

Marketing of an industrial city: project technologies and web-analytics

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Abstract — Traditional industrial cities face numerous challenges of new industrialization and digital economy. The introduction of the concept of industry 4.0 and the Internet of things covers not only technical innovations, but also affects all spheres of life, including social aspects, consumption, security, etc. The article is devoted to the analysis of the marketing tools transformation under the new industrialization and digitalization. The article considers two global trends in the development of marketing place regarding an industrial city. First, it is increasing attention to the comfortable urban environment as a significant advantage of the territory competitiveness. As many factors of production become more mobile, the quality of the urban environment becomes increasingly important. A significant improvement in the quality of the urban environment can be achieved through the use of a project approach, which allows to mobilize not only the resources of the territory itself, but also to attract external sources of funding. Secondly, the processes of digitalization significantly increase competition not only between enterprises but also between territories. As a result, Internet, including the official website of the city, becomes one of the most important channels for place promotion. The article analyzes the web criteria for the official site of an industrial city on the basis of the author's model of territories virtual representativeness identifies existing problems and provides recommendations for improving the information component of place marketing.

Keywords — industrial city, urban environment quality, marketing place, place promotion, web-analytics, project-based approach.

I. INTRODUCTION

Low quality of urban environment is specific to many Russian industrial cities. The processes of new industrialization that bring some changes to the production process require the efficiency and increased salaries of labour force for better living conditions. A number of research works indicate the citizens' needs for better urban environment and

the importance of local infrastructure as a factor of competitiveness of old industrial territories. [2, 10].

Researchers underline the relation between the processes of new industrialization, Internet of things and smart city [15]. The main features of smart city are a closer integration of information technologies and complex application of information resources within the processes of place marketing [8]. Place marketing is a common mechanism used to improve territorial competitiveness and attract specific target groups including highly skilled labour. [5]

Both marketing technologies and place marketing undergo significant changes in the period of digital economy. [11].

The main tasks of modern territory formation are as follows stimulating investments, attracting specialized labour, implementing a number of strategies aimed at developing a territory and extensive use of its resources, improving the cooperation of all entities, residents and non-residents, promotion through the Internet and implementing Internet technologies. The above mentioned activities are studied by the place marketing. A local territory is considered to be a particular object of "realization" provided the favourable conditions are created to achieve economic balance of the entities and its economic interests. Although the approaches and forms of investigating mechanisms and elements vary widely, the key concepts are "competitiveness" and "place branding" studied in many fundamental research works which identify the place marketing in terms of scale, economic geography, positioning and branding [1, 3, 4, 6, 12, 13]. A detailed review of foreign publications (more than 200 articles on place marketing and branding since 1993) has been given by David Gertner. [7].

Area development is facilitated by the government. The wellbeing of urban environment and its efficiency are closely connected. Efficiency of urban environment depends on the implementation of information technologies in the process of area development. Government bodies contribute to

the formation and implementation of strategic alternatives for local areas. At present many municipal agencies form their strategy, present it to the municipal bodies and change it according to modern place branding trends and economic consistency of local areas. Many researchers indicate the importance of government support for initiating the processes of place marketing. One of the tools is considered to be the implementation of project management in accordance with the universal standards and living standards. Guidelines for implementation of project management in executive bodies were accepted by the decree of Ministry of economic development of the Russian Federation No. 26P-AY as of April 14 2014. The guidelines regulate all the processes of project management in the territory in terms of increasing living standards and building a particular potential. Thus, much attention should be paid to information and communication aspect of developing a territory and the needs, economic interests of territorial entities. The goal of the research is to investigate the project management as an element of place marketing, place branding through project realization using Internet technologies on a local territory, considering the needs of territorial entities. The objectives are to specify project management in the place marketing; to consider project management of municipal agencies as an element/part/unit of place marketing; systemize the project management in the place marketing context; identify information and communication component of place marketing using mathematical model for virtual representativeness of a territory, investigating web-criteria for the official website of a territory..

II. SPECIFIC FEATURES OF PROJECT MANAGEMENT IN PLACE MARKETING CONTEXT

Project management is implemented to optimize and develop efficient processes in a local territory. A new management technology was initiated due to the Decree of the Governor of the Sverdlovsk region as of 14.02.2017 No.84-YT "On organizing project work in the Government and executive bodies of the Sverdlovsk region" under the Government Regulation of the Russian Federation paragraph 2 as of October 15 2016 No. 1050 according to which government bodies of the Russian Federation are to organize project work. Regulations on organizing project work and functional system of project work management in the Government of the Sverdlovsk region and the executive bodies of the region were confirmed by the decree. The Sverdlovsk region Governor's Council on strategic priority projects of the Sverdlovsk region (hereafter the Governor's Council) is a Governor's regular coordinating and advisory body established to accomplish two objectives. The first objective is to improve the regional development strategies; implement federal and departmental priority projects (programmes) with the participation of the Sverdlovsk region. The second one is to coordinate the government bodies of the Russian Federation, the Sverdlovsk region, local bodies of the Sverdlovsk region, social organizations engaged in planning and implementing the project work in the region. Hiring top-quality employees is an important part of the project management. A team of specialists is hired to carry out operational and tactical management of the project

(programme). This system enhances the efficiency and potential of the territory from the standpoint of the marketing approach; it is an integral part of all processes. Place marketing is formed and developed in a stable system model provided the marketing potential of an area is build up. Marketing potential of the territory includes social and economic potential, competitiveness potential, favourable conditions for residents and non-residents of the territory. There are many strategic alternatives that can be implemented in this field using the project work. Creating comfortable urban environment of municipal agencies is a significant factor of building up marketing potential as it attracts labour resources, increases loyalty of residents encouraging them to invest, develop the businesses, and pay for goods and services. Consistent innovation of the processes builds up the marketing potential of the territory.

It is necessary to control the project (programme) at the stages of preparation, implementation, monitoring, and its closing stage in accordance with the auxiliary and providing subjects. Their activities are to assess the monitoring procedure, results, documents and draw up the guidelines.

To sum it up, modern project management system in government bodies of the Russian Federation at the federal level has a clearly defined hierarchy, mechanisms of direct interactions, coordination of documents and monitoring procedures, provides professional skills of project teams in different areas. The system is efficient from a perspective of place marketing management provided the strict deadlines for the project stages are imposed.

III. INFO-COMMUNICATION COMPONENT OF PLACE MARKETING

Info-communication component of place marketing is a rate of virtual representativeness of a territory on the Internet; an implementation rate of Internet technologies in the territory-based project work. It is defined with the model of virtual representativeness of a territory. To make a mathematical model a set of criteria and indicators affecting the processes should be defined. The set contains not only web-criteria but also socio-psychological criteria. The model should consider maximum quantity of qualitative and quantitative indicators, intangible factors which are hard to assess. The model is qualitative as each criterion has a particular influence.

The model can be represented in the mathematical formula:

$$VRI=x_1S+x_2W \quad (1)$$

In this case VRI – virtual representativeness of a territory; S – socio-psychological criteria; W – web-criteria; x_1, x_2 – weighing coefficients of the indicator.

Virtual representativeness varies from 0 to infinity; maximum value is a completeness of website and its sufficient promotion on the Internet.

Socio-psychological criteria of the model include site usability (S1), its design (S2), i.e. a set of criteria that cannot be identified quantitatively is identified using expert method.

Web-criteria for estimating virtual representativeness of cities are the major criteria for estimating a website:

Yandex TIC (T), quantity of instantly indexed sites on Google (GC), quantity of instantly indexed sites on Yandex (YC), quantity of Yandex searches (YZ) for a city keyword per month, quantity of Google searches (GZ) for a city keyword per month, rank of an official site in search results for a city on Yandex (YM), rank of an official site in search results for a city on Google (GM).

The primary model is made the following way on the basis of the detailed sub-criteria (1):

$$VRI=(x_1(y_1S_1+y_2S_2))+x_2(y_3T+y_4GC+y_5YC+y_6YZ+y_7GZ+y_8YM+y_9GM) \quad (2)$$

In this case VRI – virtual representativeness of a territory; S1, 2 – sub-criteria of socio-psychological criteria; W 1,2,3,4,5,6,7 – sub-criteria of web-criteria; x1,2 – weighing coefficients of criteria; y1,2,3,4,5,6,7 – weighing coefficients of sub-criteria. The model enables to comprehensively evaluate the virtual representativeness of a territory on the Internet and the utilization rate of Internet technologies.

IV. FINDINGS AND DISCUSSION

Today a lot of territories are trying to create favourable living conditions taking into account the above-mentioned positions, using a complete line for differentiating strategic project directions. The priority project “Developing a comfortable urban environment” is one of the strategic projects. “Developing a modern urban environment of the urban district (UD) Verkhnyaya Pyshma within the period 2018-2023” is considered to be an element in implementing the project in question.

UD Verkhnyaya Pyshma is an industrial territory in which two town-forming enterprises are located. The plan for creating favourable living conditions is successfully implemented. Developing a modern urban environment is a course of actions aimed at providing comfortable, safe, affordable living conditions for the subjects of the territory, the population. It complies with the concept of place marketing and aims at improving the competitiveness of the territory in favor of residents and non-residents by means of the projects implemented within the government programmes. The projects implemented in a proper way triggers the marketing mechanisms. Modern urban environment is to meet health requirements, have a pleasant view, and provide the residents of the urban district Verkhnyaya Pyshma with comfortable conditions [14].

As to the infocommunication component of the project, it has a great impact on the citizens’ activity. The relevance, completeness, proper representativeness of information and services can be evaluated on the official website of UD Verkhnyaya Pyshma <http://movp.ru/>.

The aim of the project is to improve living conditions and recreational opportunities for the citizens residing in the urban district Verkhnyaya Pyshma.

The project in question is designed to achieve the following parameters:

1. Improving courtyard space of the urban district Verkhnyaya Pyshma;
2. Improving public amenities of the urban district Verkhnyaya Pyshma;
3. Involving “residents of the territory” in the project processes;
4. Increasing the rate of virtual representativeness on the Internet by means of upgrading web-criteria of an official site according to the model.

One can see that all the perspectives mentioned above imply advantageous place positioning.

One of the factors of providing better living conditions in the territory of Verkhnyaya Pyshma is considered to be improved urban environment by means of implementing a number of procedures. At present the state of courtyards located near the apartments fails to meet the established standards:

1. Physical wear of the asphalt concrete pavement;
2. Public lightning faults in the adjacent courtyard spaces;
3. Tumble-down buildings in the surrounding territory exposing citizens to health hazards;
4. Illegally parked vehicles due to the lack of parking space which has an adverse effect on surrounding territory allocation;
5. Lack of play equipment on the playground.

It is necessary to reconstruct the inner-yard spaces due to the high concentration of cars, extra car parks need to be constructed as the vehicles are illegally parked due to the lack of parking spaces. There are no designated pet areas in Verkhnyaya Pyshma.

It should be noted that apart from the inadequate amenities the official site of Verkhnyaya Pyshma needs to be improved significantly.

The implementation of the project will improve the amenities and sport facilities in Verkhnyaya Pyshma, increase landscaping areas, upgrade and promote an official website on the Internet to create an efficient information platform to cooperate with the government bodies and provide the public with the necessary information.

The major procedures to be implemented are:

1. Project design and engineering infrastructure development in order to prepare land plots for house constructions;
2. Designing, reconstruction and building of housing units;
3. Designing, reconstruction and building of educational institutions;
4. Designing, reconstruction and building of cultural heritage objects;
5. Designing, reconstruction and building of sport facilities;
6. Designing, reconstruction and building of paved roads, road networks of residential areas and neighborhoods;
7. Designing, reconstruction and building of amenities;

- 8. Designing, reconstruction and building of civil facilities;
- 9. Upgrading and promoting an official website on the Internet.

Evaluation of project procedures affecting the image of the urban district Verkhnyaya Pyshma helps to identify the weak and strong points of amenities and image building activities.

Analysis of urban amenities in Verkhnyaya Pyshma reveals a number of problems associated with the inadequate courtyard facilities, public amenities that should be eliminated by increasing loyalty, attracting able-bodied population to reside in the territory. In this case “infrastructure marketing” and “community marketing” should be applied as they are strategic perspectives of place marketing. It is necessary to analyze the tolerated risks and identify the optimization procedures in order to implement the strategies in question in a proper way.

TABLE I. RISK ANALYSIS AND MANAGEMENT IN PROJECT IMPLEMENTATION

Risk	Risk management procedures/policies
low budget to finance the urban amenities project	spreading information through social media to raise people’s awareness and finance the project
low rate of community commitment	information sharing arrangements on the official website to involve public organizations and individuals in the project implementation.
aversive attitude of Verkhnyaya Pyshma government towards modern regulations of urban amenities	Appointing an officer whose duties are to resolve the conflicts and establish relations with the Department of housing and public utilities of the urban district Verkhnyaya Pyshma.
aversive attitude of Verkhnyaya Pyshma government towards the project “Developing a modern urban environment of the urban district (UD) Verkhnyaya Pyshma within the period 2018-2023”	Compiling a schedule for urban amenities procedures, setting deadlines, appointing officers whose duties are to coordinate the project procedures.

The following guidelines are offered to improve the situation in Verkhnyaya Pyshma:

- 1. to increase the courtyard space and the road access;
- 2. to increase the number of improved courtyard spaces;
- 3. to increase the number of improved courtyard spaces in relation to the total number of courtyard spaces to be fully improved;
- 4. to increase the area of improved courtyard spaces;
- 5. to increase the number of improved courtyard spaces in relation to the total number of courtyard spaces to be improved;
- 6. to increase the number of people living in the favourable residential areas in relation to the total number of people residing in the urban district Verkhnyaya Pyshma;

- 7. to increase the number of improved public amenities;
- 8. to increase the number of improved public amenities per one resident of the urban district Verkhnyaya Pyshma.

Info-communication component of place marketing needs to be refined. It is important to analyze an official website of Verkhnyaya Pyshma using the model mentioned above to draw up the guidelines.

The findings of mathematical model application are presented in table 2.

TABLE II. VALUES OF SOCIO-PSYCHOLOGICAL CRITERIA AND WEB-CRITERIA FOR AN OFFICIAL WEBSITE OF THE URBAN DISTRICT VERKHNYAYA PYSHMA

T	YC	GC	YZ	YM	GZ	GM	S1	S2
1200	48653	28300	8503	20	18100	9	0,6	0,5
Group S		Group W			VRI			
0,557		10580,82			5502,294			

Value of virtual representativeness is 5502,294. It is a low value for a territory of the Verkhnyaya Pyshma. For this reason, the procedures for improving and upgrading an official site are offered:

- 1. to make a cross-platform site to be displayed on all devices;
- 2. to introduce metatags on the website: title, keywords, description to be effectively promoted;
- 3. to upgrade search function on an official website;
- 4. to improve the readability of the materials through a website design upgrade;
- 5. to introduce a feedback module to solve the problems of the residents;
- 6. to increase the speed and load of websites and images by optimizing the scripts.

All the procedures mentioned above make it possible to build a favourable image component, raise the rating among the subjects of the territory and increase their loyalty, have a competitive advantage of the territory in the future. The potential to develop marketing potential of the territory and the concept of place marketing is in prospect.

V. CONCLUSION

In conclusion, it should be said that the strong points of project implementation will positively affect the living standards and competitiveness of the territory which complies with place marketing concepts. The project should be directed at the cultural heritage and its favourable urban environment, place branding as it is conducted in a foreign territory in order to promote local manufacturers as a source of maintaining and preserving a comfortable urban environment and cultural heritage objects. It can be considered as a marketing tool of stimulating demand in the residential territory and outside the territory.

It should be noted that an integral part of strategic innovation of any local territory is the development of modern

place marketing. The processes are initiated not only from the standpoint of the territory vector, interests of territorial subjects in order to raise the living standards, attract investment, to develop place branding, but also from the standpoint involvement by the government and stimulating the processes taking into account the “neighbours” – territories within the concept of strategic innovation of the subjects of the Russian Federation.

Project management is an important tool for technological and phased structural development of the territory taking into account the interests of all territorial subjects which complies with the concepts of place marketing and improving territorial competitiveness. Project management in the sphere of municipal and government management isn't considered to be an element of place marketing in scientific works. It can be explained by the specific features of place marketing and a variety of forms and strategies for territorial promotion which are formed on the basis of different tools, project management is in the initial stage of application in this sphere.

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