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Modern global and domestic trends in the development of the telecommunications industry

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Abstract: The article is devoted to an overview of modern world and domestic trends in the development of the world communications market, telecommunications services and paid TV services in the telecommunications industry. Much attention is paid to the analysis of the main trends in the telecommunications market in 2019 in Kazakhstan, in particular - the fixed telephony market, the mobile communications market, the broadband Internet access market, the IP telephony market.
Key words: telecommunications, telecommunications industry, telecommunications services market.

The development of the telecommunication services market in Kazakhstan is currently attributed great importance as an important factor and condition for integration into the world community.

The global trends in the communications and telecommunications industry are the development of infrastructure based on wired, high-speed optical and wireless technologies, the provision of services for providing information to the population and organizations, the introduction and development of digital broadcasting technologies, as well as an increase in the level of digitalization of local telephony. Next, we will consider the global and domestic trends in the development of the telecommunications industry according to the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan, the data of the integrated annual report for 2019 of Kazakhtelecom JSC, analytical reviews of the telecommunications industry of the Republic of Kazakhstan, Kazakhstan Stock Exchange JSC and Kazkommerts Securities JSC , marketing data on the communications market in Internet sources and expert estimates [1-5]

According to the analytical company IDC, the global market for communications, telecommunications services and pay TV services in 2017 grew by 1.7%, and its volume in monetary terms amounted to 1.67 trillion. dollars, Fig. 1.

The largest segment of the market under consideration remains mobile communications, its share of total revenue accounts for 52%, and in the period from 2017 to 2021 the mobile category will grow on average by 2% per year. Among the growth factors that will help offset the fall in costs for voice and SMS messages, analysts listed the increasing volumes of mobile traffic and the spread of M2M services.

The second most important segment - fixed line services - in 2017 will provide about 21% of total revenue. The CAGR in this area is expected to be 4% over the next five years. The growing demand for high-speed communication is driving the positive dynamics here. As for fixed telephony services, their revenue will fall by 6% annually over the next five years. By 2021, the share of this segment will account for less than 10% of the total revenue in the telecom and TV services market, according to IDC [2].

By 2023, 5G networks will be rolled out in most emerging markets, delivering higher bandwidth and data rates. The number of 5G users in China alone is projected to surpass 1 billion by 2023. In addition, updated 4G networks will be deployed in most other markets, supporting a maximum download speed of over 1 Gbps.

Deloitte predicts that in 2019 and in the medium term, China will lead the world in terms of the size and quality of telecommunications networks. China's communications infrastructure provides the foundation for the formation and development of at least three significant new industries, each of which will be able to generate tens of billions of dollars in revenue per year by 2023.

In terms of some structural parameters, the telecommunications industry of the Republic of Kazakhstan is similar to the markets of other Central Asian countries. The geographic and demographic characteristics of the country have a significant impact on the development features of this industry, the

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main ones of which are the large territory of the country and low population density, coverage of communication services throughout the country requires significant costs. By the size of the territory, the Republic of Kazakhstan ranks 9th in the world, after Argentina, the 2nd place among the CIS countries, after Russia. In terms of population, the country is only 64th, therefore the average population density in Kazakhstan is very low and amounts to 6.71 people / km2, which is 1.5 times less than the population density in Russia and tens of times less than the population density of countries Europe [3].

The level of coverage of the Republic of Kazakhstan with wire communication has traditionally been relatively low, but in general, the communication and telecommunications market in Kazakhstan is the most developed and competitive in Central Asia. The telecommunications market of the Republic of Kazakhstan is favorably distinguished by the ongoing liberalization, in particular, the decision to open the LTE segment (standard for wireless high-speed data transmission for mobile phones and other data terminals) of all operators.

A large territory combined with a small population, a fairly high percentage of the rural population (50%) and a high family size ratio (on average 3.5 people per family, including 4 people per family in rural areas) partly explains the low level of indicators of telecommunication services in the country. So, in megalopolises and large cities, from 76% to 87% of households have fixed telephones, while in medium and small towns, as well as urban-type settlements and villages, the level of telephony is significantly lower and ranges from 38% to 44%.

New realities of the telecommunications market, saturation with traditional telecom services, increased competition between telecom operators and OTT players (delivery of a video signal from a content provider to a user's device via data transmission networks, often without direct contact with a telecom operator), are forcing participants in the telecommunications market to develop new products , look for additional ways to monetize services and services, as well as new market niches. The dynamics of growth in different segments of the telecommunications market is very different, for example, the mobile segment remains the largest direction of the telecommunications market, fixed telephony shows a steady decline.

At the end of 2019, the total volume of the communication services market amounted to 825 billion tenge, exceeding the indicator of the previous year by 7.1%.

Mobile communications continue to dominate in the structure of incomes by type of services, the development driver of which is data transmission services. Despite the decline in the share of mobile communications in total revenues, it still generates more than half of the total market volume - 53.1%. The share of income from fixed telephony has been declining from year to year, dropping to 6.7% in 2019.

The share of the segment of data transmission services and Internet access in fixed networks in recent years has shown a downward trend, despite the growth in income in absolute terms. The Pay TV services segment in 2019 provided 4.4% of total revenues from communication services [4].

With the growth of the retail market, the volume of services to telecom operators also increases, which is reflected in the growth of the segment's share in the total revenue from telecom services. Among the major mergers, acquisitions and divestment transactions in the period under review, the following should be highlighted: - merging of the subscriber bases of the pay TV operators ALMA-TV and Icon base of the company "ALMA-TV"); - bankruptcy of JSC "Arna" with the implementation of the rehabilitation management procedure in order to rehabilitate the company; - merger of regional companies "SkySilk" and "BiKaDa" (Aktau).

In the structure of incomes by types of services, mobile communications continue to dominate, the development driver of which is data transmission services. Despite the decline in the share of mobile communications in total revenues, it still generates more than half of the total market volume - 53.1%. The share of income from fixed telephony has been declining from year to year, dropping to 6.7% in 2019. The segment shrinking in physical terms is driven by mobile and IP substitution, which is a natural process for a mature market. As one of the measures to compensate for this decline, operators providing services in fixed and mobile networks are providing converged offerings, which include fixed and mobile telephony services in one package.

The share of the segment of data transmission services and Internet access in fixed networks in recent years has been showing a downward trend, despite the growth in income in absolute terms. This means that income from this type of service grows the slowest in the market. The slowdown in income growth is due to the maturity of the market, high level of service penetration and active competition between the market leaders - Kazakhtelecom JSC and Beeline, which provide households with service packages with similar content and, accordingly, have to compete in price.

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The decline in the share of revenue from fixed Internet access and data transmission services is also influenced by the development of IT services by operators. Despite the fact that the bulk of IT revenues comes from infrastructure projects, the share of IT services and Internet-based business solutions provided by telecom operators is growing every year.

The Pay TV segment in 2019 provided 4.4% of total revenues from communication services. The modest growth of income with an actively growing subscriber base is due to the fact that almost a third of subscribers use free basic TV packages provided by OTAU TV with the support of the state.

With the growth of the retail market, the volume of services to telecom operators also increases, which is reflected in the growth of the segment's share in the total revenue from telecom services. The main income for telecom operators comes from the lease of network infrastructure and the provision of data transmission channels and access to the Internet

At the end of 2018, Kazakhtelecom JSC acquired 75% of the shares of Kcell JSC. In 2019, the merger of Kazakhtelecom JSC and Mobile TelecomService LLP took place, which led to a sharp increase in the total share of the telecommunications market of the Kazakhtelecom JSC Group of Companies. In terms of market segments, the position of the Group of Companies of Kazakhtelecom JSC is as follows: fixed telephony - 90%; mobile market - 61% (including the shares of Kcell JSC and Mobile TelecomService LLP); fixed internet - 85%; IP telephony - 58%; pay TV - 42%; ICT services - 18%; operator business - 59%.

Revenues from fixed telephony services at the end of 2019 amounted to 54.03 billion tenge, decreasing by 4.99% compared to 2018. Over the past decade, the decline in the fixed telephony market has been occurring in all directions - local, intercity and international. At the same time, if until 2013 the local telephony market grew due to the growth of telephone lines, and only long-distance / international traffic that migrated to mobile networks and OTT services was subject to reduction, then since 2014 the decline has also affected revenues from local telephony due to a decrease in the market in physical dimension - the outflow of subscribers and the rejection of a part of the population and enterprises from fixed telephone lines, as a means of communication in principle. One of the tools to curb the rate of decline in revenues is the package offers from fixed telephony operators - both service packages offering various services in a bundle on the principle of "wholesale cheaper" and traffic packages that provide a certain amount of minutes at a fixed fee. Nevertheless, despite the efforts of operators, it is no longer possible to completely prevent the decline in revenues from fixed telephony services and resist mobile and IP / OTT substitution.

At the end of 2019, the volume of the mobile communications market in Kazakhstan amounted to 438.4 billion tenge, demonstrating an increase of 10.5% compared to 2019. The market demonstrated not only a way out of the negative peak that was outlined in 2015, but also the highest revenue in the entire history of the cellular communication market is focused primarily on the mass consumer. Until 2015, the strategies of all operators were aimed at gaining the largest market share in terms of the number of subscribers. In many ways, this race for subscribers has provoked price wars, which negatively affected the profitability of subscribers and the total income of operators. In addition, the devaluation of the tenge, which had a negative impact on the country's economy, led to the fact that Kazakhstani enterprises began to cut their budgets to pay for communication services to employees. These factors forced mobile operators to adjust their market strategies in terms of improving the quality of the subscriber base and developing the corporate segment through special services and ready-made solutions. As a result, starting in 2016, the share of revenues from services to corporate clients began to increase annually and at the end of 2019 amounted to almost 10%. It should be noted that if at earlier stages of market development Kcell was the leader in terms of the share of business customers in the total subscriber base, now the development of the corporate sector has become a priority for all operators and the indicator of the share of revenue from business users is at the level of 9-11% in revenue is fair for all companies.

The volume of the market for broadband Internet access (BBA) in fixed-line networks amounted to 103.1 billion tenge in 2019, which is 2.4% higher than the previous year. Despite the slowdown in growth and supply pressure on mobile networks, the broadband market continues to demonstrate positive dynamics. The reason for the growth in income is the growth in the number of subscribers, including in small towns and rural areas. All players strive to offer combo packages from wired and / or mobile telephony services, Internet access, and television. In addition to Kazakhtelecom JSC, Beeline and ALMA-TV remain active in terms of offering services to households.

The volume of the channel rental market in 2019 amounted to 26.5 billion tenge, an increase of 4.3% compared to the previous year. Channel rental services are focused exclusively on corporate users -

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companies that have a network of offices within a city or country and need to combine them. Thus, the entire volume of revenue from channel rental services is generated by enterprises. The growth of the channel rental market fits into the development strategy of the corporate segment operators and the increase in the services used by the companies. Connecting offices is critical to providing end-to-end solutions. At the end of 2019, the number of ports used for organizing data transmission channels amounted to 51.4 thousand.This is 5.3% higher than a year earlier. On the whole, the market maintains stable positive dynamics with a growth rate of the number of subscribers of 5-6% per year. The growth rate of the number of subscribers is slightly ahead of the market growth rate in monetary terms, which is associated with a gradual natural decline in the cost of the service as the market develops and becomes saturated.

Revenues from IP telephony services in 2019 amounted to 7.3 billion tenge, which is 3% higher than the previous year. The number of IP telephony subscribers (telephone lines) in 2019 amounted to 302 thousand, an increase of 3.1% compared to 2018. Despite the fact that the IP-telephony market is growing every year, both in monetary and physical terms, the growth rates of subscribers and revenues are falling year after year, indicating that the market is close to saturation. This is due to the fact that a very limited number of enterprises are in need of long-distance / international telephony services. During the peak of development of the traditional telephony market, calls to long-distance / international directions were regularly made from no more than 400 thousand telephone lines. Considering that at the end of 2019, IP telephony providers installed 302 thousand IP lines, the needs of corporate users to reduce the cost of long distance / international calls are close to being met. Observing this trend, operators "enrich" IP-telephony services, shifting the focus from reducing the cost of outgoing communications to managing corporate intra-office telephony and incoming calls through virtual PBX services. Pay TV market The Pay TV market is a relatively small but steadily growing segment of the telecommunications market in Kazakhstan. In 2019, revenue from Pay TV services increased by 11.1% compared to the previous year, amounting to 36 billion tenge in absolute terms. shifting the focus from reducing the cost of outgoing communications to managing corporate intra-office telephony and incoming calls using virtual PBX services. Pay TV Market The Pay TV market is a relatively small but steadily growing segment of the telecommunications market in Kazakhstan. In 2019, revenue from Pay TV services increased by 11.1% compared to the previous year, amounting to 36 billion tenge in absolute terms. shifting the focus from reducing the cost of outgoing communications to managing corporate intra-office telephony and incoming calls using virtual PBX services. Pay TV Market The Pay TV market is a relatively small but steadily growing segment of the telecommunications market in Kazakhstan. In 2019, revenue from Pay TV services increased by 11.1% compared to the previous year, amounting to 36 billion tenge in absolute terms.

Telecommunications companies are expecting explosive growth towards the Internet of Things in the next 2-3 years. Now the number of cards on the market is about 800-900 thousand. By 2020, the share of machine-to-machine communication and the Internet of Things in the total industry revenue should increase from 2-3% to 7%. Experts predict that by 2025 Kazakhstan will have about 100 million devices connected to the IoT, which will be 3.5 times more than in the mobile communications market. It is estimated that the market size in the country will reach $ 251 million by 2025.

A new generation of mobile communications is born on average once a decade, and each such arrival leads to an increase in data transmission speed. In 5G networks, the speed will be ten times faster than in the current fourth generation networks - LTE. Such a leap in the speed of information transfer makes it possible to expect an industrial boom. We are talking about the finest hour for Internet of Things (IoT) devices - from wireless mice, keyboards, smart kettles and refrigerators to counters and other systems connected to the Internet in the household, offices and industry. Self-driving cars will become one of the main consumers of the 5G standard [5].

The first 5G test network in Europe will appear in 2018. It will be built by the Italian telecommunications company Telecom Italia Mobile (TIM). It was decided to test communications in the dwarf state of San Marino, since there are practically no restrictions on the use of radio frequencies. Europe will develop 5G technology in the 700 MHz range (694-790 MHz), the Council of the European Union (EU) said in a statement. This means that by June 30, 2020, mobile operators across Europe should have access to this range. This timeline coincides with the expected rollout of 5G networks in the EU. As well as communication speed, operators' capital expenditures for the fifth generation will also be much higher than for previous standards. Since the networks of the previous generations will no longer be able to cope with the growing traffic due to the sharp increase in devices connected to the Internet, the relevance of building a 5G network will increase every year. Thus, operators will need to start investing

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in the construction of 5G networks already in 2018–2019. The construction of 5G networks will require huge investments, if only due to the fact that the density of the installation of base stations will increase several dozen times. An area covered, for example, by one 3G base station will require the installation of at least 10-15 5G base stations, he explains. The higher the range, the more stations will need to be built, which, of course, will be reflected in costs. that the density of installation of base stations will increase by several tens of times. An area covered, for example, by one 3G base station will require the installation of at least 10-15 5G base stations, he explains. The higher the range, the more stations will need to be built, which, of course, will be reflected in costs. that the density of installation of base stations will increase by several tens of times. An area covered, for example, by one 3G base station will require the installation of at least 10-15 5G base stations, he explains. The higher the range, the more stations will need to be built, which, of course, will be reflected in costs.

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Роль цифровых технологий в модернизации предприятий-недропользователей

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Аннотация. В условиях сокращения традиционных добывающих отраслей переход на цифровые технологии позволит кардинально изменить их деятельность на основе: дополнительного и оперативного учета множества ранее не известных параметров, оптимизации производственных процессов и снижения затрат, улучшения условий и безопасности труда, повышения уровня рационального использования и охраны природных ресурсов и др.

Ключевые слова: цифровые технологии, добывающие отрасли, предприятия, проблемы, направления, рационализация, перспективы, бизнес-модели развития.

В Казахстане горное производство исторически имеет достаточно длительный период развития. Накоплен большой опыт в разведке, добыче и переработке многих видов полезных ископаемых. За этот период горное производство прошло многие сложные периоды своего развития. Это, в свою очередь, формировало способность адаптации к изменяющимся условиям функционирования, оказавшим большое влияние на результативность, эффективность деятельности предприятий отрасли.

В настоящее время в связи с усложнением и ухудшением условий деятельности данных предприятий при постоянном снижении качества природного сырья и непрерывном углублении разрабатываемых пластов полезных ископаемых актуализируется поиск новых подходов к решению многих сложных вопросов. Для экономики Республики Казахстан данная проблема весьма актуальна, в том числе с позиций экономической и экологической безопасности.

Как известно, несмотря на многие принимаемые стратегии и программы индустриально-инновационного развития отечественной экономики, добывающий сектор остается одним из наиболее значимых и выполняющим целый ряд важных народнохозяйственных задач.

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