

ISMGE 2020**II International Scientific and Practical Conference "Individual and Society in the
Modern Geopolitical Environment"****RESEARCH OF EDUCATIONAL CONTENT IMPLEMENTATION
DUE TO DEVELOPMENT OF MOBILE APPS MARKET**

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Abstract

There is a huge number of types of mobile applications that differ in various ways. Although the information is spreading fairly rapidly nowadays, there is still insufficient interaction between countries in the field of education and research. Implementation of educational mobile applications will allow establishing close relationships between educational organizations and their structural units. The purpose of the study is to assess the state of the mobile application market to determine the relevance of new educational applications in educational communication and people socialization. The following objectives are set: to analyze the trends and dynamics of the global and domestic mobile application market; to explore the developmental peculiarities of the educational mobile application market; to assess the possibilities for the implementation and operation of a new mobile application for the development of the educational system and its integration into the world space. The information base for the study was taken from the research on the mobile application market according to the Federal State Statistics Service, reports by App Annie, Tadviser. The article analyzes the current situation in the global and domestic mobile application market, highlights several types of mobile applications that are in greatest demand, and describes the main segments of the educational mobile market. The paper concludes that the most important players in the market of educational mobile applications are the United States, Japan, China, and Germany. The mobile apps market is developing, and the share of educational mobile applications in the market will only increase in the future.

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Keywords: Educational content, educational environment, educational organizations, information, mobile apps market, socialization.



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1. Introduction

Digitalization, which has come to substitute informatization and computerization, leads to the ubiquitous digital presentation of information, which strongly affects the socio-economic development of not only individual countries, but of the whole world (Astafyeva, 2019). In this regard, the global market is beginning to spread activities directly related to IT technologies. One of the most promising and relevant activities, taking into account the current trends in the economy, is the development of mobile applications. The amount of new information in the IT sphere doubles with each passing year. For example, for university students, this means that most of the knowledge they receive in the first year of their studies is already obsolete in the final year.

2. Problem Statement

According to the research of App Annie, which is a leading provider of data on the mobile market, the global mobile application market is developing both steadily and very fast, and, withstanding negative trends, it promises growth during the year 2019. Users demand messengers and social networks, applications in the category of "business," "books" and "entertainment".

People in developed countries such as the United States, Japan, South Korea and Australia install more than 100 applications on average. This is primarily due to the growth of the production facilities of companies in the field of technical devices, improving their quality and expanding their functional properties. Speaking of others, for example, of China, most of the population uses high-quality, but less expensive devices, limiting themselves to smartphones with fewer storage capacities, which affects the number of downloaded applications.

3. Research Questions

Implementation of educational mobile applications will allow establishing close relationships between educational organizations and their structural units.

4. Purpose of the Study

The purpose of the study is to assess the state of the mobile application market to determine the relevance of new educational applications in educational communication and people socialization. The following objectives are set: to analyze the trends and dynamics of the global and domestic mobile application market; to explore the developmental peculiarities of the educational mobile application market; to assess the possibilities for the implementation and operation of a new mobile application for the development of the educational system and its integration into the world space.

5. Research Methods

The information base for the study was taken from the research on the mobile application market according to the Federal State Statistics Service, reports by App Annie, Tadviser.

6. Findings

The "Mobile First" principle is currently beginning to work at the macroeconomic level: Brazil, Japan and the United Kingdom are among the first countries in the ranking where the growth rate of mobile app expenditures of the users exceeds the GDP growth rate (Qmobi, 2019).

There are about 4 billion active mobile devices that are actively used. Thus, in 2018, 50% of the population (about 4 billion people) at least once visited Internet pages and sites. According to IT specialists and scientists, these figures are going to increase even more.

As a result of the analysis of the mobile application market, it was concluded that entertainment apps (which include games, messengers and social networks, etc.) are in greater demand and amount to 48%, they are followed by the applications used in the banking sphere and which amount to 27%, and the 25% of the market belongs to educational applications. App Annie estimates that app spending will rise to \$75.7 billion by 2022, against \$42.5 billion in 2017. The world's leading downloaded apps of all time are Facebook, Facebook Messenger, YouTube, Instagram, WhatsApp Messenger, Google Maps, Snapchat and Skype.

In Russia, about 95% of the population are the users of mobile phones or smartphones. Among them, 81% goes online daily, 15%-weekly, and only 4%-monthly. In 2017, Russia was among the top 5 countries for downloading mobile applications in the App Store, as well as in the Google Play. The mobile app market in Russia has shown steady growth since 2012. For example, in 2013 the growth rate in real terms was 64%, in value terms, the market grew by 30%. Over the next 5 years, the mobile app market continues to expand, with the result that the market growth rate is growing between 10-15% on average (table 1) (Harbr.ru, 2013). In addition, due to the fact that there are more than 80 million smartphone owners in Russia, the Russian mobile app market is called the largest market for mobile Internet and applications in Europe. As a result, you can see that the cost of marketing in this market is noticeably lower, and the cost of installing applications is twice as attractive as in the United States. The number of mobile application installations in Russia is expected to reach 352.9 billion by 2021, which is a signal for the representatives of various companies.

Table 01. Indicators of the mobile applications market volume in Russia

Indicator	2013	2014	2015	2016	2017	2018
Number of downloaded apps (million)	112	123	138	149	197	250
The rate of increase in the number of downloaded applications	-	+9.8%	+12.19%	+7.97%	+32.2%	+26.9%
The volume of money turnover in the market, billion roubles.	330	383	440	483	522	569
Cash flow growth rate		+16.6%	+14.88%	+9.77%	+8.07%	+9.003%

Source: App Annie Index: Mobile app market report, Q1 '13. Retrieved from <https://habr.com/ru/post/177277/>

The mobile app market is characterized primarily by the diversity of their types. There are several types of mobile apps that are in demand.

1. Social media. SMM has become an integral tool of business regardless of the field. Studies show that in social networks it is possible to reach audiences of any age, gender, social status, which is exploited by the brands in all countries of the world. In Russia, the penetration of social networks is estimated at 47%, 67.8 million Russians have accounts in social networks. According to Statista, the most actively used app in Russia is Youtube (63% of respondents), the second place is taken by VKontakte - 61%. The global leader Facebook - is only in fourth place in Russia and amounts to 35%. Among the messengers Skype and WhatsApp are prevailing and they amount to 38% each (Sergeyeva, 2018).
2. Messengers. According to the survey conducted by VTSIOM, almost three-quarters of respondents said that they use messengers: 62% sent at least one message the day before the survey. Leading are: WhatsApp (44%), messenger "VKontakte" (32%), SMS (32%) and Viber (30%). The choice of short messaging program is also closely related to age – for example, SMS is most common among those surveyed over 60 (43%), and VKontakte messenger is more common among those who are 18-24 years old (69%). (VTSYOM, 2018).
3. Maps, transport. In the age of globalization, navigation is not only a prerequisite for "survival" in one's life experience but also literally on the roads. Therefore, one of the most important tools to date are maps and other navigation systems.
4. Video resources, TV. Video viewing using smartphones and tablets are becoming increasingly popular and there is a decrease in the number of video views from TV screens and personal computers. According to Mediascope statistics on video viewing among desktop users across Russia, it follows that almost half (48%) of men aged 12 to 24 prefer to spend more than an hour on video resources. Women in the same age group are much less likely to watch videos for as long as men – only 28%. Users over 35 are more fond of watching short videos (up to 10 minutes) - 31% of men and 34% of women (Adindex.ru, 2017).
5. Games. Based on data from the App Annie application, games received 75% of all revenue in the app market. In 2019, 60% of all revenues are expected. Every year, the number of hours spent on games increases, with the result that potential manufacturers and developers are eager to create new features in gaming applications that could be the superior factors over competitors.
6. Mobile banking. The clearest illustration of the demand among the population of applications in the "banking" category is strong growth in the volume of application installations in this area. Thus, the volume of installations of FinTech applications in Indonesia has grown by an impressive 400% in 2 years. Mobile allows ordinary people to operate their finance more freely around the world, and they can invest through apps (Acorns, USA), transfer money (Revolut, the UK), borrow consumer loans (Kredivo, Indonesia) or borrow microloans (AfterPay, Australia).
7. Educational applications. The use of mobile learning system contributes to solving the following educational problems: bringing administrative information to students (schedule,

tuition fees, etc.); personalization of the library of electronic educational resources and increased work with educational content (textbooks, reference books, dictionaries, audiovisual information); instant information sharing, sending messages and more (Malushko et al., 2016).

This type of application is undoubtedly in demand among consumers because in today's world a person should take into account new emerging conditions and development trends. Mobile educational apps are excellent tools to achieve this goal.

There are several main trends in the mobile apps market.

Preference analysis forecast: paid or free apps. With the development of the free mobile app market, the paid mobile app market will still evolve as many apps encourage users to purchase them, taking into account the additions they can also use.

Individual approach. An application designed to suit a person's individual tastes can become quite commonplace. It is possible that people in a short time will be able to create their own applications based on their interests. It will also be able to combine the functions they need. In this way, people can become developers of their own apps.

Applicability in different areas. Mobile applications already operate in almost all areas of human activity. For example, m-health, the e-medicine market, is rapidly developing, which improves the quality of service. However, there are industries where mobile applications have not yet found their use, and the likelihood that they will become critical tools in the process of production or service in the future is very high.

Thus, we can say that the development in the mobile application market is a promising direction for the implementation of the activities of entrepreneurs both in Russia and abroad.

6.1. The development of educational mobile apps market: key segments and key players

Due to the digitalization, one of the necessary conditions for systematic learning was the use of electronic resources. Educational International estimates that the e-learning market is about \$165 billion, which is 3% of the global education market and is projected by experts to be \$240 billion by 2020 (Krechetova, 2017).

The most mature and large market in the EduTeach sector is the market in the United States. The growth rate is +4.0%-4.4% annually. The next largest are China and India and the rest of Southeast Asia. Despite the fact that Eastern Europe lags behind the market volume of Western Europe, it is still worth considering that it is gaining momentum much faster (growth rates increase by 17% annually) (NRU HSE, 2017).

«Forbes» pointed out that investment in EduTeach sector has increased by 503% over the past 5 years. In the field of excellence, educational mobile applications are also becoming more relevant as more knowledge and information is needed, but less time is allowed.

In Russia, the EduTeach market has more than 180 projects developing the segment of educational mobile applications. The market for educational mobile applications is gaining momentum, resulting in an increasing number of companies willing to invest in projects related to electronic educational resources (table 2) (Kalyzhnyj, 2019).

Table 02. Educational projects in Russia

Company	Sphere	Total investment attracted	Investor or buyer	Estimates	Latest year of funding
“Diary.ru”	LMS for schools	\$6.7 mln	Runa Capital, Prostor Capital	No data	2012
MEL Science	AR	2.5 mln	Sistema VC	No data	2016
Lingua Leo	Foreign languages	\$3.5 mln	Runa Capital, AltaIR investments	\$10 mln	2013
Group Netology	Vocational training (training in professions)	\$3.2 mln	inVenture Partners, Buran VC	\$14.1 mln	2015
«YaClass»	School education	\$2.5 mln	Almaz Capital, Vesna Investment	No data	2014
GreekBrains	Vocational training (training in professions)	No data	Mail RU Group	No data	2016
Maximum Education	Preparing for standardized exams	No data	Siguler Guff или Russia Partners	No data	2015

Source: Kalyzhnyj M. How the educational technology market is developing around the world. Retrieved from <https://vc.ru/flood/22078-edutech-investments>

At the moment, the state is increasingly interested in the creation of new electronic sources in education. Thus, on October 25, 2016, the Presidency of the Council for Strategic Development and Priority Projects approved the project on "Modern Digital Educational Environment in the Russian Federation" (Government of RF, 2016), which clarified educational objectives as well as the ways of how to implement them. One of the priorities of this project is the development of online courses and mobile applications, which will improve the level of knowledge among different categories of citizens. As a result, open-source software has been created to improve the quality of online learning. Moreover, more than 10,000 teachers and experts were involved in informing and teaching citizens. In 2018, it was intended to create the conditions for systemic improvement in the quality of education and continuing education by developing applications and online courses, the results of which have already been noticed by experts in education. At the moment, the number of students of different categories (schoolchildren, students, undergraduates, graduate students, etc.) is about 8,800,000 people. According to the project managers, in 2025 the number of educational organizations studying online will reach 11 million people. Moreover, the state is actively supporting projects aimed at transforming the existing system of education and innovation (Lizunkov et al., 2018).

The market for educational mobile applications is quite heterogeneous, and this is due to the variety of needs on the part of users. The main segments of the market of educational mobile applications are preschool and school education, higher and secondary vocational education, additional vocational education, MOOC (massive open online courses) platforms, language education.

Table 3 reflects the market share of educational applications covering most of Russia and the world in 2019, stated in %.

Table 03. Market shares of key players in the educational applications market in Russia and in the world

Company	In Russia	In the world
Photomath	8%	6%
Duolingo	13%	20%
Math learner	4%	5%
Kahoot	5%	7%
TedTalks	6%	15%
State exams preparations	9%	8% (alternative applications)
Quizlet	4%	3%
LinguaLeo	3%	4%
Company	In Russia	In the world

Source: App Annie report. Retrieved from <https://www.appannie.com/ru/>

It is worth noting that applications that teach foreign languages, as well as train skills in order to prepare for exams, consolidate knowledge, test themselves and more are in great demand. Many people also prefer to attend online courses, educational content events. This is due to the fact that first of all people spend less time attending the classes themselves (you don't have to go somewhere), and secondly, the organizational part is eliminated.

Among the applications and platforms that organize educational online meetings, we can highlight such as TimePad, Event 4science, Lomonosov, Eventboost, Eventicious, Clickmeeting and many others. Each of them has a certain set of features that attract smartphone users. For example, with the help of TimePad, you can create an event page and pre-register a huge number of participants. At the same time, the application has a built-in function of informing participants by e-mail after their registration about the event. ClickMeeting is convenient due to the fact that during the webinar, the users in the online chat can ask questions, as well as with the consent of the webinar host they can participate in the webinar via webcam. ClickMeeting also provides for the use of a whiteboard on which you can place information in the form of a presentation.

6.2. Key characteristics of the new mobile app

Digitalization puts forward new requirements for the ideal portrait of a person. In this regard, the ways and methods of functioning of various industries and activities are changing. The same is happening in education. It takes more knowledge, more information resources to increase people's adaptation response to rapidly changing conditions. In the age of globalization, the exchange of information between institutions of different countries plays an equally important role. This paper presents one of the solutions to the above problems – the development of a mobile application.

The essence of this application is to enable people to organize and watch scientific online events at the international level, as well as provide users of the application with additional useful features, which will be further described. Despite the fact that people have an increasing number of opportunities, not everyone has a chance to attend scientific conferences, forums, lectures, take online courses abroad. The application is designed primarily to organize, as well as view this kind of events using the online platform. Since not only Russian but also foreign representatives of public authorities are interested in providing the population with a high level of education, this project will be relevant. First of all, in

addition to the fact that the organizer himself will conduct the event using the broadcast camera, there will also be a built-in function that would allow any of the participants to join the online chat. In addition, when registering for the event, the webinar participant will be able to choose the language into which the speaker's speech will be translated if the event is held in another language. The translation will be broadcast simultaneously (either with subtitles or with voice translation - at the participant's choice). Educational institutions of different countries, companies implementing their activities in different areas will be able to organize conferences on their behalf, which will allow a huge number of people to take part in them. However, to avoid technical problems, only pre-registered users can participate in the event. Each user will have his personal account, which contains a database about this user: name, category of student/teacher/other, place of study/work, e-mail, phone number and other data at the request of the registering user. During any educational event (whether it is a seminar, conference, forum, online course), the speaker of the online event will be provided with a presentation board, folders for attaching files for viewing by other participants of the event, as well as the access to the common chat.

For additional convenience, the application will have a built-in messenger, due to which you can communicate with other participants at any time. This feature is a priority over competing applications for organizing online events.

In addition to the ability to organize or view online events, communicate with other participants, the users will also be able to post personal articles, research papers and the like on their page. If the user is interested in finding the like-minded people, he will be able to use links called hashtags, clicking on which you can find the records of other users on certain topics. Also, with the help of the search engine, it will be possible to find the University or any other educational institution/company of interest, on the page of which the themes of conferences and online courses will be posted. In order to stay up to date with all the events on the page of the educational organization or company of interest, the user can enable news notification mode.

Of course, when introducing a new product to the market there are risks and threats that should be taken into account for further implementation. Table 4 presents the results of the SWOT analysis of the project to create a new mobile application.

Table 04. SWOT-analysis of the project for the implementation of a new mobile application

Strengths	Weaknesses
<ul style="list-style-type: none"> - Resource focused on a wide range of consumers - Own search algorithms, ranking bases - Multi-functionality of the application - Easy to use mobile application - The novelty of the ideas and suggestions 	<ul style="list-style-type: none"> - Low detection rate of new content - The need to use advertising to monetize the application - Technical difficulties in the implementation of the project - High requirements for the skill level of employees, their incompetence in highly specialized aspects of working on a mobile app
Opportunities	Threats
<ul style="list-style-type: none"> - Entering the mobile platform market - Interaction with well-known educational organizations around the world - Interaction with the public sector - Interaction with publishing organizations 	<ul style="list-style-type: none"> - Borrowing the concept by other developers - Emergence of a strong competitor in the market - The need to attract additional funding - Failure of educational institutions to interact with app developers

Source: authors' elaboration

Thus, on the basis of the SWOT analysis, the main risks and threats that may arise during the implementation of the business idea, as well as the opportunities, strengths and weaknesses of the project were identified (Trachuk & Linder, 2015):

- the strengths of the business idea are: its demand among different categories of people, which will further contribute to the expansion of the functionality of the application, the ease of use and lack of analogues in the market (an application that includes a set of a large number of functions), versatility
- the weaknesses of the business idea are: first of all, the need to use advertising, which repels many users when using the application, technical problems that may occur
- the possibility of interaction with educational organizations and public sectors of different countries will contribute to improving the rating and status of the application, which will have a positive impact on its promotion
- the threats that may arise in the development of the project are primarily due to the fact that the proposed idea can be borrowed by other developers, or there will be a strong competitor, as well as the fact that educational organizations might refuse to interact with the developers of the application, which can lead to a complete loss of the main essence of the project.

7. Conclusion

Education is one of the most important stages in the long process of people socialization. A person receives the necessary knowledge that helps him to perceive the environment and respond to external influences. The world is developing faster and faster, and it is very important to be able to adapt to these new conditions as quickly. Currently, the education system is amenable to radical changes (Suzdalova et al., 2017). New methods and technologies for obtaining information, as well as tools and sales channels are used. Modern states have started to look for new ways to perfection. To do this, they produce robots that are studying the exact and natural sciences, are trying to develop artificial intelligence and do many more things.

Thus, in this paper, an attempt was made to analyze the situation on the market of educational mobile applications and predict the course of further market participants not only in Russia but also abroad, as well as to identify business opportunities for the implementation of the project on the development of educational mobile applications. The strongest players in the market of educational mobile applications are primarily the United States, Japan, China and Germany. The market of educational mobile applications is increasingly in demand, and it is expected that the share of educational mobile applications in the market in the near future will be on the increase, which can contribute to the emergence of new leaders in the market under consideration.

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