governance; (15) – is concealment of material information; (5) – is the lack of a clear separation of the functions of control and management stock ownership; (14) – is the low standard of living; (10) - Low to organize monitoring and control of the redistribution of resources.

The inefficiency factor of quality management indicates the use of "formal" practice of implementing the quality standards in corporate governance in companies. High transaction costs of interaction between participants of corporate governance largely associated with both the peculiarities of the Russian model of corporate governance, as well as with the effect of managerial body organizing the interaction between stakeholders, shareholders, the company's management and the Board.
of Directors members. The concealment of material information factor from the Board of Directors shows a significant level of opportunism. Top managers and other favorable position in the competition for the internal control the company. To some extent, this is a lack of a clear division of labor control and management stock ownership concealment of material information for Russian companies in the most important part of the remuneration of top managers and board members reflected on the low organization of monitoring and control in the redistribution of resources. All this contributes to the deterioration of the quality parameters of corporate governance.

DISCUSSIONS

Inefficiency factor of quality management in companies rather indicates the use of "formal" practice of implementing the quality standards in corporate governance. High transaction costs of interaction between participants of corporate governance largely associated with both the peculiarities of the Russian model of corporate governance, as well as with the effect of managerial body organizing the interaction between stakeholders, shareholders, the company's management and Board of Directors members. Factor concealment of material information from the Board of Directors shows a significant level of opportunism Top managers and more favorable position in the competition for the internal control of the company. To some extent, this lack of a clear division of labor control and management stock ownership concealment of material information for Russian companies in the most important part of the remuneration of top managers and board members reflected on the low organization of monitoring and control in the redistribution of resources. All this contributes to the deterioration of the quality parameters of corporate governance.

CONCLUSION

Conductivity track tram lines should provide a solid and reliable electrical connections providing the least resistance. To increase operational reliability singleton connectors must perform further studies the optimal configuration based on actual current in the reverse network, heat and corrosion resistance of the material, length and diameter of the wire. Using stranded wires to connectors welded metallic decks such complicate construction, but have a high mechanical strength and ductility, which affects the durability of the connector. Selection of galvanized steel wires with section from 0.3 to 3 mm has a lower resistivity compared to the high-carbon steel used in the cable connectors from the cable.

Robust connectors will increase the service life of underground metal constructions, reduce the cost of their maintenance and repair of tram tracks.

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