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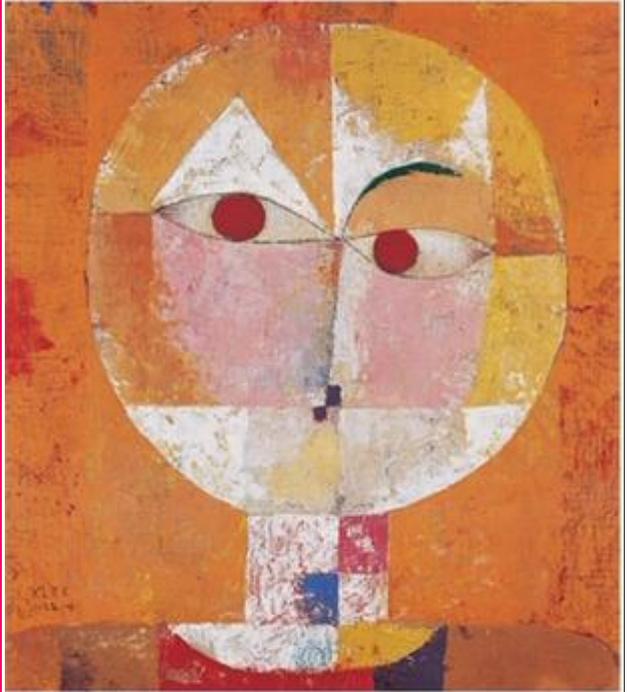
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The formalized assessment of a reputational capital for a region in Tatarstan

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Abstract

A key feature of the study is the proposed preliminary version of the conceptual approach to quantifying the reputational capital of a territory, which allows for a transition from qualitative assessments of the evolution of the process under study and its impact on key development parameters of macroeconomic indicators. The obtained data demonstrate the increasing wavy trend of the region's reputation due to the different directions of changes in the behaviour of the key sub-indices values. In conclusion, the proposed tools for assessing the reputational capital of territories significantly bring us up to the solution of the set task.

Keywords: Reputational, capital, economy, government, regulation.

La evaluación formal de una capital reputacional para una región en Tatarstán

Resumen

Una característica clave del estudio es la versión preliminar propuesta del enfoque conceptual para cuantificar el capital

reputacional de un territorio, que permite una transición desde evaluaciones cualitativas de la evolución del proceso en estudio y su impacto en los parámetros clave de desarrollo de los indicadores macroeconómicos. Los datos obtenidos demuestran la creciente tendencia ondulada de la reputación de la región debido a las diferentes direcciones de cambios en el comportamiento de los valores clave de los subíndices. En conclusión, las herramientas propuestas para evaluar el capital reputacional de los territorios nos lleva significativamente a la solución de la tarea establecida.

Palabras clave: reputación, capital, economía, gobierno, regulación.

1. INTRODUCTION

It should be noted that in the current globalization and digitalization conditions, the significance of reputational factors in the regional socio-economic development continues to grow and, in a sense, is ahead of the importance of traditional production factors. In our opinion, as well as in the competent opinion of leading Russian and foreign academic economists on the issues of studying the reputation of business entities (I. S. Vazhenina, P. Roberts, S. Raitchel, J. Shamsi, K. Fombrun, B. Brown, K. Walker, R. Hall, Boyd B., D. Khenard (VAZHENINA, 2007; ROBERTS & DOWLING, 2002; RAITHEL & SCHWAIGER, 2014; SHAMSIE, 2003; FOMBRUN & SHANLEY, 1990; BROWN & PERRY, 1994; DEEPHOUSE, 2000; WALKER, 2010; HALL, 1993; PETERAF, 1993; BOYD ET AL, 2010; WEIGELT & CAMERER, 1988; HENARD & DACIN, 2010; SAFIULLIN ET AL, 2011), the reputational capital of a territory forms a significant potential for its socio-economic development.

It is important to note that, being related to the category of intangible production factors, reputation plays a key role in the system of generating macroeconomic stability. Although the idea about the impact of reputation on socio-economic development is obvious, this hypothesis must be supported, inter alia, by the methods of scientific knowledge. This task is very non-trivial in nature and is relatively new in economics (AFAT, 2018).

The reputation of the territory forms the idea that its potential exists in terms of the opportunities provided for the intensive development of economic agents. Taking into account the fact that the region's reputational capital has a dynamic characteristic, its change forms a different level of ideas by economic entities regarding their potential for future development. In this regard, the most important methodological aspect here is the question, which reveals the features of:

- a) The influence of the region's reputation on the parameters of its socio-economic development in terms of dynamically changing business and economic activity due to the transformation of reputational activity
- b) Radiuses of influence on the adoption of managerial decisions by economic agents regarding changes in their business models under the influence of the corrected region's adjusting reputation.

Both questions require their own system solution based not only on qualitative analysis methods but also on economic and mathematical modelling tools. However, as the review of the scientific literature on the subject studied shows, in the modern space of theories of regional economic growth, there are practically no models and methods that contribute to a quantitative assessment of the influence of the region's reputation capital on the parameters of its socio-economic development. In the above works, the phenomena of the image and reputation of the regions were analyzed in a meaningful and qualitative manner.

Meanwhile, it seems that the obtaining of quantitative estimates is not less important, primarily for practical purposes. The methodical apparatus developed in this study is capable of leveling this kind of problem in many respects. Using the proposed methods allows not only to assess the level of the region's reputational activity but also to move on to a kind of much more significant problem: the search for relationships between the dynamically changing reputation level of territory and socio-economic parameters of its development. Moreover, based on the system of economic and mathematical modelling of the indicators considered, one can determine the horizons of such an impact, which undoubtedly forms a completely scientific stratum in the theory of regional development.

2. METHODS

The methodological concept of determining the reputational capital index is based on the construction of a series of subindexes characterizing the territory’s reputational activity in the global information space. The basis of this approach is the methods for construction and quantitative modelling of an institutional and market environment assessed by economic agents and reflected in the system of informational assessments dynamically generated in the global information space. Their fixation allows us to determine the fundamental level of expectations of economic agents regarding the prospects and quality of the socio-economic development of an object under study.

The region’s reputation is assessed based on 5 key sub-indices (Figure 1).

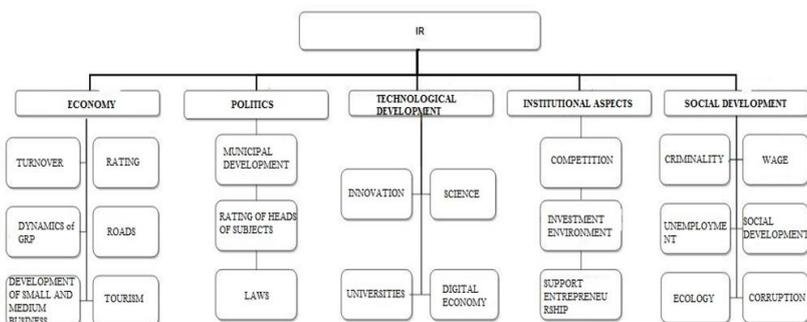


Figure 1: The system of search queries that form the image (idea) of a territory’s (region’s) reputation

The basis of the algorithm for calculating the values of the subindexes that evaluate a particular aspect of the region's reputation involves the implementation of a series of iterations.

Iteration 1. Identification of the wording for search queries that reveal the image and potential of the region.

Iteration 2. Determining the popularity of the query in the external environment. This stage of the study involves an assessment of the tonality of information search results, taking into account the information source level (federal/regional media), as well as the probability of following a corresponding link. The implementation of this procedure is carried out in the context of the search engines (Google, Yandex, Mail.ru, etc.) under analysis. In a structured form, the implementation process of the considered iteration can be represented as table 1.

Table 1: An example of determining the popularity of a query in the external environment

Line number	Probability of following the link	Key	Information source level *	Actual place in query results
1 line	26.90%	+	1	
2 line	17.10%	-	1	
3 line	14.90%	-	1	1
4 line	8.90%	+	1	2
5 line	7.10%	+	2	7
6 line	4.70%	+	1	8

7 line	5.60%	-	1	9
8 line	5.10%	+	2	10
9 line	4.70%	+	1	12
10 line	4.70%	+	1	15

* 1 - federal source of information; 2 - regional source of information.

Iteration 3. In the context of each search engine participating in the procedure on analyzing the region's reputation capital, the coefficient 'The popularity of the query in the external environment (K qp)' is estimated according to formula 1.

$$Kqp = \sum P_j \times I_j; \quad (1)$$

K qp - the coefficient of the popularity of the query;

j is the query number;

P_j – the probability of clicking the j-th row of the query result;

I_j - the level of information source (federal/regional).

The range of possible values of the coefficient, taking into account the pledged algorithm, is from -1,994 to +1,994.

Iteration 4. Evaluation of the region's reputational capital by a search query (Determination of the reputation of a query in RuNet (within search engines: Google, Yandex, Mail.ru, etc.).

The calculation of the values of this indicator is carried out according to formula 2.

$$K_{ra} = \sum T_k \times K_n \times Vi ; \quad (2)$$

Where

K_{ra} - reputational activity coefficient for the region according to the search query;

T_k - the tonality of the search engine;

K_p - the popularity of the query;

V_i – the search engine share in RuNet.

The tonality of a search engine is understood as a system of assessments related with the analyzed subject of the region's reputational activity, which is determined based on an analysis of positive and negative assessments of the search query. With this, the value of the coefficient T_k is determined according to formula 3.

$$T_k = (T + i - T - i) / 10 \quad (3)$$

Where

$T + i$ - the number of positive assessments given for a search query in the analyzed search engine;

$T - i$ - the number of negative assessments given for a search query in the analyzed search engine;

i - the number of search engines involved in the study.

The value in the denominator (10) is determined by the number of search engine responses to the query being analyzed and included in the analytical database. As it is previously mentioned, the inclusion in the analysis of the number of responses to a query in excess of 10 is not advisable due to the low probability of their click by users (less than 3-5%).

The most important component involved in formula 3 is the index characterizing the search engine share in RuNet. A kind of this index acts as a weighting factor and demonstrates the role of one or another search engine in determining the values of the region's reputation capital within the framework of a single search query.

Iteration 5. Calculation (quantitative assessment) of the sub-index characterizing a particular aspect of the region's reputation capital.

The indicator value is assessed as the sum of products of the weighted region's reputational activity coefficients. The formula for the definition of sub-indices should be as follows:

$$I_{ri} = \sum Kra \times w_i; \quad (4)$$

Where

I_{ri} - aggregated sub-index of a region's reputational activity;

Kra - coefficient of the region's reputational activity for a search query

W_i - share of requests to the query in RuNet within the analyzed number of search queries. It is determined on the basis of statistics of queries (BOYD ET AL, 2010; HENARD & DACIN, 2010).

i - the number of sub-indices participating in the study.

Iteration 6. The calculation of the integral index of the region's reputational activity.

$$R = \sum Iri \times w_i \quad (5)$$

Where

I_{ri} - aggregated subindex of the region's reputation activity;

w_i - the value of the weighting factor defined as the proportion of the number of hits for the search query to the sum of users hits for the queries analyzed in the study.

The most important methodological aspect being formed within the framework of the developed concept of research on the territory's reputational capital is the factor analysis of the weighting factors for the subindexes that form the basis for calculating the integral index for the territory's reputational capital. Their accounting and assessment determine a wide range of functional analysis, which allows revealing which components, and to what extent form the dynamics and quality of the territory's reputation capital (HASHEMIAN & FARHANG-JU, 2018).

3. RESULTS AND DISCUSSION

Based on the developed methodological tools for quantitative assessment of the regional reputational capital, its behaviour for the period from 2013 to 2017 was evaluated (by the example of the Republic of Tatarstan). An important distinctive aspect of the study is that the search engines used in determining the tonality of the analyzed queries, artificially form a restriction on the output of information. Thus, if, for example, the region's reputation for 2015 is explored,

search engines (Yandex, Google, and Mail.ru data were used in our research) provide the results for that particular year.

In total, according to the results of the study, there were explored about 600 sources of information that reveal the features of the reputational capital development in the Republic of Tatarstan (Table 2).

Table 2: The number of information sources that reveal the features of the reputation capital development in the Republic of Tatarstan

Region	Number of publications					
	Reputation of the region in the field of economics	Reputation of the region in the field of social development	Reputation of the region in the field of political (managerial) development	Reputation of the region in the technological development	Institutional aspects of a region's reputation	Total value
Republic of Tatarstan	180	180	52	113	52	577

The integral values of the desired index were obtained as a result of the implemented estimates and calculations (Table 3, Figure 2).

Table 3: The reputational activity behavior in the Republic of Tatarstan (I_{RA}) and the main components determining its level

	2013	2014	2015	2016	2017
Reputation of the region in the field of economics	0.298	0,257	0,242	0,297	0,302
Reputation of the region in the field of social development	0.271	0.20	0.172	0.303	0.305
Reputation of the political (managerial) development of the region	0,008	0.014	0,010	0,009	0,005
Reputation of the technological development of the region	0.108	0.115	0.122	0.086	0.116
Institutional aspects of the region's reputation	0.166	0,259	0.410	0.270	0.256
Integral value of the region's reputational activity index	0.851	0.845	0.957	0.965	0.984

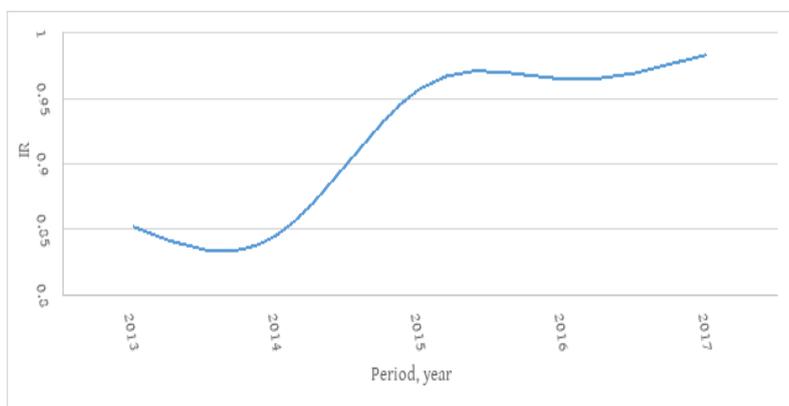


Figure 2: The reputational activity behaviour in the Republic of Tatarstan (I_{RA}) and the main components determining its level

The data presented demonstrate the increasing reputation capital trend in the Republic of Tatarstan. Meanwhile, an important element of the calculation results obtained is that the region's reputation index is undulating. This may indicate the presence of a system of factors that are corrected in time and that generate cyclical dynamics of the event and decisions, which form the image of the region in the minds of economic agents.

4. SUMMARY

The developed and tested methodological tools for quantitative assessment of the region's reputational capital form a stable basis for conducting research activities aimed at a multifactorial analysis of the key components determining the territory's reputation. This, in turn, forms stable preconditions for determining and system analysis of the development prospects of a competitive interregional environment.

It is possible to plan and predict possible negative effects or, conversely, positive flows generated as a result of the territory's reputation volatility if to realize the dynamics of changes in each of the above components, which form the integral value of the territory's reputational capital index.

5. CONCLUSIONS

In general, it is necessary to state that the proposed tools for assessing the reputational capital of territories significantly brings us up to the solution of the set task based on the emerging modelling capabilities and comparison of statistical series which evaluate, on the one hand, macroeconomic indicators of development, and, on the other, integral values of reputational capital.

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