PAPER • OPEN ACCESS

Special aspects of master data-based integrated management of region reputation in modern IT environment

View the article online for updates and enhancements.

Special aspects of master data-based integrated management of region reputation in modern IT environment

Elvir Akhmetshin [1]**, Irina Ilyina** [2]**, Valeriia Kulibanova** [3*]**, Tatiana Teor** [2]

[1] Kazan Federal University, Elabuga Institute of KFU, Kazanskaya st., 89, Elabuga, 423604, Russia
[2] Saint Petersburg University of Management Technologies and Economics, Lermontovskij pr., 44A, Saint-Petersburg, 190103, Russia
[3] Institute for Regional Economic Studies Russian Academy of Science, Serpukhovskaya st., 38, Saint-Petersburg, 190013, Russia

* E-mail: valerykul@mail.ru

Abstract. Relevancy of issue under investigation is stipulated by rapid changing of traditional assumptions about regions competitive strength. These tendencies are explicitly characterized by (I) digitization of IT processes and (II) convergence of tools enabling advancement and formation of particular territory image. Today's on-line environment is simultaneously (I) a platform for presenting the region in virtual space and (II) a tool forming preferences of territorial product consumers. While handling the region's reputation it is necessary to take into account 'digital footprint' as an element which is forming the region's image and competitive strength. Goal of research — development of recommendations to enable task-oriented formation of territorial image in targeted public consciousness.
Main methods of this case study are: analysis of theoretical framework and statistic data, monitoring of news media and social media.
The present article is addressing special aspects of regional reputation formation in modern IT medium and foreign and national experience regarding territory advancement in IT environment. It displays the possibility of master data employment for the purpose of particular territory image formation in the consciousness of main targeted public.
It becomes possible to improve reputation and, as a consequence, to raise competitive strength of the regions in condition of today's information-communication environment through sequential, systematic and orderly going through 'recognition and assumption' stages both in off-line and on-line media which allows, using targeting, to promptly disseminate information with minimum financial costs.
Materials presented herein, constitute practical value for active and consistent implementation of digital technologies not only at the level of individual enterprises but for regional authorities as well.

1. Introduction
Vigorous regional brand constitutes a fundamental competitive advantage in the struggle for territorial product consumers where actual outcome is represented by the flow of resources — human, financial, material etc. — into particular area. At that, widespread digitization and convergence of information-

communicative processes is leading to accelerated digitization of economy and virtualization of regional competition.

From the viewpoint of general methodological principles, it is expedient to consider information as a principal resource allowing to actualize socio-economic relations in the network space. A number of papers presented by Russian and foreign scientists are dedicated to analysis of effects of digital technologies implementation for the spheres of entrepreneurship, state-backed economy and consumer market.

With quite considerable demand for branding and brand-management topics, it is necessary to point out that study of applying these terms to a wider range of objects like organizations, individuals, ideas and any carrier on which marketing efforts (differentiation and promotion) are being directed is so far remaining in the phase of discussion. In the majority of cases, up to 1990`s, these terms were applied to goods and services. Only at the turn of the century understanding appeared that development and advancement of brand is one of the tools allowing to raise territory attractiveness.

Scientific interpretation of issues under consideration was formed by Kotler Ph., Haider D. H., Rein I. J., I. Asplund in paper entitled *Marketing places* issued in 1993 [1] and re-issued in 2002. Paper by Ward S., 1998 entitled *Selling places: marketing and promotion of towns in 1850–2000* [2] is dedicated to investigation of territorial marketing nature and specificity. Besides, approaches to territorial branding proposed by Finnish scientists Moilanen T., Rainisto S. in 2009 in paper entitled *How to brand nations, cities and destinations: A planning book for place branding* [3] and others are quite evidence-based. Although 'brand capital' term applied to goods has been used for a long time, term 'territory brand capital' came into common use in the beginning of XXI century. Referenced papers [4–6] are dedicated to this topic.

Some tendencies displaying change in attitude to territory brand appeared in Russia. Thus, according to the RF Ministry of economic development, provision of information, methodological and educational support for the purpose of efficient territorial marketing mechanisms formation shall become a funding process enabling consolidation of towns and regions brands being a significant factor of socio-economic development [7].

2. Reputation influence on region's competitive attractiveness

Reputation of any object is what people think about it based on their own experience or experts' opinion. Brand image existing in targeted public's mind is funded by a number of constituents; however, primary role in shaping the region's positive image belongs to reputation.

Namely good reputation becomes an undisputable competitive resource allowing to maintain partnership relations between various interested parties (stakeholders); thus, it becomes an important intangible asset for the regional economy.

Issues regarding specificity of territorial brand promotion and aspects regarding regional reputation influence on regional image formation were addressed in papers issued by Bose S., Kumar S. R., Nguyen [7], Wagner O. and Peters M. [8] Foroudi P., Gupta S., Kitchen P., Foroudi M. [9], Bell F. [10].

According to Morgan N., Pritchard A. and Pride P., 'it is easier for territories with positive reputation to retrieve attention, resources, people, workplaces and money; positive reputation improves territory's competitive strength and confirms opinion that this territory is worth visiting' [11].

In view of this, elaboration of efficient reputation management strategy becomes a red hot issue. The questions arise: what (according to stakeholders' opinion) is the territory's reputation shaping mechanism in condition of modern IT environment? What factors are affecting this process? How is it possible to track reputation change in both directions? How is it possible to take into account interests of various stakeholders while defining the key directions of territorial development?

However, in the majority of investigations touching the aforesaid topic primary attention is paid to investigation of mechanism of positive reputation formation in the eyes of tourists. Other groups of regional stakeholders are only airily mentioned. Meanwhile, complicacy of reputation management in

no small way lies in the fact that there are quite a lot of interested parties whose interests may from time to time interfere with each other. For instance, any region which is attractive from business viewpoint will not be the same for inhabitants who may not accept excessive business activities performed in their residence area.

Another problem to be considered during reputation management strategy elaboration — accounting of (I) changes which took place in mechanism of territorial image formation in the minds of regional product consumers and (II) new role related to virtual space in this mechanism.

3. Special aspects of regional reputation shaping in modern IT environment

Development of IT systems and technologies is changing traditional viewpoints in regard of external environment having intrinsic on-line and off-line parameters where virtual space is playing the role of important platform used to shape favorable attitude to the territory. Obviously, image of each particular region is shaped in each individual's mind independently, however, under the influence of another contemporary phenomenon — ominchannelness, i.e. communication channels concentrating around the user. Ominchannelness is a specific strategy initially having a marketing nature allowing to provide client, consumer, user with complex of services relating to knowledge and information acquisition. Current market assumes that boundaries between on-line and off-line promotion become to erase. Internet is no longer a separate means of communication. It became a platform of interaction with targeted public especially since it is associated with territorial branding and particular territories promotion. Thus, Andehn M., Kazeminia A. and Lucarelli A. declare that consumers are no longer passive recipients of information — now they want to be active participants and generate both content and messages [13]. In other words, today's city managers are no longer holding monopoly for elaboration, distribution and managing information about their territory [14]. On the other hand, social networks and various information platforms enable the users to communicate favorable information about their region and events occurring therein [15].

For instance, image of particular territory may be shaped in the format of publicity capital through publication activities of mass media in a definite area (figure 1).
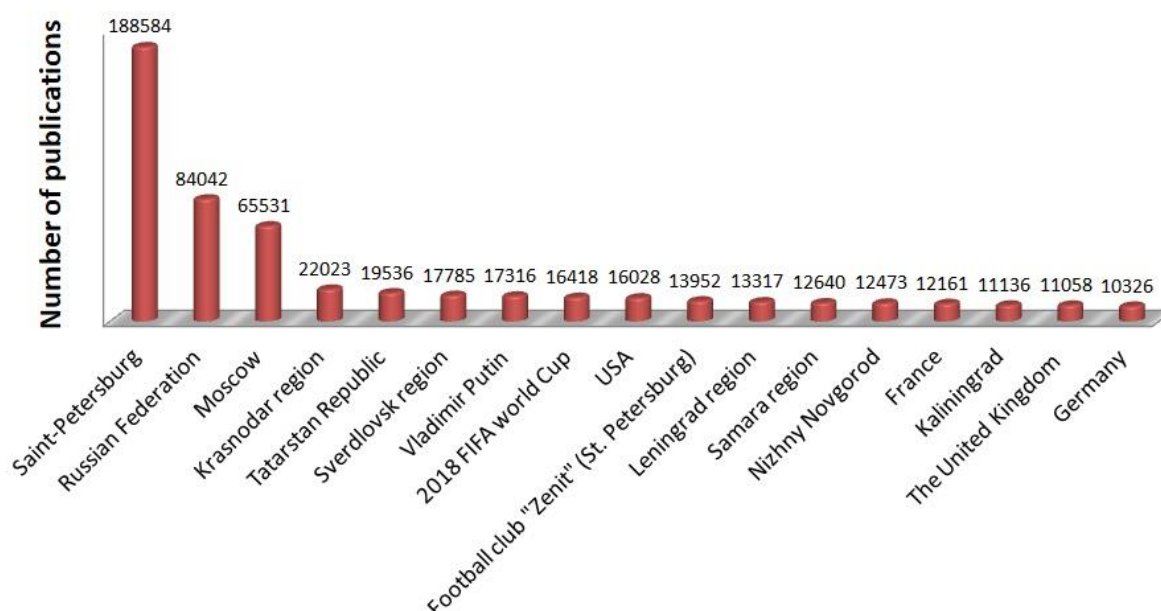

Figure 1. Objects rating with reference to press release frequency, Russia, 07.2017–07.2018.

Territory reputation strongly depends on information located in off-line environment and in virtual domain. This is why, during region reputation shaping it is necessary to take into account both real

communications and 'digital footprint' which is shaping media image of particular territory and directly affects competitive strength of particular territory [16].

At that, namely quantity of publications and their emotional coloring are of significant importance (figure 2). For instance, only 9% out of 200 thousand publications about Saint Petersburg are laid in a positive way while the majority thereof — neutral (figure 3).

According to Fehér K., *Personal on-line strategies*, digital identity creation is based on minimum 2 problems: data control and confidentiality, however, these criteria are becoming weaker under pragmatic prospective of each individual user [17].
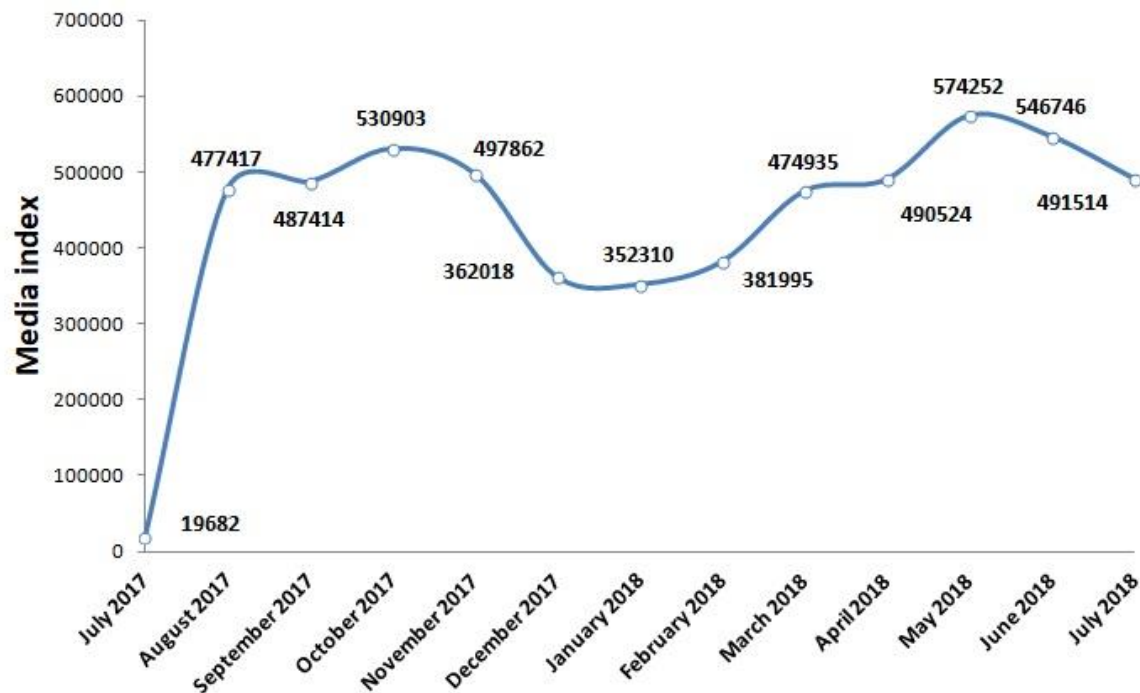
Figure 2. Number of publications about Saint Petersburg.
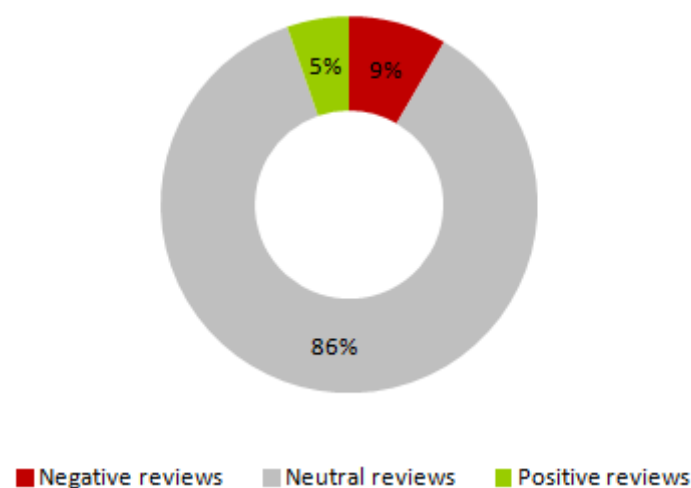
Figure 3. Emotional colouring of publications about Saint Petersburg.

Thus, it is possible to affirm that possibility to shape object's digital footprint is directly proportional to accrued benefits, i.e. users are ready to share their personal data by way of payment for

interesting content, useful information or any other advantage. In other words — this is a kind of object core data shaping process which can be applied to particular region description.

4. Employment of master-data for region reputation management purposes

Master Data Management (MDM) is employed when changes, associated, first of all, with unstructured data volume increase, occur on the background of considerably fragmented system landscape. In other words, master data is understood as data bases which are usually spread over a large amount of heterogeneous systems and which are not easily drawn to 'valuable' condition enabling correct employment thereof in business initiatives [18]. In practice, MDM is the process of shaping an integrated system intended to deliver reference information which can be used for generating a vigorous brand and good reputation not only in reference to business structures but also to the region which is a rather non-uniform (from information viewpoint) and complicated (from structural viewpoint) object.

Main source could be represented by master data applied currently mostly to business structures. Master data are not understood as any company data, e.g. transaction data, billing data, unique data within one application, metadata or standard data books. Below listed key facts describing main business essences could be rather referred to master data: for the company regularly and simultaneously maintaining considerable number of business processes these are — clients, partners, employees, products, contracts, accounts, locations and information objects of extra value.

At that, numerous researchers are worried about issues regarding application of Master Data. i.e. reference information which is critical for main activities performed both by a single person and by the organization relating to a certain region. Difficult-to-control issues are: definition of title to data, non-compliance of information management methods and absence of seamless data quality assurance methods [18–19]. Owing to rapid development of data base handling technologies, processing of integrated databases and implementation of hard-to-formalize decision making procedures based on empirical knowledge about behavior and interaction between the objects will be relatively soon performed with the use of semantic technologies based, more than likely, on the same master data because yet today industrial holdings and corporations are using Semantic MDM as a base for corporate master data management implementation.

Dumeresque [20] is proposing to establish the job of digital strategy manager whose functions will consist in (I) maintaining full supervision over corporate digital economy agenda and (II) taking responsibility for digital identity of company, person or territory on corporate and individual level.

Successful usage of Master Data and normative-reference information in the sphere of state municipal management presented in articles issued by Finnish researchers entitled *Master data management and its organizational implementation: An ethnographical study within the public sector* [21] proves the possibility of aforesaid methods application to positioning and advancement of reputation and brand within a certain territory.

Since MDM implementation for business structures enables the company to find its orientation to the client it definitely means that these models may be applied to more sophisticated objects containing non-structured and hard-to-qualify data about the region.

From our viewpoint, it is possible to point out the following groups according to which it is possible to maintain region's reputation monitoring: business, tourists, mass media, investors, inhabitants, state, innovators, employees, students [22]. For each of these groups it is meaningful to collect information and to arrange it into master data system, i.e. to use a large massive of diverse and variable information about the region which can be segmented in compliance with particular features. This will definitely simplify monitoring and interpretation for the purpose of decision making.

For instance, it is possible to use idea proposed by Analytical Center affiliated with the RF Government. Essence of this idea — development of a unique and probably Federal level-based ID for civilians, legal entities (for example referred to tax payer ID number) and property objects (on the basis of licenses) [23].

5. Conclusion

Region's reputation becomes a significant non-material asset and competitive resource playing important role in fighting for involvement of investments, technologies, inhabitants, employees, students, tourists etc.

It is necessary to underline that, territory's reputation strongly depends on information located both in off-line space and in virtual environment. This is why, while shaping regional reputation it is necessary to consider both real communications and 'digital footprint' which is shaping media image of the territory and directly affecting improvement of competitive strength of this particular area. 'Digital footprint' analysis is performed using Master Data Management where there is a considerably fragmented system landscape and where there are ongoing changes connected first of all with non-structured data increase.

Analysis of successful usage of Master Data and normative-reference information in the sphere of state municipal management proves the possibility of aforesaid methods application to positioning and advancement of reputation and brand within a certain territory.

Authors consider development of MDM-based methodology allowing to shape an integrated system of regional reputation monitoring in cooperation with stakeholders in off-line and on-line environment to be a prospective direction for further investigations.

References

[1]   Kotler Ph, Haider D H and Rein I J 1993 *Marketing places: attracting investment, industry, and tourism to cities, states, and nations* (Ner York: Free Press)
[2]   Ward S 1998 *Selling places: The marketing and promotion of towns and cities 1850–2000* (London: Routledge)
[3]   Moilanen T and Rainisto S 2009 *How to brand nations, cities and destinations: A planning book for place branding* (London: Palgrave Macmillan)
[4]   Lucarelli A 2012 *Journal of Place Management and Development* **5** (3) 231–52
[5]   Zenker S 2011 *Journal of Place Management and Development* **4** (1) 40–52
[6]   Lucarelli A and Berg P 2011 *Journal of Place Management and Development* **4** (1) 9–27
[7]   Ministry of Economic Development of the Russian Federation 2018 Territorial brands promotion tools, http://economy.gov.ru/minec/activity/sections/innovations/brends/
[8]   Bose S, Kumar S R and Nguyen B 2016 *Asia Branding: Connecting Brands, Consumers and Companies* (London: Palgrave Macmillan)
[9]   Wagner O and Peters M 2009 *Journal of Place Management and Development* **2** (1) 52–69
[10] Foroudi P, Gupta S, Kitchen P, Foroudi M and Nguyen B (2016) *Qualitative Market Research: An International Journal* **19** (2) 241–64
[11] Bell F 2016 *Journal of Place Management and Development* **9** (3) 247–54
[12] Morgan N, Pritchard A and Pride P 2011 *Destination brands: Managing place reputation* (Oxford: Butterworth-Heinemann)
[13] Andehn M, Kazeminia A and Lucarelli A 2014 *Place branding and public diplomacy* **10** (2) 135
[14] Florek M, Insch A and Gnoth J 2006 *Place Branding and Public Diplomacy* **2** (4) 276–88
[15] Pongsakornrungsilp S and Schroeder J E 2011 *Marketing Theory* **11** (3) 303–24
[16] Fish T 2009 *My Digital Footprint: A two-sided digital business model where your privacy will be someone else's business!* (London: Futuretext)
[17] Fehér K 2017 *Corvinus journal of Sociology and social policy* **8** (1) 111–26
[18] Silvola R, Jaaskelainen O, Kropsu-Vehkapera H and Haapasalo H 2011 *Industrial Management & Data Systems* **111** (1)146–62
[19] Haug A, Arlbjørn J S, Zachariassen F and Schlichter J 2013 *Industrial Management & Data Systems* **113** (2) 234–49
[20] Dumeresque D 2013 *Strategic Direction* **29** (7) 34–6
[21] Vilminko-Heikkinen R and Pekkola S 2017 *Journal of Enterprise Information Management* **30**

(3) 454–75

[22] Kulibanova V V and Teor T R 2017 *Baltic Region* **9** (3) 99–115

[23] Analytical Center for the Government of the Russian Federation 2018 Big data under state control: implementation experience (pilot investigation), http://ac.gov.ru/files/content/10087/sorokin-kruglyj-stol-issledovanie-pdf.pdf