INTERNET TECHNOLOGIES IN STATE AND MUNICIPAL MANAGEMENT

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Abstract: In the modern society, Internet technologies are essential and are used in various fields of activity. This article covers the application of Internet technologies in the state and the municipal management areas. It includes the tools of Internet technologies most in demand at present for effective information interaction of authorities with citizens. The study explores new means of disseminating information using network technologies, such as the 'Internet of Things', and examines their application in state and municipal management areas. Social services of the Internet, which are the main technological trends of the third technology platform in the state and municipal management areas, are discussed with emphasis on the Internet technologies used in implementing 'smart cities'. The scope of the study comprises the situation in Russia and the Rostov region. The paper concludes on the importance of using these technologies in the state and municipal management areas.

Introduction

The level of development in modern states is determined by the degree of awareness and acceptance of the fundamentally new concept of social development that is based on information, communication, and digital technologies. The formation of a global information space defines a new approach to the analysis of the entire system of social relations and governance. The degree of development of digital technologies influences the effectiveness of state and municipal governing bodies and the activities of officials, who ultimately implement new methods of interacting with both the public structures and the public service system. The Strategy for the Development of the Information Society in the Russian Federation for 2017–2030 defines the goals, objectives, and measures to implement the domestic and foreign policy of the Russian Federation in the field of information and communication technologies, aimed at developing the information society (President of Russia, 2017).

The information environment, based on the Internet, becomes a part of the management systems in all spheres, including state and municipal administrations. State structures, supporting and using constructive mechanisms of digital interaction, can effectively manage administrative functions of information communication. The main tasks include the development of electronic communication technologies for citizens, organizations, state bodies, and local self-government bodies. This direction involves, applying new technologies to improve the quality of public administration, improving e-democracy mechanisms, and creating management and monitoring systems for all spheres of public life. Digital technologies and information systems based on social networks and electronic media have become part of normal life for Russians. Users of the Russian segment of the Internet totaled more than 80 million people in 2016.

Internet technologies for effective information interaction between government and citizens are most in demand at present for effective information interaction of state bodies. First, official Internet sites and satellite projects are designed to provide users with access to public resources. Modern Internet sites have sufficiently developed forms and methods of structuring resources and are characterized by a systematic presentation of information. The merits include the presence of reasonably complete information about the federal government, the structure of power, information support, statistical information, and standard-setting activities. Furthermore, the presented information covers operating procedures, the activity of the governing body, and policies on conducting competitions, tenders, and work involving the population, as well as details on staff, the budget, finance, and international collaborations. The information capabilities of the site need to meet the requirements of various target groups for effective government interaction with citizens and business structures.

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The basic composition of the necessary elements, which are contained on the websites of authorities, in theory, approaches that required by Russian and international corporations corresponding to a widespread view of political technologies as a form of marketing (Lyakhova and Niconenko, 2016). However, there were challenges and in this respect the studies conducted during 2012–2015 are relevant. The dynamics were briefly evaluated at the end of 2016 by researchers of the Information Technologies Department, URIU RANHiGS, on the topic 'Comprehensive Assessment of the Internet Sites of the Municipalities of the Rostov Region'. All indicators (39) were grouped into three sets: information openness (17 indicators), interactivity (10 indicators), and manufacturability (12 indicators). Of the sites included in the study, only 35% of sites had information on the actual activities of municipalities, 31% took the form of feedback, and 21% contained links to accounts in new forms of communication media (Gaisinsky et al., 2015). The results of this study showed an increased network presence and qualitative and functional improvements of the sites that reflected a heightened focus of authorities on the Internet segment and their understanding that this activity involves a global network, and was a trend needed for the growth of effective interaction.

The issues of information openness and improvement of various forms of feedback are important and relevant, as is the activation of a new trend, which is also connected with the development of new communication technologies and the growth of literate users in the network and the ever-more intense Internet communication in society. These are the social networks, forums, and blogs that are communication media, and some of the main features of the Internet.

Data and Methodology

The user data of social networks of Facebook, Google +, and VKontakte were examined in this study. These social networks were selected because they are the most common approaches for publishing socially significant information and their users comment on various areas of life in the state.

Results and Discussion

The new media primarily involve increased interactivity and additional platforms for the exchange of views representing various target groups. In this regard, Internet communication today depends on the use of social networks, the blogosphere, and forums (Figure 1).

Figure 1: Communication channels most often used for political participation on the Internet
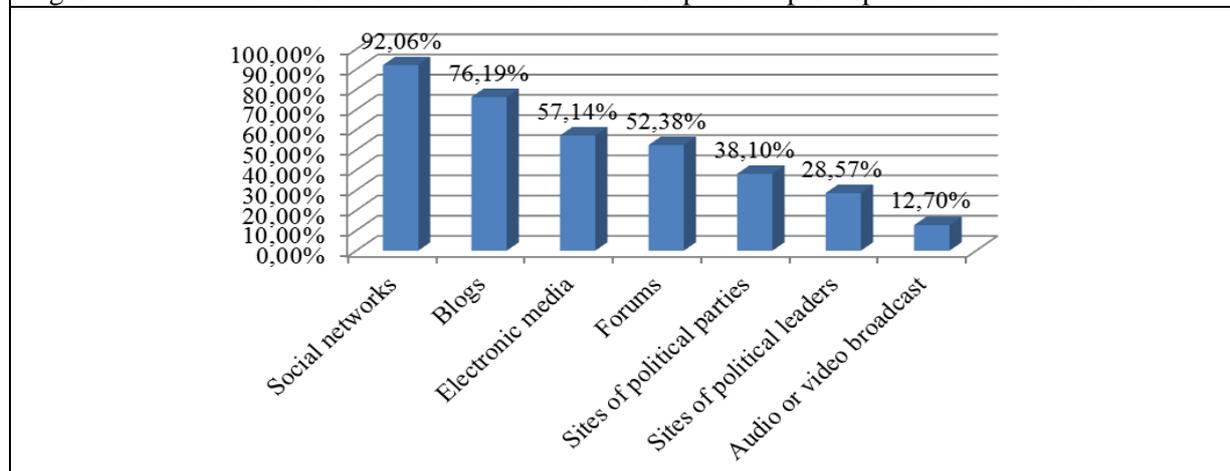
Source: Compiled by authors using Tadviser, 2018; Korolev, 2016; IDC Russia, 2017

A new form of information interaction involves the use of a blog as a communication means on the Internet. The number of Internet users who regularly read blogs is somewhat large, and the audience has increased annually by 5–7% (IDC Russia, 2017). The Russian-speaking segments of the blogosphere, about 70% of all Russian-language blogs and 76% of active blogs, are located on four main services: LiveJournal.com, Blogs. Mail.ru, Ya.ru, and LiveInternet.ru. By attendance per month, LiveJournal.com was the most popular, followed by LiveInternet.ru, and then the blogging site Mail.ru (Kondratenko et al., 2017).

In terms of social services of the Internet in state and municipal government, increasingly officials are using the new communication media of blogs, video broadcasts, and direct citizen and voter online

communications. Alexa Internet (Alexa.com) provides data on traffic, global rankings, and other information of more than 30 million websites and is visited by more than 8.5 million people per month. Given that Alexa Internet rates Yandex, VKontakte, Google, Mail.Ru, YouTube, Facebook, Wikipedia, LiveJournal, and Odnoklassniki.ru as the most popular sites among Russians, it is appropriate to explore examples of Russian politicians using these modern Internet technologies in their professional work (Kondratenko et al., 2017). One of the most active Internet users among Russian high-ranking officials is the chairman of the government of the Russian Federation, Dmitry Anatolyevich Medvedev. His Twitter account, @KremlinRussia, was established on June 23, 2010, when Medvedev was the head of state. This politician became the first among Russian civil servants to start microblogging, and his account is one of the most popular resources on the blogosphere. At the time of this study, he had more than 5.38 million readers. In the summer of 2011, the account was renamed @MedvedevRussia. Dmitry Medvedev also holds the English account of MedvedevRussiaE.

About 10 million subscribers read the entries of the head of the Russian government on Facebook, Twitter, and VKontakte. Also, the Prime Minister has a page on Instagram. On June 11, 2014, he posted his first 'Selfie' to the 2.5 million people who were subscribed to his account at that time. In LiveJournal, there is a community called Dmitry Medvedev's Blog, which is a translated account from the official video blog of the Prime Minister and is where LiveJournal users have the opportunity to discuss video and text messages of Dmitry Medvedev.

At present, many high-ranking political figures have personal pages and microblogs on the Internet. As of August 1, 2014, 53 of the 85 heads of subjects of the Russian Federation had personal blogs and pages on various social networks (Facebook, Twitter, LiveJournal, and VKontakte). The most popular was Twitter, where 50 heads of regions were registered, followed by LiveJournal with 18 governors registered, and then Facebook and VKontakte with 13 and 12 heads of subjects registered, respectively (IDC Russia, 2017).

The most popular social media personality among regional politicians was the head of the Chechen Republic, Ramzan Kadyrov. In 2017, the name of Kadyrov was mentioned in social media more than 1.5 million times. Second to this was the mayor of Moscow, Sergei Sobyanin, who had 1.277 million mentions. Third, with a high backlog of unread comments, was the governor of the Moscow region, Andrei Vorobyov, with 0.333 million mentions. (IDC Russia, 2017; Tadviser, 2018).

Also, among the five most popular social media personalities were the head of the Crimea Sergei Aksyonov (0.313 million mentions) and the governor of St. Petersburg, George Poltavchenko (0.275 million mentions). To compile these ratings, messages on Twitter, VKontakte, Odnoklassniki, Facebook, Instagram, YouTube, Telegram, forums, and blogs were considered.

Figure 2: Links from Facebook, Google +, VKontakte to official Internet portals

	Facebook	VKontakte	Google +
■ Total	717	112	18
■ Maximum	270	31	5
■ Average	13	2	1
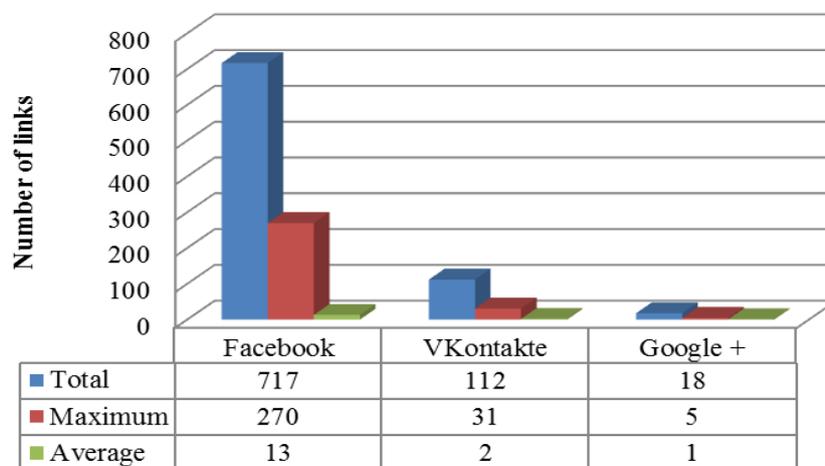
Source: Compiled from IDC Russia, 2017; Tadviser, 2018

Thus, there is a growing importance of Russian politicians' blogs because they are the most dynamic means of producing and distributing information. The expansion of the political blogosphere means

the traditional online communication media are facing competition from a new media platform, of blogs. Adopting the possibilities of Internet technologies in the professional activities of civil servants has become an indicator of progress.

In connection with social services, the number of links, from blogs and forums on the Internet and from social networks to the portals of the municipalities, are important (Figure 2). The total links from social networks, such as Facebook, Google +, and VKontakte, was 847.

In addition to microblogging and personal pages on social networks, Russian civil servants can use professional websites needed in their daily work. As an example, the social network 'Gosbuk' (www.gosbook.ru) is an interactive communication platform designed specifically for civil servants. In 'real time', users of the site can discuss various issues, post publications, create communities and working groups, participate in thematic forums, and download graphics and text documents in an electronic format.

Regarding the Internet related to the state and municipal management, as part of the creation of an electronic parliament, the State Duma in Russia has initiated launching a professional social network for deputies of all levels 'Parliamentary Portal' (portal.parlament.gov.ru). Through this portal, parliamentarians can discuss their initiatives in 'real time' with colleagues from different regions. The portal is mostly designed for regional and municipal deputies, rather than federal-level officials. Experts, such as lawyers, political scientists, and economists are invited to open accounts on the site. The average user can evaluate the initiatives of deputies only in 'read' mode and discuss these later on other social networks. The 'Parliamentary Portal' is a tool for interaction between deputies and experts, as well as for informing citizens about the initiatives and lawmaking activity of the deputies. On the portal, there are video recordings of all speeches of the deputies of the State Duma that have been published on the portal 'Video-Duma' (http://www.video-duma.ru). These are plenary sessions, official State Duma events, and committees and commissions meetings of factions in the State Duma.

In Russia, the information society is characterized by the widespread availability of mobile devices. A system has been created to provide state and municipal services in an electronic format that more than 34 million Russians have joined. The growth dynamics of users of the public services portal and the share of citizens using public electronic services are presented in Figure 3. However, the number of citizens had not yet reached the indicator mentioned in the President of the Russian Federation address May 7, 2012, No. 601 'On the main directions of improving the system of public administration.'

Figure 3: Dynamics of growth of users of the portal of public services
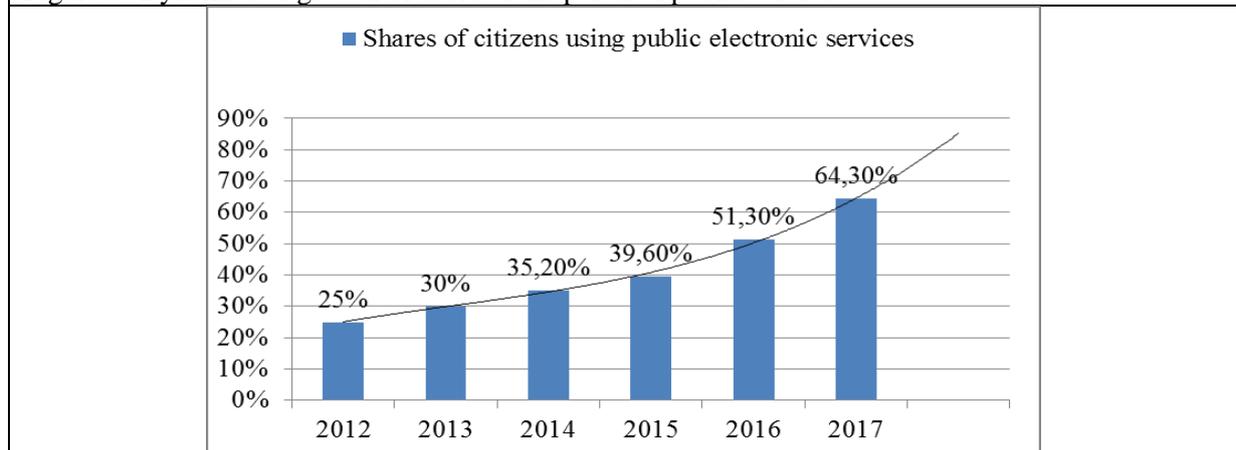
Source: Compiled from IDC Russia, 2017; Tadviser, 2018

According to the analytical company Gartner, one of the main trends for the public sector is the 'Internet of Things', which can be characterized as a new stage in the development, of the Internet (The Russian Government, 2017). In addition, the 'Internet of Things' is included in the technological platform of the digital government and 'smart city' (information and communication technologies are used to improve the living standards of citizens, development and working conditions), the concept of which has been implemented to some extent in the world over 2500 cities. Technologies are used in three stages:

1. Collection and provision of information;
2. Communications; and
3. Data processing.

Then, based on the processed information, a management decision is made. The 'Internet of Things' refers to the first stage.

According to the IDC, at present, the fourth technological platform is developing with the 'Internet of Things' included in the technological platform (IDC, 2017).

The use of this technology makes it possible to optimize management, including resources. According to the Cnews.ru portal (Korolev, 2016), the EnergyNet roadmap has been approved in relation to the development of the smart energy market. The use of 'smart energy' is one foundation for sustainable development of the city and hence, for effective municipal management. According to the IDC, one of the highest levels of investment in the field of 'Internet of Things' will precisely be in 'smart energy'. It is noted that the 'Internet of Things' is actively used in these spheres: housing and communal services, transport, and construction (Lyakhova & Niconenko, 2016). In the sphere of housing and communal services, it is used in 'smart networks', such as the management of water supply, sanitation, and 'smart buildings'. In the field of transport, it deals with traffic management. In addition, the 'Internet of Things' is a component of the security organization in the city and an important component of 'smart health'.

At present, work is underway on the 'Internet + City roadmap' (its draft has been presented). This project provides for the development of domestic open standards for devices of the Internet of Things and their cryptographic protection, the launch of the corresponding chips in Russia, and the release of frequencies due to analog and digital TV. The first part of the document referred to these technologies and the second part to areas where these technologies are applied. It is noted that this roadmap was developed with the help of the Internet Initiatives Development Fund (Korolev, 2016).

The use of the 'Internet of Things' supports sustainable development and economic growth. For example, the rational use of resources will significantly reduce costs of development and improve the quality of life for citizens. Technologies of the 'Internet of Things' are applicable to city services, city infrastructure, and city facilities.

It is noted that the Russian government agency, Rosstandart, is developing national standards in the field of smart technologies. It is necessary to have domestic developments in this field to allow the use of the 'Internet of Things' in state and municipal management in connection with implementing the concept of import substitution in the IT field (Rosstandart, 2017).

According to Tadviser.ru portal, Russian technologies of 'Internet of Things' exist in the fields of information security, information technology solutions for transport, housing, and utilities and agriculture (Tadviser, 2018). Thus, there is a great potential for the development of these technologies in the state and municipal management.

The concept of 'smart city' is actively developing in Russia with Moscow a leader in its development. Moscow became the finalist in the prestigious World Smart City Awards in the category 'City' (Bahour, 2016), along with Seoul, the capital of South Korea (leader in the development of the concept of e-government), the Indian city of Pune, the Jiuquan city district in the Chinese province of Gansu, and the Holland-Cron, the Netherlands. In terms of 'smart healthcare', Moscow is at the head of the leaders, namely, London, Barcelona, New York, and Sydney, that are implementing this concept of the 'smart cities'. In Russia, the concept of 'smart cities' and their elements are implemented in several cities and regions: Moscow, St. Petersburg, Kazan, Ufa, Krasnoyarsk, Belgorod, Tomsk, Novosibirsk, Nizhny Novgorod, Rostov-on-Don, Krasnodar, Mordovia, Obninsk, Kaluga, among others. There is also the creation of a 'smart city' from scratch near Moscow (Urban City Development Agency, 2015).

The benefit of the 'Internet of Things' is that the 'smart' city is formed, not by information technologies, but by the citizens who use them (Astanina et al., 2017).

Conclusion

Internet technologies comprise some of the most important machinery in the state and municipal management. They include the system of portals and new information technologies, such as the

'Internet of Things'. In the system of portals, allocating a portal of state services is necessary to provide a convenient form of state and municipal services for citizens of those areas. The exponential growth in the number of portal users justifies such necessity. Although the number of citizens using the portal is yet to reach the government's indicator level, work continues in popularizing the public services in an electronic form and the use of social services on the Internet. This study found that the range of services on the Internet has grown including those for the healthcare sector. Indications are that featuring the municipalities' sites on the portal sites is essential for public awareness, along with optimizing such sites for mobile devices, with mobility now a priority of the public sector. It is concluded that without the use of the 'Internet of Things', the concept of 'smart city' would not be feasible. Therefore, it is important for a relevant legislative base to support this area and manage information security issues.

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