Original scientific paper
10.7251/AGSY14041013M

INNOVATIVE TECHNOLOGIES AND INCREASING COMPETITIVENESS OF RURAL TERRITTORIES

Marina MOREKHANOVA

Federal State Budget Institution of Science Institute of Agrarian Problems of the Russian Academy of Sciences, Russia
*Corresponding author: iagpran@mail.ru

Abstract

The quality of life of rural population as a most important factor of increasing the competitiveness of rural territories is studied in the paper by analyzing the dynamics of consumption of high-tech goods and services. Having analyzed the results of the households' budget and time-use surveys conducted by the Federal State Statistics Service (Rosstat) and the results of the sociological survey performed with the personal involvement of the author, we find that the use of high-tech goods by the rural population of the Russian Federation tends to rapidly grow. As a result, of this, the quality of life of the rural and the urban population is converging. At the same time, the social differentiation within local rural communities is on the rise, and the way of life in the city and the countryside remains different. Particular attention in this study is paid to the rural population's taking of new opportunities in the fields of education, employment and leisure activities arising from the proliferation and inclusion of innovative technologies in the local rural communities.

Keywords: *innovative technologies, rural development, consumption, quality of life, social differentiation.*

Introduction

The contemporary everyday life is difficult to imagine without innovative technologies, the range of which is constantly expanding. High-tech goods and services are increasingly changing the way and quality of life of the population.

Since 2005 the rates of growth of the average per capita incomes in rural households in Russia steadily outpaced that in urban households. Thus, in 2005 the average per capita cash incomes in rural households constituted 48.9% of the incomes of urban residents with a subsequent increase up to 55.5% in 2009 and 61.2% in 2012. (Rosstat 2008, Rosstat 2010 Inc., Rosstat 2013) Comparing the nominal income with the subsistence minimum, which allows reducing the impact of inflation, we see that both the nominal and the real incomes of the rural population increased. Between 2005 and 2012 the ratio of the average per capita disposable resources of rural households to the subsistence minimum grew from 1.2 to 2.1 times.

Higher incomes enable rural residents to purchase modern high-tech goods and services. Despite the remaining urban-rural differences in technological and economical accessibility of modern technology, innovative products are being increasingly used by rural residents. For instance, in 2001 the level of availability of personal computers and microwave ovens in the countryside was 10 times lower than in the city (for mobile phones the figure was 17.5 times), but by 2012 the availability of personal computers, microwave ovens and mobile phones in rural households respectively constituted 73.0%, 84.5% and 93.5% of the urban level (Table 1).

An example of a new technology that in a short time passed through all stages of development and inclusion – from recognition to prevalence – is mobile cellular communication. In 2000, only 2% of Russians used mobile phones. Today, the use of cellular

communication has become a common practice, both in the city and in the countryside. The Internet and satellite TV are beginning to be used more widely in the rural areas too. The use of such technologies is one of the main solutions to the problem of information inequality of the rural population, which is still relevant.

The proliferation of innovative technologies changes the everyday life of the contemporary rural population in very many ways – from reducing the time and effort on housekeeping and household farming to offering new opportunities in the spheres of education and employment. At the same time, the evolution of modern technology itself does not eliminate the previously existing differences, but on the contrary, gives rise to new kinds of differentiation.

Table 1: Availability of modern household appliances, TV and radio receivers on average per 100 rural households, units. Households with access to the Internet, % of all households*

	2001	2005	2009	2012	Countryside, % of the urban level			
					2001	2005	2009	2012
Camcorder	**1**	**3**	**6**	**9**	**20,0**	**30,0**	**37,5**	**50,0**
Microwave oven	**1**	**11**	**35**	**60**	**10,0**	**36,7**	**61,4**	**84,5**
Personal computer	**1**	**11**	**34**	**54**	**10,0**	**35,5**	**55,7**	**73,0**
Air conditioner	**0**	**1**	**6**	**10**	**0,0**	**25,0**	**66,7**	**76,9**
Mobile phone	**0**	**59**	**191**	**232**	**5,7**	**49,2**	**82,3**	**93,5**
Car	**25**	**34**	**47**	**55**	**92,6**	**103,0**	**100,0**	**101,9**
Households with access to the Internet, % of all households	**-**	**6,7**	**21,6**	**50,0**	**-**	**28,9**	**46,2**	**73,1**
Including that with the home PC	**-**	**2,1**	**13,9**	**43,4**	**-**	**19,1**	**35,5**	**67,6**

*Sources: Income, Expenses and Consumption of Households in 2012: The Results of Random Analysis of the Budgets of the Households. Moscow: Federal State Statistics Service, 2013, p.122, 130; Income, Expenses and Consumption of Households in 2009: The Results of Random Analysis of the Budgets of the Households. Moscow: Federal State Statistics Service, 2010, p.115, 121; Income, Expenses and Consumption of Households in 2007: The Results of Random Analysis of the Budgets of the Households. Moscow: Federal State Statistics Service, 2008, p.189

Materials and Methods

The paper is based on the results of the comparative analysis of incomes, level of providing with high technological goods and services, structure of time budget of rural and urban households on the basis of materials of selective budget surveys of households (2001-2012) and the usage (budgets) of time by population (1990-2008), comprehensive monitoring of living conditions (2011), conducted by the Federal State Statistics service (Rosstat), the results of the sociological surveys of the processes of proliferation of and familiarization with innovation practices in local rural communities conducted by the Institute of Agrarian Problems of the Russian Academy of Sciences in one of the Russian regions (Saratov's oblast) in 2010-2011with personal involvement of the author. The selective budget

investigation of households involves 47765 households living in the Russian Federation. The two-stage territorial based sampling provides the results of investigation representative for the whole of Russia (population on the whole and by main socio-economic groups). In the sample survey of time usage the number of the observed households was 47000 in 1990, while in 2008 there were 2016 households with 5000 respondents. During the Complex Observation of Population Conditions of Life the sample size was 20000 members of households with the age of 15 and older. In each of three researches the multistage sampling represents both urban and rural population of the Russian Federation. In the research of the Institute of Agrarian Problems of the Russian Academy of Sciences the randomized sample represents the able-bodied and working-age rural population of the country and includes 743 respondents.

Results and Discussion

The growing availability of high-tech cultural and household appliances and goods in rural households and the increasing technological accessibility of new kinds of services make the living conditions in rural areas qualitatively equal to that in the city, while the positive features of the rural way of life remain in place the same. This fact creates the basis for equalizing the prestige of living in urban and rural settlements.

High rates of growth of availability of “innovative elements” of the rural households’ property compared to the urban households not only enabled to reduce the lag of the countryside in terms of qualitative characteristics, but also affected the convergence of the time budget patterns of the urban and rural population (distribution of the daily time spent on critical activities). This growth of the level of availability of high-tech appliances in rural households became one of the factors considerably reducing the time spent on housekeeping.

The comparative analysis of the time budget surveys conducted by the state statistics bodies in 1990 and 2008 shows that in 18 years the time rural working women would spend on housekeeping (excluding the time spent on private farming and purchasing goods) reduced from 4 hours 33 minutes (average per day of the week) to 3 hours 19 minutes. For working men the reduction of the time spent on working around the house was just 19 minutes.[1] This is partially a result of redistribution of family duties and is largely due to the advent of new household appliances (Shabanov, 2011).

Special attention in this study was paid to the issues of mastering modern information and communication technologies (ICT). Computer technology and the Internet are qualitatively new phenomena that cause profound changes in all spheres of life – work, consumption and leisure. The availability of access to these technologies, the degree of computer literacy and awareness of their capabilities, the level of information activeness today are the factors contributing to overcoming the constraints in choosing the kinds and types of activity in rural areas, and to the accessibility of cultural values, advisory information and certain kinds of social services. The ability to make avail of the opportunities offered by information and computer technologies is becoming a new asset much helpful in climbing the social ladder. But at the same time, the rapid proliferation and continuous improvement of information technologies cause the expansion and deepening of the “digital inequality” (inequality in access to information and communication technologies among the population) not only between the city and the countryside, but between different social groups within local rural communities. The research shows that the degree of accessibility of modern technologies depends not only on technological capabilities, but also on such factors

[1]Calculated by the author from data of statistical digests: National Economy of the RSFSR in 1990: Stat. yearbook. State Statistics committee RSFSR. - M.: National Information and Publishing Centre, 1991,p.122; Rosstat (2010) Results of the pilot sample survey of use (budget) time population. - Moscow: Federal State Statistics Service, URL: http://www.gks.ru/doc_2010/bul_dr/btime10.doc

as age, the levels of education and well-being, and on the activeness of participation in continuous education.

The use of information and communication services in the everyday life of the Russian rural population considerably differs by social-demographic groups. The respondents aged 16-35 years are the most active users of computers and the Internet. In 2012, every second representative of this age group would use the Internet at least several times a week. Older age groups are featured by an inverse relationship between the respondents' age and the intensity of their using information and computer technologies. The older the rural people, the less often they use computers and the Internet compared to both their younger fellow villagers and urban residents of the same age (Table 2).

Table 2: The share of home personal computers and the Internet users, in different age groups in 2008 and 2012., a percentage of all household members of the corresponding group*

	The age groups							
	To 16 years old		From 16 to 35 years old		From 36 to 55 years old		From 56 to 74 years old	
	2008	2012	2008	2012	2008	2012	2008	2012
The share of home PC users among household members under 74 years, living:								
in urban areas	37,4	52,8	59,4	85,0	38,5	69,9	8,1	29,3
in rural areas	24,3	44,3	29,8	66,9	18,8	47,7	3,3	15,1
The share of regular Internet users among household members under 74 years, living:								
in urban areas	12,7	35,9	35,2	75,9	16,6	46,4	3,0	18,1
in rural areas	4,4	29,0	8,8	50,6	4,3	26,7	0,7	7,1

*Source: Income, Expenses and Consumption of Households in 2012: The Results of Random Analysis of the Budgets of the Households. Moscow: Federal State Statistics Service, 2013, p.134.

Interestingly, in contrast to computers and the Internet, the use of satellite television directly depends on the respondent's age. 46.4% of the respondents older than 45 years have satellite TV. The respective fractions of the satellite TV owners aged 31-45 years and those younger than 30 years are 35.3% and 29.6%. (Morekhanova, 2011) Probably, this is because this relatively new technology does not cause any changes in the lifestyle, but just satisfies (although on a qualitatively new level) the traditional, long-standing need.

The dependence of the intensity of Internet use by education level also takes place. It's especially true for people from 35 years (Table 3).

Table 3: The frequency of access to the Internet, respondents living in rural areas at the age 35 and over depending on their level of education, as a percentage of the respondents in the corresponding group*

	The level of education					
	Graduate and incomplete higher professional	Secondary professional	Primary professional	Secondary (complete)	Basic general	Not have the basic
The frequency of access to the Internet:						
constantly (more than 1 time per week)	51,4	41,9	26,4	22,0	5,5	0,0
from time to time	37,7	39,9	41,5	28,3	16,7	16,7
do not use	10,9	18,2	32,1	49,7	77,8	83,3

*Source: the Complex Observation of Population Conditions of Life**.** Moscow: Federal State Statistics Service, 2011. URL: http://www.gks.ru/free_doc/new_site/KOUZ/survey0/index.html

Household income level has an impact on the presence of rural household modern informational-communication equipment (Table 4).

Table 4: The share of rural households with satellite dishes, mobile phones, computers, depending on the financial situation of the assessment as a percentage of the number of households in each group *

	Self-evaluation of the financial situation of the household					
	Income is not even enough for food	The food there is enough money, but to buy clothes, pay for housing utilities difficult	Enough money for food and clothing, but we can not afford purchase essential durables	Can not afford to buy food, clothes, necessary durables, but not enough money to buy:		Means enough to buy everything that we see fit
				new car	Apart ments, villas	
The share of households in which there are:						
satellite antenna	**16,8**	**22,7**	**33,8**	**50,3**	**44,7**	**50,0**
mobile phone (s)	**80,5**	**86,5**	**90,2**	**97,4**	**97,4**	**89,1**
the home personal computer (s)	**15,4**	**21,3**	**30,9**	**60,8**	**72,4**	**34,4**
a laptop computer, a digital organizer	**3,4**	**6,0**	**7,6**	**15,0**	**13,2**	**9,4**

*Source: the Complex Observation of Population Conditions of Life**.** Moscow: Federal State Statistics Service, 2011. URL: http://www.gks.ru/free_doc/new_site/KOUZ/survey0/index.html

Age-related differentiation of interests of the rural Internet users can also be observed. Rural residents less than 20 years of age are mostly interested in entertainment: 76,3% compared to 20.2% among the users older than 50 years. Internet users aged 16-45 more often than the representatives of other age groups prefer social networking, checking the news and obtaining their education distantly with the help of mandatory or optional programs. The respondents aged 35-39 years use the Internet to find a job more often than the others (8.8% versus 3.0% for the whole sample).

Gender preferences also differ inside rural community. Women are more active in using the Internet for distant education (20.0% versus 14.2% for men). Men, in their turn, more often use the Internet for playing online games and downloading movies and music (46.5% as against 31.3%).

In general, being almost no different from urban residents in terms of the intensity of using the Internet for communication, entertainment and education, rural people use it less for the others, practically significant purposes: to search and get a job , implement trade or financial transactions or to communicate with public authorities (Table 5) .

Table 5: Differentiation of households according to the purpose of using the Internet in 2012, per cent of all households*

	Households:	
	Urban	**Rural**
Fraction of households using the Internet, per cent of all households, including for the purpose of:		
Searching for or performing paid work, distributing information	**7,9**	**3,0**
Getting information, doing paperwork on websites of public authorities, government agencies or departments	**20,2**	**10,7**
Searching for information about goods and services for everyday life, ordering goods, and submitting their own ads for the sale of personal belongings or property	**49,5**	**23,0**
Making financial transactions (payments for services, money transfers, etc.)	**17,9**	**8,2**
Obtaining distance education under mandatory or optional programs	**8,5**	**8,4**
Reading the news and articles, using electronic libraries and encyclopedias, etc.	**74,2**	**59,5**
Social networking to maintain personal contacts and exchange information, correspond with family and friends	**92,2**	**91,9**
Downloading movies, music and games, playing online games, etc.	**77,6**	**67,6**

*Sources:: Income, Expenses and Consumption of Households in 2012: The Results of Random Analysis of the Budgets of the Households. Moscow: Federal State Statistics Service, 2013, p. 130

Conclusion

The continuing backlog of rural areas according to the whole number of parameters of technical and social-economic development is manifested in the lower level of availability of high-tech goods and services in rural households. However, in recent years, that gap has been steadily declining. This is because the innovative technologies are becoming more and more economically and technologically accessible and play an increasingly important role in improving the quality of life. The growing penetration of advanced modern technologies in the everyday life of different social groups indicates that these technologies are no longer something for elite use and increasingly becoming accessible for a large part of the rural population. At the same time, the differentiation in the degree of accessibility and mastering modern technologies (especially ICT) is prominent within the rural community itself.

Growth of availability of high-tech goods and services in rural households and more active use of the opportunities they offer by all strata of the population can be achieved through a set of measures aimed not only to provide technical and economic accessibility of modern technologies and improve their quality, but also to form the necessary skills of using new technologies and raise awareness of the advantages they have among all strata of the rural population. It seems necessary to set up educational and training systems that would provide basic knowledge and skills of using modern technologies with taking into account the specific interests and abilities of different rural social groups, arrange for demonstration and awareness campaigns to stir up the rural residents' interest in using advanced technologies in their everyday life, to primarily develop electronic information resources and services in such fields as health care, education, job search and interaction with public authorities and make them accessible for all strata of the rural population.

References

Morekhanova M. (2011) Innovation culture of the rural population (according to sociological survey data) // Regional Agrosystems: Economics and Sociology. [Electronic

Resource]: Yearbook. IAgP RAS, Saratov, 2011, № 2. URL: / http://www.iagpran.ru/journal.php?tid=243 Accessed on 09/06/2014.

Rosstat (2013) Income, Expenses and Consumption of Households in 2012: The Results of Random Analysis of the Budgets of the Households. Federal State Statistics Service, Moscow, pp. 220

Rosstat (2010) Income, Expenses and Consumption of Households in 2009: The Results of Random Analysis of the Budgets of the Households. Federal State Statistics Service, Moscow, pp 190

Rosstat (2008) Income, Expenses and Consumption of Households in 2007: The Results of Random Analysis of the Budgets of the Households. Federal State Statistics Service, Moscow, pp 258

Rosstat (2010) Results of the pilot sample survey of use (budget) time population. - Moscow: Federal State Statistics Service, URL: http://www.gks.ru/doc_2010/bul_dr/btime10.doc. Accessed on 23/06/2014.

Rosstat (2012) Results of the Complex Observation of Population Conditions of Life, Federal State Statistics Service, Moscow, URL: http://www.gks.ru/free_doc/new_site/KOUZ/survey0/index.html Accessed on 19/06/2014.

State Statistics committee RSFSR (1991) National Economy of the RSFSR in 1990: Stat. yearbook / State Statistics committee RSFSR. - National Information and Publishing Centre, Moscow, pp. 447

Shabanov V. (2011) Assessment of the quality of life of rural population by employing time budget statistics// Regional Agrosystems: Economics and Sociology. [Electronic Resource]: Yearbook. / IAgP RAS, Saratov, 2011. № 2. URL: http.// www.iagpran.ru/journal.php?tid=246 Accessed on 11/06/2014