

DIGITAL TRANSFORMATION AND DEVELOPMENT OF TELECOMMUNICATIONS INDUSTRY: LESSONS FOR FUTURE GLOBAL PANDEMIC

Audu Bello

*PhD of economics, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia,
elena.korchagina@gmail.ru*

Supervisor: E. V. Korchagina

*doctor of economics science, professor, Peter the Great St. Petersburg Polytechnic University,
St. Petersburg, Russia, elena.korchagina@gmail.ru*

Telecommunications industry plays the most vital role in various aspects of every economy. The role became more prominent during/after the Covid-19 global pandemic, due to adverse effects of lockdown and restrictive measures. In view of this, it is pertinent to explore the digital transformation and development of the industry to guard against future global pandemic. Existing documents and telecommunications industry data in 2018–2021 were systematically analyzed. It was revealed that in the analyzed period there was simultaneously an increase in connections to high-speed digital networks and a decrease in the use of fixed telephone lines. It was also revealed that fall in telecommunications industry revenue was a result of many interrelated and depended factors of the economy.

Keywords: digital transformation; development; telecommunications industry; global pandemic.

ЦИФРОВАЯ ТРАНСФОРМАЦИЯ И РАЗВИТИЕ ТЕЛЕКОММУНИКАЦИОННОЙ ОТРАСЛИ: УРОКИ ДЛЯ БУДУЩЕЙ ГЛОБАЛЬНОЙ ПАНДЕМИИ

Ауду Белло

*кандидат экономических наук, Санкт-Петербургский Политехнический Университет
им. Петра Великого, г. Санкт-Петербург, Россия, elena.korchagina@gmail.ru*

Научный руководитель: Е. В. Корчагина

*доктор экономических наук, профессор, Санкт-Петербургский Политехнический Университет
им. Петра Великого, г. Санкт-Петербург, Россия, elena.korchagina@gmail.ru*

Телекоммуникационная отрасль играет важнейшую роль в различных аспектах любой экономики. Ее роль стала еще более заметной во время/после глобальной пандемии Covid-19 из-за неблагоприятных последствий карантина и ограничительных мер. В связи с этим целесообразно изучить цифровую трансформацию и развитие отрасли для защиты от будущей глобальной пандемии. Были систематически проанализированы существующие документы и данные по отрасли телекоммуникаций за 2018–2021 годы. Было выявлено, что в анализируемый период одновременно наблюдалось увеличение числа подключений к высокоскоростным цифровым сетям и снижение использования фиксированных телефонных линий. Также было выявлено, что падение доходов телекоммуникационной отрасли было результатом многих взаимосвязанных и зависимых факторов экономики.

Ключевые слова: цифровая трансформация; развитие; телекоммуникационная отрасль; глобальная пандемия.

Introduction

Digital transformation of the telecommunications industry has demonstrated several consecutive transitions in the next generation network (2G, 3G, 4G, 5G and 6G). The second generation network (2G) began its widespread distribution from the European market to other markets in the developed countries of the world [1]. The next generation network (5G & 6G) race to build a smart society is highly accommodated in the Chinese government strategic commitment for technological and ultra wideband technology development [2].

Telecommunications industry plays the most vital role in various aspects of every economy [3–5]. The role became more prominent during/after the Covid-19 global pandemic, due to adverse effects of lockdown and restrictive measures [6–7]. It is eminent that the pandemic adverse effects on the economy disrupted the supply chains which lead to temporary or permanent lose of job to household and profit to firms, and the subsequent fall in the performance of the telecommunications industry due low purchasing power [8–10].

In view of the above, it is pertinent to explore the digital transformation and development of telecommunications industry to guard against future global pandemic. In view of this, the author investigates trend in digital transformation of high speed networks access and penetration; examine performance of the industry; and show the impact of Covid-19 pandemic on the industry performance.

Materials and methods/theoretical foundations

The author used methods of analysis and systematization of literature from ScienceDirect.com on the digital transformation of the telecommunications industry before and during a global pandemic, and also applied a systematic analysis of statistical data of the telecommunications industry of the Russian Federation for the period 2018–2021, received from the International Telecommunication Union (Query – ITU DataHub).

Results and discussion

The results of this paper are elucidate in this section. It covers digital transformation of telecommunications industry (access to high speed digital networks, and subscriptions to networks) and performance of telecommunications industry (revenue).

Access to high speed digital networks, subscriptions and revenue, 2018–2021

High speed network (%)	2018	2019	2020	2021
Access to high speed digital networks				
2G	91.00	98.90	98.94	99.40
3G	78.00	87.70	88.60	86.00
LTE/WiMAX	70.00	87.70	88.60	89.75
Subscriptions (count)				
Fixed-telephone	32100000	27700000	25900000	23900000
Mobile-Cellular	229000000	240000000	239000000	247000000
Revenue (‘000000000 USD)				
Mobile networks	10.4	11.7	10.6	10.6
Telecommunications services	25.9	26.0	23.7	23.7

Source: [11].

Table 1 presents the transition and coverage of high speed digital networks across the country. In 2018, the populace has access to 2G, 3G and LTE/WiMAX high speed digital networks with 91.0 %, 78.0 % and 70.0 % coverage respectively; 98.9 %, 87.7 % and 87.7 % coverage in 2019 respectively; 98.4 %, 88.6 % and 88.6 % coverage in 2020 respectively; and finally, 99.4 %, 86.0 % and 89.75 % coverage in 2021 respectively [11].

The information on fixed-telephone subscriptions shows steady fall in the level subscriptions within the periods. The fixed-telephone subscriptions in 2018 was 32100000, decreased by 14 % to 27700000 in 2019, further decreased by 6 % to 25900000 in 2020, and the figure stood at 23900000

in 2021 with 8 % further reduction. The mobile-cellular subscriptions stood at 229000000 in 2018, rose by 5 % to 240000000 in 2019, but fell by less than 1 % to 23900000 in 202 before peaking with 3 % increase to 247000000 in 2021 [11].

In 2018, the revenue earned from the provision of mobile-cellular networks stood at \$10.6 trillion, rose to \$11.7 trillion in 2019, but fell to \$10.6 trillion in 2020, and maintained same figure in 2021. The revenue earned from the cumulative telecommunications industry as shown Table 1 stood at \$25.9 trillion in 2018, it rose to \$26 trillion in 2019, but also fell in 2021 to \$23.7 trillion, and sustained same amount in 2022 [11].

In summary, the results show that the Russian Federation has sustainably transformed and developed its telecommunications industry with large percentage of the populace having access to 2G, 3G and 4G high speed networks across the country. However, the Covid-19 pandemic has adversely impacted the industry performance with the fall in subscriptions and subsequent fall in revenue in 2020–2021.

Suggestions for practical application

The suggestions drawn from the results of this paper for practical applications are as follows: One, it is necessary to concentrate efforts on introducing 5G and 6G networks in the most densely populated areas of the country. Two, various sectors of the economy should operate both online and offline as a coping mechanism in the event of future global pandemic that may lead to lockdown or restrictive measures. Three, human factor of production (labour) should be adequately equipped with necessary skills to discharge their duties remotely from any part of the globe. Finally, invention of artificial intelligent (AI) robots that can move around the country in the event of future global pandemic that may led to lockdown or restrictive measures for human.

Suggestions for future research

Future research should concentrate on the deployment of 5G and 6G network and invention in AI robots that could be operated remotely to carryout the duties of human in the event of future lockdown/restrictive measures in the country.

Conclusion

For this paper to explore the digital transformation and development of telecommunications industry as a coping strategy for future global pandemics, the paper is organized into four sections. Section one reveals the relevance of the topic, poses the research problem and provides an overview of the current state of research on the development of the telecommunications industry; the second section presents research methods and information sources; section three covers the results and discussion of the investigation, and suggestions for practical application and future research; and the final section provides a brief summary of the structure of the paper.

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