ISSN 2449-7479
amme.wne.sggw.pl

Annals of Marketing Management & Economics
Vol. 2, No 1, 2016, 13–23

THE INFLUENCE OF THE OPERATIONAL PROGRAMME INNOVATIVE ECONOMY ON INDIVIDUALS AT RISK OF THE DIGITAL DIVIDE AND THEIR PARTICIPATION IN THE ELECTRONIC ECONOMY

Dariusz Chalimoniuk
Siedlce University of Natural Sciences and Humanities, Poland

Wojciech Pizło
Warsaw University of Life Sciences – SGGW, Poland

INTRODUCTION

The role information plays in the economy has been growing since the mid-20th century, as has the need for quickly accessible and reliable information. During the industrial revolution, new production technologies and new machines were the engine of progress. Today we are witnessing a new revolution, one in which technologies associated with the processing and transfer of information – Information Communication Technologies (ICT) – are responsible for economic development to an ever greater degree. When properly created and used, information is becoming a valuable resource – increasingly more valuable, in fact, than physical or human resources. ICTs have become more ubiquitous, used as they are to accomplish both individual and professional goals. This is how the development of the new social model called the information society is unfolding.

The aim of the research we have done for this paper was to examine phenomena associated with the digital divide in the context of the rise of the information society and to assess the extent of digital divide in Poland before and after marginalised individuals participated in a programme for combating digital divide. The main source of empirical data was the results of a research survey available online. The research sample consisted of people using the Operation Programme Innovative Economy (OPIE) – Measure 8.3. Combatting Digital Divide – eInclusion. We conducted the study in cooperation with local government units (LGUs) in Poland. It involved sending

information to programme beneficiaries living in a municipality, county or voidvodship (province) benefiting from measure 8.3 OPIE about the research we were conducting with the website address of the survey and asking participants to fill it out. We chose this method because personal data is protected in Poland, so there is a lack of direct access to data on households, the project participants. The study was conducted from September 2014 to March 2015. Pilot studies covered the entirety of Poland, while the ones chosen were those that had completed implementation of measure 8.3 no later than 30 June 2014.

The research sample size (as of 30 June 2014) was 12,929 households. Number of 1,487 surveys were returned, but 85 were discarded because they were returned blank, so the number analysed was 1402 (Table). The survey questions were grouped thematically:

TABLE. Sampling distribution

Category	Number	Percent participating in a given category
Gender of the respondent		
Female	818	58.3
Male	584	41.7
Combined	1 402	100.0
Age of the respondent		
Under 18	43	3.1
18–30	182	13.0
31–40	247	17.6
41–50	267	19.0
51–60	326	23.3
Over 60	337	24.0
Combined	1 402	100.0
Education of the respondent		
Primary	137	9.8
Trade	321	22.9
High school	695	49.6
University	249	17.8
Combined	1 402	100.0
Place of residence of the respondent		
Village	278	19.8
City of up to 100 thousand inhabitants	140	10.0
City of more than 100 thousand inhabitants	984	70.2
Combined	1 402	100.0
Socio-economic status of the respondent		
High school or university student	106	7.6
Unemployed	243	17.3
Employed	282	20.1
Farmer	80	5.7
Self-employed	20	1.4
Retired/Pensioner	671	47.9
Combined	1 402	100.0

Source: the authors.

using the Internet to communicate, search for information, entertainment, culture, online education, e-banking, e-finance, purchasing and selling online, labour market, contacting government offices.

THE INFORMATION SOCIETY

The term information society was coined in 1963 by T. Umesao, in an article about a novel theory of society based on the processing of information [Gajdos 2008]. Y. Masuda later produced a detailed description of the changes that take place within a society based on the telecommunications sector and information. He believed that this society would not be a material one, as embodied by huge structures, but would in fact be an invisible society that should aptly be called an information society. Economists emphasize that in the information society, information and knowledge are treated as non-material values, which have become the new resources generating the value of money. The literature on the information society covers a range of concepts including the third wave (A. Toffler), postindustrial society (D. Bell), the network society (M. Castells), the global information society (the European Union) and the media society (T. Goban-Klas) [Tomczyk 2010].

The information society is the third element of Bell's triad of social development, joining preindustrial society and industrial society [Sztompka 2002 after Bell 1974]. The concept was first used by K. Koyama [1968] and Y. Masuda [1969]. The transition from industrial to postindustrial society brings with it an increase in the importance of information, knowledge and skills as the main factors in placing an individual in society [Domanski 2000]. Commentary on the postindustrial society includes changes including technological advances in both production and communication [Turner 1998]. In a postindustrial society, machines assume routine, repetitive work while people engage in creative work, increasingly involving the processing of information.

The information society is typified by a highly developed modern services sector, with banking, finance, telecommunications, informatics, research and development, and knowledge economy governance all prominent examples of such services [Gajdos 2008]. From 1993 to 1999 Martin Bangemann was the Commissioner of the European Union responsible for the development of telecommunications and information technology. His 1994 report „Europe and the global information society – recommendations for the Council of Europe", helped popularise the notion of the information society. In his view, the information society is characterised by modernity, a high level of development and an elaborate teleinformation infrastructure, enabling members access to information and other services [Janoś-Kresło 2011]. A characteristic quality for the knowledge society is growth in competitiveness between employees and societies that are open at the same time. Formal education and knowledge provide access to new professions and a higher social position than that of one's parents. The basic areas promoting the development of the knowledge society are:

– first, people (possessing the proper knowledge, embodying social capital);
– second, institutions including the law (promoting the development of business and strengthening the position of consumers), organisations (both business and non-profit organisations that are able to compete in the electronic economy) and information resources as a public good available on both the micro and macro levels;

– third, the technical infrastructure (the availability of computer equipment, software and Internet access).

The information society is the next step, as it were, after the industrial revolution, and some researchers describe this stage of development as the information revolution or postindustrial society. In the information society, there will be a focus on human relations – human because it is people who stand for/represent the natural environment, society, culture and political order. The global information society, if it is to have a humanistic character, calls for sustainable societies to be built, in which communities and their systems of symbols are preserved. During the first Congress of Polish Information Technology in 1994, the information society was defined as one "that is prepared and has the ability to use information systems". It is computerised and uses telecommunications services "to transfer and process remote information" [Nowak 2005]. The concept of the information society has been set out in planning documents, which pointed to the need to build a system of society where the management of information, its quality and the speed with which it moves are essential factors of competitiveness, both in industry and in services [*e*Poland 2001]. Thus, the information society these documents referred to is characterized by:

– heavy use of information in everyday life by the majority of individuals and organisations;
– the use of information technology for individual/private, social, educational and professional ends;
– the ability to send, receive and exchange data and information regardless of the distance to be covered.

The use of personal computers connected to the internet has for many become a natural existential environment, in the absence of which they are unable to function normally. The Internet and microelectronic devices have irrevocably shaped the surrounding world, visibly changing and covering practically all areas and walks of life. The notion that "if something cannot be found online, then it doesn't actually exist" speaks to the importance and ubiquity of the medium [Tomczyk 2010: 140].

The development of the information society offers numerous new opportunities, which we would be fortunate to have find application not only in our personal lives but also in our professional lives and the economy. The ever more frequent use of ICTs, particularly the Internet, has given rise to a new economic model known as the electronic economy, or e-economy. It has forced users to change traditional approaches and mindsets. The way transactions are conducted has changed as the frequency of online shopping has risen. The Internet has become not only a source of entertainment, but a fundamental source of information and communication. The various courses and training and educational materials available online are used in education and further education. Financial transactions can be done online, as can one's business at government offices. One can look for work online and also work remotely as a telecommuter. This is to say nothing of the numerous other uses the development of e-commerce has enabled.

Modern technologies are not only an expression of luxury and tools to improve comfort and quality of life, but are the necessary infrastructure in the electronic economy. The increasing possibility of using computers and the Internet make them indispensable

tools in everyday life (in school, work, access to information and knowledge). Most people's lives are built around the performance of computers and flow of digital information [Kurowska 2013]. The importance of having access to current, reliable information, especially with regard to electronic commerce has naturally drawn the attention of numerous economists. Nobel Prize winners Joseph E. Stiglitz, George Akerlof and A. Michael Spencer have all done research on asymmetric information. In their studies they analysed the risk posed by having imperfect, incomplete information. The negative consequence of information asymmetry is that inferior choices may be made [Kurenda 2004].

THE DIGITAL DIVIDE

The differences in access to information-communication technology will lead to the establishment of a new type of social divide, defined as the digital divide (digital divide, in Polish). It is one form of social divide that characterises the 21st century, consisting of marginalisation in social and professional life. Alongside the traditional divisions – wealthy and poor, most often – the categories of having and not having access to modern technologies, including the Internet, have arisen [Janoś-Kresło 2011]. According to the OECD, this is a phenomenon of social inequality, or the appearance of a divide between individuals, households, enterprises and regions in social-economic development, and connected with the access and use of information-communication technology in all spheres of economic activity [Jastrzębska 2012].

The failure to keep pace with technological development is a challenge for international organisations, states, local governments and other institutions that shape policy on providing access to new media [Tomczyk and Węgrzyk 2010]. Those most vulnerable to the digital divide are also those most vulnerable to social divide: the unemployed, disabled, uneducated, and the poorly paid. The digital divide has a negative influence on state functioning insofar as it leads to citizen passivity, a lack of involvement in social and political life and people being poorly informed. Action on the part of public administration is therefore essential in combatting the digital divide [Popiołek 2013]. The most common causes of the divide are a lack of or limited access to a computer and the Internet (mainly due to the high cost of the equipment and an Internet connection) and an inability to use them. A lack of awareness about the practical uses of the Internet, mainly among the elderly, the poor, and poorly educated is a third cause of the divide [Janoś-Kresło 2011].

The information society can be divided into three classes: the knowledge creators (the information aristocracy), those who possess wide knowledge about new technologies, making up the creative group. The creative group contains academics, artists using new technologies, innovators and inventors. The second group comprises individuals able to uniquely use a single new technology, including individuals who propagate knowledge, such as teachers and government workers. The third group consists of individuals who lack knowledge about and access to modern technology (the informationally illiterate). Between them and the creators of knowledge there lies a civilization gap, which in the near future will result in those who lack access to information (knowledge of information) having lower incomes and possibly being marginalised socially and economically. In the

context of the digital divide, beyond these groups the literature [Batorski 2009] points out the different levels of access to new media. J. van Dijk [2008] identifies four levels of access to the new media:

– the motivation to use new technologies;
– physical access (owning a computer, having Internet access);
– skills;
– use (different ways of using the computer and Internet).

The fundamental issue is having the motivation to use the new technology. Much depends on that motivation: the decision to purchase a computer and an Internet connection as well as to acquire the essential skills to use the required applications. Not only having access to a computer and the Internet at home, work, school, or elsewhere, but also the desire to use it is also at the heart of the discussion. After all, access doesn't automatically beget use. Using a computer and the Internet also requires the appropriate competencies with the software, and some aptitude in searching for information online, judging its reliability and usefulness, as well as the ability to create and use it for one's own goals. Finally, what influence the use of new technologies has on the user's situation and opportunities in life is of essential importance. Therefore, how computers and the Internet are used – van Dijk distinguished this as the fourth level of access – are of fundamental importance. These technologies can be used in very different ways, bringing both benefits and harm to users (addiction, for example) [Batorski 2009]. Kuśmierz recognises the digital divide as one of the most important afflictions the world faces today. A seemingly trivial issue turns out to have far greater impact on the life of an individual than originally thought [Furmanek 2010].

e-INCLUSION

e-Inclusion is inextricably linked to the digital divide. It focuses on building digital cohesion by delivering benefits arising from Internet use and other technologies to all groups of society, in order to help them overcome social and economic divide [Batorski 2009]. e-Inclusion refers to the effective participation of individuals and the whole of society in all social and economic spheres based on knowledge through the access and use of ICT. It is also important to overcome barriers to access and enable the use of the benefits ICT brings to society. e-Inclusion further refers to the degree to which ICTs level the playing field and promote participation in the various spheres of social life. It therefore stands to reason that the goal of European policy should be not only to guarantee citizens access to new Internet communication technologies, but also to enable their use. A basic goal of measures undertaken for e-Inclusion in Europe is to counteract social divide, guarantee social cohesion, while at the same time boosting human capital, another means of achieving long-lasting economic growth. Gary Stanley Becker took up the importance of human capital for the economy, and originated the concept of "investing in human beings". He observes that skills and knowledge cause wealth to grow, while a low level of human capital deepens poverty [Kurenda 2004].

THE OPERATIONAL PROGRAMME INNOVATIVE ECONOMY – MEASURE 8.3

The answers to these challenges are measures to be implemented under government and international programmes, one of which is the Operational Programme Innovative Economy. As part of Priority Axis 8, Information society – increasing the economy's innovativeness – measures have been designed to tackle digital divide (measure 8.3). The aim of priority Axis 8 is to stimulate the development of the digital economy by supporting the creation of new, innovative eServices, innovative electronic business solutions and reducing the technological, economic and mental barriers to using eServices that exist in society. The following four measures have been implemented as part of this axis:

– 8.1. Support for economic activity as regards the electronic economy;
– 8.2. Support for implementation of electronic business – B2B;
– 8.3. Counteracting the digital divide – eInclusion;
– 8.4. Ensuring Internet access at the "last mile" level.

Measure 8.3 is intended to guarantee Internet access to individuals at risk of digital divide due to poverty or being disabled. The support comes in the form of subsidies paid to LGUs or consortia of local governments and non-governmental organisations, which are responsible for the comprehensive implementation of measures supporting the eligible households of their municipalities [http://8poig.mac.gov.pl/os8/dzialania/einclusion/1814,Przeciwdzialanie-wykluczeniu-cyfrowemu-eInclusion.html, accessed: 14.01.2015]. The target groups that receive assistance include:

– households meeting income criteria entitling them to receive support under the social security system;
– households meeting income criteria entitling them to receive support under the family benefits system;
– school children from families in a difficult material and social situation entitled to allowances and chosen to receive support in cooperation with a school and/or social welfare centre;
– disabled people with a severe or moderate degree of disability or the equivalent medical certificate;
– foster families;
– institutions operated or coordinated by the municipality (including public libraries, cultural institutions, schools, public childcare centers situated on the benefiting territory, and public care homes).

The target groups of the project are identified by the respective LGUs, with the possible support of a non-governmental organisation.

RESEARCH RESULTS

One of the research areas concerned the use of the Internet for educational purposes (Fig. 1). The programme beneficiaries' activity grew considerably in every area after joining the programme. The largest percent increase – from 52 to 75.1% – occurred for those using online encyclopedias, while the percentage using free online materials also rose

notably. In the remaining cases the percentage point increase was smaller, though taking into consideration the starting point and end results, the number of users using a given option practically doubling is a respectable result. For example, 11.6% of respondents were involved in online courses before the project, while the number jumped to a full 20.6% after. This is, relatively speaking, a very large number, especially considering that not everyone who could opt to study online has the need to do so. The ability to take online courses enables training and further education and eventually improves the situation on the labour market thanks to improved competencies.

The second group of questions concerned the use of the Internet as a banking and financial tool (Fig. 2). Participation in the project brought a change in the use of electronic banking. The number of respondents who opened an online bank account grew, from 31.5 to 49.9%.

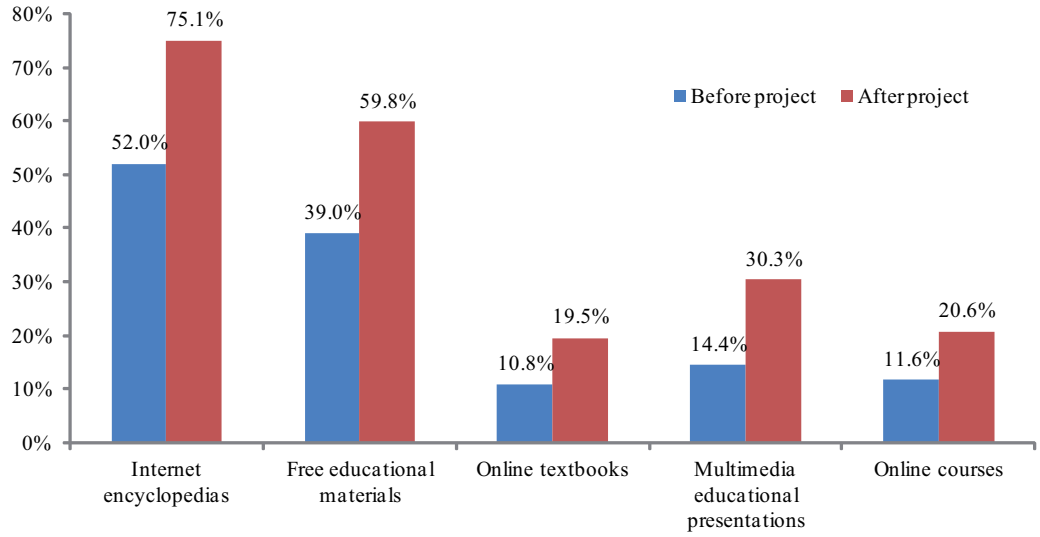

FIG. 1. Internet use for educational purposes

Source: the authors.

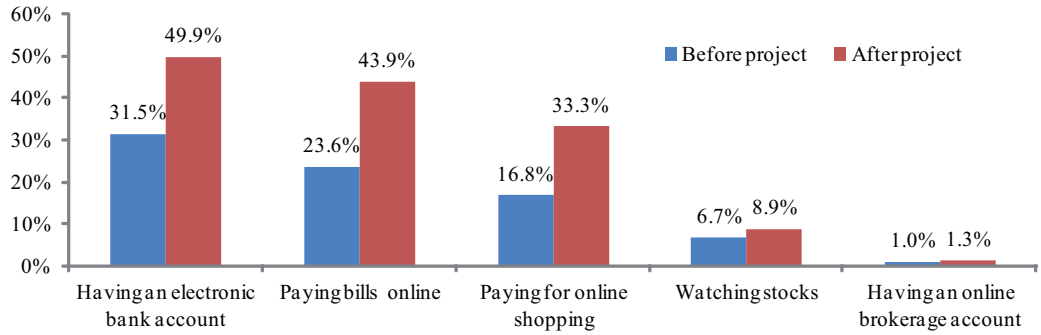

FIG. 2. Changes in the use of electronic banking services (financial institutions)

Source: the authors.

Exactly 43.9% of the individuals in this group pay their bills online, though only a third of respondents pay online for purchases made online [Pizło and Lesicki 2012]. Decidedly fewer watch stocks and use brokerage accounts online. The next group of questions concerned the use of the Internet to purchase and sell items online (Fig. 3).

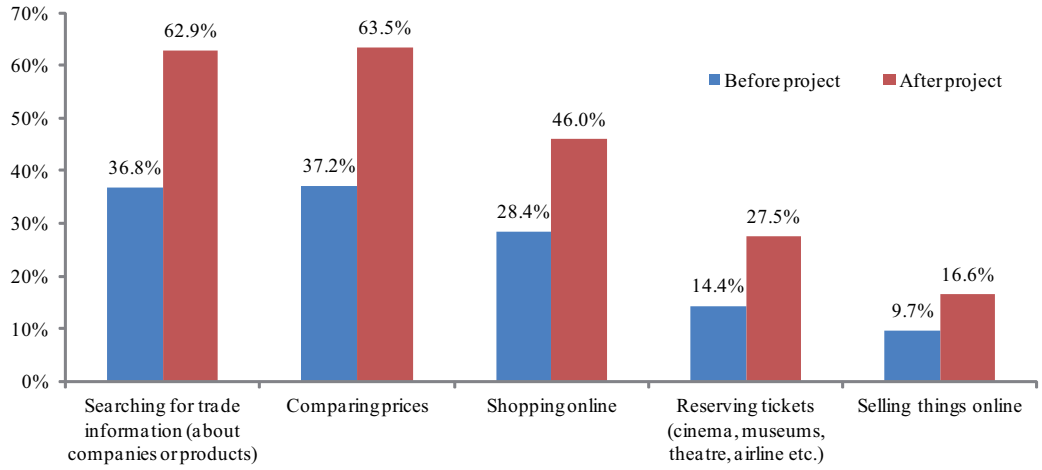

FIG. 3. Use of Internet to buy and sell online

Source: the authors.

Nearly two-thirds of the survey respondents use the Internet to look for commercial information, including companies and products, and to compare products. Just over a third could say the same before receiving support from the digital divide programme. 46% of respondents shop online, while only 28.4% had done so before participating in the programme. The number of people who make reservations online also grew, from 15 to 25%. At 16.6%, a relatively large share of people – especially given that they had recently been digitally excluded – used the Internet to sell items.

CONCLUSIONS

Emerging alongside the spread of personal computers and Internet connectivity, the digital divide is also referred to as the information divide or technology/computer illiteracy. It involves the alienation of individuals, groups or regions from the information society. The digital divide holds back people who are affected by marginalisation, as in the era of widespread e-economy services it prevents this group from satisfying online a vast range of both basic and more complex needs. A failure to use such services can in many cases lead to reduced quality of life. The most important barriers to widening Internet use include "hard" infrastructural barriers (no connection to the Internet usually for financial reasons) and "soft" barriers, including a lack of motivation or appropriate skills. The aim of social policy should therefore be to prevent the digital divide, by means of eInclusion, and by removing the barriers to Internet use and the attendant development of electronic commerce. This study has highlighted that the funds provided under measure 8.3

OPIE benefited participants in each of the areas studied. They pointed to the need for and legitimacy of such activities. In addition to the personal advantage of the beneficiaries, steps taken to tackle digital divide also indirectly affect the development of electronic commerce by increasing the number of people who actively use it.

REFERENCES

BATORSKI D., 2009. Wykluczenie cyfrowe w Polsce (The digital divide in Poland) (in:) D. Grodzka (ed.) Społeczeństwo informacyjne (The information society), Studia Biura Analiz Sejmowych Kancelarii Sejmu, Biuro Analiz Sejmowych Kancelarii Sejmu, Warszawa (in Polish).

BELL D., 1974. The Coming of the Post-Industrial Society, Basic Books, London.

*e*POLSKA – Plan działań na rzecz rozwoju społeczeństwa informacyjnego w Polsce na lata 2001––2006 (*e*Poland – Action Plan for the development of the information society in Poland, 2001–2006), 2001. Ministerstwo Łączności, retrieved from http://kbn.icm.edu.pl/cele/epolska.html [accessed: 14.01.2015] (in Polish).

FURMANEK W., 2010. Edukacyjne wyzwania nowej stratyfikacji społecznej (Educational challenges of the new social stratification), Edukacja Ustawiczna Dorosłych 3 (70), 15–25 (in Polish).

GAJDOS A., 2008. Analiza struktury zatrudnienia w społeczeństwie informacyjnym (An analysis of the structure of employment in the information society), Zeszyty Naukowe Rola Informatyki w Naukach Ekonomicznych i Społecznych. Innowacje i Implikacje Interdyscyplinarne 8, 1 (in Polish).

DIJK J. van. The Digital Divide in Europe (in:) The Handbook of Internet Politics, Routledge, London – New York, retrieved from https://www.utwente.nl/bms/mco/bestanden/digital-divide.pdf [accessed: 17.03.2016].

JANOŚ-KRESŁO M., 2011. Polskie gospodarstwa domowe w drodze do społeczeństwa informacyjnego (Polish households on the road to the information society), Studia i Prace Kolegium Zarządzania i Finansów, 111 (in Polish).

JASTRZĘBSKA W., 2012. Wykluczenie cyfrowe – przyczyny, zagrożenia i bariery jego pokonania. Studium przypadku nierówności społeczne a wzrost gospodarczy. Modernizacja dla spójności społeczno-ekonomicznej w czasach kryzysu (The digital divide – causes, threats and barriers to overcoming it – a case study in social inequalities and economic growth – modernisation for social and economic cohesion in times of crisis), Zeszyt 25, Wydawnictwo Uniwersytetu Rzeszowskiego, Rzeszów, 91–104 (in Polish).

KURENDA E., 2004. Słownik historii myśli ekonomicznej (A dictionary of the history of economic thought), Oficyna Ekonomiczna, Kraków (in Polish).

KUROWSKA M., 2013: Wykluczenie cyfrowe zagrożeniem dla społeczeństwa informacyjnego (The digital divide as a threat to the information society) Wykluczenie informacyjne, Biuletyn EBIB, 145, retrieved from http://open.ebib.pl/ojs/index.php/ebib/article/view/136/279 [accessed: 12.01.2015] (in Polish).

NOWAK J.S., 2005. Społeczeństwo informacyjne – geneza i definicje (The information society – genesis and definitions) (in:) Społeczeństwo informacyjne 2005, G. Bliźniuk, J.S. Nowak (eds), PTI, Katowice, retrieved from http://www.silesia.org.pl/upload/ Nowak_Jerzy_Spoleczenstwo_informacyjne-geneza_i_definicje.pdf [accessed: 09.01.2015] (in Polish).

PIZŁO W., LESICKI M., 2012. Marketing internetowy produktów żywnościowych w Polsce (Online marketing of food products in Poland), Zeszyty Naukowe SGGW, Ekonomika i Organizacja Gospodarki Żywnościowej, 100, 63–74 (in Polish).

POPIOŁEK M., 2013. Wykluczenie cyfrowe w Polsce (The digital divide in Poland), Nierówności Społeczne a Wzrost Gospodarczy 32, 310–320, retrieved from https://www.ur.edu.pl/file/50181/24.pdf [accessed: 09.01.2015] (in Polish).

SZTOMPKA P., 2002. Socjologia. Analiza społeczeństwa (Sociology. The analysis of society), Znak, Kraków (in Polish).

TOMCZYK Ł., 2010. O wykluczeniu cyfrowym seniorów w zinformatyzowanym świecie (On the digital divide and seniors in an informaticized world), Zeszyty Naukowe Rola Informatyki w Naukach Ekonomicznych i Społecznych. Innowacje i Implikacje Interdyscyplinarne 10, 1 (in Polish).

TURNER J.H., 1998. Socjologia. Koncepcja i ich zastosowanie (Sociology, theories and applications), Zysk i S-ka, Poznań.

Summary. The article examines the influence of the Operational Programme Innovative Economy on individuals whose participation in the electronic economy is threatened by the digital divide. The aim was to diagnose the digital divide in the context of the Information Society and to assess the level of digital divide. The empirical material was a survey on a sample of 1,487 questionnaires, 1,402 of which were ultimately accepted and analysed. The sample consisted of individuals benefiting from the Operational Programme Innovative Economy – Measure 8.3, Counteracting Digital divide – eInclusion. The article presents the essence of the information society by looking at the ideas of A. Toffler, D. Bell, M. Castells, M. Bangemann and T. Goban-Class, as well as the nature of the digital divide and e-Inclusion. It was found that, after joining the programme, beneficiaries significantly increased their use of Internet encyclopedias (from 52 to 75.1%), as well as participation in online courses. Respondents also showed an increase in the use of electronic banking (the number of respondents who opened up an online bank account rose from 31.8 to 49.9%).

Key words: information society, digital divide (digital divide), Operational Programme

JEL: D82, D83, L86

Corresponding author: Wojciech Pizło, Warsaw University of Life Sciences – SGGW, Faculty of Economic Sciences, Department of European Policy, Public Finance and Marketing, Nowoursynowska 166, 02-787 Warsaw, Poland, e-mail: wojciech_pizlo@sggw.pl; Dariusz Chalimoniuk, University of Natural Sciences and Humanities in Siedlce, Faculty of Economic and Legal Sciences, Department of Management and Marketing, Żytnia 17/19, 08-110 Siedlce, Poland, e-mail: dariusz.chalimoniuk@uph.edu.pl