

Agile project management in telecommunications industry

Agile gestión de proyectos en la industria de las telecomunicaciones

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ABSTRACT:

The international community's development corresponds to the onset of the fourth industrial revolution. This is a qualitatively new stage of development. Telecommunications industry is one of the dynamic industries in the world. Products and services in this industry are changed very quickly. As the business of the telecommunications company develops, internal processes and technologies are at the center of attention. The company's success in a dynamically developing external environment is determined by the company's ability to adapt to rapidly changing market needs. Agile Project management as an approach allowing to form a business model that is the most effectively functioning in the modern telecommunications industry is analyzed. Examples of the implementation of the agile project management are considered. State and prospects of Russian telecommunications industry development are determined. Agile Project management is offered as a promising methodology of project management in Russian telecom. The development of the telecommunications sector to the world level is one of the priorities of the national economy.

Keywords: Agile Project management, telecommunications industry, scrum.

RESUMEN:

El desarrollo de la comunidad internacional corresponde al inicio de la cuarta revolución industrial. Se trata de una etapa de desarrollo cualitativamente nueva. La industria de las telecomunicaciones es una de las industrias dinámicas en el mundo. Los productos y servicios en esta industria se cambian muy rápidamente. A medida que el negocio de la empresa de telecomunicaciones se desarrolla, los procesos internos y las tecnologías están en el centro de atención. El éxito de la empresa en un entorno externo en desarrollo dinámico está determinado por la capacidad de la empresa para adaptarse a las cambiantes necesidades del mercado. Agile Gestión de proyectos como un enfoque que permite formar un modelo de negocio que es el más eficaz en el funcionamiento de la moderna industria de las telecomunicaciones se analiza. Se consideran ejemplos de la implementación de la gestión ágil del proyecto. Estado y las perspectivas de desarrollo de la industria de las telecomunicaciones de Rusia se determinan. Agile Gestión de proyectos se ofrece como una prometedora metodología de gestión de proyectos en las telecomunicaciones rusas. El desarrollo del sector de las telecomunicaciones a nivel mundial es una de las prioridades de la economía nacional.

Palabras clave: Agile Gestión de proyectos, industria

1. Introduction

The current development of the world community, characterized by the highest speed at which changes happen, their enormous scope and systemic nature of the effects, according to Schwab (2016) – the founder and President of the World Economic Forum in Davos, confirm the occurrence of the fourth industrial revolution. Touching all spheres of life, the telecommunications industry, which belongs to one of the most important sectors of the economy, which ensure the functioning of other industries and the state as a whole, receives a tangible impact. In the conditions of globalization of the world economy, acceleration of scientific and technological progress, increase of business activity of the society, expansion of connections at the national and international scale, the role of information is significantly increasing. The ongoing informatization of society puts new high demands on the quality and efficiency of telecommunications. As a result, information and telecommunication services could not effectively be distributed without a well-established governance mechanism. Thus, there is an urgent need to implement the agile project management methodology in this field, which can be effective in the face of increased uncertainty.

The theoretical and practical issues of agile project management development are explored by many scientists. Among them the following scholars are highlighted: J. Highsmith (2000, 2004), K. Schwaber (2002, 2003, 2004, 2007), J. Sutherland (2014), J. Goodpasture (2010), K. Hass (2007), C. Larman (2004). It is noteworthy that this methodology has received wide recognition abroad, both theoretical and practical levels. In contrast to the developed countries agile project management has not yet received sufficient development in Russia. Thus, the objective of the study is to analyze telecommunication industry from a position of implementing the methodology of agile management.

2. Methods

Agile project management (Highsmith, 2000; Balashova, 2014; Goodpasture, 2010; Hass, 2007; Larman, 2004; Cohn and Schwaber, 2003; Conforto and Amaral, 2010) becomes particularly relevant in the context of the formation of the fourth industrial revolution. This model is able to solve the most urgent problems for today, which consist of uncertainty and rapid changes in the business environment. Agile is a management strategy whose goal is to achieve a sustainable development by the company through adaptation to all kinds of unpredictable changes. Initially, the agile methodology has successfully proved itself in the field of information technologies. The aforementioned software development methodology succeeded in squeezing the traditional for this industry - the waterfall model. The essence of the agile system is based on the following fundamental principles:

- technical units in cooperation with the business department are located in an open area;
- test scripts are developed before programming stage;
- daily morning meetings with a brief discussion of the problems encountered;
- the development process consists of "sprints" (work cycles lasting from one to four weeks). The output of each cycle is the working code. The widely-known Deming cycle (PDCA) (Deming, 1982) underlies the logic of the algorithm of this process.

There are five stages of agile project management (Highsmith, 2004):

1. envision (how to determine the product vision, the project objectives and constraints, the project community and how the team work together);
2. speculate (developing an ability or feature based release plan to deliver on all aspects of the vision);
3. explore (planning and delivery project running tested stories in a short iteration, constantly

seeking to reduce the risk and uncertainty of the project);

4. adapt (reviewing the obtained results, the situation and the teams' performance and adapting as necessary);

5. close (concluding the project and passing on the key learning's').

So, agile project management can be defined as short cycles of product development that deliver product incremental updates rapidly based on the changing needs of the consumer. This methodology is the opposite to the well-known waterfall project management, which values extensive planning and preproduction.

The principle of functioning of agile methodology in IT sphere is transformed into its application in the most effective management strategy within the framework of the fourth industrial revolution. The main regularities of the mechanism for introducing and using the model under consideration, with an emphasis on the scale of activities and taking into account modern means of developing communications are preserved. Next, it is necessary to highlight a number of characteristic features of the agile project management:

- an extensive partner network of companies (with duplicate and complementary competences) and suppliers;
- multidisciplinary team of the main company;
- dual operating system, consisting of the synthesis of a classical hierarchical organizational structure and a dynamic network structure, designated by Kotter (2014), who is an outstanding specialist in the field of change management, as necessary to match modern organizations with the requirements of a rapidly changing business environment;
- wide application of cloud technologies for integration of interacting companies among themselves and with the external environment;
- high-tech industry is the most suitable sphere of application;
- avoiding multitasking;
- big data;
- high level of customization;
- rapid reconfiguration of labor and material resources;
- minimization of losses from possible, unexpected negative changes.

Thus, the main advantages of agile management include:

- cost reduction,
- quality improvement,
- just-in-time delivery,
- flexibility of internal processes.

3. Key research findings

3.1. Telecommunications industry

Information systems in the telecommunications industry are among the main means of production. The organization of services, processing of the data connected with them is carried out with the help of such IT solutions. The development of information systems in the telecommunications industry is characterized, on the one hand, by the need for rapid introduction of new services due to the high competition between telecommunications providers, on the other hand, by the complexity of integration into the existing information infrastructure and the by the high cost of errors due to large scales and volumes of the services provided.

The specifics of the development processes of information systems in the telecommunications industry determine the requirements for the management procedures of the corresponding projects for their development and modernization.

The main features of the IT infrastructure of the telecommunications industry:

1. high loading (high traffic volume, number of subscribers, complexity of implemented functionality) with limited budget;
2. high cost of error / system failure;
3. continuous cycle of production, provision of services, limited budget for innovations;
4. high-speed implementation and deployment of new functionality and depreciation of the existing with limited budget;
5. integration with many external IT systems, many business processes are affected.

Therefore, the requirements for project management are as follows:

1. managing the development of complex scalable systems consisting of multiple components;
2. increased requirements for the quality of products;
3. ensuring systematic iterative development without cardinal changes;
4. managing the development on the basis of decomposition of the functional architecture and on this basis localization and restriction of the introduced changes;
5. management of activities related to integration with external systems.

Thus, the requirements for project management methodologies, identified on the basis of an analysis of the IT infrastructure of the telecommunications industry, are reduced to the achievement of four operational performance:

- Cost (reduction);
- Quality (increase);
- Delivery (just-in-time);
- Flexibility.

Obviously, the main features of the agile project management meet adequately to requirements for project management in telecommunications industry and they are able to reach the target results.

3.2. Agile in telecommunications industry

Software development is one of the most important tasks in the course of doing projects for the development and implementation of information systems. Only actions at the levels of specialized processes, common services and application software can be attributed to the traditional development of software solutions. Actions at the application adaptation level are aimed at adapting existing solutions to the user's needs, so to implement them, flexible approaches that do not involve long preparatory procedures and that allow the application of principles of rapid application development are advisable to apply. The agile software development methodology is one of the most common concepts. Agile is advisable to apply in projects of varying complexity and scale. This approach is based on incremental planning of development processes, where the scope of tasks is specified as the project progresses, the creation of accompanying artifacts is not the task of such a project. These features of the methodology greatly complicate the long-term planning and subsequent maintenance, therefore the agile approach is advisable to apply for small tasks, ensuring, at an acceptable quality, minimum time and cost of development. Thus, the management of the development of complex information systems occurs due to the decomposition of complex objects into relatively independent parts and components.

Many abroad telecommunications companies use agile project management. For example, TechCore Inc., by creating a product backlog this allowed the company to see that revenue could be made by focusing attention on product development. Within 4 months of implementing one of the methods of agile project management – scrum (Schwaber and Beedle, 2002; Schwaber, 2007; Sutherland, 2014), TechCore had achieved its goals and the its prospects had improved. Before the implementation of scrum, TechCore had day log review meetings where the manager would impart his knowledge and direction to the development engineers. These meeting often went off track taking up the full team's day. With scrum the manager got involved in daily scrum meetings, with this they identified that teams weren't taking and individual problems were holding up the project. The scrum meetings also highlighted supply chain problems where engineers were waiting for component deliveries. When this problem was identified the project manager employed two junior engineers to work with supply chain to identify and source components as quick as possible so there was no delay to the project and it liberated senior engineers time from dealing with these smaller matters (Schwaber, 2004).

The next one is TelecomAustralia. In 2012, Australian large telecom provider embarked on a journey to build a next generation telecom billing and ordering capabilities, thus it began agile-transformation. The main problem in project management was a simple overall definition of done, because of the different technologies in different requirement areas each of the areas had their own definition of done relevant to that technology. As a result, TelecomAustralia enabled the teams to work in a highly-coordinated fashion to refine the features for the next sprints and excellent transparency of the work at all levels; a highly skilled group and good inter-team coordination and bonding was created; simple flexibility and the principled approach provided by agile method - scrum enabled the teams to adapt and develop the practices and processes to suit the context.

In 2014 Vodafone Turkey, founded in 2006, that is Turkey's second largest mobile communication company embarked on the path of agile transformation. Agile transformation has been set as three steps. In the first step, a pilot team was established and for several sprints its progress had been tracked. Due to the observed improvements of the pilot team especially in productivity, the pilot team had tripled its throughput rate at the end of its first three months, then, it had been decided to move forward with the second step, scaling step, via establishing new scrum teams. Around five months after moving forward with the scaling step, scrum teams' throughput was observed to be two times more than before. In addition to that, significant reductions were observed in defect rate and customer complaints inside these scrum teams. The third step was enterprise adopting with the aim to grow agile culture. Telecommunications industry in Turkey is highly competitive and agile transformation has started to shorten time to market and improve quality in order to be able to provide competitive advantage to the business. And these goals have been achieved.

3.3. State and prospects of Russian telecommunications industry development

According to «TMT Consulting», the volume of the Russian telecommunications market (figure 1) in 2015 reached 1674 billion rubles with a growth of 2,1%, which is more than in 2014 (1,7%). As the researchers note, growth is associated with an increase in revenues for a number of inter-office services provided in international areas and paid for in a more expensive currency. Therefore, if we do not include inter-operator services and pay-TV services, then the growth will be even smaller.

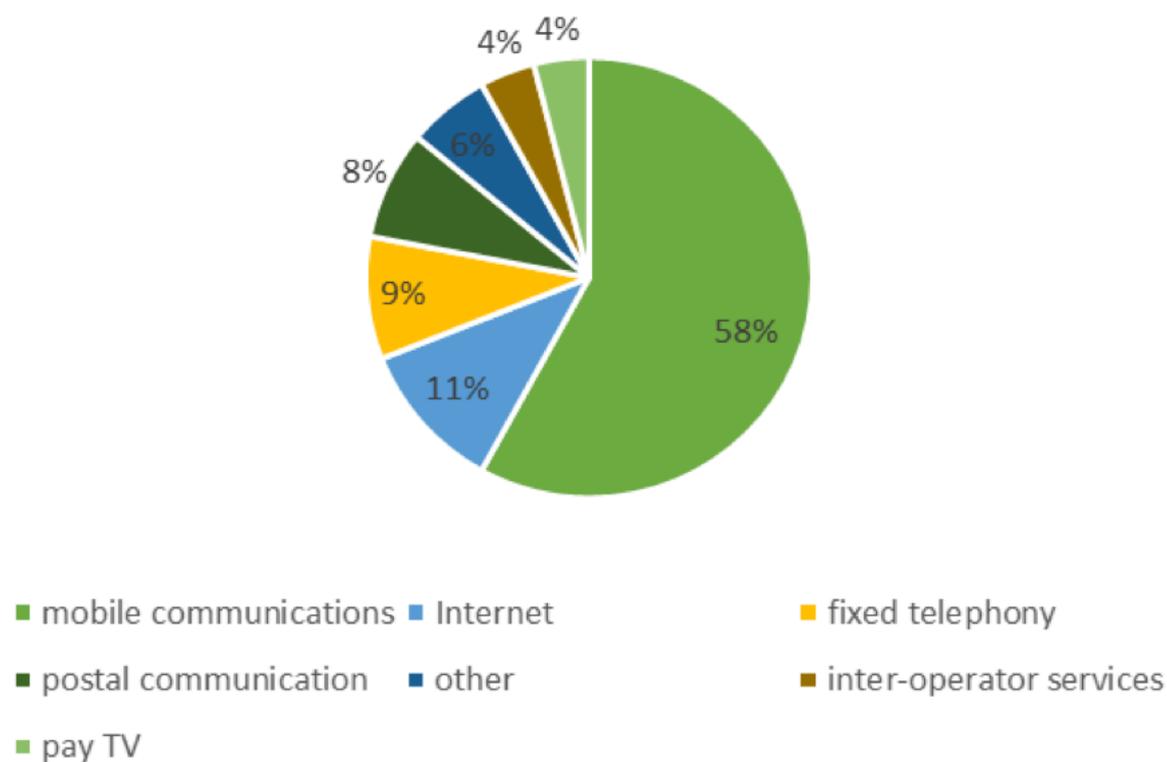


Figure 1. The volume and structure of the Russian telecommunications market in 2015, developed by the authors (source: «TMT Consulting»).

Speaking about the shares of companies in the market structure, it should be noted that in Russia there are a lot of small players, while the largest five companies («Mobile TeleSystems», «Rostelecom», «MegaFon», «VimpelCom» and «T2 RTK Holding») occupy about 80% of the market. And the first ten companies that in addition to these include «Moscow city telephone network (MGTS)», «TransTeleCom», «Russian television and broadcasting network», «ER-Telecom holding» and «Inter-regional TransitTelekom» (MTT) - about 90%.

Mobile communication still brings more than half of revenues to the telecom industry, but the share in general is gradually decreasing - to 55.3% from 55.7% in 2015. According to «TMT Consulting», the volume of the mobile communications market in 2016 decreased by 0.3%, to about 883.1 billion rubles.

In turn, at the moment the world telecommunications market continues to show signs of saturation, and its players are looking for new niches for further growth. One of the main drivers is the provision of integrated services at the junction of telecom and IT. The term "digital transformation of the telecom industry" is becoming more widespread. The essence of this transformation is that the business model of operators, built on the provision of traditional communication, becomes unprofitable, and requires the transition to new services, relying on the modernized telecom infrastructure. These new services include the provision of video content, banking services, and services based on the processing of big data. In this regard, the choice of an effective mechanism of project management at the present stage of the telecommunications industry development is particularly important.

Even in times of crisis, domestic operators are ready to invest in new technologies that allow expanding the range of services provided. It is confirmed by observations of the integrators who adhere to the idea that companies are "willing to spend money on projects that help to generate additional revenue and develop an existing network of services: IMS, MVNE, IoE, big data, cloud solutions, M2M". However, now the development of the telecommunications market is at an early stage. The sluggish revenue dynamics pushed the operators either to enter into partnerships with digital companies or to transform into them. So, the owner of the company «VimpelCom» M.Fridman formulated the task as: "to move away from its roots in the communications industry to much more modern - IT and hi-tech". In turn, «MegaFon» has more specific plans to conquer the digital segment. The company intends to buy a controlling stake in the Internet holding Mail.ru Group for 740 million dollars. The deal should return MegaFon's performance to sustainable growth and is part of the company's new strategy.

The telecommunications services sector is one of the most important and promising directions of the Russian economy, the development of which is crucially necessary for the strategic development of all industries. At the same time, foreign experts predict not only a stable growth of the Russian telecommunications market, but also a major breakthrough in this sector in the next 5 years.

Taking into account the revealed peculiarities of an effective project management strategy - agile project management and the experience of development of this methodology abroad in the context of the telecommunications industry, one should make a conclusion about possible prospects for implementing agile project management in Russian telecommunication companies. Adherence to modern trends, in other words, the development of agile methodology, could eliminate the backlog of the Russian telecommunications industry and bring it to the modern level of development.

4. Conclusions

Summing up the results of the study, the following conclusions should be allocated:

1. in the world practice, the sphere of telecommunications is subject to continuous, rapid, cardinal changes. In this regard, the scenario of Russia's technological development follows global trends;
 2. the core characteristics of the agile project management meet to requirements for project management in contemporary telecommunications industry and they are capable of reaching the target operational performance;
 3. agile project management is a rational methodology of project management in the telecommunications industry in the period of its global transformation, which has proved its effectiveness abroad;
 4. the Russian telecommunications industry is at the beginning of the road of radical changes and is on the verge of transition to a new stage of development - to the information society and integration into the global information space. Agile project management seems to be an effective measure of project management in the Russian telecom;
 5. the further development of the information and telecommunication infrastructure of Russia is considered as one of the main factors of growth of business and intellectual activity of the society.
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