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THE ASSESSMENT OF LEVEL OF INFORMATION PROVISION OF RURAL TERRITORIES THE WEST REGION OF UKRAINE

Statement of the problem. Nowadays, information and communication technologies increasingly are penetrating into all spheres of human activity. There is a rapid development of information infrastructure and information services in Ukraine. Because of the development of telecommunications and communications, the number of users of modern technologies is increasing, not only in cities but also in rural areas in particular.

Analysis of recent research and publications. The issue of information provision in rural areas in the context of local government, agricultural management, and innovative development of agricultural enterprises using modern computer and information technology in the field of rural tourism, agricultural production, etc. Those issues are being dealt by such scholars as Matyuhin V.A., Ogirko I.V., Kobets M.I., Shkvyrya N.A., Lysenko L.V., Pechenyuk V.I., Pecheniuk A. et al. However, there are still not enough studies on evaluation of access to the global network and presence in rural settlements in today's Internet space.

***Statement of the purpose*.** The purpose of the article is to assess the level of Internet access in rural areas of Western Ukraine. To achieve this goal, the criteria that would enable you to objectively characterize the level of rural resident's access to a global network, should be defined. In our opinion, the following criteria should first of all include:

- availability of information and communication technologies (number of providers, operators in the area) and technical access to the network;
- number of educational computer systems in rural schools and libraries equipped with computers;
- availability of computer equipment (fixed, portable computers), fixed and mobile telephone households.

The main material of the study.

1. Access to information and communication technologies.

Among the options that are used to connect the residents of villages and settlements there can be named such as: the connectivity via Wi-Fi, using a conventional fixed telephone, the connection through fiber-optic cable, 3G Internet, and Satellite Internet [1].

One of the most common and affordable options to connect to the global network is a mobile Wireless Internet. In Ukraine, the following providers are offering this type of service: Intertelekom , PeopleNet, MTS, FreshTel, Geraffe 4G, 3Mob, Life :) 2G, Kyivstar 2G [3].

Intertelekom is sufficiently broad network coverage and offers Internet connectivity almost to the entire Western region of Ukraine (with the exception of mountainous part of Chernivtsi, Ivano-Frankivsk, Lviv, the Transcarpathian region and Lviv region within the border zone (Mostyska, Rava -Ruska, Belz)).

PeopleNet offers its services to nearby regional centers and in Lviv (Stry, Zhydachiv), Volyn (Gorokhiv), the Carpathian (Mukachevo) regions and also in some regional centers. For provincial cities the average coverage radius ranges from 21 km to 31.5 km, that is why the services of the Internet connection provider can be used mainly by the residents of villages located in suburban areas.

MTS Coverage includes all regional centers of the western regions , and some cities such as Kovel (Volyn region) , Sarni (Rivne region), Truskavec , Stry, Morshin, Zhydachiv, Novyi Rozdil (Lviv region), and the village - Yassin, Black Tisa (Transcarpathian region), Tatar, Polyanitsya, Yablunitsa (Ivano-Frankivsk region). It should be noted that the coverage in the Transcarpathian region also includes the settlements that are located between Uzhgorod, Mukachevo and Beregovo. On average the coverage radius of the operator ranges from 26.2 km to 91.1 km.

FreshTel provides access to the Internet in rural areas that are located within 40 miles of the city. Basically the western territory of this operator offers its services in cities (Lviv, Chernivtsi, Ivano-Frankivsk, Tysmenytsia, Uzhgorod, Vinogradov, Hust), but even not in all regional centers , because there is no coverage in Rivne, Ternopil and Lutsk.

Geraffe 4G provides its services only in the cities of Lviv and Ivano-Frankivsk. 3Mob, the founder and member of which is JSC "Ukrtelecom", covering all areas of Western Ukraine. In turn, these providers like Life :) 2G and 2G Kyivstar covering the entire territory of the western regions, except in some mountainous areas.

According to the National Commission for the State Regulation of Communications and Informatization as of 06.25.2013, in the register of operators and telecommunications providers there were 3401 businesses, 119 of which are in rural areas. It should be noted that the location of the service provider or telecommunications provider does not give any reasons to believe that their activities are focused only on the localities in which they operate. Telecommunication operators and service providers that are in cities may provide their services in rural areas as well. According to the register, 519 such entities declare the extent of their activity on the all territory of Ukraine or its individual regions, and by covering their services and rural

development. In rural areas of the western region 112 operators and telecommunications providers are operating at the moment, of which 38 are in the Transcarpathian and 33 – in Lviv region [6].

According to the National Commission for the State Regulation of Communications and Informatization, the lowest level of penetration of broadband and the Internet is among the Transcarpathian, Ivano-Frankivsk and Rivne regions. Instead, Lviv region in comparison to Odessa, Donetsk and Zaporizhzhya, belongs to the group of regions with the highest penetration rate of broadband Internet [2].

2. The Number of educational computer systems in rural schools and libraries equipped with computers.

Teaching computer complex (the TCC) - teacher's personal computer (PC) connected to local computer network of students' personal computers with the possibility of sharing on the Internet. Availability of educational computer complex in the countryside can be seen as an access to the global network, provided that the average resident in rural areas is unable to connect to the Internet personally.

Table 1 shows that the availability of TCC in schools are the best in the Transcarpathian and Chernivtsi regions. However, the proportion of TCC, which are connected to the Internet is the greatest in Rivne region. The worst situation among the regions of the Western Region to ensure the TSC in urban and rural secondary schools, as well as share Internet connection is in the Ternopil region.

Table 1

Supplying secondary schools in Western Region with training computer complexes (TCC) in 2010/2011 academic year

region	Provision of TCC on 01.01.2005, %	State of TCC on 01.01.2011, %	Rural locality		
			% Provision needs to TCC	Number of student per computer	% Internet connection
Volyn	44,2	77,8	77	4	63
The Transcarpathian	42,4	100	93	23	49
Ivano-Frankivsk	34,5	88,5	89	14	84
Lviv	41,5	67	62	17,8	52
Rivne	41,3	95,4	93	16	91
Ternopil	15,9	55,8	55,1	16	34
Chernivtsi	42,7	100	95,5	16	64

Reference: [5, p. 315-316, 8].

At the beginning of 2011 in Ukraine as a whole, about 85 % of secondary schools were already connected to the Internet. The corresponding proportion of schools in rural areas is about 60% (the share of vocational connection and higher education institutions is about 100 %, as most of them are located in urban areas). The main reason for this disparity is inadequate communications technology in rural areas, the presence of mostly outdated and linear communication equipment, features which are sufficient to ensure the quality of Internet access, corresponding to modern requirements [5, p. 313-314].

Along with secondary schools, the Internet access can be provide by the library. Within the program "Bibliomist", libraries become computerized and provide a free access to a global network. Under this program, the largest number of libraries in rural areas of western areas equipped with computers with Internet access, are in Rivne (51) and Ternopil (46) regions. Slightly smaller is the number in Volynsk (39), Ivano-Frankivsk (34), Chernivtsi (27) and the Transcarpathian (26) regions. Least libraries that are equipped with modern information technology is calculated in the Lviv region - only 6 rural libraries [7].

3. *Availability of computer equipment (fixed, portable computers), fixed and mobile telephone households*.

In 2011, 25.5 % of automatic telephone exchanges in rural areas in Ukraine were accounted in Western Region. Their number was 2,777 units with total capacity of 498 thousand phone numbers. All automatic telephone exchanges (PBX) - 572 were accounted in Lviv region, 479 - in Ternopil and in Chernivtsi region there were at least - 270 units. Accordingly, the PBX capacitance is the greatest in rural Lviv region (90 thousand telephone numbers). Minimum installed capacity of automatic telephone exchanges in rural areas is in Volynsk region (43.9 thousand numbers) (Fig. 1).

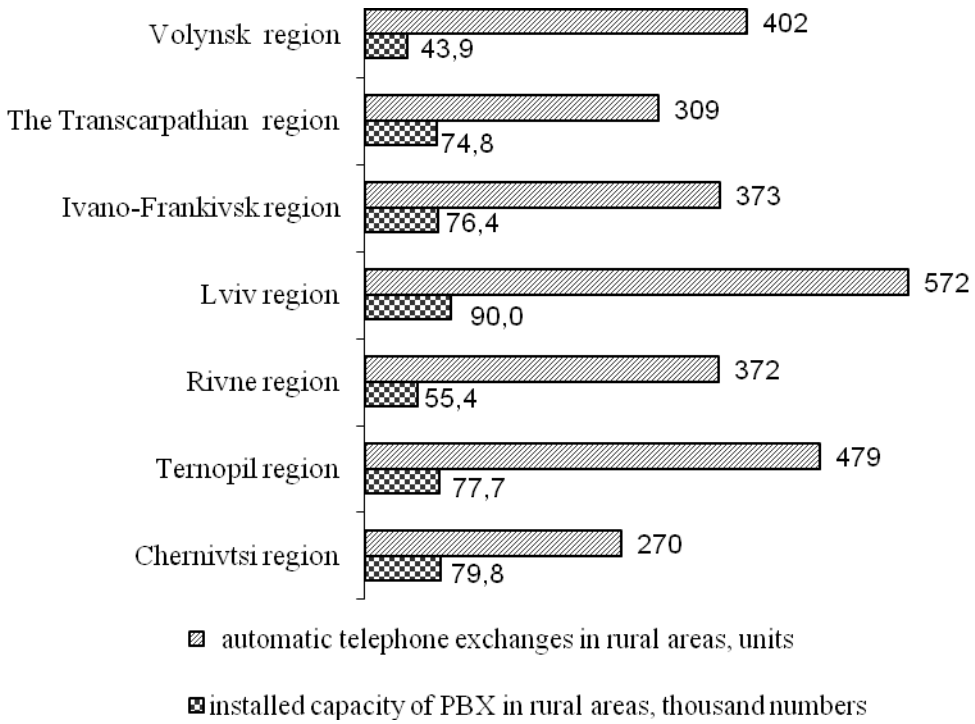

Figure 1. Number of PBX and their installed capacity in rural areas of western regions of Ukraine, 2011
Reference: [13, p. 225-226].

In 2011, the index of rural households stationary telephone numbers showed that in the Chernivtsi region 2,3 rural households accounted for one landline number. In rural areas, Ternopil region, this figure was 2.7 households per 1 telephone number. In turn, almost one in three rural households in Lviv, Ivano-Frankivsk and the Transcarpathian region had a fixed telephone numbers (3.6, 3.5 and 3.1 respectively). Among the regions of the western region the worst level of fixed communication lines in rural households is typically in Volynsk and Rivne (4.2 and 4.0 rural households account for each landline phone number respectively). For rural households in Ukraine as a whole, the figure was 3.5.

From 2007 to 2009, the increase of basic household telephones was observed in rural networks in the Transcarpathian, Lviv, Ternopil and Chernivtsi regions. During the 2007-2012 Rivne region was being characterized by a reduction of fixed telephones in rural areas. Starting from 2010 in the whole Ukraine the tendency to reduce fixed home telephones in rural network has been seen, and since 2011 this phenomenon has been typical for the Western region (Table 2).

Table 2

Major household telephones in rural networks in West region, (thousand) in 2007-2012

region	Year					
	2007	2008	2009	2010	2011	2012
Volyn	37,1	37,4	37,3	37,2	42,6	40,2
The Transcarpathian	75,9	77,8	78,8	78,2	77,1	75,7
Ivano-Frankivsk	70,1	71,6	70,7	69,8	67,3	63,8
Lviv	75,2	78,4	79,3	78,7	79,3	75,6
Rivne	49	48,7	48,3	47,6	45,9	42,5
Ternopil	79,1	81,4	81,5	85,5	82,4	81,5
Chernivtsi	68,3	70,6	71,9	72,4	71,2	70,2
Ukraine	1492,2	1512,2	1502,7	1495,4	1457	1388,7

Reference: [9, p. 23, 13, p. 237].

Regarding the level of the main household telephones among rural population of western regions, the best equipped rural areas are Ternopil and Chernivtsi region. Key indicators of household telephones in rural Rivne region is 22 units per 100 households and is the smallest, not only among the Western region, but less than the nationwide rate (Table 3).

Table 3

Provision of basic household telephones among rural population, based on 100 families, units

Region	Year			
	2009	2010	2011	2012
Volyn	23	23	26	25
The Transcarpathian	37	37	36	36
Ivano-Frankivsk	28	28	27	26
Lviv	28	28	26	25
Rivne	25	25	24	22
Ternopil	41	43	41	41
Chernivtsi	42	42	41	41
Ukraine	29	29	28	27

Reference: [9, 10, 11, 12].

The provision of durable products in urban households are much better than in rural. However, there is a constant increase in durable goods in rural households. In 2010, the availability of mobile phones in urban and rural households increased to10%. It should be noted that in 2012 the supply of products such as laptops, computers, satellite dishes, microwave ovens, food processors, freezers and mobile phones in rural households grew at a faster pace than in urban [4].

The Fig. 2 shows that from 2008 the provision of personal computers in rural households has doubled and mobile phones increased in 1,2 times. During the years of 2010-2012 there was an increase in the share of rural households with a portable PC by 3.5 times.

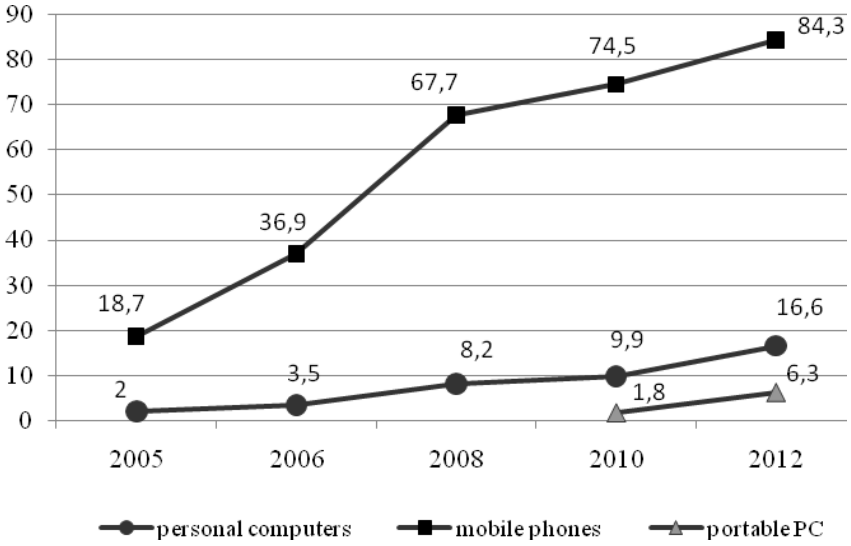

Figure 2. Dynamics of rural households in Ukraine in the presence of durable goods, %

Reference: [4].

Conclusions and further research. Therefore, one of the most common and affordable connectivity options in rural areas can be considered as Wireless Internet. The analysis also showed the existence of some imbalance between the terms of information provision in rural areas. One can not say that certain rural areas have the best technical access to the Internet. Thus, the provision of educational computer complexes in secondary schools and through them the access to the global network is the worst in the Ternopil region , while in the region, as in Chernivtsi, there is the best indicator to provide basic household telephones in rural population. The worst indicator of the availability of fixed line rural households is typycal to Rivne region, in turn, the number of computer training centers and libraries which have an access to the global network is the largest in western regions. This remains a pressing problem equalization of access to modern information technology not only between urban and rural areas, but also within rural areas in different regions.

In accordance to the steady increase in the number of users of the global network, an open questions remain for further research, such as determining the goals and motives of connectivity and Internet use by rural residents, the impact of new means of communication for lifestyle, analysis of the ratio of income of rural households and the cost of Internet services.

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Maksymenko A.O. THE ASSESSMENT OF DATAWARE LEVEL IN RURAL AREAS OF WESTERN UKRAINE.

Purpose. The purpose of the article is to estimate the level of Internet access in rural areas of Western Ukraine.

Research Methodology. Making the research the following methods have been used: analysis and synthesis, abstract and logical, dialectical and systems analysis, economic and statistic, monographic and comparative analysis.

The basic criteria for estimating the level of dataware, such as accessibility of information and communication technologies, the number of computer complexes in rural schools and libraries equipped with computers, availability of durable goods in the households (personal computers, mobile and fixed phones), have been picked out.

Results. On the basis of the proposed criteria the imbalance between the conditions of dataware in rural areas of Western Ukraine. The lowest indicators: 1) the provision with educational computer complexes in the schools and access through them to online network (Ternopil region), 2) the provision with fixed telephone in rural households (Rivne region), 3) the number of rural libraries equipped with computers with Internet access (Lviv region). The best indicators: 1) the provision of rural population with fixed phones (Ternopil and Chernivtsi regions), 2) the provision with educational computer complexes in the schools and libraries with access to Internet (Rivne region).

The conclusion about the existence of unbalancing in access to the Internet has been made.

Originality. Scientific innovation is represented in the implementation of a comprehensive assessment of rural residents’ access to the Internet through appropriate indicators.

Practical significance. The practical significance of the results is to identify rural areas that have the least access to the Internet, which in turn for providers and telecom operators are promising in view of the growing need for access to the global network. In addition it will equalize the access to modern information technologies not only between urban and rural areas, but also within rural areas in different regions.

Key words: dataware, Internet, rural area, Western region of Ukraine.