

Po upadku Związku Radzieckiego Ukraina, zajmująca znaczącą pozycję geopolityczną w regionie, straciła w związku z ograniczeniem nakładów na inwestycje w sektorze nowych technologii swój główny potencjał badawczy. Na przełomie stuleci ciągle jesteśmy świadkami rewolucji informacyjno-komunikacyjnej (ICT) rozpoczętej w krajach wysoko rozwiniętych. Mimo iż nowoczesne technologie postrzegane są przez Ukraińców jako “zachodnie”, znalazły szybko zastosowanie nie tylko w przemyśle i nauce, ale dotarły także do innych sfer życia. Obecnie takie sektory jak administracja publiczna, przemysł, rolnictwo, edukacja, opieka zdrowotna, transport, komunikacja są silnie skomputeryzowane. Współczesna sytuacja wymaga od społeczeństwa szybkiej obróbki ogromnej ilości informacji.

Rozwój Internetu miał na Ukrainie charakter eksplozji. Dodatkowo warto pamiętać o rosnącym dostępie do połączeń satelitarnych i telefonii komórkowej jako czynniku wpływającym na rozwój komunikacji w kraju. Można jednak obserwować wyraźny “podział cyfrowy” między obszarami zurbanizowanymi a wiejskimi. Wielkie miasta, będące tradycyjnie centrami administracyjnymi, przemysłowymi, usługowymi i finansowymi z koncentracją kapitału, sił wytwórczych i informacji potrzebują szerszego dostępu do zaawansowanych technologii. Dlatego większość użytkowników Internetu (około 75%) koncentruje się w pięciu największych miastach Ukrainy (Kijowie, Charkowie, Dniepropie-trowsku, Odessie i Lwowie. Dostęp do Internetu jest ograniczony w mniejszych miastach, a na wsi praktycznie go nie ma.

Ukraina jest ciągle krajem rolniczym z dużą liczbą osób zatrudnionych w pierwszym sektorze. Obecnie właśnie rolnictwo jest najmniej skomputeryzowanym działem gospodarki. Mimo dogodnych warunków naturalnych produkcja rolna pozostaje na niskim poziomie. I to właśnie niski poziom wykorzystania ICT może być tego przyczyną. Tak, więc wprowadzenie nowoczesnych technologii do produkcji rolnej ma szczególną wagę dla wzrostu potencjału ekonomicznego.

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## **Ukraine: A gender digital divide**

New information technologies have become a powerful force in transformation of social, economic and political life in the modern world. Presently, during the forming of the information society the states and separate regions have very limited opportunities of successful development and welfare without use of the advanced technologies.

An input of the new information and communication technologies (ICTs) in development of the global economy is growing overwhelmingly. The industrial analysts estimated the volume of global ICTs market at the level of \$1.83 billion in 1997, whereas that of electronic commerce via Internet - within \$7-15 billion in 1998. Due to the boom at the Internet market, the capitals of the 200 world richest people has increased from \$463 billion in 1989 to more than \$1 trillion in 1999. The global use of personal computer has grown in three times during 1990s and their number reached 370 mln. in 1998. The number of Internet hosts has grown in 115 times during the period and is about 43 mln. items, that provides more than 147 mln. persons with a possibility to work in the dialogue regime.

But the modern revolution in the area of ICTs results in widening of global 'dig-

ital divide', or possibilities of access to information and possibilities of its use, between poor and rich countries. At present, when talking about poor countries, it is possible to speak about regions, which have the limited access to the information, and thus, the deficit of knowledge and low level of development of scientific potential. Under growing scientific and technological competition, countries, which are not able to raise a level of science and introduce the innovations, definitely will stay behind their neighbors. As a result, the economic and social inequality will grow in the global scale.

Thus, according to the UNO data, at present almost all world technological innovations are made by 15% of the population. At the same time, only about a half of the world population are able to perceive and use these innovations, whereas the rest is eliminated from the processes. About 90% of all Internet users live in highly developed industrialized countries, and 57% of them can be found only in the USA and Canada. On the contrary, the share of Africa and Middle East is only 1% of the world Internet population.

Thus, if the global 'digital divide' will not shorten in the future, the economic and incomes inequality will grow all over

the world; the developing countries will become poorer, whereas the developed – richer. New technologies, which have a significant potential of development, will lead to larger differentiation of the global society.

‘Digital inequality’ becomes one of the most important factors of polarisation of the population as among the regions, as within the countries. The UNO Development Program has introduced a new measure of poverty in 1997: the information poverty. This aspect of living standards and quality of life determines a possibility of access to the information resources of different population groups and their ability to use these resources efficiently.

Namely the phenomenon of dependency of professional and personal success in the life on the attitude of a person to the information and technological revolution has got the name of ‘digital divide’. The divide between those, who have the access to the technologies and those, who have not, can be found in many different areas of the society. That part of the population, which has realized in time that the access to computer technologies and communications, as well as an ability to use them, are the key factors of success in the information society, found itself in more favourable position, as they have larger possibilities for professional growth and raising of welfare.

Presently, the global community pays more and more attention to the position of persons who are deprived of access to information and advanced technologies. As a rule, the majority of those, who

can be found at the most remote part of the ‘divide’, are women – they have less access to the information in comparison with men. If the progress in the area won’t be observed, women will become more marginalized under conditions of economic and social development of their countries and all the world. That’s why the implementation of gender issues is important at the beginning of the information technologies introduction, with a purpose of consideration of gender aspects from the beginning, not as the correcting measures later. Currently, gender issues in the field of ITCs are considered as not urgent problems under motivation, that the development should ensure the basic needs of the population. But this issue doesn’t put a problem of a choice between the different needs. The information technologies can be an important way of ensuring the basic needs of all the population and of some population groups, providing an access to the resources which would fasten overcoming of poverty and raising of living standards.

The most striking gender divide can be observed in the Internet use. It is very difficult to obtain the reliable statistics on use of the Internet by gender. The standard statistical indices are not divided by gender and the available data not always are reliable and comparable. But it is obvious that the number of women is not large and their distribution is limited. In the majority of world countries the main part of women – Internet users are not representative concerning all female population, rather a part of small educated urban elite. The regional data evidence, that women make less than 22% of all Internet users in

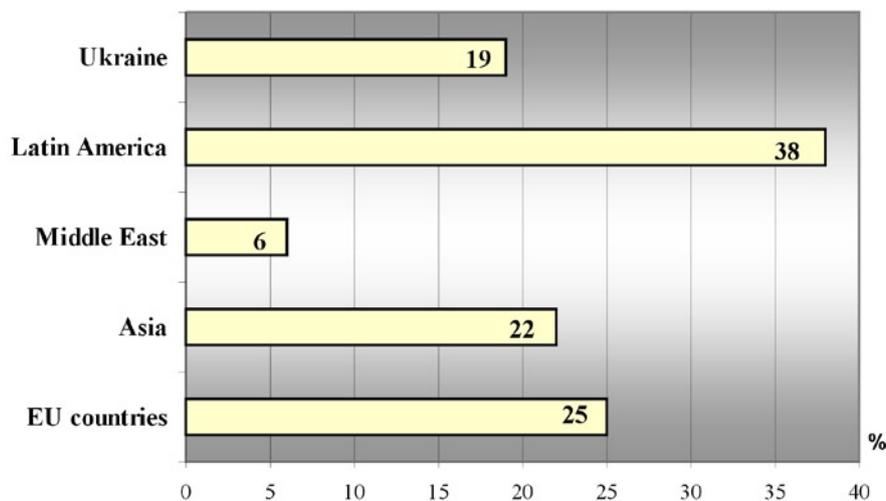


Fig. 1. Regional Averages of Women among Internet Users

the Asian countries, 38% - in the countries of Latin America and 6% at the Middle East. As to the African countries, the corresponding statistical data by gender are not available.

According to the data of the main Internet providers of Ukraine, women make only 19% of Internet users in the country, whereas the figure is 25% in the EU countries. The majority of professional Internet users in Ukraine are men with high education, who have incomes higher than the average. Despite of significant growth of a share of women among Internet users since 1995, in the main, those women who use the advanced information technologies use them at work. Usually, home access to a computer and Internet still remains a phenomenon. Internet users at office can be divided into those who use the network as a tool of production (routine office work, data input and processing,

information production, computer design, programming and related activities), and those who use it as a tool of communications (creating and exchange of the information).

The most popular way women use information technologies as a means of communications can be found in Internet and e-mail use with the purpose of creating of networks for political support and economic development of women. NGOs, which develop the electronic networks and work in the area of political support of women, were the first among the introducers of information technologies and remain persistent users today.

Moreover, women often use electronic communications for creating of networks which promote their business and professional interests. This area of information activity is much less developed in com-

parison with networks of the political activists, but makes a promising perspective sphere with possibilities of further development. Presently, e-mail is the main use of the information technologies, which is used by women's organizations and individual women. But large time expenses due to the "double" working day of women and widespread stereotypes on corporative limitations make Web-use complicated for women.

Very few women can be found among the producers of the information technologies and Internet providers, programmers, designers, developers of Internet sites, system administrators. Plus, women are practically absent in decision making in the area of the information technologies.

There is a range of factors, which limit the women's access to advanced information technologies. These factors include: computer literacy and general level and character of education, foreign languages knowledge, time expenses, costs of information services and obtaining of the appropriate qualification, geographical location of the services, social and cultural norms and certain corporative limitations, which promote the area of new information technologies as the male sphere.

Scientific and, in particular, technical education is necessary for ensuring women's participation in the area of information technologies at a level of computer programmers, engineers, system analysts and designers. All over the world the numbers of women involvement into these science branches is very low, which prevents promotion of women in the information

technologies. But in the regional scales there is a certain variation in a share of women engaged in natural, computer and engineer sciences. Some indicators show that women are more interested in computer sciences in the developing countries than, for example, in the USA. Thus, women make from 30 to 50% of students in the field of natural and computer sciences in the developing countries. The worst situation is in Africa, as African women obtain the world's lowest levels of participation in science and at all levels of education.

As to Ukraine, only 27.8% of women have education in the area of technical sciences, whereas the men's figure is 52.8%. The numerous researches show that, as a rule, women end their education in the area of computer sciences earlier, which results in large gender imbalance among persons with high professional qualification. Though women obtain about a third of diplomas of specialists in the area of computer sciences, much fewer of them obtain the L.C. degrees and even fewer become the candidates for degrees in sciences in the area. The limited number of women among professionals with higher professional levels in the information technologies proves the stereotypes of the domination of men in the computer sciences.

In 2000, women made 60% of the population employed in the area of informatics in Ukraine, whereas the wider gender divide was observed among the employed in the age group of 15-29 (47.3% of women against 52.7% of men)<sup>1</sup>. In the older age categories the ratio is changing: a share

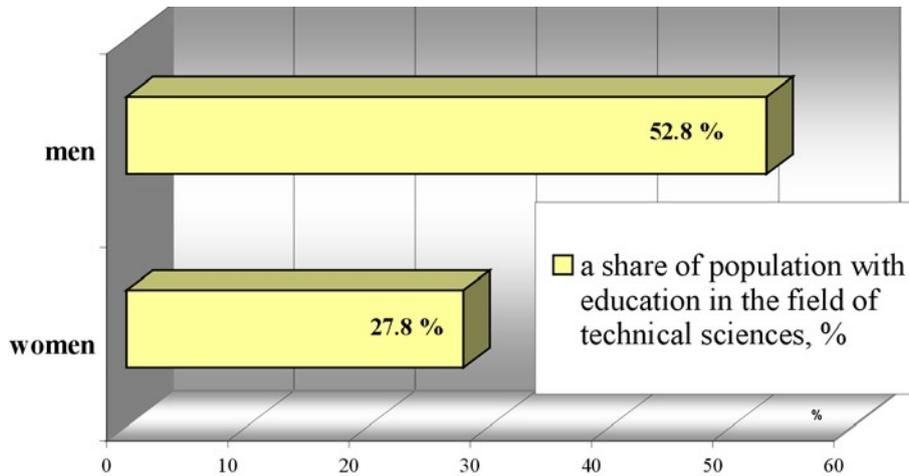


Fig. 2. Persons with Technical Education in Ukraine by Gender.

of women employed in the area of information technologies among persons of retirement age exceeds the corresponding indicator for men – 54% against 46% (but it can be explained mainly by large domination of women in this age group and by difference in retirement age). As to the area of communications, despite of the fact that women make 60.4% of the employed in the area, they are represented at the lowest positions and receive the lowest wages.

Women generally have the lowest incomes, suffer of higher unemployment rates and occupy positions which require lower qualification in all branches of the economy. The average per capita incomes of women make only 67% of the corresponding indicator for men, despite of traditionally high educational level of women and their large economic activity in the labour market.

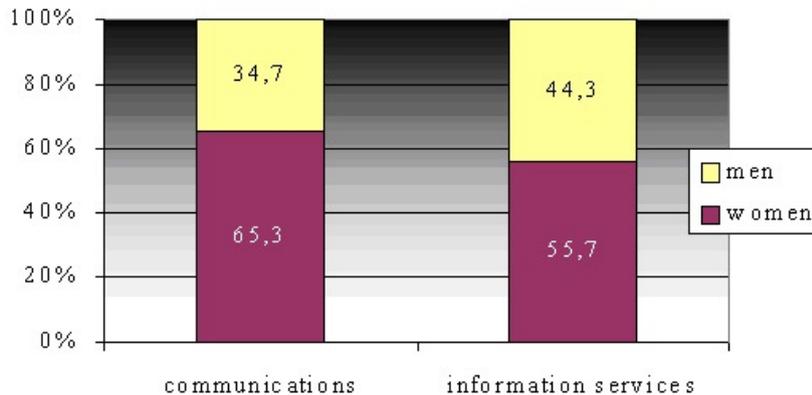


Fig. 3. Employed in the field of ICTs, Ukraine, by Gender.

According to the data of Quarterly Surveys of living standards of the Ukrainian households, which are regularly conducted by the State Statistical Committee of Ukraine, in 2000 the average women's wage was only 71.4% of the men's in the information and communications technologies (correspondingly 309.1 Hrv. against 432.9 Hrv. monthly) and 84.6% in the area of communications (correspondingly 258.7 Hrv. against 305.7 Hrv. monthly). At the same time, the ratio of women's and men's wages was 95.2%, when consider all branches of the economy (correspondingly 276 Hrv. and 289.9 Hrv. monthly). Such lower level of women's incomes in the area of information and

communications technologies impresses, because women make the majority of the employed in this area (more than 60% of the employed). But the main type of female activity within the area is the work on information processing, in particular, on data input.

There is a trend of concentration of women among the final consumers of the information, at such positions in the area of information technologies, which require the lowest level of qualification and are connected with data processing and input. Women, as a rule, make insignificant share of the chiefs, servicing personnel and designers in the networks, operation

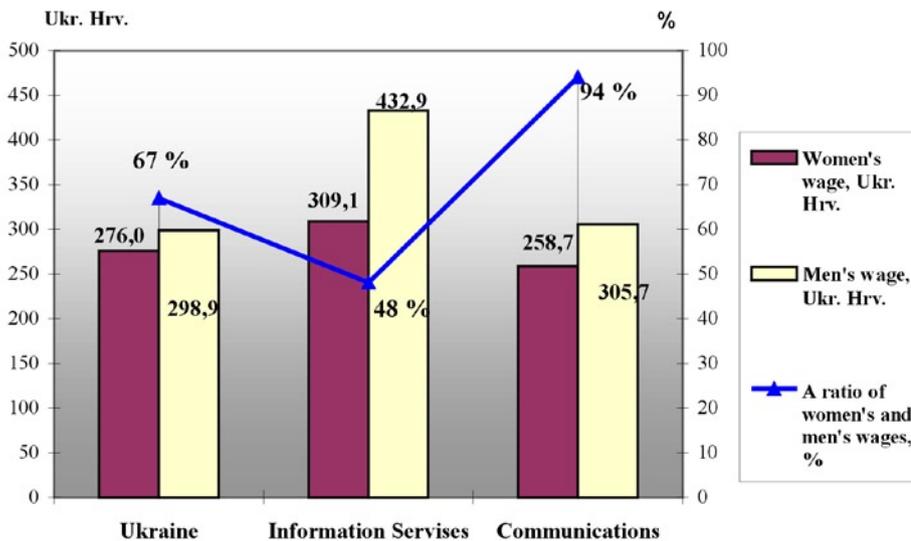


Fig. 3. Gender disproportions in incomes of the population, employed in the area of information and communications technologies, 2000.

systems or in the software. Though information technologies can be considered as the relatively new sphere of activity, the gender segregation of employment al-

ready can be observed; and it is growing gradually. But in some cases women can make promotion to the higher professional levels in the area of ICTs.

Though some kinds of working activities became unnecessary due to information and technological progress, new jobs have been created in the services sphere. Women occupy jobs in the area of information services, banking, insurance, graphic arts industry and printing, which require higher qualification. The main type of women's employment within this sector is work on data processing; in particular – on data input. Many of new jobs are concentrated at the telephone centers, in geoinformation systems and software; all of them require higher qualification than the usual data input. The level of wage at positions in the area of information and technological services usually is higher than at the same positions which require similar skills.

The use of information technologies has a huge potential for favouring the current economic activity of women, including agriculture, trade and business entrepreneurship. For example, women-farmers could raise the productivity of work and volumes of agrarian harvest, when using the information on possibilities of improvement of productive technologies,

information on weather conditions and markets of goods, services and labour force. Such services as trade, distribution and other entrepreneurship, require the information on the market conjuncture and distribution of the information about their own business activity.

The new information economy suggests many potential possibilities for development of business activity, which can be started by women and suggest jobs for women. The most numerous positions, which are situated at the lowest level of the necessary qualification skills, include jobs in the area of data input, search and primary processing of the data. The software, GIS technologies and work in the system analysis require higher qualification and educational level, but women gradually are being involved into these jobs. Though electronic commercial areas” form a producer to a consumer” and causes common admiration presently, it can become a difficult sphere for the introduction of women.

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### **(Footnotes)**

<sup>1</sup> According to the data of Quaterly Surveys of living standards of the households of Ukraine.