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ANALYSIS OF THE POSSIBILITIES OF INTRODUCING INNOVATIVE METHODS OF COLLECTING AND PROCESSING MEDICAL DATA INTO A MEDICAL MARKET IN RUSSIA

-AN EXAMPLE OF THE US COMPANY BECARE LINK LLC



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The markets of medical supplies and medical technologies aimed for treatment and prevention of many sicknesses is growing. BeCare Link LLC is a healthcare innovative company from the US which successfully created a product which may help elderly people and benefit from this situation.

The purpose of the thesis is to analyze and project the existing company BeCare Link, its values, achievement, mission and products into a Russian innovation and healthcare markets. Find out what are the entry barriers, how developed Russian market is for this kind of innovations.

The main objective of my thesis work is to analyze the Russian market of innovation and healthcare and analyze how well they support each other today when the healthcare market is booming and the trend for innovations and new products in the medical field is growing every day. For the last years this topic was highly demanded and relevant and became even more. For these reasons I am hopeful to present my results to the BeCare Link company and offer them a proper analysis for their further growth and for the possible solutions and decision in my home country for the development of innovation and healthcare markets.

The results of the work include certain margins for the BeCare Link's strategy of expansion onto a Russian market as well as the advice on the improvement of the market's conditions itself. This research gives a detailed estimation of the Russian medical market and serves as a basis for further researches and conclusions about its potential on the innovation field.

KEYWORDS: technologies, data, analysis, healthcare, medicine, market, Russia.

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1. INTRODUCTION

1.1 Background

As the world population grows one of the main ongoing trends in the market is the aging population. After the baby boom in the last century the number of elderly people at the moment is relatively large. The fact that number of elderly people around the world increases, more money government spends on healthcare issues such as insurances, medical supplies and the improvement of the medical facilities for the proper treatment of the sicknesses related to aging factor. In addition to that, the market of medical supplies and medical technologies aimed for treatment and prevention of many sicknesses is growing.

More than 75% of the patients are expected to use medical digital technologies by the year 2025 and the age of the people who use them is also increasing. (Grand View Research, 2017) The global Personal Emergency Response Systems market is estimated to reach USD 11.1 billion by 2025 According to report by Grand View Research increasing incidence of Alzheimer's disease and rising life expectancy are estimated to boost the market for Medical alert systems. Furthermore, the elderly is more prone to falls, and according to a study, 50% of seniors aged 80 years and 30% of seniors aged 65 fall every year. In addition, those suffering from diseases such as epilepsy, Alzheimer's, Parkinson's, multiple sclerosis, and muscular dystrophy, are at a higher risk of falling. These are major factors that are estimated to drive the market. (Grand View Research, 2017) Moreover, increasing number of mergers and acquisitions by market players are also expected to accelerate growth.

I got to know this market and product during my visiting student program at New York University in The Unites States in 2017. During that period, I completed Professional Practical Training program at the BeCare Link LLC innovation technology start-up company that operated in the area of Medical Devices and was mainly targeting solutions and software for the assessment of such progressing sicknesses like massive Sclerosis or Alzheimer.

I gained the knowledge about the field of Medical Devices and learnt the way it operates in the US. I became very interested in it and started to research the ways how we could implement their services and products in the Russian market. I realized that the state of

the healthcare in my home country is not at its best and some incentives in innovation market and especially medical segment may affect it. I thought that the company where I did my internship could be a great example as an organization and a role model for the future Russian startups in the same field. At the end of my internship program at BeCare Link LLC I asked the CEO for permission to use the case company in my Research for my undergraduate program. He also agreed to answer all the questionnaires that I may provide and any questions that will interest me during my work on the thesis. (BeCare Link, 2018)

I lived in Russia my whole life and I now realize that my country has severe problems in healthcare. Here I want to provide some background information about the healthcare segment in Russia and explain how innovations at least in the private medical sector may stimulate the whole market for the further development and changes. The World Health Organization (WHO) recommends that for the medical industry each state should spend at least 6% of its GDP. (World Health Organization, 2014) However, at the moment, in Russia only 3.6% of GDP is spent on health, that is, almost half as much as necessary. On this indicator, Russia is at times inferior to Western European countries. In comparison: Holland spends 9.9% of GDP on its citizens' health, the USA - 8.1%. (World Health Organization, 2014)

Russian insurance system doesn't work properly when the money from the Government's healthcare budget is sent to the medical institution "following the patient" (amount of money equals the number of patients - this should stimulate competition between polyclinics and hospitals). Such system is undoubtedly good for small countries with a compact population distribution, but in Russia, where there are many sparsely populated areas, it leads to underfunding and the inevitable degradation of medicine in small towns and rural areas. (Mironov, 2017)

A successful implementation of innovative technology that BeCare Link LLC offers in the largest cities of Russia may stimulate medical market and show them an example of how Russian medical system may be better and that strategies and services that are being used in the developed countries can work in developing country as well.

The withdrawal of new products into an already established and sufficiently standardized market is a very complex and long process, especially when it comes to innovative technologies and the medical market, in particular. It is necessary to analyze Russian market, its characteristics, the processes of implementing innovative projects and

technologies, and to find out which instances and third-party companies or organizations are involved in this process. This analysis will allow the case company and its products to be projected to the Russian market, draw conclusions about the relevance and feasibility of such projects, and find the reasons for the results and provide recommendations for improving the situation, if any will be relevant and needed.

1.2 Case company

BeCare Link is an American medical technology company that works with two of the largest hospital systems in New York (Weil Cornell Medical College and Mount Sinai Hospital) to develop a new mobile standard for conducting diagnostic tests for patients with chronic diseases (neurodegenerative or autoimmune). These tests can be performed by either physician or by the patients themselves, and they are consistent with previous tests done in hospitals or doctors' offices, which are usually performed quarterly. By tracking the benefits and side effects of various therapies, in addition to collecting other important information, BeCare helps physicians evaluate the progression of the disease and the need to change the current treatments. This information will be enriched with other important quantitative and qualitative data on patients. For example, personal information, genomics, etc. And also, a periodic MRI, blood tests, etc. This information on I / O will be digitized, and managing a large amount of data will be key to increasing the likelihood of a successful outcome. An important idea that launched BeCare was that the technology of mobile and machine learning can greatly improve the diagnosis of multiple sclerosis. (BeCare Link, 2018)

1.3 Research purpose and objectives:

The purpose of the thesis is to analyze the potential of introducing BeCare Link's product to a Russian innovation and healthcare markets. Find out what are the entry barriers, identify how prepared Russian market is for adapting such innovations. Define and propose a possible strategy for the entry. The topic will be explored with the following questions:

- What are the current crucial problems in the Russian healthcare system?
- Which companies or organizations would be interested in this technology and how they would be ready to contribute?
- What is that main barrier for that product implementation?

2. LITERATURE REVIEW

The innovation process is a movement characterized by the constant dissemination of recent inventions, the emergence of new products and services and, as a result, the increase in the number of jobs. The interrelation of innovative projects in different sectors of the economy and market sectors is obvious. This can be seen in the example of the development of computer technology, which entailed the development of software, electronics and components. At the same time, the emergence of new equipment required the training of personnel (here innovations in the education sector were already required), and further developed computer technologies entered various sectors of material production and services. (Blum, 2016)

The government structures act as the main catalyst, accelerating and facilitating the flow of complex and interdependent innovation processes. Several important functions are assigned to the state mechanism. A vivid example is the financing of research, which is unattractive for private investors since it does not bring profit. The private sector often lacks sufficient incentives to invest in new technologies, as they are poorly researched and poorly projected. Business finances only a smaller part of the promising developments, since many new products are characterized by low demand from the buyer, and there is also a great chance of technology being intercepted by competitors. The government can help with additional incentives, such as tax and credit benefits, pay for and buy projects and their development. The state can normalize activities and establish rules, which is an excellent system for protecting the property rights of developments. The lack of protection mechanisms for enterprises engaged in the development of new technologies can lead to the interception of ideas by competitors and immediate exploitation. The policy of the state, in this case, is reduced to providing short-term advantages to the innovator organization, which are the right to single-handedly use the results of the invention for a certain period of time. (R.A., 2012)

The withdrawal of new products into a well-formed and sufficiently standardized market is a very complex and lengthy process, especially when it comes to innovative technologies and the medical market, in particular. To present the full picture, it is necessary to analyze two completely different medical markets, the US and Russia; compare their characteristics, the processes of realizing and implementing innovative projects and technologies, and find out which instances and third-party companies or

organizations are involved in this process. This analysis will allow the case company and its products to be projected onto the Russian market.

2.1 The United States Medical Market

In the 21st century the medical services market in the United States is one of the most developed in the world. Health-care has become so significant throughout the world that at this point in developed countries, the health sector employs more staff than in production. Healthcare has become the second most important source of new jobs in the US in recent decades, and healthcare expenditure has increased from less than 5% of GDP in 1960 to 17% of GDP at present. A common opinion links this long-term increase in costs to "the emergence, introduction and wide dissemination of new medical technologies and services". But this explanation is more confusing than explaining the situation. Most of the costs are not related to the treatment itself, but to maintaining health and caring for patients with diseases such as diabetes or heart disease. Other, sometimes fatal diseases, such as cancer and AIDS, have now become chronic diseases that can be treated for a long period of time. (Halpin, 2012)

The Budget Committee of the Congress periodically issues prognosis on health care expenditure in the next 75 years. The number of employees in the industry in the US exceeds 10 million people. By spending on medicine, the United States ranks first in the world-as in absolute figures (\$ 2.26 trillion, or \$ 7,439 per person) and in relative terms. Current forecasts predict that the total US spending on medicine will grow from 16% of GDP in 2015 to 25% in 2025, 37% in 2050 and 49% in 2082. In other countries, it is also projected that expenditure will continue to grow at a steady pace: in the European Union, aging is predicted to cause government spending to grow 4% between 2015 and 2050, while China expects even greater growth. One of the factors is the emergence of new knowledge, the other is the changing demand. In the UK, for example, the likelihood that an 80-year-old patient will have an operation to remove cataracts or coronary bypass surgery has doubled in comparison with 1990. (Halpin, 2012)

For several decades, people have tried to develop the desire to monitor their health, which coincided with the modern idea of a healthy lifestyle. In this situation, "restless healthy" have become an equivalent factor of pressure on health care, as well as the patients themselves. Fashion for health is a trend that is part of a large emerging industry that is busy caring for the welfare of people and maintaining them in this state of well-being so that people become more successful and functional with the help of gyms and

massage parlors, healthy food and etc. What is called positive elasticity of demand, helps to make a forecast about the increase in costs for such services. (R.A., 2012)

The United States is the only developed country in the world that does not guarantee its citizens an all-inclusive and all-embracing health insurance system. Despite the impressive achievements of American health care and the medical services system, millions of Americans are out of reach due to the rapid price increase. The US Census Bureau released data showing that 50.7 million people were uninsured in 2009, accounting for 17% of the total American population (Halfin, 2012).

Many economists and other specialists express their concern that so much of the gross domestic product is spent on health care. The United States ranks 1st in the world among the most expensive healthcare systems and only the 37th in terms of the level of rendering medical aid, the 72nd - in terms of the general level of health of the population. (Kurdzhiev, 2011)

For insurance, pharmaceutical and other companies working in the US healthcare system, this sphere is business, bringing high profits, but not realizing a social function. They try to block the reforms, citing various arguments against them, because they are afraid of new restrictions, worsening of the conditions of their activity and a decrease in incomes. The high commercialization of US healthcare generates distrust of reforms that are socially oriented. It is very difficult to break the resistance of these powerful and influential groups. (SPB Exchange, 2015)

In the United States, health insurance is any program that helps pay for medical costs, whether through private sources of insurance, social insurance or a social security program funded by the government. (SPB Exchange, 2015)

The US healthcare system is divided into Private Medicine (Health Insurance, Private Insurance) and Socialized Medicine (government Medicare, Medicaid programs). 84% of citizens have private health insurance, acquired independently or provided by the employer. Citizens who do not have private insurance are covered by government programs such as Medicare (insurance state program for people over 65) and Medicaid (insurance for Americans from poor families, people with disabilities, disabled people, pregnant women and children), as well as other programs of different states and local authorities for the poor population. (SPB Exchange, 2015)

Medical insurance is one of the privileges offered by many employers. As a rule, they are all the same, offer the same benefits to all employees or members of the group.

In the United States, individual insurance is almost entirely implemented through the provision of insurance benefits in the workplace. Most American workers, in addition to wages, receive a variety of benefits, which can be different for workers of one firm or different firms. The types and sizes of such benefits provided by different employers may vary significantly. (SPB Exchange, 2015)

It should be noted that insurance covers not all, but only a very limited list of medical services. There are not included, for example, the services of a dentist, ophthalmologist, pediatrician, and psychiatrist, etc. All-inclusive insurance can be afforded only by very rich people. (Municipal economy, 2015)

2.2 Russian Medical Market

In the context of accelerating the globalization of the global economy, increasing the competitiveness of the national economy becomes a prerequisite for maintaining the leading positions in the world market. The main driving factor is the development of innovative activities, which is based on the creation of new technologies, new products, methods and methods of development, and a more advanced scientific and technical base. Effective formation of the country's innovation policy contributes to the improvement of performance indicators in many areas of innovative products and technologies, the rational use of available resources and the expansion of the segment of high-tech products in the world market. Leading positions in 2015 in the rating for innovation development according to the GII are: Switzerland - 68.3%, Great Britain - 62.4%, Sweden - 62.4%, Netherlands - 61.6% and the USA - 60,1 %. Russia among the surveyed countries ranks 48th in the rating for innovative development (39.3%). According to Bloomberg research on the innovation index, Russia ranks 12th among the 50 countries surveyed with an indicator of 78.85%. (Kosmarova, 2016)

In the period from 2010 to 2013, there is a positive trend of indicators of the volume of innovative goods, works, and services in the extractive and processing industries in Russia. The growth for this period was 16.39%. In 2014, the share of innovative goods decreased by 0.3% compared to the previous year. In the development of communication, activities related to the use of computer technology and information technology, the share of innovative goods, works and services tend to change. From

2010 to 2011, the growth was 3.61%, and in 2012 there was a decrease - by 5.61%. In 2014, compared with the previous year, there has been a decrease in the share of innovative products in the field of information technology to 2.5%. From 2010 to 2011, Russia saw an increase in the number of organizations engaged in innovations (by 1.8%), and from 2012 to 2014 - a decrease in the share of organizations by 1.1%. In the period from 2010 to 2014, the share of organizations implementing innovations in Russia fell by 2.7%. (Kosmarova, 2016)

In 2015, compared with the previous year, there was an increase in the use of intellectual property in the field of inventions by 8.68%, for the development of databases - by 36.45%. The decrease in use is typical for the development of industrial samples by 0.54% and the topology of integrated circuits - by 16.67% (Kosmarova, 2016).

The volume of the medical market in Russia in 2016 exceeded 15 billion dollars and the segment of private medicine grew faster than others. Due to the reduced funding and quality of service in the public sector for private clinics, golden times have come - the growing demand has allowed them to earn more, reinvest profits in new directions and open new branches. (Businessstat, 2018)

Against the background of growing demand and the development of Internet technologies, dozens of startups appeared on the market, helping medical companies and individual doctors better understand the consumer, considering health, financial capabilities, and geographical location.

For several years, Russian companies have been living in conditions of falling demand from consumers. In 2016, the demand, according to the Federal State Statistics Service, fell by 5.9%. GDP also showed negative dynamics - minus 0.6%. In the black, there were basically those who are oriented to export and foreign exchange earnings. But at the same time, private medicine has gone up, working exclusively for the domestic Russian consumer. According to the agency BusinessStat, last year the medical market as a whole added 4.7% and crossed the bar to 2.2 trillion rubles. (Businessstat, 2018)

The volume of paid medical services increased from 425 billion in 2010 to 672 billion rubles in 2015. Although one can be treated for money in the state or shadow sectors, the maximum growth is provided by a legal commercial segment. (РБК, 2016)

But the main thing that pushes the consumer to apply to the private sector for medical services is the impossibility or unwillingness to receive these services in state institutions. High School of Economics in Moscow experts estimated that the government's consolidated expenditures on health care fell by 20% in 2016 compared to 2012. However, Unmet demand has led to a larger influx of customers in commercial medicine. Some players feel so good that they do not need additional funding. (РБК, 2016)

Since employers are trying to optimize costs, and in large companies and banks, reductions occur, the natural volume of volunteered health insurances decreases, and money - is saved only due to higher prices for insurance and purchases of individuals. (РБК, 2016)

Cash medicine, on the contrary, is gaining momentum - primarily due to the annual programs of the clinics themselves. The latter note the high demand for their programs: consumers, especially in the central regions, prefer to buy everything in the package.

In the market of commercial medicine, marginal industries are traditionally leading, first of all, the segment of dentistry, which, according to Global Reach Consulting, grew by 9% in 2015. The diagnostic segments are growing more dynamic than others (by 14% in 2015), cosmetology and aesthetic medicine. (GlobalReachConsulting, 2017)

The operating clinics open relevant departments to raise the average check and keep customers. For those who are engaged only in cosmetology, two strategies are viable today: either specialization on a narrow set of services, or complex service in a territory where there are no competitors yet.

Public spending on health in 2016 compared with 2014 decreased incomparable prices by 15%. From 2011 to 2015, doctors were reduced by 14%, beds - by 21%. The natural volume of the budgetary sector will continue to decline, including because of the transition to single-channel financing from the MHI funds.

According to the forecasts of the HSE, the expenses of the "MHIF Fund" will fall in 2017 by almost 5% at comparable prices. Inaccessibility of medical services will push consumers either to refuse treatment or to apply for paid internal or online consultation. New drugs and technologies increase the number of diagnoses that can be treated, shift diagnostics to earlier periods, reduce the impact of therapy on the body, and ultimately expand the range of potential patients. Artificial intelligence already helps to monitor, identify and prevent diseases at an early stage. (GlobalReachConsulting, 2017)

In addition to diagnostics, preventive and anti-aging medicine, 3D printing technologies are actively developing, from implants to organs. Simultaneously with technological solutions, online consultations are being introduced, which also help to expand the client audience. Russians are more serious about their own health. Fashion for a healthy lifestyle and caring for yourself has made consumers more conscious. The demand for medical services remains inelastic even in times of crisis, at least among wealthy citizens. (EY, 2017)

Companies are investing in their own promotion, informing patients about new medical opportunities and expanding the potential audience. Simultaneously, they launch numerous discounts and promotions, attracting customers who were not going to use the options, but subsequently found them interesting. It is interesting that medium-segment medical centers continue to use classical channels of promotion, while the same EMC has significantly reduced the cost of radio and TV in favor of Internet promotion over the past three years. (EY, 2017)

The EY poll in 2015 showed that most private medical organizations in Moscow and selected regions of Russia intend to invest more than 500 million rubles in business development, with 85% of the players intending to expand their network. The bulk of the funds were spent on the acquisition or construction of new clinics. (EY, 2017)

It is in the technological direction that medical startups are in demand (MedTech). Existing medical companies, considering their confident financial situation, are extremely interested in the introduction of technologies that allow for more effective contact with consumers or partners, provide an opportunity to learn more about the patient and, accordingly, provide him with the best treatment and additional services. (GlobalReachConsulting, 2017)

The specialization of demanded start-ups ranges from elementary virtual services to innovative analytics using large data. Here are just some vivid examples. Services that connect doctors with patients, medical companies - with potential partners, and specialists - with each other, in Russia, too, is enough: DocDoc, Ask the Doctor, My Doctor, and even Pet Doctor, which IBM invested in. At the largest players, the number of customers is close to one million. For example, as of May 2017, more than 750,000 people used the service to write to the doctor DocDoc. (GlobalReachConsulting, 2017)

The sites, which unite clinics and private specialists with equipment suppliers, are just beginning to appear in Russia. Online store Buyonet along with other players brought

the sale of material and equipment for dentistry online, actively uses Internet promotion and sees its future in creating a marketplace. The development of this segment in Russia seems to have been given a green light: on May 11, the government commission after long discussions approved the draft law on telemedicine. After accepting the document in the State Duma and approving the standards, doctors will be able to conduct consultations and consultations with the patient in a remote mode.

Telemedicine platforms have already been launched within the framework of the projects Pediatric 24/7, Online Doctor and Doctor at Work. Joint projects are also launched by other players: the MTS operator in conjunction with the network of private clinics of the Medsi, Yandex and Doc + doctor's services, Renaissance Insurance and the network of clinics Doctor next. Specialists working in telemedicine services do not yet provide certificates and do not prescribe treatment, but give recommendations, that is, they operate within the framework of legislation. While the law on telemedicine has not been finalized, companies are testing technology and are preparing for this boom. (Karakash, 2017)

Here, Russia follows the world trend: according to IHS analysts, by 2019 the world telemedicine market will reach almost \$ 44 billion, showing an average annual growth of 17.7%. New projects in this area continue to appear. (IHS, 2018)

Today's doctors have the opportunity not only to study deeply the various structures of the body but also to compare information with a huge array of historical data. And then, for example, to predict the course of the disease and the effectiveness of treatment even before the disease appeared in the body.

The complex technologies on the basis of machine learning and the analysis of large data become so much that there are startups that help you find and apply the right development.

A striking example is Kaggle - a non-core foreign payment platform for solving problems based on available data, where specialists from all over the world compete in the search for solutions within the framework of machine learning. Most of the cases there are precisely on medical tasks. In general, Healthcare is one of the hottest AI sectors (after Fintech), with artificial intelligence in medicine most often used in the segments of monitoring, diagnosis, and visualization of data. (Karakash, 2017)

Among the Russians, there are many experts in the field of artificial intelligence who are trying to create and develop companies abroad due to the availability of research and scientific resources (universities, accelerators, large companies, etc.), investments, and

also because of a more capacious market. For example, Anton Buzdin and Nikolai Borisov, together with the citizen of Canada, Alexander Zhavoronkov, founded the company Insilico Medicine, which develops artificial intelligence to create drugs, biomarkers, and research on the mechanisms of aging. (Karakash, 2017)

In addition to Insilico Medicine, VentureBeat noted four more promising start-ups at the junction of AI and medicine: Genetesis LLC (a three-dimensional card of the heart to identify cardiac arrest for 90 seconds), Lunit (software based on in-depth training and 3D imaging for diagnosing diseases), SigTuple (AI-platform for processing and analysis of visualized data in medicine), Bay Labs (data analysis of ultrasound diagnosis of the heart). (Karakash, 2017)

In Russia, a limited number of funds are invested in medical startups, many of which do not specialize in this direction. Below are examples of funds and projects in which they invested:

- Guard Capital (DocDoc, Doctor at Work, GetBetter).
- Prostor Capital (VitaPortal).
- Runa Capital (VitaPortal).
- Intel Capital (CardioDX).
- FREI (Cardiorhythm, UNIM Histology, MIR LLC and others).
- Maxfield Capital (Patients Know Best, Sensoplex and others).
- run-Net Holdings (Practo).
- Biofund RVK ("RTM Diagnostics", "Expat", "Semiotics").
- Altair Capital (Wealth).

It is noteworthy that for most funds investment in medical start-ups are coming from personal funds. The number of grants and business angels is also very limited.

The development of capital-intensive projects in Russia is possible within the framework of a large company, with the support of the state or a major game company. For example, Invitro founded 3D Bioprinting Solutions, a biotechnology research laboratory that develops and produces bioprinters and materials for 3D bioproducts.

RVC and "CSI Ventures" invested in the start-up "Brain Beat", developing a glucometer based on a bloodless measurement of blood sugar level. In case of success the startup plan to sell the foreign pharmaceutical company. (Karakash, 2017)

Federal Supervision in Health Care in Russia

Registration of medical products is a state procedure, the purpose of which is to allow the production of quality and safe products on the Russian market. Part 4 of Article 38 of the Federal Law of 21.11.2011 No. 323-FZ "On the fundamentals of protecting the health of citizens in the Russian Federation" established that the territory of the Russian Federation permits the treatment of medical devices registered in the order established by the Government of the Russian Federation, appointed by the federal executive body. The procedure for state registration was approved by the Decree of the Government of the Russian Federation No. 1416 of 27.12.2012 "On the curing of the Rules for the State Registration of Medical Products". (RosZdravNadzor, 2018)

Order of the Ministry of Health of Russia from 14.10.2013 № 737n approved the Administrative Regulations of the Federal Service for Supervision in the Healthcare Sector for the provision of a state service for the state registration of medical devices. (RosZdravNadzor, 2018)

For the implementation of the procedure for state registration of medical devices in accordance with the Rules for the State Registration of Medical Devices approved by the Resolution of the Government of the Russian Federation No. 1416 of 27.12.2012, it is necessary to obtain the following services:

Based on the results of a basic study of the markets in the US and Russia, it can be seen that their functioning is based on the same principle. The main differences are that the problems faced by health and innovation systems in Russia and the US are at different stages. The problems that exist in the American system stem from too much involvement of the private sector in medicine and because of the very high level of medical care. In Russia, the same problems are their reflection - too little interest in the private sector and low level of medicine in general. The problem, related to the lack of interest of medical institutions and insurance companies in innovations, takes place in both countries, but at the same time manifests itself more sharply in Russia. (Karakash, 2017)

In order to draw further conclusions about the applicability of BeCare Link's methods in the Russian market, it is necessary to analyze the company, its activities, and strategy, and to combine it with the knowledge gained about the structures of the US and Russian markets.

2.3. BeCare Link strategy and development

2.3.1 Organizational and economic characteristics of the company

BeCare Link is an American medical technology company that works with two of the largest hospital systems in New York (Weil Cornell Medical College and Mount Sinai Hospital) to develop a new mobile standard for conducting diagnostic tests for patients with chronic diseases (neurodegenerative or autoimmune). These tests can be performed by either physician or by the patients themselves, and they are consistent with previous tests done in hospitals or doctors' offices, which are usually performed quarterly. By tracking the benefits and side effects of various therapies, in addition to collecting other important information, BeCare helps physicians evaluate the progression of the disease and the need to change the current treatments. This information will be enriched with other important quantitative and qualitative data on patients. For example, personal information, genomics, etc. And also, a periodic MRI, blood tests, etc. This information on I / O will be digitized, and managing a large amount of data will be key to increasing the likelihood of a successful outcome. An important idea that launched BeCare was that the technology of mobile and machine learning can greatly improve the diagnosis of multiple sclerosis. (BeCare Link, 2018)

The current state of the art makes MS patients be examined by a qualified clinician through observation, which is carried out in a clinical institution. Patients usually see their doctors four times during the year. Patients with mild to moderate MS often have outbreaks, which are a short-term worsening of old symptoms or even new ones. These symptoms can be very mild or severe enough to interfere with a person's ability to function at home and at work. It would be of great benefit to these patients if these outbreaks could be diagnosed as early as possible and in a convenient place, preferably at home, which would allow the technology. In addition, the diagnosis of worsening of symptoms can be significantly improved if patient data can be collected once a week (and at home), and not only 4 or 5 times a year. BeCare's mobile solution will initially support the management of multiple sclerosis, but then BeCare will use a similar technology to support the management of various diseases in the future. (For example, Parkinson's disease, Alzheimer's disease, lung disease, and stroke). The BeCare platform receives results and performance data via a mobile device or other wearable sensors that are then stored in a cloud compatible with BeCare HIPPA for processing by machine learning and statistical methods. These results (together with data) are then provided to both physicians and patients via a dedicated website. (BeCare Link, 2018)

2.3.2 The value of BeCare

The unique value of BeCare results from a combination of sophisticated technology, patient-friendly delivery and a network of strategic participants in the medical facility. BeCare was launched as a collaborative effort between Larry Rubin, BeCare's CEO and Eric Attias, co-chairman of the NRF, which supports research into multiple sclerosis with established relationships with Weil Cornell Medical, Dr. Timothy Vartanyan, and Director of the Multiple Sclerosis Center, Judith Jaffe. in the New York-Presbyterian Hospital.

Using the partnership of NRF and the Weill Cornell College of Medicine (WCMC), and also working closely with Dr. Tim Vartanyan, who is the leading scientific physician at MS for the development of a mobile technology platform, BeCare has defined the standard of MS remote evaluation. BeCare has already begun a major clinical study with WCMC, which includes 150 patients with mild to moderate MS and 50-60 control subjects. Obstacles to the creation of this process are not only technological. The vast majority of medical technology startups never receive clinical testing of their product in large hospital systems because of the reluctance of the administration of hospitals and doctors to work with unidentified individuals. (BeCare Link, 2018)

2.3.3 BeCare business model

BeCare's business strategy is to work with medical experts to create a digital/mobile equivalent of standard diagnostic assessment tests. Specific results of measuring digital data should be confirmed by clinical trials. BeCare intends to create mobile applications that will also analyze the condition of patients with Alzheimer's disease, lung diseases, and stroke. The purpose of the BeCare Multiple Sclerosis Assessment app is to allow patients to conduct regular examinations and regular assessments of their condition. The BeCare MS application integrates with all operating systems Android and Apple. To test the appraisal estimates and Gold-Standard clinical evaluations, BeCare conducts a large-scale clinical study with the Weill Cornell Medical College (WCMC), which began in May 2017.

The duration of the clinical trial is determined by the time spent treating approximately 150 patients with MS and 50-60 control patients. A clinical trial requires a one-time visit for each subject, so that he has a standard EDSS test in the hospital, and that the clinician controls the patient who passes the test in an application that will be repeated about 7 times in the scatter to exclude the fact of memorizing the questions. The application collects data based on cognitive data and activity.

BeCare intends to quickly distribute the BeCare application for the MS community through several different channels:

1. Through partnerships with hospital networks, such as WCMC and Mt. Sinai.
2. Through the channels of social networks. BeCare develops a distribution channel through the famous social networking site MS (mycounterpane.com).
3. Through well-known organizations MS.
4. Through the game store google and iTunes.
5. Through Facebook groups (BeCare Link, 2018)

The innovation process covers the cycle from the emergence of ideas to their implementation in practice and consists of:

- 1) scientific study and data retrieval, such as new processes, systems and devices, new types of processing and production methods of technical subjects, new forms and methods of production management;
- 2) scientific research on how to develop new products, new technologies, new forms and methods of organizing production, as well as research related to experimental design and technological developments;
- 3) the creation and conduct of the necessary tests, which cover the experimental and leading industrial samples of new equipment, instruments, machines. (Shapagatov, 2016)

During the first stage of the innovation cycle, it is necessary to:

- 1) Collect information that covers technological changes in the market, innovations that came from R & D departments and marketing services in production departments. Examine and analyze the wishes, requirements and complaints that came from consumers in the sales apparatus of the enterprise, as well as from resellers and customers. Accumulate information about the permissible potential of the company in areas related to the development and implementation of new products.
- 2) Determine the types of risk, the levels of their impact on the expected result of production and innovation.
- 3) Collect and analyze information on target markets and possible options for their development, which are related to innovations. (Shapagatov, 2016)

2.3.4 Competitive environment

Although there are about 259,000 mobile applications, the market for mobile applications related to diseases is still growing because very few applications provide the functionality that users want.

Indeed, there are 7 submarket mobile applications for health:

- Education and awareness
- Helpline
- Diagnostic and treatment support
- Communication and training of health workers
- Tracking diseases and epidemics
- Remote monitoring and data collection

No application has yet become so widespread as other basic services available on smartphones, such as Google Maps or WhatsApp. Nevertheless, a recent PWC study shows that health is one of the three largest mobile trends for 2016, based on the fact that users' confidence in applications as a whole continues to grow. BeCare has good prospects, as every day remote access and the possibility of remote implementation of activities grows and evokes more and more interest. Currently, 43% of Americans are interested in an application that manages a personal problem or state of health. (BeCare Link, 2018)

Three groups are trying to get a higher market share in the mHealth industry:

- Traditional innovators: pharmaceutical companies, hospitals and medical companies, such as GE Healthcare, Siemens, Medtronic, and Philips.
- Acting players: traditional players in the field, such as insurers, pharmacy managers (who buy drugs in bulk) and health care systems with a single carrier, such as the NHS in the UK.
- Technological giants: Google, Amazon and other technology firms.

BeCare technology is currently clinically confirmed in cooperation with the Weill Cornell hospital. The study included about 200 subjects (150 patients with MS), which was completed by October 2017. (BeCare Link, 2018) The data of all these patients are stored in their own cloud, compatible with HIPPA, which supports an analytical set of statistical tools and is accessible to physicians via a web interface or mobile interface. Since BeCare Link registers many patients on its platform, the test data stored in the BeCare cloud can be used to identify information about the doses of the drug, the course of the disease and treatment options.

The current state of patients with worsening symptoms is that they must personally contact the treating doctor for diagnosis and treatment, while BeCare App solutions can offer patients much faster access to treatment with telemedicine advice. (BeCare Link, 2018)

The BeCare App data is obtained from wearable or mobile device sensors by which patients undergo tests, and, combined with such additional information as drug doses and other clinical measurements, allow doctors to diagnose or change drug therapy more quickly.

Many countries (including the US) are beginning to introduce payments to providers that can demonstrate a reduction in the cost of using health care. If BeCare technology reduces the cost of treatment by only 5% (for example, for remote diagnostics as a telemedicine study), then this is an annual savings of \$ 200 million. The US (200 million US dollars) per year.

In the United States, accountable care organizations (ACOs) have been established to improve patient care and reduce costs. In particular, Medicare-focused on ACOs as the main device for improving quality and reducing costs. While the United States spends much more on health than any other country. ACOs are usually associated with large hospital systems that are business clients of BeCare. If BeCare can capture 2% of this savings, it will be 4 million annual revenue for saving MS funds. (BeCare Link, 2018)

In the creation of innovative technology, BeCare used all the opportunities that the US provided to it. Clinical studies in, ready to support the development of medicine, hospitals, and clinics. Conducting trial testing in medical universities, which often consider it an honor to participate in pro-progressive start-ups. The company received support from leading research medical centers in New York. At the same time, the whole company had only its own investments and had no other investors. The US market and innovation policy encourages innovations and makes them possible, albeit through a long and thorny path, and provides support from theoretically interesting structures.

In order to draw conclusions about how the methods and strategy of BeCare Link LLC are feasible in Russia, it is necessary to conduct a detailed analysis of the Russian medical market. (BeCare Link, 2018)

2.4 Characteristics of new technologies on the market

The introduction of innovations has now become the main condition for the sustainable operation of enterprises, especially in the context of globalization of the economy. The preservation of high competitiveness is achieved today through the identification, evaluation, and use of intellectual capital. Firms achieve profits through the exploitation of intellectual property, which allows for its monopoly use (on the basis of exclusive rights) to dictate in the market its pricing policy for unique products and technologies. (Ustinova, 2009)

Over the past years, there have been changes in the science-intensive industry, branch science, investment and production of industrial consumer goods, where the level of production has fallen many times. The formation of mechanisms for the promotion of Russian goods and services, unique developments in the world markets should be an important step in the economic development of the country. (Ustinova, 2009)

For the successful promotion of technologies on the market, special organizational structures at the federal and regional levels are needed, professional organizations that solve the tasks of promoting innovation. In the newly created structures for managing the promotion of technologies, new specialists with knowledge of the market who have the experience of communications on the international market should work. Knowledge of the information, analytics, the ability to quickly make managerial decisions, contacts at the international level with commercialization centers and official communications will allow to effectively introduce new developments to the market. The tasks of the new structural units are:

- study of market situations, analysis of market needs;
- study of databases of high technologies, replenishment of knowledge bases;
- access to the international level, presentation of a new product at international exhibitions;
- search for stakeholders who promote technology;
- development of the processes of launching new technologies into business processes;
- creation of mechanisms for the maintenance of technologies in the system of business processes;
- market assessment of technologies and comparative analysis with known technologies;
- the formation of new market segments, new zones, free of competition - the application of the experience of the "blue ocean" strategies. (Ustinova, 2009)

To stimulate innovative activity of industrial enterprises and stimulate developers of intellectual products, it is necessary: to stimulate the achievement of high results of efficiency - within the framework of budgetary financing, to train specialists in technologies and the specifics of developing products at the international level, to determine the responsibility of department heads at all hierarchy levels, connected with innovative activity. The main attention should be paid to the creation and promotion of high-tech products in the sphere of production, this will create a basis for the production and promotion of all products on the market for any enterprise. (Glazyev, 2007)

Enterprises after the implementation of a scientific project and the receipt of unique results, the acquisition of a patent, it is necessary to set the task of promoting such development to the external market. The creation of an innovative infrastructure in Russia: financial, production and technological, personnel and expert-consulting will create positive conditions for the commercialization of developments.

Specialists creating new developments need to work together with specialists in the field of innovation management, marketing, logistics. (Kokurin, 2009)

In highly developed countries, the use of valuable knowledge and products of intellectual labor makes up 70% of GNP in post-industrial economies. In Russia, the creation of science-intensive products and its launch on the market is an important direction for the country's economic recovery. (Glazyev, 2007)

Examples of successful organization of technology withdrawal to the market are the British Technology Group (UK) and the government agency ANVAR (France). Their activities are aimed at providing all-round support to creators of intellectual products, maximizing the identification and consolidation of their protection of capable rights with the subsequent distribution of revenues from joint commercial implementation of technological achievements among all participants in the process of their creation, from organizing funding R & D to promoting their results to to the end user. (Glazyev, 2007)

In Russia, many enterprises do not have sufficient financing, there is no innovative policy, there are no trained specialists in the field of marketing of unique technologies, commercialization of business. Therefore, the presence of high innovation potential in individual enterprises does not contribute to the withdrawal of their products to the world market. (Kokurin, 2009) Real ways of entering innovation in the new conditions of intensive development are the design of technology as a promising innovative business project, tracking favorable situations in the high-tech manufacturing sector, and using the services of business incubators.

When analyzing various segments of the world market, the value relationship of consumers to new products or technologies is revealed. Consider the mentality and specifics of the perception of a new product in selected segments of the market, the response to price parameters and the requirements for quality and service services. Assess the costs of pro-movement of products, develop strategies for promotion. (Guydaenko, 2006)

Innovative projects should be promoted by special experts-analysts and marketing experts of innovations. In Europe, such specialists are called "drivers" of innovative projects that have the relevant knowledge and experience. In Russia, it is also necessary to train such specialists. It also requires the creation of a working group on international cooperation in the sphere of innovative technologies from representatives of federal executive bodies. (Guydaenko, 2006)

Many industrial enterprises find themselves in conditions when they have to choose which kind of marketing strategy will be most effective when promoting their goods or services. Depending on what strategy will be implemented, the level of costs for industrial or consumer advertising, for conducting business negotiations, for communication and logistics will be determined. Criteria, in this case, can serve as the size of demand and the intensity of competition, the degree of availability of trade intermediaries for the manufacturing company and the level of costs for their services, the inability of barriers to entry into the market, it is important the ratio of consumers to sources of information, interesting for comparing the ratio: the price of goods and the income of final consumers. Consequently, for the successful conclusion of high-tech developments on the world market, it is necessary to pursue a state policy aimed at increasing the investment attractiveness of industries, supporting Russian producers of unique products, and promoting the promotion of products both on the domestic and global markets.

It is also important to develop the intellectual potential in the field of high technology. It is necessary to train specialists of the new profile, technological brokers who have knowledge of the market and the specifics of the formation of the value relationship of investors and consumers to the enterprise's products. (Ustinova, 2009)

In order to identify the problems associated with the process of the withdrawal of such products to the Russian market, and to assess the extent to which the company's methods are suitable for it, it is necessary to conduct a partial analysis of the medical services market in St. Petersburg (as a local example). Part of the analysis is due to the

fact that the product that is the object of promotion in the new market is not a specific product, but its type is an innovative solution or innovative products in the medical field. Similar products can be broken into a very large number of types, for example - software or applications for people with progressive diseases, a device for remote response to emergencies, and so on. For each of these groups, there will be a volume of the market, the client base and other components of the marketing analysis. BeCare Link is interested in the state of the medical innovation market in general, as they work with a variety of products, and so far, they are only considering the prospect of introducing new technologies.

2.5 Medical market in Russia from the EY yearly report

In order to objectively assess the relevance of BeCare Link solutions for the Russian market, it is necessary to conduct an analysis of the market of medical services in Russia today and on their basis to draw a conclusion about how the company's products and their marketing strategy correspond to the current situation on the Russian market.

For this, the following indicators and parameters should be considered:

- Competitors
- Prices
- Possible marketing channels
- Market volume
- Consumer

Market capacity and market structure

Analyzing the statistics and growth trends in recent years can be said not only about the current state of the medical services market and VHI, but also the forecasts for the next few years. From 2012 to 2015, the private medical market increased by 60% with a weighted average growth rate of 15%. After that, it only slowed down and in 2017 was only 5%. The growth rate of DPS is even worse and amounts to 4-7% over the past 2 years. According to forecasts of analysts, this rate is planned to stay up until 2019. (EY, 2017)

Объем рынка медицинских услуг в РФ, 2012-2021 гг., млрд рублей



Figure 1 - The volume of the market of medical services in the Russian Federation (EY, 2017)

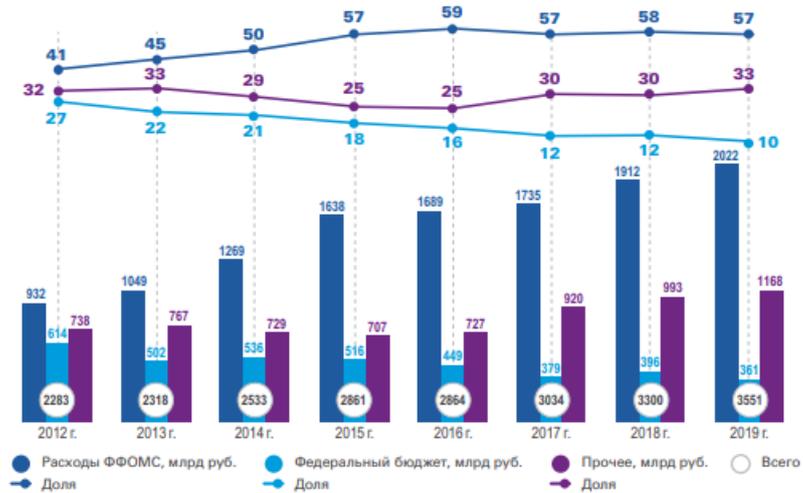
Структура рынка медицинских услуг в РФ, 2012-2021 гг.



Figure 2 - Structure of health services (EY, 2017)

As for spending on health, the share of the consolidated budget expenditures in the structure of health expenditure in the period under review has gradually decreased from 85% in 2012 to 81% in 2016, while the share of the private sector it has grown. (Ravilevich, 2016)

Структура расходов консолидированного бюджета РФ на здравоохранение, 2012–2019 гг.

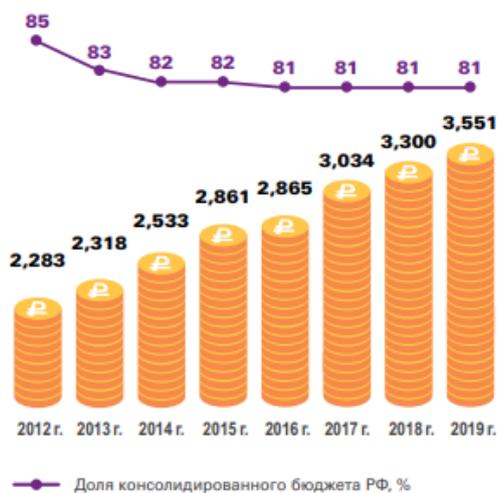


Источники: Федеральное казначейство, Федеральная служба государственной статистики, Министерство экономического развития РФ, ФФОМС, анализ КПМГ

Figure 3 - Structure of expenditure of the RF budget on health care (EY, 2017)

In October 2016, the Ministry of Health came forward with an initiative to increase the deductions for compulsory medical insurance from 5.1% to 5.9% from 2019. In December 2016, the Ministry of Finance proposed, on the contrary, to limit the growth rate of wages of health workers in 2017 (5.4% instead of 10.6%), and thus reduce the budget deficit of the MHIF, but in the State Duma of the Russian Federation this proposal support was not received. (EY, 2017)

Расходы консолидированного бюджета РФ, млрд руб.



Расходы частного сектора, млрд руб.



Figure 4 – Consolidated and private sectors expenditures

In the segment of MHI, concentration continues to grow as a result of the exit of small players from the market or their absorption by leading insurance medical organizations (SMOs).

The increase in the authorized capital of insurance medical organizations from 60 to 120 million rubles.

In nominal terms, the volume of VHI segment continued to grow in 2016, but the growth rate (6.7%) was below the growth rates of the LMC segment (9.1%) and the shadow sector (7.3%), which was the result of compression the quantitative demand for VHI and the desire to save on the part of policyholders choosing insurance programs with less coverage.

In general, we can say that the segment of VHI in its current form has reached saturation, since the increase in demand from large corporate clients in the absence of economic growth is not expected.

"Insurance companies save money. Previously, they were set up to help patients, and now - to resolve the problems associated with their losses. Their position for clinics: "Come to the level of cost, and then all patients are yours". (EY, 2017)

In the foreseeable future, there will continue a trend of inflow of new patients into the LMC, mainly in the lower price segment, as a result of a further decrease in the availability of medical care in the MHI segment (especially in the primary sector, as a result of increased workload), and due to the reduction in insurance coverage within the framework of corporate VHI policies. (EY, 2017)

Consumers (patients)

About half of the respondents in 2016-2017 noted a decrease in the solvency of clients, which is why clients increasingly sought to save on medical services. The main criterion for customers was the price-quality ratio. Most of all, the decline in the desire to spend money on medical services and to visit medical institutions has manifested itself in the mass and business segments of paid medicine. In the premium segment of the market, this trend was mentioned less often.

One of the main preferences of the clients was the complexity of the services.

Спрос на медицинские услуги: основные тенденции в 2016-2017 годах



Figure 5 - Demand for health services

Consumers compare prices and choose cheaper options for basic services or laboratory research, and to solve specific problems and in difficult cases go to iconic specialists, including clinics of a higher price segment.

"The responsibility for their health in people is much higher. They spend less on luxuries and more on health. We can say that in 2016 more attention was paid to preventive medicine, in particular diagnostics ". (EY, 2017)

The study also noted that patients prefer personal visits to the doctor. In this case, patients have the desire to resolve the issue in the shortest possible time, with a minimum number of visits.

Patients turn to specialists of a narrow profile (some clinics identified the five most sought-after specializations), which distinguishes private medical organizations from state-shock, in which the primary reception of the therapist is required.

Also noted the proliferation of electronic devices for health monitoring (fitness bracelets, smart watches, etc.) and the desire of patients to integrate independent health monitoring with the services provided by the medical organization. (EY, 2017)

Используемые сервисы и технологии дистанционной коммуникации с пациентами



Figure 6 - Used services and technologies

Competition

Speaking about competition, the research participants stressed that "know-how in medicine is not, all clinics have the same equipment and the same services, the only difference is in the service and, possibly, in the cost of consumables." At the same time, respondents noted a high level of competition in the market of medical services in Moscow and a relatively low level in regions where there are not openly many private health care units open, and state health facilities often compete. (Radyuk, 2014)

Тенденции в работе конкурентов: распределение по сегментам



Figure 7 - Trends in the work of competitors

Research on telemedicine

July 29, 2017, Russian President Vladimir Putin signed a bill providing for the provision of medical assistance in the Russian Federation using telemedicine technologies. Disputes about the scope and types of telemedicine services were conducted long before the bill was submitted to the State Duma in May this year.

Skepticism in relation to telemedicine is explained by the fact that respondents, especially representatives of the medical community, do not believe in the possibility of remote diagnostics and consider significant risks associated with this practice. (EY, 2017)



Figure 8 – Relation to telemedicine

Examples of telemedicine:

service "second opinion";

- doctor's advice on the phone;
- communication with a doctor via chat on the site or with the help of monthly messengers;
- conducting remote consultations in the format of doctors' interaction among themselves (doctor's consultation).

Remote monitoring and control of indicators, rehabilitation. As perspective directions, 7% of respondents indicated the introduction of technologies for dynamic monitoring and monitoring of a particular parameter of the patient's health status with subsequent adjustment of therapy. Also, the participants of the research were interested in projects on remote control of rehabilitation at home.

Competition in the market makes it more profitable and pro-active. In an effort to master a larger market share, companies are developing, increasing productivity and qualifications, and quality of products. Companies strive to produce new products and new technologies in order to outstrip competitors. In this regard, the race to certify the technology of remote examination and patient testing pushed BeCare Link to accelerate

and quality development of technology. The interest of American private investors and the support of state research centers allowed them to freely conduct research without worrying about the lack of capital, and the continued financial support of medical institutions and the desire to promote products originating from insurance and pharmaceutical companies allowed to forecast a positive the trend of product growth in the market and build plans for expansion. (EY, 2017)

Comparing the statistical data of the research and the business plan and the company's marketing plan, it can be concluded that not all of their strategies and plans are implemented on the Russian market at the moment. The development of telemedicine at the moment is not a priority for state investment departments and does not inspire confidence in private investors, since the projects are mainly innovative in the market and imply a long-term investment. Nevertheless, the absence of large-scale competition guarantees freedom of activity for developers of such technologies and does not limit them to the market framework, the desire of patients to monitor their own health, save on doctors' visits and minimize the time spent on it are motivating factors for the implementation of similar projects.

The American healthcare system and the market of medical services are radically different from the Russian one. From the study it is clear that the difference lies not only in the general characteristics, but also in the principle of the work of medical institutions and all those who are associated with the promotion of innovative paid medical services - insurance companies, investors, certifying organizations and so on. From the theoretical research and information collected from representatives of the innovative and medical market in Russia, we can identify the following barriers faced by innovation companies or simply researchers in the development and implementation of innovations in the Russian medical market.

The respondents noted the following problems faced by their MoD:

- personnel problems;
- Problems of interaction with insurance companies;
- problems associated with patients;
- External threats. (Radyuk, 2014)



Figure 9 - Personnel problems

The two most acute problems of concern for research participants in the field of interaction with insurance companies are pricing policy and more frequent use of the franchise in VMI polls.

A number of clinics said that insurance companies demanded the conclusion of long-term contracts at fixed prices and because of the absence of other players in the insurance market in the region, the companies were forced to agree to such conditions.

Patients:

- low patient health culture;
- "patient extremism";
- insufficient number of patients;
- Imposing a negative attitude towards medical workers in the media.

Препятствия на пути развития телемедицины



Figure 10 - Obstacles to the development of telemedicine

Lack of legislative base.

This factor was called the main obstacle to the development of telemedicine in Russia 67% of respondents. They talked not only about the adoption of the law on telemedicine but also about the transparent methodology for choosing a doctor and protecting the rights of both the patient and the doctor. Almost 20% of the interviewed said that they are waiting for the provisions on telemedicine to be consolidated at the legislative level so that their clinic can start earning money on rendering services in this area.

At the same time, 7% of the participants in the study do not understand how the law on protection of personal data will operate in the framework of telemedicine.

High level of risks. Almost a quarter of respondents indicated a high level of risks associated with telemedicine. They were presented as risks associated with the qualifications of doctors and errors in the diagnosis and remote treatment, as well as probable complaints from patients that they refused to provide medical assistance when the remote diagnosis could not be performed.

The absurdity of the idea and the negative attitude of doctors. About 20% of respondents consider it impossible to remotely treat and abridging the very idea of telemedicine. At the same time, 11% noted the negative attitude of the medical community as one of the main obstacles to the development of telemedicine. Low level of awareness of the population. In the opinion of 15% of respondents, one of the main obstacles is the extremely low awareness of citizens and, as a consequence, their distrust of telemedicine.

Insufficient investment.

11% of respondents spoke about the insufficient volume of investment in telemedicine from the side of the state and private investors, as well as the unwillingness to invest in the future.

Investors and the state are ready to invest, state medical institutions are ready slowly and painfully, but to introduce innovations, large it-companies have rushed into the healthcare sector, because it is important and profitable, there are already young players in the market that are gradually rising, and there are even more talented startups using new technologies and organically occupying their chosen niche. In order for a breakthrough and universal scaling of local histories to happen, the market must be competitive and reach a certain critical mass. To do this, one must constantly search for new technological solutions, give young talented children access to data so that they can train on qualitative data sets, it is necessary to create an infrastructure for the growth of young specialists. (Emelyanenko, 2015)

3. RESEACRH METHODOLOGY

3.1 Questionnaire development

This research aims to present the structure of the Innovation and Healthcare market in Russia. Therefore, on the example of the case company I want to project an innovative technology of BeCare Link on the Russian market and theoretically analyze the process of its implementation, find the barriers and the reason for the appearance and provide possible solutions for those if they are possible.

Mixed methods have been used in this research. Using mostly qualitative data from literature review has been important to present an overall situation on the market, establish parties that may affect a new product implementation. Contacts with the representatives of the case company allowed me to collect data from the case company about matter related to their operations as well as getting the access to their inner-company documents such as business plans and financial reports. However, qualitative data was not sufficient to estimate two different markets especially in the comparison, therefore international statistics of the recent years have been used. In order to broaden the qualitative research a questionnaire was conducted, aiming for the specialists on the healthcare market. Five specialists from the different fields related to chronic diseases were contacted and 3 agreed to an interview: Dmitry Granov (Doctor of Medical Sciences, Professor, Corresponding Member of the Russian Academy of Sciences), Traiger Arkady Zeylikovich - Owner of the First Family Clinic and Parshin Vadim Pavlovich (Head - doctor of the First Family Clinic).

The main idea behind the interview was to contact people from different areas of the healthcare market. Researchers and scientists' minds and points of view were crucial in order to identify the state of the scientific base for innovative technologies in the chronic diseases area. Hospital doctors could have provided the knowledge about the patients behavior, their preference and relation to the telemedicine in general, as well as provide the information about the approximate quantity of the patients with diseases targeted by the product. Businessmen who run hospital line or have already developed or established any kind of business in the medical field could have helped with the knowledge about the economic perspective, they could have analyzed the economic state of the market and provide their estimations upon the possibility of introducing a new product (such as an app from BeCare Link) to the Russian market.

I have contacted representatives from each of that field and received a positive response from the most influential people on the Russian medical market from each of 3 areas. There were two options for the interview style: I could have sent them out a questionnaire or conduct an interview live with an audio recorder. First option could not fit in to the narrative of the research, since most of the questions are open-questions and it would be impossible to conduct a test style interview serving my purposes. Sending open-questions was not fitting as well, since people that I have contacted are extremely busy and simply wouldn't have time to write full answers to the provided questions. Therefore, the live interview version has been chosen and we have arranged an appointment with each of the respondents.

Questions for the interview have been created according to the findings from the literature review and followed the most important steps of the innovative medical product introduction. All of the questions have been approved by the CEO of the BeCare Link company to be fulfilling the current objectives of the company.

The questions were made to find out about the current state of technological support on Russian medical market and its readiness for implementing innovative technologies and based on the factors that are important for the innovations but are missing on the Russian market. In addition to that it was important to find out which companies would like to endorse that kind of innovations and which organizations are involved on the process of implementation:

- What are the current most important problems in the Russian health care system?
- Can innovations in the medical field cause changes for the better or are they a barrier?
- How well is the Russian medical market prepared for this kind of innovation?
- Which organizations can influence the results or will participate in the development and market launch process?
- Which companies or organizations would be interested in this technology and how could they participate / contribute?
- What is the main barrier to the implementation of this product?
- What tests or other procedures will technology have to go through to be ready for implementation?

The questionnaire has been implemented live with the representatives of the healthcare market and recorded. After that the qualitative data from the interview has been extracted

and combined with the data from the literature review. Interview raw content could be found in Appendix A.

3.2 Reliability and validity

The questionnaire has been conducted live in person and recorded with a notification that the name and the position of the person will be used in the research. Due to that reason a more broaden variety of the specialist has been taken and 2 out of 5 refused to give an interview. The fact that specialists who agreed knew about the terms increases the validity of the information they provided as well as their status and international certification.

Literature reviewed and the data from the company provided a great background in order to create questions that are important for the innovation on the healthcare market in Russia and focus on the problems which Russian healthcare market faces.

Specialists have been chosen in different fields of the healthcare market which increased the diversity of their answers and allowed to analyze information in a more broaden way from the different areas such as Healthcare Business Management, Chronic Diseases Research and Hospitality.

The correlation of the statistics research from the international company with the interview conducted with certified specialists make a strong and valid point in the results and summary of the research, however, the lack of the quantitative data made it hard to provide any numerical conclusions and for the more exact results the deeper further analysis is required.

4. ANALYSIS AND FINDINGS

The following data was collected from the leading representatives of the medical sphere in St. Petersburg, such as Dmitry Granov (Doctor of Medical Sciences, Professor, Corresponding Member of the Russian Academy of Sciences). This information will allow using not only data from printed or Internet resources but also information obtained directly from people closely related to medicine and developments in it. Below are the key results of the interview, the questions of which were developed during the research and are shown in Appendix B, taken personally from highly qualified specialists. The

results of the interview are reflected in Appendix B. The interview has been created and conducted by Kirill Ilin, author of the thesis.

In order to objectively assess the relevance of BeCare Link solutions for the Russian market, it is necessary to conduct an analysis of the market of medical services in Russia today and on their basis to draw a conclusion about how the company's products and their marketing strategy correspond to the current situation on the Russian market.

4.1 Questionnaire analysis and results

Dmitry Granov (Doctor of Medical Sciences, Professor, Corresponding Member of the Russian Academy of Sciences)

From the scientist's point of view the market is ready for the telemedicine innovation especially in the field of chronic progressing diseases. He is positive about the fact that they may not only benefit doctors and scientists but medical institutions as well, since they make the process of diagnosis a lot faster and easier for both parties. He is aware about the digitalization and implies that those innovations are extremely important for the global development of the industry. Among the barriers he mentions a very long period of development, since currently the market of telemedicine in Russia is almost empty and there is no basis for the creation of innovations. In addition, he mentions the overall stagnation of the market due to the lack of innovations and investments. In his opinion the only way to implement innovations faster is by the government's ordering.

This prediction coordinate with BeCare Link strategy since they do not have to develop the technology from the beginning in the country of export which will save them a lot of funds and time. The fact of the emptiness of the telemedicine market serves as a benefit and as well as the potential threat. The limited number of digital products results in a low trust rate from the customer who prefer more traditional ways of treatment and assessment. However, the lack of the competitors on the market allows BeCare Link to dictate their own policy and provide unique products to the new market.

Parshin Vadim Pavlovich (Chief medical officer of the First Family Clinic)

Chief medical officer presented skepticism for the development of innovative medical technologies inside the country. Due to the lack of investments from the private sector the only possibility for that is the government's order. He also mentions that the care for the patients with progressing diseases in the country is not on the proper level and

doctors don't try to treat such diseases but to remain patients stable. In his opinion, such technology appears to be too complex for the Russian market since there is no basis for it.

This information works mostly against the introduction of such complex and modern technology as BeCare Link provides to the Russian market, since it basically might not find its niche. In order to minimize that risk, it is necessary for the company not to only present it for the market as a product but to provide it through large certified hospitals or research center which might endorse that kind of innovation due to the lack of the products on the market from the beginning. BeCare should build a strong basis for their introduction with trusted third-parties that would benefit from promoting their innovation.

Traiger Arkady Zeylikovich - Owner of the First Family Clinic

As the owner of the clinic, respondent concerns practical aspects of the innovation and implies that the telemedicine market in Russia is empty at the moment. He implies that this type of innovation such as BeCare link product is very hard to implement and due to large risks many firms or clinics would not be interested to the big risks of such campaign. However, he mentions that some large centers in Moscow might be interested in endorsing that type of innovations. He mentions that the technology base in private clinics could support products from BeCare Link and the only issue is to ensure them that this product promises success.

The fact that private hospitals and research centers acquire the technological base for innovations works as an opportunity for BeCare Link, since they will be ready to implement the product and serve as an endorser. Since the success on one market makes it easier to assure companies in the future success on another one may make it possible for the company to find parties which will be interested in promoting and implementing their production. Therefore, BeCare Link should target large private hospitals with a suitable technology base that will make it possible to maintain their technology.

As a summary there are several aspects of the market that play a very important role in the potential BeCare Link Strategy for expansion. First of all, the emptiness of the Russian telemedicine market may serve as not only a strength but a threat. It certainly promises some freedom for the company's policy but also implies a lack of trust from the potential customers as well the promoting parties. Secondly, the deficit of the

technological basis of the whole country equalizes by the developed private sector which creates a point of interest for the company and should be the in focus when it comes to the promotion, testing and implementation of new technologies on the Russian market. Thirdly, the complexity of such innovation represents a certain risk for the success, since people will simply dismiss it due t the lack of trust. Perhaps, if it wouldn't be possible to find a promoting medical center or hospital for the product, Becare Link may consider presenting some technology that would be more intuitive and practically applicable for the market at its current state. It will build a certain trust rate and base for further technological improvement.

4.2 Recommendations for Improving the Process

Reforms are the main solutions identified in the study of problems. But not point-by-point by the principle "to find the decisive link, to pull for it - and everything will be resolved". We need a set of reforms aimed at all elements of health care. They must be thoughtful and complete.

To increase the effectiveness of the healthcare sector, specialists propose to develop a mechanism to stimulate competition between health professionals and medical institutions. It is required to create such a mechanism that will interest medical professionals in improving the quality of their services.

1) the creation of a database of doctors and their patients (who are constantly served by him). Such a system operates abroad, where public health services are free (USA), and allows to identify highly qualified doctors;

2) to provide financing for medical institutions for the effectiveness of the services they rendered. That is, the less a person carried through the walls of the hospital, and if he did not have a relapse of the disease, then the medical institution that assisted him will receive more funding than the others. This will allow not only to serve patients more efficiently but will also stimulate the introduction of technologies that accelerate the inspection process and so on.

3) it is necessary to change the organizational and legal form of medical institutions. Today they are all state. This means that the resulting financial results from their work go to the state shock: the surplus of money is taken away; the arising debts are extinguished. This situation demotivates medical institutions for relatively effective work. You should give them more freedom in activity;

4) should be a differentiated approach to the development of the health sector in different territories of the Russian Federation due to their unequal development. Somewhere it is

only necessary to improve the effectiveness of healthcare by promoting competition to improve the quality of medical services provided since there are medicines, equipment, and specialists necessary for the region (city). And somewhere, first, it is necessary to solve the problem of the shortage of medicines, medical equipment, specialists, and only then to introduce mechanisms to stimulate competition in the health sector.

Another way of developing competition is the use of modern information achievements in the field of health care. In particular, experts suggest the idea of creating a personalized database of individual accounts.

To attract funding and stimulate new developments, it is proposed to establish venture funds (with the participation of different capital), to allocate state grants for research. Business cooperation with universities and science cities begins.

The state needs to stimulate the innovative development of the entire economy in general and the healthcare sector in particular. As it was already noted earlier, in Russia there is practically no new development of medicines and medical equipment. To improve the situation, the state, first of all, needs to develop innovative infrastructure, change tax legislation (increasing tax incentives and introducing tax holidays for companies implementing new developments). Soon, the establishment of several scientific research institutes for scientific research in the field of medicine is planned. (Belovodski, 2010)

5.0 CONCLUSION

Summing up, the work carried out a basic analysis and investigation of trends in the innovation market and medical market in the US and Russia. Having received knowledge of the fundamentals and behavior of markets, BeCare Link was analyzed and its strategy of implementing innovative products in telemedicine in the US market. The result of this work was the analysis of the medical market in Russia, the results of which, combined with the knowledge from the first two sections, made it possible to draw final conclusions about the effectiveness of BeCare Link's strategy and methods in the Russian market.

Based on the results of the work done, it can be concluded that, despite the enormous volume of accumulated problems, changes in the Russian health care system are beginning to improve. The results of the conducted interviews made it possible to give basic qualitative advice to BeCare Link's approach to the Russian market and give an estimation of its potential.

But there is another serious problem that cannot be solved only by new ideas and funding. Experts do not distinguish this problem, but every person faces it. It is about the confidence of consumers in Russian medicines, medical equipment, doctors. And the reason for the above-mentioned problem lies precisely in those defects of the healthcare sphere, named in the work. In addition, even from Soviet times, people have the idea that all imported goods have better quality, characteristics, are safer than Russian counterparts (if any).

Lost trust is always very difficult to return. But if all the problems mentioned in the work are solved, if their solution is not stretched for a long time, then people will switch to domestic medicines and medical equipment, they will stop considering the maximum withdrawal of money from the patient as the main goal of the doctor. The number of days spent in hospitals will be reduced. Reduce mortality and increase life expectancy. All this will immediately have a positive impact on the country's economy. Only then it will be possible to say that the Russian health care system is effective.

Trying to predict which innovative directions will suit medicine in the next three to four years, Russian startups pay attention, first of all, to the United States. It is important to make an amendment to the Russian realities - a relatively low level of investment and a lack of infrastructure.

Market capacity and competition should be considered, existing projects that have already received or are eligible for funding, have a ready-made solution or prototype, an established customer base or access to limited resources - information, technology, and experts.

Summarizing the results of a survey of specialists, conducted by me personally and the statistical results of previous studies, one can judge the market's interest in innovations offered by BeCare Link. This is also indicated by the availability of initial developments in telemedicine, such as general databases and online recording at receptions. The software and the technological equipment need serious improvements for the reliable introduction of such technologies, but this requires a basic and global solution to the problem of investment in this area, the creation of funds, the replacement of the insurance company's operating systems and compulsory health insurance.

The development of technology for remote patient screening and innovative solutions, in general, is possible in Russia, but at this stage, the promotion of such projects, due to the lack of stable sources of investment, not too much market interest and a low level of trust in medical innovation can take a very large amount of time and resources without guarantees for the final success. The results of the research allow us to track the general trend of development of companies as BeCare Link in the Russian market and provide enough information for further study of this topic segmenting the market for different diseases and various types of technologies with a wide variety of applications.

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APPENDIX A

Dmitry Granov (Doctor of Medical Sciences, Professor, Corresponding Member of the Russian Academy of Sciences)

- To what extent are the technologies offered by BeCare Link in Russia currently developed?
- Let's assume the situation with the pathology of the breast. What is the key to improving the results? Improvement of drugs, multimodal and early diagnosis schemes. For early diagnosis, all cannot be done. How does the examination begin? With a survey and a direct inspection. This stage, with the help of programs (like BeCare Link), can be mechanized and standardized. Alzheimer's and sclerosis are very speculative diseases at the moment and on developments in their treatment they earn more money than they bring any results.
- How patients are ready to use the applications with standardized tests, instead of visiting the doctor?
- To date, this topic is rapidly developing. People use applications, on the phone, on computers, those people who want to live better and longer. This class of people increases. If you transfer this to organizational structures, then they too very much benefit from this, because the processes are optimized. The doctor wins from such optimizations, and with it a medical institution. At the moment the market is ready, but it is empty and not even due to any low computer hardware or software, because for such products (like BeCare Link) to come up and implement software for a medical institution would not be a big problem. This is not easy, but many institutions have such opportunities, but the path to this is very long. Private clinics themselves should be the most interested in such innovations, as they will allow companies to save a lot of money.
- What procedures should the products go through in order to get permission for use?
- For the production to be used, it is obliged to pass the survey in MINDDRIVE. A number of tests within the organization, licensing software and all equipment. For insurance companies, such projects are very unlikely to agree to sponsor similar projects. But if the companies are somehow connected with certain medical institutions, but their interests may include sponsoring such projects. Barriers - stagnation, inhibition, corruption. But, if - the state. order - then the process is very even feasible. Innovative products can provide an impetus for the global improvement of computer and operational support of medical institutions.

Parshin Vadim Pavlovich (Head - the doctor of the First Family Clinic)

- Who is involved in the development of innovative technologies in medicine?

- Ministry of Health and research institutes - for example Almazov Research Institute, Brain Institute, Geriatric Center. Development in any case passes through the Ministry of Health, which itself appoints developers.
- And if private companies have developed technology?
- Private clinics are engaged in applied things. Basically everything works through state and scientific orders. Very rarely, companies themselves are promoting some kind of development. Federal authorities basically make decisions about innovations. I can not imagine any private clinic that could implement such innovations.
- What procedures should the innovation go through?
- Testing and evaluation of the Ministry of Health. No private company can introduce its technology itself. After the development, they should give them to research and evaluation in higher instances of the Ministry of Health. Without the customer, research and development data have no meaning, since such an amount of investment simply does not have a sense for private traders. Need for implementation of such a technology. It is very unlikely that Russian private clinics will be ready to introduce new technologies, and are more focused on solving practical problems. Insurance companies are very unlikely to sponsor such developments, but perhaps large insurers may be interested. In most cases, patients in Russia, patients with multiple sclerosis and Alzheimer's are given to the city geriatric boarding house, which does not deal with treatment, but only monitors the patient. "Care", which provide similar institutions, is not enough.
- How interesting is the opening of dispensaries for private clinics with good care, updated?
- For private clinics, there should be a very good level of care in order to lure people financially. Still, I believe that this is the task of the state, and private clinics do not have such opportunities. Without a government order, such developments are almost impossible. The participation of private funds is required. The current situation in the country does not allow thinking about such developments in the near future.

Traiger Arkady Zeylikovich - Owner of the First Family Clinic

- There are specialized clinics for monitoring elderly people, for a lot of money.
- Is there such a situation, in which, a person with a sclerosis for example, is not in the institution, but lives at home, coming to the examination?
- Probably not. Hospitals in Russia are engaged in more practical things and diseases.
- And what about the technology of remote testing for any other diseases? How should the company operate?
- For such technologies in Russia, the market is zero. Not that even for such complex diseases, and even for the rank and file. The analysis depends on the specific market of

the sick. Without state participation, such a project in Russia would be virtually impossible. Sclerosis in Russia is not an insurance event. And insurance companies do not often pay trips to doctors for such reasons. Such cases are paid by the state. Insurance companies receive money from insurance of large companies, negotiate with medical institutions, set a price, and so on. Insurance companies are not particularly interested in working with new types of services. Maybe in Moscow, large companies could see some profit in this. In most cases in Russia at present the market is not very interested in people and innovations. In conditions of crisis, insurance companies are more interested in working "on the rolled-in".

- With financial success, private clinics would be interested in acquiring such a technology. The example application is 1bit. But for the development of such technology, a lot of money is needed. Databases of medical institutions in very good conditions. At large clinics, computer support is at the proper level, and it could provide support for such a technology. If there are technologies, there will be a system. The human mentality in Russia does not allow the rapid development of technology, since no one wants to be an innovator.