

Development of services in the telecommunication sphere of Kazakhstan

Sholpan Asylkhanovna Smagulova¹, Tazhibek Akzholovich Bogatov¹, Ainur Bugybaykyzy Abylkassym², Gulmira Tanirbergenovna Ongarova², Zhanna Bugybaykyzy Bugybayeva¹

¹T.Ryskulov Kazakh Economic University, Zhandosova Street, 55, Almaty, 050035, Kazakhstan

²International Humanitarian Technical University, A.Baitursunov street, 80, Shymkent, 160000, Kazakhstan

Abstract. Foreign experience has proven that currently advanced development of the country is based on the new “knowledge of economy” and technological innovation. In this process organizations perform a global information system which plays an important role to enable the promotion of economic growth. Therefore, the article is devoted to the study of the telecommunication services market in Kazakhstan on the examples of a large local monopolist JSC “Kazakhtelecom”. The purpose of the study is to analyze the management of ICT services, taking into account national company introduction on innovative fiber-optic technology and the development of transport backbone networks in Kazakhstan. Much attention is paid to the use of new cloud services that promote efficient development of successful strategic development of the company.

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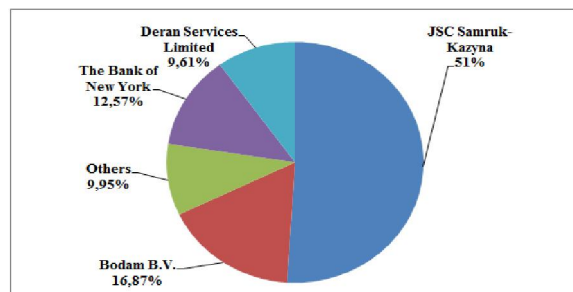
Keywords: telecommunications market, mobile communication, fiber technology, innovation, information and communication services, IT-infrastructure.

Introduction

Strategically important sector of the telecommunication market appears as the main element in the formation of the information economy [1]. JSC “Kazakhtelecom” is the national transportation and the leader of the telecommunications industry in Kazakhstan. In this regard, the work is also focused on the analysis of the status and organization of the market in telecommunication services in the country. The company was founded in 1994 in accordance with the decision of Palate of the Ministers of the Republic of Kazakhstan (RK) [2] on the basis of combining the basic funds of enterprises and organizations in regions of telecommunication. The re-registration of the company “Kazakhtelecom” was carried out in connection with the adoption of the new Law “On Joint Stock Companies” [3].

The organizational structure of JSC “Kazakhtelecom” includes - General Meeting of Shareholders, Board of Directors, Management, Central Office, Branches, Directors of regional telecommunication, Representatives in Russia and China, subsidiaries and affiliated companies. Major shareholders of the Company: JSC “National Welfare Fund” of Kazakhstan “Samruk-Kazyna” - 51% , Bodam company of New York (Amsterdam) - 16,87%, Deran Services Limited - 9,61%, The Bank of New York (nominee shareholder) - 12.57 % and other (Figure 1). The structure of the group of companies JSC “Kazakhtelecom” includes the following subsidiaries and associates: JSC “ALTEL” (100% - share in the authorized capital), GSM “GSM

Kazakhstan JSC “Kazakhtelecom” (49%), JSC “Nursat” (77.08%), OJS “Signum”, Moscow (100%), JS “VOSTOKTELEKOM” (100%), JS “Kepter telecom” (100%), JS “RadioTell” (100%), LTD “Online.kg”, Bishkek (100%).



Picture 1 - Ownership structure of JSC “Kazakhtelecom”

Note - The compiled by the authors based on National Welfare Fund “Samruk-Kazyna”. Date Views 26.02.2014 www.sk.kz.

The purpose of JSC “Kazakhtelecom” - to ensure maximum integration of Kazakhstan into the international telecommunication sphere taking into account the provision of a wide range of quality of ICT services through the introduction of the world's leading innovative technology. The company employs about 30,000 people. JSC “Kazakhtelecom” is a monopolist which has its branches and regional offices in each region. For efficient organization of business and for increasing subscriber outlook, the

company is engaged in a differentiated basis in expansion of various services for information and interactive services. So, the company the new changes sensitively and efficiently which takes place in communication technology and innovative designs to meet all the necessary customer needs. Thus, in 2008 the numbers of Internet users of JSC “Kazakhtelecom” were more than 1 mln. people, at the beginning of 2014 there were more than 4.5 mln. people [4].

Realization of the potential customer orientation provides better knowledge of customer relationships, production of portfolio services which corresponds to the level of competition and effective demand, providing convenient and flexible personal services, increasing the centralization of responsibility for the sale and service for the client regardless of market and technology, analysis and improvement. Customer perception of interaction has been increased in all aspects: the customer loyalty, as well as the development of business relationships with governmental authorities. The main goal of customer orientation service is to maximize long-term income on the expenses of costs. On the conditions of increasing competition in telecommunication market, particularly, the customer-centric approach to business is being developed. In this regard, one of the priorities of JSC “Kazakhtelecom” is to develop a customer-oriented corporate culture. Rules, service infrastructure, technological base - all are based on the subject of the principles of meeting and the needs of customers [5]. A service re-engineering processes, policies and procedures are being developed in this aim. Service infrastructure is modernized to provide comfort and practical use, which supports aesthetic pleasure [6]. All technologies used in service operations which are examined prior to implementation for usability (ease and simplicity), intuitive to operate, get enjoyment from the use [7].

Methodology

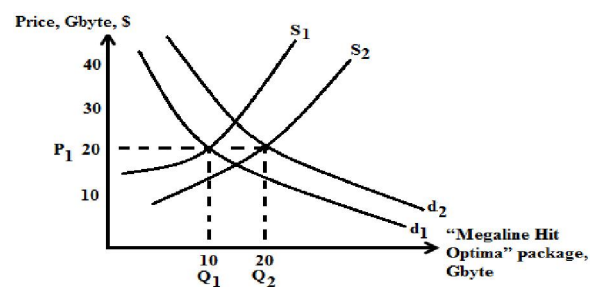
Methodology of the research involves constant application methods, such as: fundamental, analysis of the causes and consequences of the system, factual, comparative and graphical analysis.

Main part

JSC “Kazakhtelecom” operates telecommunications services on providing: local, long distance and international calls, mobile telecommunications (including mobile radio, paging and transit) services, internet access, as well as integration system (design, implementation, IT-infrastructure, leasing software and etc.). The highest share by segmental types of communication services

accounted for – telephone communication and the Internet [8]. The basis for the growth in the fixed market trend is a significant increase in revenues from fixed broadband access (BBA) at 9% per year, as well as changes in the structure to increase the share of modern value-added services, especially, content and application on the basis of convergent and mobile access. Enterprise development provides the implementation of key programs in this direction based on modern optical-fiber technology which includes the provision of high-speed Internet access [9], rental and reservation of channels which serves the virtual private networks (IP VPN) and packaging services.

Thus, an increase in demand from private clients from D1 to D2 (Figure 2) for internet services under the tariff plan “Megaline Hit Optima” implies or/and growth rates (P) or the volume of supply (S1 to S2). However, the company understands that the growth rates may lead to lower consumption of Internet resources.



Picture 2 - Increasing demand for services tariff

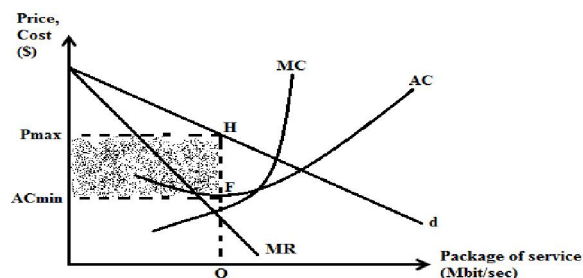
Note - The compiled by the authors based on JSC “Kazakhtelecom”. Date Views 30.12.2013 www.telecom.kz.

Currently, every technological revolution requires to be upgraded, i.e. increase of the throughput capacity of the whole system. On this reason, on 1 March 2014, the changes were made to the specified plan. The volume of traffic to external Internet resources has been increased twice - from 10 to 20 GB, with no monthly fee changes ($P_1 = \$20$). Services were launched under the brand name “ID Net” with the development of optical access networks in 2011, which led to a significant increase in traffic. This backbone data network has grown two times. Increase in the number of broadband subscribers and volumes of traffic require development of network infrastructure. Thus, in 2013 the work began with the construction of transport optical network “DWDM” [10], which will arrange 100G-channels for building innovative network architecture. Fiber-to-the-Home (FTTH) has been built since 2011. Now, mobile operators can connect to get a reliable service

operator with a high bandwidth, which is sufficient for 3G/4G traffic and which is secure for handling and low cost.

The company actively uses comprehensive service packages in the aim of to maximize monopoly of profits. So, since 2011, within the coverage area of fiber-optic access networks serve with a package “iDHome”, which, along with high-speed broadband internet access (“iDNet”) submitted by telephony services (“iDPhone”) and digital broadcasting services (“iDTV”), which is very popular and already include more than 200 thousand people. This package provides technology-based Gigabit Passive Optical Network (GPON). This technology is the distribution network access with the most efficient use of the resource of fiber optic cable, which is known as an effective and economical way to provide broadband information. With this technology, the issue was resolved by the subscribers access to the data network, telephony and IP-TV at the speed of up to 100 Mbit/s at 4K resolution and 3D-TV.

In the figure 3, a monopolistic profit ($P_{max}HFAC_{min}$) is shown. Thus, the cost of technology “GPON” is reflected in the curves average (AC) and the marginal cost (MC), the demand show the services (D), and marginal revenue (MR). The calculation of earnings per unit of service is need from: $P_{max}-AC_{min}$, then the profit will be equal to: $(P_{max} - AC_{min}) \cdot Q$. Full connectivity to local subscribers by the “GPON” average and marginal costs will be reduced, and the profit will be grown.



Picture 3 - Formation of the company's profits

Note - The compiled by the authors based on JSC “Kazakhtelecom”. Date Views 23.10.2013 www.telecom.kz.

According to the plan for users “ID Net” under “ID TV” service will be available in HD-TV format in 2014. There will be also additional services, such as “WebTV”. This allows users to access to tablets, smartphones and computers to watch television license video content “ID TV” via the Internet. Thus, in the nearest future, the customer

connection of Kazakhstan to fiber-optic network “FTTH” Technology “GPON” will allow completely to give up the copper component in the network reduces the defect and the quality of service provider will be improved significantly. In addition, the global information market growth is the main trend of the penetration of mobile devices. This trend also exists in Kazakhstan. More and more people are using smartphones and tablet computers in their lives. This leads to an increase in demand from the population of IT services designed for these devices.

Currently, fixed telephony services based on the wireless access to technology of “WLL CDMA 450” which has been developed in the countryside. Having taken advantage from bundling the Internet access and unlimited long distance calls in 2013, promotional connection package of “Super EV-DO” has been used, under which subscribers of rural settlements can be connected to the free package of “Megaline Super EV-DO” with Internet access with the speed of up to 1 Mbit/s volume of 10 to 30 GB per a month and unlimited long distance calls within the network of JSC “Kazakhtelecom” with a monthly fee which depends on the selected tariff plan. Based on this analysis, it was found that the share of traditional services in the revenue structure of “Kazakhtelecom” has been steadily declining, while others shares, particularly, in the IT business, are growing by contrast.

According to the approved “Organizational structure of JSC “Kazakhtelecom”, with its promotion and provision of services is involved in also management information systems (MIS). It includes sales center, departments - marketing and advertising, sales management, contact center, calculations, realization of projects, sales, the system of integration services and commercial regional offices. The main objective of the MIS is more efficient use of corporate information system.

In addition to the providing retail services, the company is active in the corporate market. Evaluation of the market share of JSC “Kazakhtelecom” in the corporate sector is about 65%. Upon receipt of services to corporate clients need strict implementation of commitments by the operator as to the timing and quality of service, and the level of its service. In JSC “Kazakhtelecom”, in the service of corporate clients branch of the Company Corporate Sales is being specialized (CCS).

In the first place, service of corporate customers in the DCT is based on an individual approach to business customers. Sales are based on the principle of One Stop Shopping (1SS), when the customer receives the business portfolio of ICT services from one operator, with a single contract for

all services. JSC seeks to ensure that corporate customers with quality services which is provided to them in connection with what is soon to be introduced by Service Level Agreement (SLA) - Agreement on the level of provided services. SLA allows you to determine the level of service quality. In the case of supply below specified parameters of the telecom operator pays compensation to the customer. Basic advantages of SLA:

- to abstraction from the implementation technologies of telecommunication services (the "black box");
- to flexible production of the required set, volume and quality of services;
- to mobility of obtained service.

JSC "Kazakhtelecom" offers a wide range of services - customers choose products from shared hosting to rent rack, thus, in the package may include data backup, consulting and outsourcing any work to configure and upgrade equipment, virtual private network or leased lines. In particular, the DIS JSC "Kazakhtelecom" shows such kinds of "hosting", i.e. service of providing computing power to organize information on the server, usually on the Internet: virtual hosting, colocation - placing the client to the server as a host of the site, Dedicated - dedicated server hosting and placement on the site hosting applications, domain registration zone KZ.

Packaging services are offered to the Internet access, telephoning and services that assist corporate clients to buy things easier and more profitable, the provider - from email to content services. For example, at the end of 2013, agreement was signed with JSC "ATF Bank" about placing twenty racks in the data center JSC "Kazakhtelecom". The main motive for "ATF Bank" was providing the maximum security and banking information storage of customer data and transactions.

Corporate information and communication services market is growing steadily and leading analytical agencies predicting its further steady growth, there is a development of IT and Internet projects in the public, financial and other sectors against the background of the high potential of this market, and it has strong competitive positions [11]. Thus, the management is developing new high-tech telecom services, maintenance and improvement of the corporate information system (CIS), the provision of traditional and innovative services. In addition, services for data centers, system integration, as well as the services based on cloud computing.

Today, the vector of development of the IT market is increasingly shifting towards cloud services, as it gives a great advantage in the development of an effective IT strategy. Assessment

has shown that the volume of the global cloud computing worldwide market is predicted at the level of \$ 150-160 bln in 2014. There is expected that "virtualization" will be more than 60% of servers all around the world in 2014. For example, the offers cloud services "Microsoft Hosted Exchange" and "Microsoft Hosted Sharepoint", as well as cloud-based video conferencing mechanism. In the future, the market of the country will have a few cloud services: "Microsoft Hosted Lync", "Dynamic Cloud Server" and "Virtual Data Center".

Cloud computing will actually change the IT-paradigm for all companies and is the most popular trend in modern IT industry for the following reasons: firstly, firms prepare themselves for the need to have their own reliable server hardware, which is quite expensive to maintain and is inflexible to modernization; secondly, the costs of maintaining the state IT will be reduced, because all the concerns about the smooth operation of the equipment will take on outsourcing. The most popular services are private virtual and hybrid cloud data centers with complex services from hot standby to traffic analysis with complete security software for rent - from office applications to specialized products that automate any business process enterprises. In the nearest future a storage services for the corporate segment, the new SaaS-products for small and medium businesses will be introduced.

An important trend in the field of security services and minimize the risks of a joint partnership is presented by LTD "Rentsoft" (Russia) and "Kaspersky Lab". They offer special grace period on the use of a single integrated solution for protecting any device platforms "Windows ®", "Android ™", "Mac OS" - "Kaspersky Internet Security". It includes a secure browser for iOS ®, allowing you to block fraudulent and malicious websites instantly, protecting against malware, spyware, and identity theft. Services such as "anti-phishing", "secure keyboard for entering financial data" module and "secure payment" provide protection when using online banking systems and payment systems "PayPal", "Yandex" and others.

The company continues to expand the capabilities of wireless access to the Internet. For example, in February, 2014, JSC "Kazakhtelecom" has launched a new service based on the technology "WiFi". 688 wireless access points to the Internet have been organized in the regional centers and major cities of the country. Speed is up to 8 Mbit/s, without traffic restrictions on the internal and external resources that will allow the subscriber to use the services as telephony and data transmission. For business owners - shopping malls, hotels, restaurants are provided with the service of model

“WiFi”, which allow controlling the ability to provide Internet access to their users through the specialized Web- interfaces. At present popular online web-content is localized for customers. At the same time, it saves about 50 Gb/s traffic external channels, creating savings of operating costs - about \$ 1.5 million per year.

Republican contact center based on subsidiary LLP “KTCL” with regional facilities in the cities of Astana, Almaty and Karaganda have been launched to expand the range of services in 2013. More than 400 contact centers operate around the clock over 1,000,000 calls in Kazakhstan per a month. In connection with the introduction of a unified database of subscribers JSC “Kazakhtelecom”, as well as cellular and other operators can obtain comprehensive information services to help. These activities helped to reduce the average tariff. Strategic direction of realizing the potential of the company is based on innovation management and formation of innovative thinking. The focus is determined to business models and products, technologies, as well as increasing security, energy and capital resources.

Innovation division is focused on combining the needs of domestic and foreign partner operators in transport traffic. Important areas are Europe, China, Russia, and Central Asia. The company makes the most of existing infrastructure, reducing the number of regeneration nodes that make network traffic delays in transmission, but provides the scalability and the ability to skip up to 4 Tbit/s of traffic in each direction. This was made possible through the use of modern management techniques with optical signals. The more ambitious project is being developed in the field of international transit traffic through the territory of Kazakhstan. In accordance with the project “DREAM”, which is realized by “Kazakhtelecom” and “Megaphone” (Russia), length of ground cable line between Europe and Asia will be reduced to 8,700 km, and the rate of signal delay “RTD” will be reduced to 175 ms. Hence, the company is committed by 2030, Kazakhstan has passed through at least 2-3% of global information flows, and by the year 2050 it will be at least 5%. It should be noted, that the realization of the potential of asset management is ensured through mergers and the subsequent performance of deep-level integration of assets.

The point of all the above strategic directions is to improve management of JSC and technological development. Strategic direction to optimize management is based on its transformation into a structure which provides a high proportion of convergence and integration, customer orientation and efficiency. Forecasts of the leading analytical

agencies is determined on the significant increase in the share of income of operators in the content of the market and applications up to 20-25% by the end of 2014 which will keep the further upward trend. An essential component of this success in this market is a service paid by TV, on which significant growth is projected. In addition, the great importance of this type of business in terms of the synergistic increase demand for fixed and mobile communication has increased as well as the customer loyalty. Conquest of leadership in the market of content and applications is provided for the implementation of plans of competitive portfolio of content and applications, giving preference to the business models and technologies at a fast enough-to-market with minimal investment. It is possible to provide a wide range of services on the territory of Kazakhstan thanks to the implementation of a large-scale program of modernization and development of telecommunication networks. Projects such as - construction of the National Information Superhighway, the creation of the National backbone data network, the National Network of satellite communications and etc. are being implemented under this program successfully.

Conclusions

Development market of info communication in Kazakhstan is provided for the implementation of JSC “Kazakhtelecom’s” key programs of competitive service portfolio.

The company has positioned itself as a leading provider of services to the population as well as with the corporate clients in the telecommunication sector. All the proposed services are communication solutions for the optimization of business not only in Kazakhstan, but also abroad.

Achievement of strategic objectives to strengthen the leading position of the company on IT-market presupposes realization of the potential synergies on the bases of package and integration services, the provision of their convergence.

Findings

The following conclusions have been reached:

– disadvantages of JSC “Kazakhtelecom” are slow - scope implementation of IT outsourcing, the low level of development “of cloud services”, users also have problems of security and risk of delayed access to the Internet;

– priorities of company growth on a proposal submitted to quality services - activization of application system integration and virtual data centers commissioning the new services on data storage systems, the development of 4G mobile

business based on commercial networks “LTE”, extensive use of satellite technology for radio access “CDMA/EV-DO”, implementation of services and business geography, introduction of new technologies in the world of communication and business processes, gaining market leadership in the provision of content and applications, improvement of corporate risk management systems;

– strategic vector of the firm is based on the introduction of nano-technology and innovative equipment with the broader use of fiber infrastructure to provide a variety of competitive services in the mobile market and fixed communication by means of reducing their costs, strengthening the further optimization and reliability of backbone networks of transits and potential of Kazakhstan.

Corresponding Author:

Dr. Smagulova, T. Ryskulov Kazakh Economic University, Zhandosova Street, 55, Almaty, 050035, Kazakhstan.

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