ATLANTIS PRESS

Advances in Economics, Business and Management Research, volume 105

1st International Scientific and Practical Conference on Digital Economy (ISCDE 2019)

Instagram digital data analysis services

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***Abstract* — The article analyzes various approaches to the definition of the concept of "digital economy" and "digital services" and defines digital services. The author considers the digital services of the Instagram network and analyzes their functionality for the presence of digital data accumulation and their intellectual analysis. To find out how much the existing service considered in the article belongs to the "digital service" category, an expert survey of users is carried out and, based on the aggregation of their opinions, a complex indicator is obtained that assesses the level of service digitalization. It is also shown that the implementation of the data analysis module will allow the services under consideration to achieve the necessary competitive positions and fully realize their digital potential.**

Keywords — digital economy, digital services, Instagram

I. INTRODUCTION

The development of society at the present time is impossible without the use of modern information technologies, which over the past half-century have dramatically changed our lives and opened up new market opportunities. The development of information technologies was so rapid that they have in less than the last 30 years overcome the same path as traditional production technologies, for example, metallurgical ones, over 300 years. The role of information technologies has become so important that they first turned the traditional economy into information, then into collaborative and, finally, into digital. Based on this chain of transformations, is it possible to consider that the digital economy is a simple sum of the traditional economy and information technologies? Probably not. The term "digital economy" arose a long time ago, namely in 1994, and is associated with the publication of the book "The Digital Economy: Promise and Peril in the Age of Networked Intelligence "by Canadian scientist Don Tapscott . In this book, the author assesses the impact of information technology on business and the public administration system, noting that information technology alone provides a digital representation of economic objects and processes. This allows you to radically change the business processes of enterprises, the rules of doing business to form new methods of production and sale of various products and services. According to Tapscott, the main advantage of the digital economy is the possibility of a dramatic drop in transaction costs associated with finding information and concluding contracts, relying on the institutional theory of Ronald Coase in this matter. In 1995, Nicholas Negroponte, an American scientist from the University of Massachusetts, proposed to understand the term digital economy as "the transition from the movement of atoms to the movements of bits". That is, from his point of view, the digitalization of the economy is the processes associated with the mass transfer of information into binary code.

II. DIGITAL SERVICES. DEFINITION OF A CONCEPT

In the studies of many domestic and foreign scientists [3] "digital economy" is used as a synonym for the use of new information technologies, usually based on the capabilities of the Internet in various sectors of the economy. Therefore, one can often observe the substitution of the concept of "digital economy" by such phenomena as "information economy", "knowledge economy", "Internet economy", "network economy", "electronic economy", "new economy", "electronic business", "collaborative economy" and others. All these concepts, of course, are inextricably linked with the formation of the "digital economy", but reflect only private processes or historical stages of the digital economy. The Digital Economy of the Russian Federation Program defines the following digital economy: Digital economy is an economic activity, the key factor in the production of which is in digital form, and contributes to the formation of the information space taking into account the needs of citizens and society in obtaining high-quality and reliable information, the development of the information infrastructure of the Russian Federation, the creation and use of Russian information and telecommunication technologies, as well as the formation of a new technological basis for the social and economic sphere.

Based on this definition, it is easy to understand that the main digital economy is "data in digital form" and this does not contradict the ideology proposed by Nicholas Negroponte, but the key difference in this definition, in our opinion, is that the data should be reliable and be useful to society.

Based on this understanding, digital services can also be defined. The really rapid development of information technology has spawned many information and electronic services designed for various purposes, ranging from online stores and ending with state information systems.

A digital service is an information (electronic) service that presents various possibilities for users to fulfil their needs in obtaining high-quality and reliable information, which allows them to accumulate data in digital form and carry out its intellectual processing.

Such an understanding of a digital service correlates with an understanding of the term “digital economy” and characterizes the difference between a digital service and an information (electronic) one. It is clear that in the digital economy, almost all information services will gradually migrate to digital.

Thus, the digital economy creates new “resources” in the formation of a new technological basis for the social and economic sphere - digital services that implement the ideology of the digitalization process: turning any user actions into data presented in digital form, which can improve the efficiency and quality of doing business.

The aim of our article will be to review the digital services of the social network Instagram and identify the level of their digitalization.

III. INSTAGRAM DIGITAL SERVICES OVERVIEW

Today, social networks are the main assistant in communication between the consumer and the brand. According to experts in the field of marketing, the basics of brand promotion on online platforms are not very different from offline promotion. In the digital economy, there has been a sharp increase in users of various social networks, so the latter become an excellent platform for the implementation of various marketing communications, as well as for the promotion of various goods and services. One of the most progressive and successful is the social network Instagram. According to statistics, in 2018, the global Instagram audience exceeded 800 million users, an increase of 100 million in less than six months.

Today Instagram is one of the most effective marketing tools. The most important difference from other social networks is that Instagram focuses on the product. This is a popular social network, the functionality and audience of which are great for promoting goods or services, both a freelancer and a large company.

Almost every successful commercial resource has integration with an account on the Instagram network, using it as a source of targeted traffic, which can easily be converted into a client base. We also note that the Instagram account itself can act as a channel for the direct sale of goods and services even in the absence of a main web resource.

A number of digital services allow to manage your Instagram account effectively.

Let's consider first the services for auto-posting on Instagram. These services perform actions related to the publication of new posts in your Instagram account. Typical digital services of this kind are: INSTAPROMO (fig. 1), PAMAGRAM (fig. 2), SMMPLANNER (fig. 3), etc.

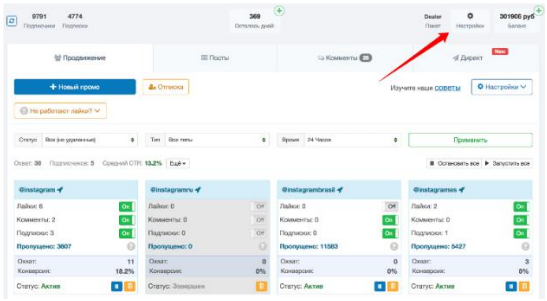

Fig. 1. Interface of INSTAPROMO

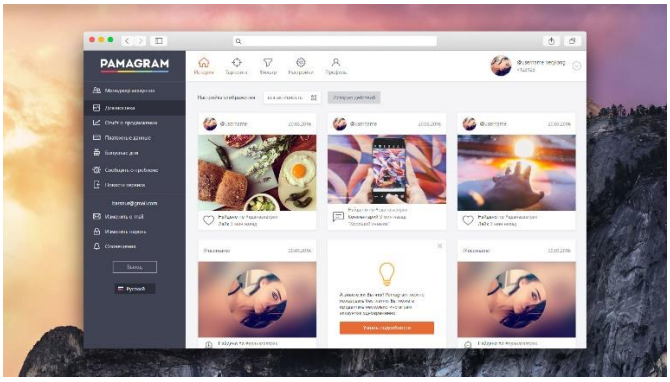

Fig. 2. Interface of PAMAGRAM

These services simulate user actions and are characterized by wide functionality related to the ability to fine-tune future posts, date and time, consolidate the archive of photos with sorting their sequence. Using these services, you can set restrictions by gender, by the number of subscribers and subscriptions of users, daily and hourly limits for subscriptions/unsubscriptions, likes and comments. To simulate human actions, you can select options for skipping accounts and a night break.

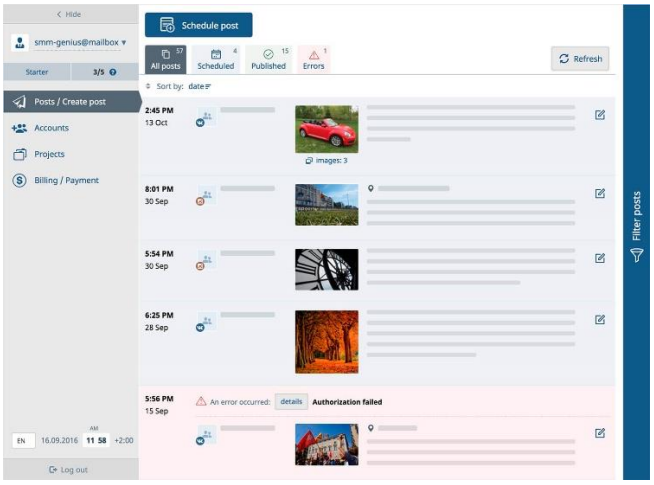

Fig. 3. Interface of SMMPLANNER

As a rule, this kind of service in different variations includes several modules that allow you to implement an integrated approach to manage your account. We list typical modules:

- promotion (automatic subscription and unsubscribing, mass-linking, automatic comments)

- direct (personal automatic messages);
—Comment tracking (work with comments)

The developers of such services have already created templates for comment tracking - automatic comments, direct mail management. Digital services allow you to manage your target audience by parameters such as gender, user activity, the number of photos in your account, etc., track comments, reply to them, delete them automatically, filter the audience by stop words. Almost all of these services have built-in simple analytics. The difference between these services is mainly in the price and different layout of the modules listed above.

Let's move on to the consideration of digital services designed to analyze accounts on the Instagram network. Typical services are HITALAMA (fig 4.), ICONOSQUARE (fig. 5).

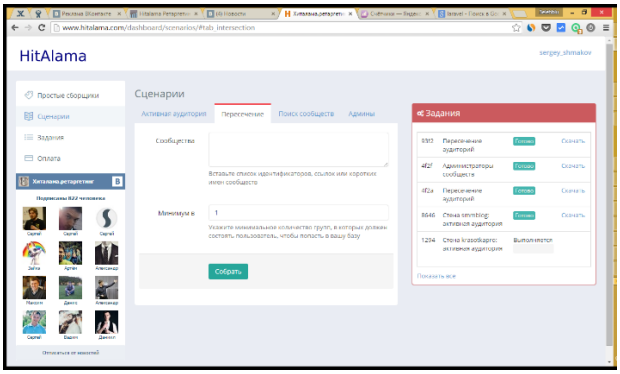

Fig. 4. Interface of HITALAMA

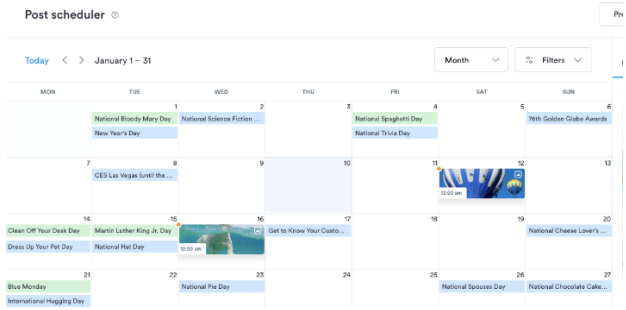

Fig. 5. Interface of ICONOSQUARE

Services that will help the account holder analyze all statistics for a certain period and make a management decision based on an assessment of the effectiveness of marketing activities.

Typical functionality of these services is the implementation of statistics on the number of subscribers and subscriptions sorting by posts, analysis and the possibility of comparative analysis, calculation of the number of acquired and lost followers, etc. As a rule, using these kinds of services, the account owner has an exceptional opportunity to view user behavior, as well as the broadest possibilities of data visualization.

The following typical services are related to searching for hashtags, posting reposts and monitoring comments: WEBSTA (fig. 6), HASHTAGS, PARASITE, CHOTAM (fig. 7).

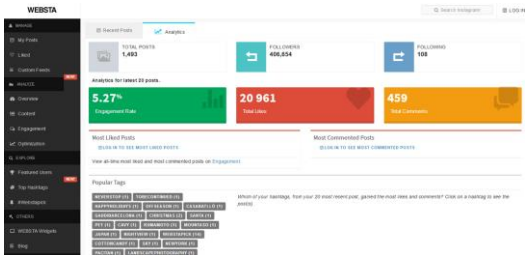

Fig. 6. Interface of WEBSTA

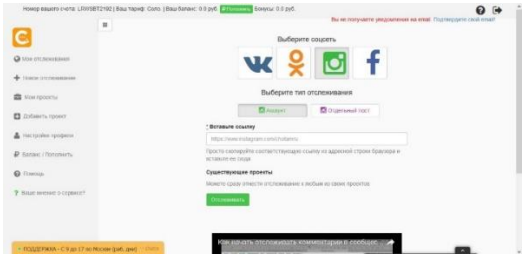

Fig. 7. Interface of CHOTAM

These services for working with hashtags are often used to analyze the competitive environment. After entering a specific query in the search line, the services issue the corresponding posts and related accounts. Typically, these types of services are able to determine the most rated posts according to your requests, sort the search results in accordance with many criteria, repost entries on your own page, and also notify the user about new comments and manage them: quickly respond to positive comments or erase negative ones.

Another GIVEAWAYS service allows you to determine the winners of repost contests or comments by randomly selecting a winner.

Various typical digital services were considered that allow you to automate some user actions, collect data in digital form, and manage your Instagram account. Each of the considered services has the ability to analyze data in one form or another, however, they cannot be called fully digital, since none of them implements the possibility of data mining, which means it does not have a recommendation system that implements the form "if ... then".

Applying the expert assessment method based on the theory of fuzzy sets using the following criteria: automation of user actions (AA), multifunctionality of settings (MS), setting of target audience (SA), digital data accumulation (DA), data mining (DM), you can evaluate the degree to which these services belong to many digital services. To do this, we conducted an expert survey of 32 users managing Instagram accounts that rated each service according to the proposed criteria in points from 1 to 10. The results of aggregation of expert assessments are presented in the form of the following Table (see Table 1)

TABLE I. EXPERTS AGGREGATION RESULTS FOR INSTAGRAM DIGITAL SERVICES

Service name	AA	MS	SA	DA	DM
INSTAPROMO	0.8	0.8	0.7	0.8	0.3
ICONOSQUARE	0.9	0.8	0.8	0.9	0.6
HASHTAGS	0.7	0.7	0.7	0.7	0,4
PARASITE	0,4	0.6	0.3	0.8	0.1

Further, for each service considered by us, a complex indicator was calculated, using the methodology described in [], evaluating the level of digitalization of the service, which made it possible to obtain the following rating on a scale of 1 to 10 (see Table 2):

TABLE II. A COMPREHENSIVE INDICATOR THAT MEASURES THE LEVEL OF DIGITALIZATION OF A SERVICE

Service name	Comprehensive Digital Service Metric
INSTAPROMO	8.4
ICONOSQUARE	9.1
HASHTAGS	7.5
PARASITE	6,2

Various typical digital services were considered that allow you to automate some user actions, collect data in digital form, and manage your Instagram account. As an expert survey showed, each of the considered services has the ability to analyze data in one form or another, however, they cannot be called fully digital, since none of them fully implements the possibility of data mining, which means it does not have a comprehensive recommender system realizing implications in the form of "if ... then". The ICONOSQUARE service, which is the official Instagram service, turned out to be closest to the level of digital service.

IV. CONCLUSIONS

As a result of the study, we proved that the digital economy is, on the one hand, the result of a synergy of information technologies and methods of the information economy, on the other hand, that the basic elements of the digital economy are not only the data presented in digital form but also the business effect that they give rise. This allowed us to formulate the concept of a digital service and to reveal its difference from the information one.

The analysis of Instagram digital services showed that not all of them fully satisfy the concept of digital service that we have formulated, mainly because they lack an intelligent add-in for analyzing the data that these services accumulate. This means that the competitive advantage will be acquired by the service that will develop such an add-on in the near future and will generate recommendations for users on how to effectively manage their Instagram account.

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