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DIAGNOSIS OF THE PROBLEMS OF SEGMENTATION AND RELATIONSHIPS DEVELOPMENT OF THE CELLULAR SERVICE AND INTERNET COMMUNICATIONS MARKET IN UKRAINE

The subject of the study is the analysis of the marketing strategy of large and medium-sized companies in Ukraine and worldwide which operate in the telecommunications sector. The purpose of the study is to review and provide characteristics of the telecommunications industry in Ukraine. This paper defines the place and role of marketing segmentation in mobile communications and the Internet market. The characteristics of the mobile communications market in Ukraine are compiled and examples of structural market transformations worldwide are analyzed. The measures for the restructuring of the market are proposed. The results of the study lead to the following conclusions: a set of strategies for the effective development of market segmentation which can be applied in Ukraine is highlighted; possible measures for structural adjustment of the market are proposed.

Keywords: segmentation, mobile communications market, mass marketing, mobile virtual network operator, diffusion of innovations, oligopolistic market.

Problem statement. As at the early 2019, 21.09 million people in Ukraine regularly access the Internet (once a month or more). Of these, 64% use mobile devices¹. Scientists, experts in the telecommunications industry argue that the introduction of new technology-based services is directly correlated with the size of the economical gross product. For instance, increasing the penetration rate of broadband Internet access by 10% leads to a GDP growth of 0.6-2.8%². That is why the strategically important cellular service market attracts attention not only of entrepreneurs and professional marketers, but also statesmen.

An important component of the Ukrainian telecommunications market problem perspective is the strategy of consumer segmentation, namely mass marketing. The standardization of technologies, whose results are provided to the end consumer, contributes to the formation of a typical range of services at standard prices. In addition, the cellular service market has all the hallmarks of oligopoly. These factors limit the differentiation of services and reduce potential market participants, which affects consumer sentiment and market relationships. Most consumers complain about uneven quality of services, incomprehensible tariff conditions, and most of all – about substantial increases in in the subscription fee³. There are also specific needs of some consumers, as well as a number of B2B sector requests for customized services that the market cannot offer due to the use of mass marketing.

Analysis of contemporary studies. The problem of segmentation and relationships development between market participants is being studied by scientists in Ukraine and all over the world in various aspects: definition of the segmentation and its components (P. Kotler, M. McDonald, I. MacDonald Dunbar), analysis

¹ Factum Group Ukraine (2019). *Проникновение интернета в Украине* <https://inau.ua/sites/default/files/file/1903/dani_ustanovchyh_doslidzhen_za_1-y_kvartal_2019_0.pdf> (2020, March, 14).

² Delo.ua (2017). *Пилуля для роста: Как 3G и 4G влияет на ВВП страны* <<https://delo.ua/business/piljulja-dlja-rosta-kak-3g-i-4g-vlijaet-na-vvp-strany-337126/>> (2020, March, 21).

³ УНІАН (2019). *В Україні подорожчав мобільний зв'язок: скільки платитимемо.* <<https://www.unian.ua/economics/telecom/10404528-v-ukrajini-podorozhchav-mobilniy-zv-yazok-skilki-platitmemo.html>> (2020, March, 10).

of the cellular service market in Ukraine and directions of its development (L.V. Lazorenko, N.O. Margarita, A.P. Karpiy), researching the competition in the oligopolistic market of mobile communications (L.V. Zubko, Y.V. Sapega), characteristics of mobile virtual operators and their role in the industry (Allan T. Rasmussen, Christian Borrman), evolution of the telecommunications industry worldwide (Gerard M. Goggin, Andrew Wheen). At the same time, given the lack of systematic study of market segmentation strategies in the industry, the cellular service and Internet communications market, the development of relationships among its participants need further research.

Definition of objectives. The purpose of this article, as a part of the scientific research, is to identify the essence of segmentation strategies adopted in the industry, as well as to explore the problems of applying other marketing strategies.

Presentation of the primary material. Market segmentation is the division of all potential consumers into groups based on differences in their needs, characteristics or behavior¹. In most cases, an enterprise in any industry cannot cover all consumers with one single offer, since on rare occasions all of them need the same product or service. Segmentation is usually applied by geographical, demographic, economic, social, psychological, behavioral principles or by motives for the purchase or using goods.

After conducting market research, according to its results, company management decides on the strategy of choosing the target market for each specific product or service. If an enterprise chooses a mass marketing strategy, it means that it has decided to ignore any differences in segment needs – segmentation is kept to a minimum. Players on the cellular service and Internet market follow a similar strategy – high-tech companies are implementing a late-19th-century marketing strategy. Of course, this is due to the similarity of the results from the operation of the technologies offered; for example, the consumer will not contact the cellular operator (carrier) asking to provide him with a CDMA digital cellular communication rather than GSM (although in some cases such a need arises) since a user is more concerned with the end result – calling the other party. However, on any market sooner or later the question of going beyond the traditional diversity of services arises; it comes after the saturation of primary demand and the inevitable evolution of needs.

In considering the cellular service and Internet market in Ukraine, it is possible to talk about the three largest players on the telecommunications market – so-called “The Big Three”: “Kyivstar” (54% of the market), “Vodafone” (34%) and “Lifecell” (16%)². This power structure is typical for the industry, as expensive equipment and infrastructure, as well as permits and licenses are traditional barriers to the emergence of new independent players. There are also several mobile and internet operators which occupy small niches: “Intertelecom”, as the only CDMA operator in Ukraine (about 0.5% of the market); “TriMob”, which satisfies the need for cheap 3G internet in the lower echelons of the market (about 0.7%); “LycaMobile”, as an international virtual operator specializing in roaming and international calls (share is unknown). However, even small-scale market players are followers of mass marketing strategy, since the depth and breadth of their range of services, the portrait of the target consumer are little different from those of “The Big Three” (despite some specialization).

On all European mobile communications markets (54 countries), 3-4 companies have a leading position with the largest subscriber base³. The situation in other regions of the world is not very different. In other words, on most of the world markets, government regulators deal with their oligopolistic structure.

Due to the fact that the parent companies of two of the three largest Ukrainian telecommunication service providers are located in the Russian Federation, it is correct to compare the Ukrainian cellular service and Internet market with the Russian one. In addition to “MTS”, “MegaFon”, “Beeline” and “Tele2”, which use the industry-wide “positioning on everyone”, on the Russian market there is also “Yota” LLC, which sufficiently serves the mobile Internet segment of those up to 35 years – residents of regional centers who have a demand for fast and lucrative 4G, but at the same time use other services less. It is worth noting that the average monthly cost of Russian operators’ tariff plans is 153% higher than the offers of their subsidiaries in Ukraine (500 rubles against 75 UAH, as of 01.09.2019). However, the price range of Russian operators’ offers is much larger: from 225 to 620 rubles for a package with a minimum number of services versus 75-80 UAH for a similar one in Ukraine (some of “Lifecell” tariffs are not taken into account due to their failure to meet the consumers minimum requirements of service – both Russian and Ukrainian). Considering

¹ Палига, Є. (2007). *Основи сучасного маркетингу*. Львів: Українська Академія Друкарства.

² Маргіта, Н. О. (2016). Оцінка сучасного стану розвитку ринку мобільного зв'язку в Україні. *Економіка та суспільство*, 7, 388.

³ Wikipedia (2020). *List of mobile network operators of Europe*.

<https://en.wikipedia.org/wiki/List_of_mobile_network_operators_of_Europe#Ukraine> (2020, February, 12).

the breadth and depth of the range of Russian operators' services, different approaches to pricing and communication policy, the selection of different market segments and orientation on theme by some firms, we can conclude that there is no mass market segmentation strategy applicable, plus more intense competition for B2C and B2B consumer. But what drives cellular service and Internet market segmentation?

First of all, let's enlarge upon the concept of virtual mobile operator. MVNO (Mobile Virtual Network Operator) is a mobile operator that uses an existing third-party infrastructure while providing services under its own trademark. By leveraging excess capacity belonging to existing market participants, MVNOs are designed to meet the needs of those consumers who are characterized by high cost of engagement. They can be: subscribers who constantly make international calls; subscribers with disabilities and low purchasing power; B2B clients with special needs etc. Traditional mobile operators in developed countries usually have some reserve capacity and bandwidth to ensure the quality of services in the event of a massive short-term increase of subscribers' activity. In order to shift the reserve to self-sufficiency, operators dynamically unload to MVNOs their unused capacity at minimal, "wholesale" prices. A virtual operator does not have the capital cost of installing and maintaining base stations, hiring large staff of specialists and paying fees for all the telecommunications licenses. In addition, MVNO can use equipment of several cellular operators at once, extending the coverage area and reducing the termination of traffic (redirection) cost, thus creating an attractive trade offer for consumers.

By the level of own services' development and controlling components of its production, companies are divided into those using Light MVNO and Full MVNO models. There are also intermediate forms – subsidiaries as service providers and resellers.

Table 1

Business models of some market participants

Carrier type	Traffic routing and communication equipment	Service systems on subscribers' devices	Call center and online support	Billing system	Tariff plans and SIM-cards	Marketing communications and distribution network
Reseller						+
Subsidiary, service provider			+	+	+	+
Light MVNO		+	+	+	+	+
Full MVNO	+	+	+	+	+	+

Source: compiled by the author on the basis of data¹

GSMA Intelligence, a mobile communications market analysis company, identifies eight existing MVNO categories² that meet the needs of relevant segments: discounters, telecom companies, entertainment/media companies, migrant and travel brands, retailer brands, services for B2B, roaming providers and M2M (machine-to-machine interaction – technologies that enable data to be transmitted across devices, such as terminals, meters, camcorders, trade terminals, etc).

On the Russian market, MVNOs have been the catalysts for structural changes since the early 2000s. In 2008, local authorities created the necessary legislative framework for the virtual operators' operations, regulating their activities and the right for their own number capacity. That, in turn, provoked the emergence of new players on the market. A good example of the cellular service market restructuring is the "Beeline" operator, which leased its facilities to the virtual operator "Sim Telecom" (known as the "Sim Sim" brand since 2014). Its services were in demand with migrant workers due to points of sale places being strategically

¹ Bernard, G. H. (2020). Full MVNO and Light MVNO. *Georges-Harald Bernard's blog*. <<http://ghbernard.byethost18.com/full-mvno-and-light-mvno/>> (2020, February, 12).

² GSMA Intelligence (2015). *The global MVNO footprint: a changing environment* <<https://web.archive.org/web/20150419012148/https://www.gsmainelligence.com/research/2015/02/the-global-mvno-footprint-a-changing-environment/490/>> (2020, March, 20).

selected (around 4000 points near train stations, markets and other public places), low rates for calls to CIS countries and support of call center operators speaking relevant languages (including Uzbek and Tajik)¹.

Although MVNO's business model is widespread in many regions of the world, its process of integration is slow on the Ukrainian cellular service and Internet market.

Table 2

MVNO penetration into cellular service markets, by countries

Country	Active MVNOs	Share of all MVNOs on the market	Market players, years (average)
United Kingdom	77	15,9%	19
Germany	135	19,5%	18
USA	139	4,7%	17
Russian Federation	37	5%	16
Ukraine	2-3	< 0,5%	4

Source: compiled by the author on the basis of data²

At the same time, it cannot be denied that there are segments of potential or already attracted subscribers on the Ukrainian market whose needs can be effectively met by the services offered by MVNO. The history of virtual mobile operators in Ukraine dates back to the mid-2000s, when the need for cellular communication as a technology, its penetration, encouraged a few market players to consider all segments and use different marketing strategies. Mobile carriers have been actively creating new sub-brands whose services have well-defined target audiences. The subscriber base of each of the sub-brands numbered from tens of thousands to several million users, but most of these subsidiaries were quickly liquidated and subscribers were forcibly transferred to the tariffs of the parent companies. Market participants explained this decision as "the need to unite all internal brands".

As far as the stage of virtual mobile operators' market development in Ukraine is clearly far behind the similar markets in the countries of near and far abroad, the problem of identifying all the factors that hinder the progression of such a partnership arises. Here are some of them:

- Lack of the legislative framework for MVNO. Each virtual operator must be licensed to operate as a normal telecom carrier³. MVNOs are currently only resellers of the "real" cellular carriers' services and may have difficulties obtaining their own license plate or cannot obtain it at all;

- Network congestion and low ARPU. Although the disadvantages of the infrastructure systems may indeed exist due to its lack of cost recovery on investments, significant costs are invested in the development of the base stations, transport network and maintenance of the existing coverage (with only "Lifecell" under such conditions being unprofitable). As for low ARPU, its level does not interfere with market transformations through MVNO creation; for instance, in the MVNO-vibrant Philippines⁴ the average monthly check may not exceed \$1,5.

- Weak antitrust regulation of the industry and lack of appropriate regulatory powers in NCRCI (National Commission for State Regulation in the Field of Communication and Informatization). Ukrainian law does not provide for forced cooperation with the MVNO or sanctions for usurpation of market power by a mobile operator. Speaking of the Antimonopoly Committee, it has examined the case of the possible

¹ Кодачигов, В., Кантышев, П. (2018). «Вымпелком» избавился от виртуального оператора для мигрантов. *Ведомости* <<https://www.vedomosti.ru/technology/articles/2018/04/03/755695-vimpelkom-izbavilsya>> (2020, March, 03).

² One Development, Ltd (2018). *The state of MVNO in 2018*. <<https://web.archive.org/web/20190324140650/http://www.weconnectthailand.com/news/the-state-of-mvno-in-2018-more-than-1300-active-mvnos-in-79-countries/>> (2020, March, 12).

³ Закон про телекомунікації, ст. 155, 2004 (Верховна Рада України). *Офіційний сайт Верховної Ради України* <<https://zakon.rada.gov.ua/laws/show/1280-15>> (2020, February, 25).

⁴ Newswire Association LLC (2017). *MVNOs in Emerging Asia: MVNO friendly regulatory framework and unique product offerings to drive MVNO market* <<https://www.prnewswire.com/news-releases/mvnos-in-emerging-asia-mvno-friendly-regulatory-framework-and-unique-product-offerings-to-drive-mvno-market-300455594.html>> (2020, March, 10).

cartel complicity (regarding the practice of 4-week billing) promptly enough¹, but so far (as of 01.01.2019) has not initiated any monopoly abuse² allegations towards “Kyivstar”;

- Lack of a strong national operator. All key market participants are subsidiaries of the foreign companies: “Kyivstar” PJSC (“VEON”/“VimpelCom” Ltd. – Russian Federation), “Vodafone Ukraine” PJSC (“MTS” PJSC – Russian Federation), “LifeCell” LLC (“Turkcell” A.Ş. – Turkey), “InterTelecom” LLC (“Interdnestrom” – unrecognized Pridnestrovian Moldavian Republic). This is an unnatural situation for the mobile communications market, since in most countries there is at least one national player on the market with a significant market share³. Representatives of any major company in other countries are always late in applying innovations and are not usually the initiators of restructuring the market.

- Misunderstanding of the MVNO on the traditional (“base”) operator dependence level. Virtual operators cannot practice aggressive dumping and thus “compromise the stability on the market” unless this opportunity is created. The terms of the partnership are always consistent with the parent carrier; moreover, only 26% of MVNOs position themselves as discounters⁴.

The emergence of new MVNOs on the Ukrainian market is a necessary condition for the revival of competition, which is misrepresented by the existing market players as “unbearable”. This can only be the case when it comes to price competition (again, not taking into account the existence of a “standard” price range of key market players and their abilities to organize cartels), but not in the case of service, technological innovation and marketing segmentation.

Let us turn to the proposals for restructuring the market. Addressing the problem of mass marketing and inefficient segmentation, one should focus on the worldwide practice of overcoming the negative effects of an oligopolistic structure by revitalizing competition. One of the methods that will give impetus to the development of the industry is the attraction of virtual mobile operators as new entrants to the market. At the moment, there are at least two promising areas on the Ukrainian market, the segmentation strategies for which can be implemented by MVNO business models.

The first strategic direction is to serve the segment of the young, active users who want to access the fastest mobile Internet and be the first to enjoy the latest technological advances. It should be noted that in 1962 the American sociologist E. Rogers developed the theory of the so-called diffusion of innovation⁵ (Fig. 1), which describes this consumer group as a segment of “enthusiasts” (“innovators”) and “early adopters”.

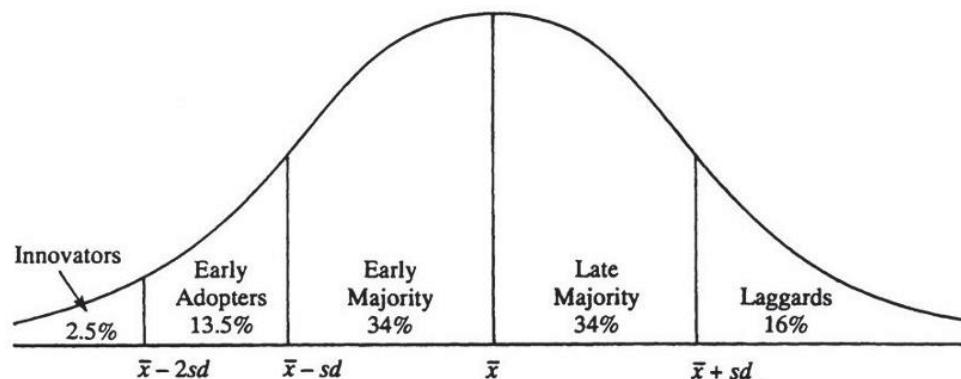


Fig. 1. Segmentation by the innovation diffusion model

¹ Укрінформ (2019). *Розрахунковий період мобільних операторів у 4 тижні неправомірний – АМКУ* <<https://www.ukrinform.ua/rubric-economy/2695520-rozrahunkovij-period-mobilnih-operatoriv-u-4-tizni-nepravomirnij-amku.html>> (2020, March, 05).

² Антимонопольний комітет України (2020). *Зловживання монополієм (домінуючим) становищем* <<http://www.amc.gov.ua/amku/control/main/uk/publish/article/84986;jsessionid=AD4678B6101EF9E9229FC4D37E787D2F>> (2020, February, 12).

³ Wikipedia (2020). *List of mobile network operators of Europe* <https://en.wikipedia.org/wiki/List_of_mobile_network_operators_of_Europe#Ukraine> (2020, February, 12).

⁴ GSMA Intelligence (2015). *The global MVNO footprint: a changing environment* <<https://web.archive.org/web/20150419012148/https://www.gsmainelligence.com/research/2015/02/the-global-mvno-footprint-a-changing-environment/490/>> (2020, February, 20).

⁵ Everett, M. R. (1962). *Diffusion of innovations*. London: Macmillan (Free Press of Glencoe).

In every country there are consumers on the cellular service and Internet market who want “the latest and greatest”. These are people who can easily imagine the benefits of new technologies, evaluate their usefulness and tailor it to their needs. Also, as is often the case with new technological standards and consumer electronics devices, early adopters tend to purchase a “catalyst for change” or “a better future for everyone” and thus hope that they will prove to be “superior” to ordinary users. We can assume that there is a segment of a sufficient size with active (marked by high consumption) mobile Internet users age of 16-35, residents of regional centers with average income (by analogy with markets in other countries), who potentially have an unmet demand for missing services in Ukraine which can be provided by the symbolic MVNO “Type 1”. This may include unlimited mobile internet plans (Ukrainian carriers provide ones, but limit connection speeds after a certain amount of traffic consumed; alternatively, MVNO may offer a downgrade from 4G to 3G after reaching the consumption limit – with the expectation of minor losses from the most active subscribers). MVNO “Type 1” may be present both in the higher echelons of the market (100-150 UAH and above per month for the service pack) and below the average price level (50-60 UAH per month). These costs should be reduced by completely abandoning services that are not sought after in the innovators and early adopters’ segments, such as minutes of calls and SMS.

The second strategic direction is MVNO “Type 2”, which shall serve the lower echelons of the market: consumers who do not want to use any services other than cellular communications; subscribers with minimal ARPU. We can conclude that there is a sufficient number of existing and potential subscribers (“late majority” and “laggards”) who do not need or simply are not able to pay for mobile internet and other relevant carriers’ services – they only need a cellular connection of the minimum necessary quality. These may be pensioners, the elderly and other sectors of the poor population in Ukraine. Following the cascading increase in tariffs during 2018, it has become apparent, through the prism of numerous complaints, that there is a significant hidden demand for the potential discount player’s services; moreover, “The Big Three” do not currently offer any tariff plan without the mobile traffic package included, since the mobile internet delivery is the main item of revenue for carriers (at the same time, phone calls between subscribers of the same network is free of charge, but within the paid package). Although operators have tried to reduce the pressure on subscribers of the described above segment by providing a discount of $\approx 10\%$ for discontinuing the use of mobile internet, these consumers still feel abandoned.

The unrestrained fear of the carriers over MVNO discounters is, at first glance, grounded because of the fact that it is unprofitable to serve the lower echelons of the market and MVNO seems to use an aggressive dumping as a matter of course. In fact, the needs of the segment stated above can be met by lower quality services, primarily using outdated technological standards. Currently, the telecommunications industry is aware of the clear trends such as VoLTE growing popularity (Voice over LTE – voice communication of better quality using 4G), falling SMS usage and decline in 3G investment¹ (Fig. 2).

Providing the opportunity to make a limited number of calls using traditional technological standards and leasing the right to use a small part of the radio frequency resource to the less relevant 2G/3G Internet should not cause extra costs of the base operators and make an outflow of their valuable subscriber base possible; on the contrary, this will allow the implementation of the “harvesting” marketing strategy for services in stages of maturity and decline. In addition, according to some market experts, such as the NCRCI Chairman², phone calls may become completely free of charge in the future (as a basic unpaid service: may also be implemented as a free service between subscribers of different carriers), while users will only consume internet traffic. Considering all the appearing trends, the question arises: can a partnership of the base operator with MVNO “Type 2”, which, let us assume, is only supposed to provide MVNO with the traditional cellular services – not for free (15-30 UAH per month), at economically reasonable prices – to threaten the market power balance somehow? Such an MVNO certainly could pull over some of carriers’ subscriber base (unless it attracts completely new subscribers), but only those who are the most “undesirable” clients for market leaders – frugal, inactive users with low ARPU who only need the least margin, outdated services and the minimum required level of service. These are the existing or potential subscribers in the segments that are inefficiently served by the base operators. The emergence of MVNO “Type 2” will not only revitalize the market, but also improve the socio-economic situation of some sections of the population.

¹ Informa PLC (2019). *MWC19: What to Expect* <<https://ovum.informa.com/resources/product-content/mwc19-what-to-expect-ens002-000064>> (2020, February, 12).

² UBR (2018). *В НКРСІ рассказали о скорости интернета, МНР и внедрении 5G в Украине* <<https://web.archive.org/web/20190917174621/https://ubr.ua/market/telecom/v-nkrsi-rasskazali-o-skorosti-interneta-mnp-i-vnedrenii-5g-v-ukraine-3879123>> (2020, March, 02).

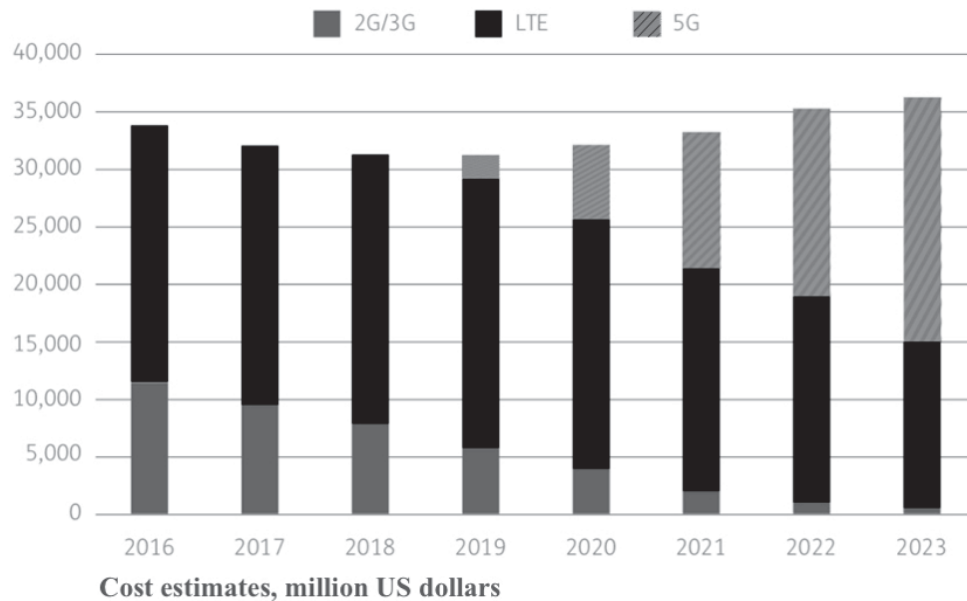


Fig. 2. Carriers' forecast on investments in 3G network development according to GSM Association

Key findings. On the cellular service and Internet communications market in Ukraine there is a mass marketing strategy that prevails; this is the reason why some segments are not properly serviced. Most of the similar markets worldwide have a similar oligopolistic structure, but in leading European and neighboring countries, measures have been taken to overcome sluggish competition. One of the ways to make necessary market transformations is to stimulate the emergence of virtual mobile operators (MVNOs) on the market. These market players are the catalyst for change, in particular in the areas of marketing segmentation and the introduction of technological innovation. The Ukrainian MVNO market is extremely underdeveloped due to local peculiarities such as: lack of legal framework for MVNO; low ARPU and inability of market participants to see potential benefits of working with MVNO; weak antitrust regulation of the industry; lack of a strong national operator; misunderstanding of the MVNO on the base operator dependence level. Based on the theory of diffusion of innovations and analogy with the world markets of cellular service and Internet communications, we can assume the presence of undeveloped segments of active and conservative (poor) consumers, whose demand can be effectively satisfied by the emergence MVNO “Type 1” and “Type 2” accordingly on the market.

References:

1. Factum Group Ukraine (2019). *Proniknoveniye interneta v Ukraine* [Internet penetration in Ukraine]. <https://inau.ua/sites/default/files/file/1903/dani_ustanovchyh_doslidzhen_za_1-y_kvartal_2019_0.pdf> (2020, March). [in Russian].
2. Delo.ua (2017). *Pilyulya dlya rosta: Kak 3G i 4G vliyayet na VVP strany* [The pill for growth: How 3G and 4G affect the country's GDP]. <<https://delo.ua/business/piljulja-dlja-rosta-kak-3g-i-4g-vlijaet-na-vvp-strany-337126/>> (2020, February, 21). [in Russian].
3. UNIAN (2019). *V Ukraini podorozhchav mobilnyi zviazok: skilky platyty memo* [In Ukraine, cellular service has become more expensive: how much we will pay]. <<https://www.unian.ua/economics/telecom/10404528-v-ukrajini-podorozhchav-mobilniy-zv-yazok-skilki-platitmemo.html>> (2020, March, 10). [in Ukrainian].
4. Palyha, Ye. (2007). *Osnovy suchasnoho marketynhu* [The basics of modern marketing: the manual]. Lviv: Ukrainska Akademiia Drukarstva. [in Ukrainian].
5. Marhita, N. O. (2016). Otsinka suchasnoho stanu rozvytku rynku mobilnoho zviazku v Ukraini [Assessment of the current state of the mobile communications market development in Ukraine]. *Ekonomika ta suspilstvo* [Economics and society], 7, 388 [in Ukrainian].
6. Wikipedia (2020). List of mobile network operators of Europe. <https://en.wikipedia.org/wiki/List_of_mobile_network_operators_of_Europe#Ukraine> (2020, January, 12). [in English].

7. Bernard, G. H. (2020) *Full MVNO and Light MVNO. Georges-Harald Bernard's blog* <<http://ghbernard.byethost18.com/full-mvno-and-light-mvno/>> (2020, January, 12). [in English].
8. GSMA Intelligence (2015). *The global MVNO footprint: a changing environment* <<https://web.archive.org/web/20150419012148/https://www.gsmainelligence.com/research/2015/02/the-global-mvno-footprint-a-changing-environment/490/>> (2020, February, 20). [in English].
9. Kodachigov, V., Kantyshev, P. (2018). "Vimpelkom" izbavilsya ot virtualnogo operatora dlya migrantov ["VimpelCom" got rid of a virtual operator for migrants]. *Vedomosti* [Records]. <<https://www.vedomosti.ru/technology/articles/2018/04/03/755695-vimpelkom-izbavilsya>> (2020, March, 03). [in Russian].
10. One Development, Ltd (2018). *The state of MVNO in 2018* <<https://web.archive.org/web/20190324140650/http://www.weconnectthailand.com/news/the-state-of-mvno-in-2018-more-than-1300-active-mvnos-in-79-countries/>> (2020, March, 12). [in English].
11. *Zakon pro telekomunikatsiyi, 2004* (Verkhovna Rada Ukrayiny) [Telecommunications Act 2004 (Verkhovna Rada of Ukraine)]. *Ofitsiyyny sayt Verkhovnoyi Rady Ukrayiny* [The official website of the Verkhovna Rada of Ukraine]. <<https://zakon.rada.gov.ua/laws/show/1280-15>> [in Ukrainian]. (2020, February, 25).
12. Newswire Association LLC (2017). *MVNOs in Emerging Asia: MVNO friendly regulatory framework and unique product offerings to drive MVNO market* <<https://www.prnewswire.com/news-releases/mvnos-in-emerging-asia-mvno-friendly-regulatory-framework-and-unique-product-offerings-to-drive-mvno-market-300455594.html>> (2020, March, 10). [in English].
13. Ukrinform (2019). *Rozrakhunkovyi period mobilnykh operatoriv u 4 tyzhni nepravomirnyi – AMKU* [Carriers' 4 weeks billing period is illegal – Antimonopoly Committee of Ukraine]. <<https://www.ukrinform.ua/rubric-economy/2695520-rozrahunkovij-period-mobilnih-operatoriv-u-4-tizni-nepravomirnij-amku.html>> (2020, March, 05). [in Ukrainian].
14. Antimonopoly Committee of Ukraine (2020). *Zlovzhyvannya monopolnym (dominuyuchym) stanovyshchem* [Abuse of the monopoly (dominant) position]. <<http://www.amc.gov.ua/amku/control/main/uk/publish/article/84986;jsessionid=AD4678B6101EF9E9229FC4D37E787D2F>> (2020, March, 12). [in Ukrainian].
15. Everett, M. R. (1962). *Diffusion of innovations*. London: Macmillan (Free Press of Glencoe). [in English].
16. Informa PLC (2019). *MWC19: What to Expect* <<https://ovum.informa.com/resources/product-content/mwc19-what-to-expect-ens002-000064>> (2019, January, 12). [in English].
17. UBR (2018). *V NKRSI rasskazali o skorosti interneta, MNP i vnedrenii 5G v Ukraine* [NCRCI reported internet speed, MNP and future roll-out of 5G in Ukraine]. <<https://web.archive.org/web/20190917174621/https://ubr.ua/market/telecom/v-nkrsi-rasskazali-o-skorosti-interneta-mnp-i-vnedrenii-5g-v-ukraine-3879123>> (2020, February, 28). [in Russian].