



ECONOMIC ANNALS-XXI
ISSN 1728-6239 (Online)
ISSN 1728-6220 (Print)
<https://doi.org/10.21003/ea>
<http://www.soskin.info/ea/>

Volume 180 Issue (11-12) 2019

Citation information:

Plahotnikova, M. (2019). Business processes reengineering in the digitally dependent sectors of economy (on the example of telecommunications companies). *Economic Annals-XXI*, 180(11-12), 146-154. doi: <https://doi.org/10.21003/ea.V180-16>

UDC 658.1



Maria Plahotnikova

PhD (Economics), Associate Professor,
Department of Regional Economics and Management,
Southwest State University
94, 50 Let Oktyabrya Str., Kursk, 305040, Russia
erelda@mail.ru
ORCID ID: <https://orcid.org/0000-0002-6305-2006>

Business processes reengineering in the digitally dependent sectors of economy (on the example of telecommunications companies)

Abstract. The methodology of business process reengineering (BPR) has now reached a certain level of demand in the world and domestic practice of business process optimization. However, classic reengineering schemes currently require adaptation, both to certain sectors of the economy and to the type of optimized business processes. These requirements are due to the need to find effective solutions in the field of organization management in the digital economy. The opportunities and threats created by the digital economy pose new challenges for companies in many industries, which determine their development and survival in the global market.

In this article, we provide data on the state of telecommunications industries in Russia and the world, and identify factors that affect the development of business processes of telecommunications companies, including management. The author's method of reengineering for telecommunications companies in the digital economy takes into account the identified features and trends in the development of the telecommunications sector. The telecommunications companies under our practical study are those operating in Russia, namely: MTS; MegaFon; Rostelecom; VimpelCom; T2 mobile. An example of VimpleCom was investigated, and the KPIs before and after the reengineering of development were calculated for the company.

The author proposes to apply the concept of «digitally dependent» industries that includes industries for which the opportunities and threats provided by the digital economy directly affect, first of all, the management of business processes, in particular, in the telecommunications industry.

Based on the study of the world and domestic practice of BPR, the author concludes that for the successful application of the methodology of BPR in telecommunications companies, it is necessary to take into account certain specifics arising from the mutual influence of the digital economy and the enterprises of digitally dependent industries.

Keywords: Business Process Reengineering; BPR; Telecommunications Companies; Business Processes; Digital Economy; Company Management Efficiency; MTS; MegaFon; Rostelecom; VimpelCom; T2 mobile

JEL Classification: M20

Acknowledgements and Funding: The author received no direct funding for this research.

Contribution: The author contributed personally to this work.

DOI: <https://doi.org/10.21003/ea.V180-16>

Плахотнікова М. А.

кандидат економічних наук, доцент, кафедра регіональної економіки та менеджменту,
Південно-Західний державний університет, Курськ, Російська Федерація

**Реінжиніринг управлінських бізнес-процесів цифрозалежних галузей економіки
(на прикладі телекомунікаційних компаній)**

Анотація. Методологія реінжинірингу бізнес-процесів досягла певного рівня затребуваності в світовій і вітчизняній практиці оптимізації бізнес-процесів. Однак класичні схеми реінжинірингу на даний момент вимагають адаптації як до певних галузей економіки, так і до виду оптимізованих бізнес-процесів. Ці вимоги обумовлені необхідністю пошуку ефективних рішень у сфері управління організаціями в умовах

цифрової економіки. Можливості й загрози, породжувані цифровою економікою, ставлять перед компаніями багатьох галузей нові завдання, від вирішення яких залежить їх розвиток і виживання на глобальному ринку.

У цій статті наведено дані про стан телекомунікаційних галузей у Росії та світі, визначено фактори, що впливають на розвиток бізнес-процесів телекомунікаційних компаній, у тому числі управлінських. Авторська методика реінжинірингу, що дозволяє сформулювати напрямки розвитку управлінських бізнес-процесів телекомунікаційних компаній в умовах цифрової економіки, враховує виявлені особливості й тенденції розвитку телекомунікаційної сфери. Прикладний аспект дослідження представлено аналізом компаній-надавачів телекомунікаційних послуг у Росії, а саме: «МТС»; «Мегафон»; «Ростелеком»; «Вимпелком»; «Т2 Мобайл». Було докладніше досліджено приклад компанії VimpleCom, розраховано показники KPI до і після реінжинірингу розвитку.

Автором пропонується використовувати концепцію «цифрозалежних» галузей економіки. Це галузі, для яких можливості й загрози, що надаються цифровою економікою, безпосередньо впливають, перш за все, на управлінські бізнес-процеси. До таких галузей, зокрема, відноситься й телекомунікаційна.

На основі дослідження світової та вітчизняної практики реінжинірингу бізнес-процесів автор доходить висновку, що для успішного застосування методології реінжинірингу управлінських бізнес-процесів компаній телекомунікаційної галузі необхідно враховувати певну специфіку, що виникає із взаємного впливу цифрової економіки та підприємств цифрозалежних галузей.

Ключові слова: реінжиніринг бізнес-процесів; телекомунікаційні компанії; бізнес-процеси; цифрова економіка; ефективність менеджменту компанії; «МТС»; «Мегафон»; «Ростелеком»; «Вимпелком»; «Т2 Мобайл».

Плахотникова М. А.

кандидат економічних наук, доцент, кафедра регіональної економіки і менеджменту, Юго-Западный государственный университет, Курск, Российская Федерация

Реинжиниринг управленческих бизнес-процессов цифрозависимых отраслей экономики (на примере телекоммуникационных компаний)

Аннотация. Методология реинжиниринга бизнес-процессов достигла определенного уровня востребованности в мировой и отечественной практике оптимизации бизнес-процессов. Однако классические схемы реинжиниринга на данный момент требуют адаптации как к определенным отраслям экономики, так и к виду оптимизируемых бизнес-процессов. Эти требования обусловлены необходимостью поиска эффективных решений в сфере управления организациями в условиях цифровой экономики. Возможности и угрозы, порождаемые цифровой экономикой ставят перед компаниями определенных отраслей новые задачи, от разрешения которых зависит их развитие и выживание на глобальном рынке.

В нынешней статье приведены данные о состоянии телекоммуникационных отраслей в России и мире, определены факторы, влияющие на развитие бизнес-процессов телекоммуникационных компаний, в том числе управленческих. Авторская методика реинжиниринга, позволяющая сформулировать направления развития управленческих бизнес-процессов телекоммуникационных компаний в условиях цифровой экономики, учитывает выявленные особенности и тенденции развития телекоммуникационной сферы. Прикладной аспект исследования представлен анализом компаний-поставщиков телекоммуникационных услуг в России, а именно: «МТС»; «Мегафон»; «Ростелеком»; «Вимпелком»; «Т2 Мобайл». Был подробнее исследован пример компании VimpleCom, рассчитаны показатели KPI до и после реинжиниринга развития.

Автором предлагается использовать концепцию «цифрозависимых» отраслей экономики. Это отрасли, для которых возможности и угрозы, предоставляемые цифровой экономикой, напрямую влияют, прежде всего, на управленческие бизнес-процессы. К таким отраслям, по мнению автора, относится и телекоммуникационная.

На основе исследования мировой и отечественной практики реинжиниринга автор приходит к выводу, что для успешного применения методологии реинжиниринга управленческих бизнес-процессов компаний телекоммуникационной отрасли необходимо учитывать определенную специфику, возникающую из взаимного влияния цифровой экономики и предприятий цифрозависимых отраслей.

Ключевые слова: реинжиниринг бизнес-процессов; телекоммуникационные компании; бизнес-процессы; цифровая экономика; эффективность менеджмента компании; «МТС»; «Мегафон»; «Ростелеком»; «Вимпелком»; «Т2 Мобайл».

1. Introduction

At the moment, the digital economy has penetrated into most sectors of the national economy, both at the national and international level, however, its consequences and results have different effects for different industries, since some of them, including telecommunications, have a mutual influence with the digital economy. Therefore, the current period for the telecommunications sector is characterized by a change in the methodology and methods of business processes reengineering (Eriksson, Johansson, & Bergholtz, 2019), therefore, there is a need to conduct additional research in this area.

First of all, it is necessary to assess the state of the global telecommunications market, since analytical agencies of various levels give it ambiguous assessments (Gevorgyan & Martynov, 2019). This is due to a set of external factors that analysts take into account when evaluating. However, in general, we can conclude that the dynamics of both the global and Russian telecommunications markets in the near future will be determined by the trends presented below.

The first trend is the willingness of the largest telecommunications organizations operating on the global market not to focus on price competition, and the reason for this is the specifics of scientific and technological progress in the telecommunications sector (Ozmen, Aydođan, Delice, & Toksari, 2019). *The second significant trend* is the noticeable attention of governments of developed countries to the problems of the digital economy in general and its impact on the development of telecommunications infrastructure in particular (Plotnikov, Vertakova, & Leontyev, 2016). *The third trend* is related to the formation of a new global market under the influence of the «Internet of things» ecosystem, which currently has a significant impact on both Russian and foreign telecommunications (Charochkina, Androsova & Sogacheva, 2018).

These trends in general affect the telecommunications sector favourably, which is why we can predict positive dynamics of sales volumes in the telecommunications market (Gbongli, Xu, & Amedjonekou, 2019). According to the various researchers, the positive dynamics of sales will continue for quite a long time. If we take into account the forecast data for the beginning of 2019, the growth of the telecommunications market will be equal to 1% per year (Ozmen, Aydođan, Delice, Toksari, 2019). An important feature of the largest telecommunications companies is that they pay significant attention to some related markets, considering them as one of the main sources of growth in their business (Kalimov, 2016). In particular, many telecommunications companies, both domestic and foreign, act as suppliers of integrated information and communication solutions for the related markets (Kamaev, Naboka, & Chistov, 2011).

All of the above points to the complexity of the managerial business processes of telecommunications companies, which, in turn, require new, more effective management mechanisms and transformation of the strategic management systems. Therefore, to increase competitiveness and maximize the use of competitive advantages, telecommunications companies need to radically restructure their managerial business processes, taking into account critical management objects and the stage of the life cycle. Business processes reengineering will allow telecommunications companies to adapt them to the conditions of the digital economy. When implementing BPR projects, telecommunications companies should adhere to a conceptual process business-model that allows them to implement strategic decisions to expand their activities, increase standardization, increase efficiency through economies of scale in sales and marketing, improve the effectiveness of information technology and human resources management (Fasna & Gunatilake, 2019). The results of the transformation of managerial business processes should be:

- 1) development of additional communication services (mobile and fixed Internet services);
- 2) development and implementation of services in related markets (cloud technologies, information and analytical products) (Chountalas & Lagodimos, 2019).

Thus, it is evident that the specifics of the telecommunications companies is their mutual influence on the development of the digital economy, i.e. the conditions that are created by the digital economy require adaptation of management and other business processes of companies, while telecommunication companies provide new services and implement technologies which give impetus to the development of the digital economy, including the spheres others than telecommunications one. The obtained conclusions determine the high significance of studying the transformation of managerial business processes of telecommunications companies and indicate the need to adapt the classical scheme of business process reengineering, primarily at the stage of reverse (retrospective) reengineering (Musangi, Odero, & Kwanya, 2019).

2. Brief Literature Review

Over the past five years, foreign scientists such as B. Marcinkowski & B. Gawin (2019), O. Eriksson, P. Johannesson and M. Bergholtz (2019), P. S. Musangi, D. Odero and T. Kwanya (2019), Y. Qu, X. Ming, Y. Ni et al. (2018) have been engaged in studying of the business process reengineering issues. However, their research concerns improving the methodology for modelling business processes in the process of reengineering, and the stages themselves, whereas the information base of this technology remains outside their interests. At the same time, less attention is paid to the specifics of reengineering of various types of business processes, and

the problems of their transformation under the influence of the digital economy are not highlighted as well.

The following foreign authors are engaged in research in the telecommunications sphere: M. Ozmen, E. K. Aydoğ̃an, Y. Delice and M. D. Toksari (2019), K. Gbongli, Y. Xu and K. M. Amedjonekou (2019). Their research does not concern the problems of business processes reengineering of companies in this sphere, but only takes into account the overall impact of the digital economy on telecommunications.

As for the Russian authors who study the problems of business processes in the telecommunications sector, we can distinguish V. M. Smolentsev and I. T. Zaika (2013), Z. S. Tuyakova and T. V. Cheremushnikova (2016), V. V. Yatsenko and M. V. Sidorova (2016), who in their research reveal the issues of modelling and transformation of business processes of telecommunications companies, while in matters of reengineering, we can distinguish such authors as V. A. Kamaev, M. V. Naboka and D. A. Chistov (2011), A. N. Vizgunov and N. P. Vizgunov (2015), S. B. Sborshchikov and L. A. Maslova (2019). At the same time, the main focus of these studies is on information technologies used in the reengineering of business processes of telecommunications companies.

Therefore, we can conclude that at the moment there is a significant gap in research on the specifics of managerial business processes reengineering of telecommunications companies in the digital economy.

3. Purpose

Development of a relevant methodology for managerial business processes reengineering of telecommunications companies, adapted to the conditions created by the digital economy, including determining the stage of the life cycle of the Russian telecommunications sector. The methodology takes into account the factors of the external environment generated by the digital economy and the specifics of the transformation of managerial business processes.

4. Results

The analysis and generalization of the world experience in developing projects for the business processes reengineering of telecommunications companies shows that it was the telecommunications sector that began to apply process management from its very foundation (Plakhotnikova, Vertakova, & Emelyanov, 2017). This fact significantly affected their strategic management system, since their internal environment was initially evaluated from the perspective of end-to-end business processes. The research shows that telecommunications companies operating on the global market, such as BT Group (Marcinkowski & Gawin, 2019), Tencent (Ozmen, Aydoğ̃an, Delice, & Toksari, 2019) and many others, attach great importance to the developing and updating of their managerial business processes at the strategic level. At the same time, the level of development of the digital economy in the target markets is the determining factor influencing the choice of business process transformation strategy (Gevorgyan, Martynov, & Starozhuk, 2017).

It should be noted that the strategic management system of most large international telecommunications companies is built in such a way that their functional strategies, and first of all the innovative ones, are more focused on indicators of the digital economy than the other ones, and translate the company's development strategy into the external environment in terms of process management (Basyuk, Prokhorova, Kolomyts, Shutilov, & Anisimov, 2016).

Thus, to get directions for adapting the methodology of managerial business processes reengineering, it is necessary to identify the main trends in the influence of the digital economy on the system of managerial business processes of telecommunications companies (Table 1).

Table 1 shows that the critical objects of management in telecommunications companies are the following:

- 1) organizational structure;
- 2) innovation;
- 3) the range and quality of services.

Therefore, we suggest that during the internal environment survey at the stage of retrospective reengineering, we pay significant attention to the structure as one of the five factors of the internal environment, while focusing on such functional areas as innovation and assortment. At the same time, for commercial companies of any type, the defining functional area is finance, so this functional area should also be included in the core of the analysis. Thus, we propose the following approach:

Table 1:
Characteristics of trends in the impact of the digital economy on the system of managerial business processes of telecommunications companies

Trend name	Characteristics of the effect	Corresponding critical management objects
1. The need to develop an effective innovation strategy	Taking into account current technological innovations that are characteristic of the digital economy.	Technological innovation
2. Transformation of the strategic management system	1. Taking into account the rapid changes in the needs of the target audience of the telecommunications market as a result of the digital economy development. 2. Highlighting organizational and structural changes in the strategic management system.	Management strategy and organizational structure
3. Increasing the share of modern telecommunications technologies used by telecommunications companies to expand the range of services	The purpose of creating and applying new technologies is to develop the operational activities of companies with the most effective use of information and communication technologies and the opportunities of the digital economy.	Range and quality of services

Source: Qu, Ming, Ni, Li, Liu, Zhang, & Xie (2019)

- 1) coefficient analysis of the organizational structure;
- 2) identification of the company's strengths and weaknesses in the following areas: innovation, product range, finance (including assessment of the company's financial condition).

To eliminate the negative impact of external environmental factors, we suggest using the PESTLE analysis (Smolentsev & Zaika, 2013). Here is an example of such an analysis for PJSC VimpelCom (Table 2). We have excluded insignificant factors from Table 2 to facilitate perception.

As can be seen from Table 2, political, economic, and technological factors have the greatest influence on the Russian telecommunications companies, so it is necessary to conduct a detailed analysis of these factors when examining the external environment. For a generalized analysis of internal and external environment factors, we used SWOT analysis (A. N. Vizgunov & N. P. Vizgunov, 2015) (Table 3).

Thus, the use of such a strategic analysis tool as SWOT allowed us to identify factors of the external and internal environment that have a significant impact on the strategy of transformation of management business processes of telecommunications companies and offer mini-strategies for their inclusion in the company's development strategy.

As we have already noted, under the influence of the digital economy, the composition of critical management objects of telecommunications companies has changed, which has led to the need to develop new managerial business processes and the use of consulting technologies to optimize them.

It should be clarified that the emergence of new critical management objects (CME) does not reduce the importance of managing traditional objects, however, new CME require completely new

Table 2:
PESTLE analysis of telecommunications companies on the example of PJSC VimpelCom» (Russia)

Environmental factors	Influence factor	Average expert assessment	Weight factor
Political			
Political and economic sanctions	3	1.75	0.14
Develop and implementation of the governmental Digital Economy Programme	2	3.75	0.20
Tax system	3	2	0.16
Economic			
Growing demand for mobile Internet	4	3.75	0.41
High level of competition in the industry	3	1.75	0.14
Inflation	2	2.75	0.15
Social			
Increasing mobile preferences among the population	3	2.75	0.22
Improving the overall level of service quality requirements on the part of consumers	3	2	0.16
Technological			
GSM technology development	2	2.75	0.15
Increasing of the Internet technology availability	3	3.75	0.30
Legal			
International law	3	3.00	0.15
Vague Russian legal framework	4	2.67	0.18
Environmental			
The ecology influence of the technologies used	4	3.00	0.20
Total	60		

Source: Compiled by the author based on own expert survey, 2019

Table 3:
SWOT analysis matrix for determining the main strategies of the managerial business processes transforming

Environmental factors	Internal factors	
	Strengths	Weaknesses
	<ul style="list-style-type: none"> - The level of innovation in telecommunications. - Compliance with the level of quality of the service to the expectations of the target consumer. 	<ul style="list-style-type: none"> - Cost level. - Profitability.
Opportunities 1. Growing demand for mobile Internet 2. The growth of mobile preferences among the population 3. Increasing the availability of Internet technology	<ul style="list-style-type: none"> - High level of innovation in the innovation field and compliance with the level of quality of service to the expectations of the target consumer allow to fully meet the growing demand for mobile Internet, which increases sales volumes. - These same advantages will ensure a rapid capture of emerging market share through the growth of population preferences. 	<ul style="list-style-type: none"> - The growth of demand for mobile Internet, increasing sales volumes, will reduce the share of fixed costs in their total volume, which will provide savings on scale. - The growth in sales volumes and market share, taking into account the reduction in total costs, will increase the profitability of the organization.
Threats 1. High level of competition in industry. 2. Political and economic sanctions. 3. Consequences of the economic crisis.	<ul style="list-style-type: none"> - The use of innovative methods will attract potential consumers to the organization. - The emphasis on the quality of services and price regulation would equalize the reduction in demand that had emerged from the crisis. 	<ul style="list-style-type: none"> - There may be a temporary refocus on the introduction of a greater share of services in demand.

Source: Compiled by the author

optimization technologies that will fully allow telecommunications organizations to take advantage of the opportunities provided by the digital economy.

At the same time, the need for a radical change may appear in a telecommunications company at any of the stages of its life cycle (LC) (Sborshchikov & Maslova, 2019), but this is especially typical for the stages of stability and extinction. As it is known from the scientific works of various authors (Riyanto, Primiana, Yunizar, & Azis, 2019), at any stage of the LC, the company may experience problems of various degrees of complexity, some of which can be considered «normal», since they are associated with the so-called «growth disease» (Pashuk & Kadilova, 2018), and some of them are «abnormal», since they are associated with organizational pathologies.

The latter of these problems must be addressed through radical changes that involve, among other things, reengineering of business processes. The aging process for any company, in contrast to the living system, is abnormal and requires advice. Thus, the more appropriate option of strategic behaviour is to prevent aging, to this end, the stage of «Youth» and «Dawn» should update business processes, including management, for example, by engineering (Liu, 2018), so that by the time they reach stability, the company could make a new qualitative leap and beat the competition in the market. However, this development is not always possible, so often enterprises find themselves at the stage of stability or maturity (depending on the model of LC used) without preliminary preparation, and then, in most cases, they need to reengineer business processes.

At the moment, in the most general form, there are two types of reengineering in the economic literature: crisis and development (Plakhotnikova, Vertakova, & Emelyanov, 2017). Within these generalized types, several other classification groups are distinguished, but since they do not depend on the stage of LC, it is not appropriate to consider them in this article. To identify the required type of business process reengineering, you can use the Boston consulting group (BCG) matrix (Basyuk, Prokhorova, Kolomyts, Shutilov, & Anisimov, 2016) which is based on the classic stages of the company's life cycle. In our opinion, the categories of the BCG matrix relate to the type of reengineering as shown in Figure 1.

Figure 1 shows that for a company that falls into the category of «Wild cats», reengineering is not advisable, since the business processes of this company are only being formed at this stage, and engineering or benchmarking are more suitable technologies for optimizing business processes (Chountalas & Lagodimos, 2019).

At the «Star» and «Cash cow» stages, it is advisable for companies to apply reengineering of development which strengthens its position and supports leadership in the industry or helps to achieve it.

The «Dog» stage is characterized by a decline (fading) in the company's activities and to return to a stable position, it is necessary to use crisis reengineering.

Thus, it can be concluded that the features of applying business process reengineering at various stages of the company's life cycle are that at each stage a certain type of reengineering is

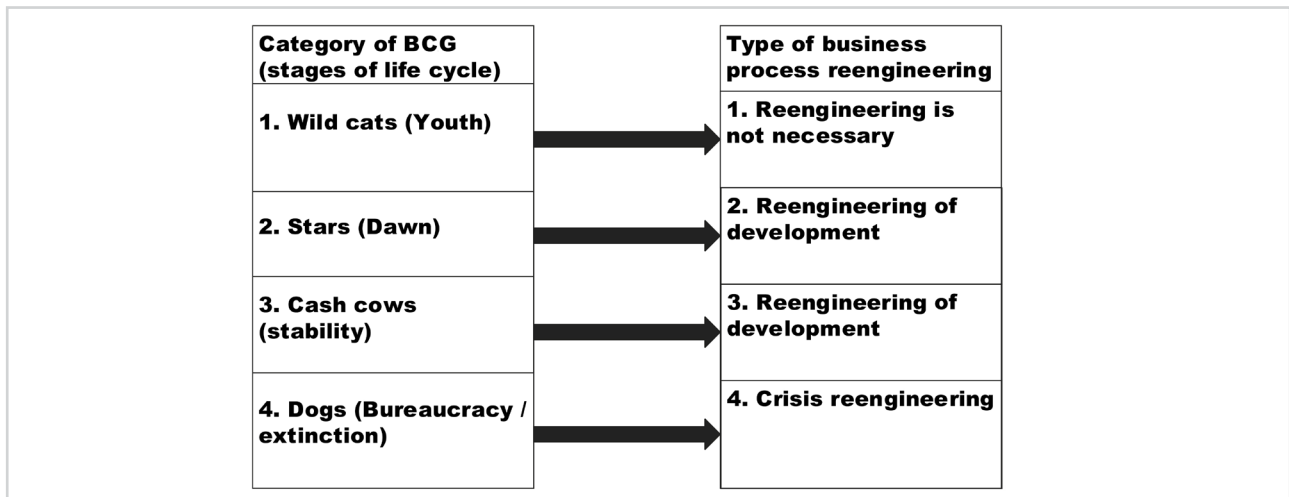


Figure 1:
Determining the type of reengineering required by BCG categories
Source: Compiled by the author

applied, and at some stages it is not advisable to apply it. However, other similar tools can be used to study the nature of reengineering and its types, specific to some companies.

As we have already mentioned, in our opinion, the methodology of business process reengineering can be most effectively adapted at the stage of reverse (retrospective) reengineering, which involves a total survey of the company in order to find inefficient business processes.

The author's method of reengineering for telecommunications companies in the digital economy takes into account the identified features and trends in the development of the telecommunications sector.

At the first stage, the method involves the identification of key management objects that are typical for the telecommunications industry. Based on them, the most significant business processes of management (BPM) are identified, which must be constantly monitored, adapted and developed. At the same stage, the most significant key success factors for the industry (SFI) are formed (Tuyakova & Cheremushnikova, 2016), which are then used to assess the significance of the selected BPM and search for problem areas. Further, the method involves determining the stage of the company's life cycle (the method assumes the use of the BCG matrix), on the basis of which it determines the type of appropriate reengineering for the company's BPM.

Then, the BPM development directions are formed in accordance with the selected type of reengineering. The final stage of the methodology is to evaluate the developed directions based on KPI (Yatsenko & Sidorova, 2016), which are typical for the telecommunications industry.

We selected one of the largest companies in the Russian telecommunications market, VimpelCom, to test the developed methodology. This choice is due to the average position of this company in the telecommunications market, both in terms of revenue and the number of subscribers (Table 4) (Vertakova, Klevtsova, & Polozhentseva, 2018).

In accordance with the developed methodology, we identified critical management objects (CMO), the management of which has a significant impact on the company's overall performance. According to the study, they are innovation and organizational development. Thus, each of these CMO requires its own separate business process. However, practice shows that they are often

Table 4:
Ranking of the Russian telecommunications companies in 2018 by revenue (USD billion) and the number of subscribers (mln people): MTS, MegaFon, Rostelecom, VimpelCom, T2 mobile

Ranking	Company's name	Revenue, USD billion	The number of subscribers (mln people)
1	MTS	7	78
2	MegaFon	5	75.2
3	Rostelecom	5	n.d.
4	VimpelCom	5	57.4
5	T2 mobile	2	42.3

Note: exchange rate in 2018: USD 1 = RUR 61.22

Source: Based on the study by Vertakova, Klevtsova and Polozhentseva (2018)

combined into one, leading to a lack of resources for each of the processes, which reduces their quality.

Then, using the BCG matrix, we determined the stage of the life cycle of VimpelCom, namely, the «Star», therefore, it is at the stage of growth (dawn), so we chose the type «reengineering of development». Next, we evaluated the effectiveness (KPI) of the selected areas of the business processes of management (Table 5) (Gevorgyan & Martynov, 2019).

As shown in Table 4, there is an increase in all KPIs projected after the «reengineering of development» implementation which makes it possible to recognize the directions of development of BPM as effective, and the methodology itself as appropriate.

Table 5:
KPI for evaluating VimpelCom business processes

KPI	Estimated (industry average) for 2018	VimpelCom values for 2018 (before reengineering of development)	Projected values of VimpelCom for 2020 (after reengineering of development)
Sales margin, %	14.6	18.33	23.8
Market share (maximum for 2018), %	41.89	27.97	38.1
Customer Satisfaction Level (SL), %	82.26	71.4	83.4
Turnover rate, %	11	16.9	10.9

Source: Compiled by the author based on own data research and calculations

5. Conclusions and Perspectives of Further Research

Summarizing all the research results, we can say that the development and transformation of managerial business processes of telecommunications companies are closely related to the specifics generated by the digital economy, therefore the impact of the digital economy on them is particularly noticeable.

The world experience of development strategies of telecommunications companies in the context of process management indicates the need for permanent adaptation of business processes, primarily managerial ones, to the conditions of the modern global world, including the increasing digital influence in the economy.

The developed author's method of transformation of managerial business processes of telecommunications companies by reengineering in conditions that are typical for the active development of the digital economy allows maintaining the competitiveness of telecommunications companies and ensures their sustainable development with a high probability.

In our opinion, the directions of transformation of managerial business processes can be defined both in terms of the new critical management objects that arise due to the influence of the digital economy, and in terms of compliance with the external opportunities and threats, as well as due to the development of the digital economy. This is confirmed by testing on the basis of data from VimpelCom.

Therefore, to maintain and improve the efficiency of managerial business processes of telecommunications companies, it is necessary to track changes in the company's life cycle stage and, based on the current or projected stage, redesign managerial business processes to meet the conditions of the external environment as a whole and the most significant factors, including those arising from the development of the digital economy. At the same time, the adaptation of managerial business processes to the new operating conditions will contribute to the formation of key competitive advantages of telecommunications companies in the digital economy.

References

1. Basyuk, A. S., Prokhorova, V. V., Kolomyts, O. N., Shutilov, F. V., & Anisimov, A. Y. (2016). Administration Management in the Innovation Cluster. *International Review of Management and Marketing*, 6(S6), 180-184. Retrieved from <https://elibrary.ru/item.asp?id=27136205>
2. Charochkina, E. Yu., Androsova, I. V., & Sogacheva, O. V. (2018). Factors of formation of the Internet economy in Russia: opportunities and experience of developed countries. *Economy and Management: Problems, Solutions*, 7(12), 58-63. Retrieved from <https://elibrary.ru/item.asp?id=36826903> (in Russ.)
3. Chountalas, P. T., & Lagodimos, A. G. (2019). Paradigms in business process management specifications: a critical overview. *Business Process Management Journal*, 25(5), 1040-1069. doi: <https://doi.org/10.1108/BPMJ-01-2018-0023>
4. Eriksson, O., Johannesson, P., & Bergholtz, M. (2019). The case for classes and instances-a response to representing instances: the case for reengineering conceptual modelling grammars. *European Journal of Information Systems*, 28(6), 681-693. doi: <https://doi.org/10.1080/0960085x.2019.1673672>

5. Fasna, M. F. F., & Gunatilake, S. (2019). A process for successfully implementing BPR projects. *International Journal of Productivity and Performance Management*, 68(6), 1102-1119. doi: <https://doi.org/10.1108/IJPPM-09-2018-0331>
6. Gbongli, K., Xu, Y., & Amedjonekou, K. M. (2019). Extended Technology Acceptance Model to Predict Mobile-Based Money Acceptance and Sustainability: A Multi-Analytical Structural Equation Modeling and Neural Network Approach. *Sustainability*, 11(13). doi: <https://doi.org/10.3390/su11133639>
7. Gevorgyan, R. M., & Martynov, L. M. (2019). Analysis of the state and development of the Russian telecommunications industry in the digital economy. *Azimut of Scientific Research: Economics and Management*, 28(3) (in Russ.).
8. Gevorgyan, R. M., Martynov, L. M., & Starozhuk, E. A. (2017). Management of modern organizations using virtual business environment in the digital economy. *Economics and Entrepreneurship*, 12(4), 718-724 (in Russ.).
9. Kalimov, O. V. (2016). Improving the competitiveness of enterprises in the regional market of infocommunication services. *Proceedings of Southwest State University. Series: Economics. Sociology. Management*, 6(20(3)), 112-122. Retrieved from <https://elibrary.ru/item.asp?id=27258679> (in Russ.)
10. Kamaev, V. A., Naboka, M. V., & Chistov, D. A. (2011). Business process reengineering of telecommunication company. *News Of TuISU. Technical Science*, 3, 111-118. Retrieved from <https://cyberleninka.ru/article/n/reinzhiniring-biznes-protsessov-telekommunikatsionnogo-predpriyatiya> (in Russ.)
11. Liu, S. (2018). End-to-end management of production systems of the entities. *Proceedings of Southwest State University. Series: Economics. Sociology. Management*, 8(3(28)), 281-289. Retrieved from <https://elibrary.ru/item.asp?id=36356206>
12. Marcinkowski, B., & Gawin, B. (2019). A study on the adaptive approach to technology-driven enhancement of multi-scenario business processes. *Information Technology & People*, 32(1), 118-146. doi: <https://doi.org/10.1108/ITP-03-2018-0142>
13. Musangi, P. S., Odero, D., & Kwanya, T. (2019). Critical success factors in library reengineering: a case of academic libraries in Kenya. *Global Knowledge, Memory and Communication*, 68(6-7), 534-549. doi: <https://doi.org/10.1108/GKMC-12-2018-0099>
14. Ozmen, M., Aydoğan, E. K., Delice, Y., & Toksari, M. D. (2019). Churn prediction in Turkey's telecommunications sector: A proposed multiobjective-cost-sensitive ant colony optimization. *WIRES Data Mining and Knowledge Discovery*, 10(1), 1-23. doi: <https://doi.org/10.1002/widm.1338>
15. Pashuk, N. R., & Kadilova, M. B. (2018). Main problems of implementation of reengineering of business processes of the organization as the main method of innovative management. *Eurasian International Scientific-Analytical Edition*, 67(3), 126-128. Retrieved from <http://www.m-economy.ru/art.php?nArtId=6419> (in Russ.)
16. Plakhotnikova, M. A., Vertakova, Yu. V., & Emelyanov S. G. (2017). Reengineering in the System of Process Management of the Enterprise: Practice of Use in the Russian Industry. *Proceedings of the 30th International Business Information Management Association Conference, Southwest State University, Russia*, 1881-1891. Retrieved from <https://ibima.org/university/south-west-state-university-russia/>
17. Plotnikov, V., Vertakova, Yu., & Leontyev, E. (2016). Evaluation of the Effectiveness of the Telecommunication Company's Cluster Management. *Economic Computation and Economic Cybernetics Studies and Research*, 50(4), 109-118. Retrieved from https://econpapers.repec.org/article/cysecocyb/v_3a50_3ay_3a2016_3ai_3a4_3ap_3a109-118.htm
18. Qu, Y. J., Ming, X. G., Ni, Y. R., Li, X. Z., Liu, Z. W., Zhang, X. Y., & Xie, L. Y. (2018). An integrated framework of enterprise information systems in smart manufacturing system via business process reengineering. *Proceedings of the Institution of Mechanical Engineers Part B: Journal of Engineering Manufacture*, 233(11), 2210-2224. doi: <https://doi.org/10.1177/0954405418816846>
19. Riyanto, A., Primiana, I., Yunizar, Y., & Azis, Y. (2019). Digital branch: a business process reengineering in Indonesian banking. *Journal of Engineering Science and Technology*, 662(7), 1-7. doi: <https://doi.org/10.1088/1757-899X/662/7/072002>
20. Sborshchikov, S. B., & Maslova, L. A. (2019). Reengineering of objects of capital construction and reengineering of technological processes. *Bulletin of the Moscow State University of Civil Engineering*, 133(10), 1321-1330. doi: <https://doi.org/10.22227/1997-0935.2019.10.1321-1330> (in Russ.)
21. Smolentsev, V. M., & Zaika, I. T. (2013). Modeling the network of business processes of a telecommunications company. *Scientific Journal of KubSAU*, 89, 1274-1295. Retrieved from <https://cyberleninka.ru/article/n/modelirovaniy-seti-biznes-protsessov-telekommunikatsionnoy-kompanii> (in Russ.)
22. Tuyakova, Z. S., & Cheremushnikova, T. V. (2016). The key performance indicators system and its use in the rating of telecommunications companies' competitiveness. *Economic Analysis: Theory and Practice*, 448(1), 54-68. Retrieved from <https://cyberleninka.ru/article/n/sistema-klyuchevyh-pokazateley-rezultatov-deyatelnosti-i-ee-ispolzovanie-pri-reytingovoy-otsenke-konkurentosposobnosti/viewer> (in Russ.)
23. Vertakova, Yu. V., Klevtsova, M. G., & Polozhentseva, Yu. S. (2018). Indicators for assessing the digital transformation of the economy. *Economy and Management*, 156(10), 14-20. Retrieved from <https://emjume.elpub.ru/jour/article/view/476> (in Russ.)
24. Vizgunov, A. N., & Vizgunov, N. P. (2015). Methods of transformation of the business process model in order to increase its transparency for users. *Management of Economic Systems: Electronic Scientific Journal*, 5(77), 7. Retrieved from <https://cyberleninka.ru/article/n/metodika-preobrazovaniya-modeli-biznes-protsesta-s-tselyu-povysheniya-ee-prozrachnosti-dlya-polzovateley> (in Russ.)
25. Yatsenko, V. V., & Sidorova, M. V. (2016). Personnel motivation at info-communicational companies on the basis of KPI with use of the extended schemes of eTOM business processes. *Journal of Creative Economy*, 10(2), 211-226. doi: <https://doi.org/10.18334/ce.10.2.35002> (in Russ.)

Received 14.11.2019

Received in revised form 29.11.2019

Accepted 3.12.2019

Available online 30.12.2019