Kształcenie i doskonalenie zawodowe

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Usage of digital information technology in financial education and financial inclusion. Case Study of young adults who study economics

Wykorzystanie technologii cyfrowej w edukacji finansowej i integracji finansowej. Studium przypadku dla młodych dorosłych, którzy studiują ekonomię

Key words: Digital Information Technologies, Innovation in Finance, Youth.

Abstract. Modern information technology (including digital information technology) plays the crucial role in contemporary world development. It penetrates many areas of daily life of individuals, households, enterprises, financial institutions and at the same time influences in direct or indirect way on societies and economies development. Information and communication technology (ICT) usage is ubiquitous and has a strong impact on whole societies, but it is mainly pervasive among present day youth. The study of literature as well as the observation of reality confirm both chance and threat of digital information technology for children and youth development. Therefore, the research questions are: 1) May the digital information technology be a threat to youth with further negative influence on economy? 2) Is the digital information technology sufficiently used by young people?

The results of research confirm that young people are not aware about its meaning and responsibility in proper usage of modern technology in contemporary world, what brings serious threats for development of societies and economies. The fundamental problem to solve is to equip the young people in this awareness, which may cause positive change.

Słowa kluczowe: cyfrowe technologie informacyjne, innowacje w finansach, edukacja finansowa, włączenie finansowe, młodzież.

Streszczenie. Nowoczesna technologia informacyjna (w tym technologia cyfrowa) odgrywa kluczową rolę w rozwoju współczesnego świata. Wnika w wiele dziedzin życia codziennego jednostek, gospodarstw domowych, przedsiębiorstw, instytucji finansowych i jednocześnie ma bezpośredni lub pośredni wpływ na rozwój społeczeństw i gospodarek. Wykorzystanie technologii informacyjno-komunikacyjnych (TIK) jest wszechobecne i ma silny wpływ na całe społeczeństwa, ale w szczególności jest zauważalne wśród współczesnej młodzieży. Studia literatury oraz obserwacja rzeczywistości potwierdzają zarówno szanse, jak i zagrożenia wynikające z cyfrowej technologii informacyjnej dla rozwoju dzieci i młodzieży. Dlatego też w niniejszym artykule postawiono następujące pytania badawcze: 1) Czy cyfrowa technologia informacyjna może stanowić zagrożenie dla młodzieży z dalszym negatywnym wpływem na gospodarkę? 2) Czy technologia cyfrowa jest wystarczająco wykorzystywana przez młodych ludzi?

Wyniki badań empirycznych przeprowadzonych w obszarze edukacji finansowej oraz włączenia finansowego (w zakresie realizacji płatności) potwierdzają, że młodzi ludzie nie są w pełni świadomi znaczenia i odpowiedzialności w zakresie właściwego stosowania nowoczesnych technologii. Może to oznaczać zarówno niewykorzystane szanse, jak i poważne zagrożenie dla rozwoju społeczeństw i gospodarek. Podstawowym problemem do rozwiązania jest zatem wyposażenie młodych osób w świadomość, umożliwiającą wykorzystanie potencjału nowoczesnej technologii w wielu obszarach.

Introduction. In today's modern and knowledge-based and the information and communication technology economies, information and communication technology (ICT) influences both the costumers' economic behavior as well as it influences producers' behavior (Quah, 2003). ICT influences on economy through the formation of management process of enterprises but also through its impact on financial inclusion (Lapukeni, 2015) which help in poverty reduction (Park and Mercado, 2015) as well as through influence the education processes (Khannanov, 2003; Naidu, 2006). The results of much research on influence the investments in ICT on economic growth in many countries still remain inconclusive (Papaioannou, 2004; Hosseini and Aghaei, 2009). It means that modern information technologies are both chance and threat for positive changes in economy and that they become a great challenge for contemporary world.

Information and communication technology usage is ubiquitous and has a strong impact on whole societies, but it is mainly pervasive among present day youth (Y and Z generations). For 'Y generation' named as 'Millennials' which was born between 1980–2001 and have accessed the development and easiness of technology, technology is one of the cornerstones of life. 'Millennials' is first technologic and global generation of the world, which live together with the technology and it is remembered as the 'most technological generation'. What's more, Y generation was affected by the rapid advancement of the information and communication technologies. In turn, 'Z generation' which was born between 2000–2020 is just the technology generation,

which does not know the world without technology (Berkup, 2014). Each of these generation is important for economy: 'Y generation' plays important place especially in business life today, while the 'Z generation' is very important potential for future economy and for world development as the whole.

For each young generation the most important process in way to adulthood is education. Educated and informed societies are the great potential for economies. ICTs may in effective way support the process of education of children and youth, especially taking into account presented features of young generations concerning the technology.

Next very important area of usage the ICT by youth is participating in financial market (financial inclusion), especially having banking account and payment realization. The financial inclusion determines the financial well-being of individuals, influences the financial stability and facilitates economic growth. Positive patterns in usage of financial offers brings great benefits for many entities and fields in economy.

The aim of this paper is to present the features of today's young people as the potential users of technological innovations in the area of financial education and financial inclusion.

Methodology. With respect to the mentioned insights two research questions are formulated:

1) May the digital information technology be a threat to youth with future negative impact on economy? The example of knowledge illusion[1].
2) Is the digital information technology sufficiently used by young people? The example of e-payment[2].

The two-stages methodology is designed to answer the main research questions and achieve the research aim. The first stage is based on the study of the academic and non-academic literature. The aim of this part of the paper is the presentation how young generations perceive and use modern technology in process of financial education as well as in realization the e-payments.

The second stage is an empirical survey based on questionnaire. In empirical part of study the existence of illusion of knowledge as the effect of usage Internet tools and usage of payments cards and mobile devices in payments realization were examined. Statistical significance of survey results will be verified by chi2 test.

The empirical element of the essay is the result of part of the wider survey carried out under research grant among students of economics of the Visegrad Countries:

Czech Republic – 362 students of University J. E. Purkyne in Usti nad Labem (including 192 students starting and 170 students finishing financial education),

[1] Preliminary results of research on illusion of knowledge (without verification of statistical significance of results) were presented in (Frączek, 2016) and for this paper the research was expanded.

[2] Preliminary results of research (without the division into the students starting and finishing study of economics) were presented in (Frączek, 2017a) and for this paper the research was expanded.

Hungary – 203 students of the University of West Hungary in Sopron (including 157 students starting and 46 students finishing financial education),

Poland – 362 students of University of Economics in Katowice (including 177 students starting and 185 students finishing financial education),

Slovakia – 274 students of the University of Economics in Bratislava, Faculty of Economics 3and Business in Kosice (including 177 students starting and 137 students finishing financial education).

The survey was conducted during April–May 2015 under the Standard Grand funded by International Visegrad Fund conducted form 2015–2016. The respondents were all available (during lectures) students of given universities. However, due to the large number of students at the University of Economics in Katowice sample surveys were carried out among students available for lectures.

The universities participated in research are typical state universities, where students-respondents are characterized by a number of similar features, including: the structure of gender, differences in the size of the city they come from and differences in the economic/non-economic education of their parents. Therefore it can be assumed that the selected research sample is a miniature of the population of students of economics in countries from Visegrad Group (the countries of Central and Eastern Europe).

The study was carried out taking into account the respondent's country and stage of teaching (I – students starting economics study, students of first year of bachelor study, II – students graduating from economic/financial education, students of last year of master study).

Modern technology in processes of financial education and financial inclusion (payments). The main beneficent of many modern technological solutions is youth and in the environment of young people information and communications technologies are the most important. The vast majority of adolescents have access to computers, the Internet, smartphones and many other modern technological devices, what is desirable and even absolutely required to exist among the youth environment. Young people usually feel a heightened empathy with the digital environment in comparison to other age groups (Bennett and Maton, 2010).

The usage of modern technological solutions among youth is wide. In this article it will be presented the usage of IT in processes of financial education and financial inclusion in the area of payments making.

The usage of IT in education refer to both educational contents prepared and provide in electronic form (digital versions of educational materials) and different Internet tools (sources) providing the information. Considering the educational context it should be underlined a big number of educational contents sources, including: e-mailing (thematic student-to-student correspondence), e-mailing questions to the experts, google – looking for the information, Google scholar (e-books, e-articles),

financial portals, websites of different authorities and institutions, interactive web tutorials, active educational cooperation with other Internet users in virtual environments (discussions, videoconferences), virtual educational content prepared by your teachers, virtual educational content which are collected or prepared by colleagues. Contemporary information technologies also provide different ways of communication in educational processes (e.g. single communication type, individualized self-paced e-learning offline, group-based e-learning synchronously, group-based e-learning asynchronously) (Naidu, 2006).

Another very important area of the usage the modern technology are payments (as element of financial inclusion). Financial inclusion means freely access to useful and affordable financial products and services that meet their needs – e.g. accounts in financial institutions, payments, savings, credit and insurance – delivered in a responsible and sustainable way (Sarma and Pais, 2011). The attractiveness of innovative financial products and services including e-payments and their impact on degree of financial inclusion is a result of individual, subjective perception and evaluation of their advantages and disadvantages. On the one hand, ease of usage, transaction speed, flexibility to match individual demand patterns, and on the other hand the complexity of service, financial cost, risk of loss of security and limited confidentiality of transactions are highlighted. Among factors that are unfavorable to technological innovation are the low knowledge (including digital knowledge (ETS, 2007)) and ignorance of customers towards the functionality of innovative electronic payments.

In today's world card payments and mobile payments play a special role among non-cash payments (World Bank, 2015; GSMA, 2017).

Both card payments and mobile payments are special form of electronic payments. Each one has its own advantages and disadvantages. Today, payment cards (mainly debit and credit cards) offer more and more security, convenience, flexibility and control than any other payment methods. In turn mobile payments, as a new technology for payments, face the challenge of achieve the customers' trust.

Youth may turn out to be a key customer segment to win over and influence mass market acceptance next generation of e-payments. Young people are seen as the 'gatekeepers' for the mass take-up of new technologies in most of societies in the world. This demographic group is eager adopters of most advanced technologies and innovations (VocaLink 2013).

A major chance of mass migration to mobile payments is the rising penetration of internet-enabled mobile devices and their acceptance especially by youth as well as that the smartphone users are forecast to grow. Banks and other PSPs have a powerful tool in a form of mobile social media platforms for influencing young consumers to use new e-payment methods, for example by increasing their awareness of the benefits while reducing their perceptions of risk (Light and Berg, 2015).

For existing and prospective providers of new e-payment solutions based on modern technological innovations, the youth sector is the first and most important demographic to focus on.

Examples of weaknesses of the Internet technology usage among the students of economics in Visegrad Countries in process of financial education and financial inclusion. Taking into account the fact that today Internet is one of the technological breakthroughs in interpersonal communication it should be highlighted, that for university students the Internet is the great potential, because 100% respondents (students of economics in Visegrad Countries) are Internet users. In this point it is worth to note, that percentage of internet users in all population on December 2017 amounted to 54,4% for the World, 85,2% for Europe and 87,7% for Czech Republic, 88,6% for Hungary, 78,1% for Poland and 85.0% for Slovakia (Internet World Stat 2018).

Influence the technological tools accessed in Internet on knowledge illusion. Despite of many benefits which brings the usage of modern information technologies in educational process, there are also many source of threats. One of them is indifference against the knowledge manifested in insufficient usage of modern and accessible technology in education.

The research on usage the technology in financial education confirms that students, who study economics and finance do not use the potential of educational contents supplied via Internet. The results of research show that students are not equipped in skills of selection and evaluation of searched information. They usually use the Google for searching the information. In turn, interactive web tutorials and questions to the experts are less popular. Unfortunately, also the reviewed e-books and e-articles on Google Scholar are used by students very rare. This may be seen as the ignorance against to knowledge. Students also do not use the potential of remote ways of communication served with usage of digital technology [Frączek, 2016; Frączek, 2017b].

The serious threat for results of education is improper selection and interpretation the information as well as the usage the tools accessible via Internet. Conducted research allows for examining the compatibility of declaration on knowledge and having the knowledge among the students, on the example of most popular investment theories/analysis (fundamental analysis FA, technical analysis TA, portfolio analysis PA, behavioral analysis BA). In the research students-respondents answered simple question under each investment theory/analysis and then they was asked to declare their basic knowledge (positive self-assessment) in each theory/analysis – table 1.

Results of research confirmed very low level in compliance of the self-assessment with knowledge, what means that students either answered question correctly and did not declare their knowledge in given theory/analysis or declare their knowledge

Table 1. Results on self-assessment, basic knowledge of the investment theories and compliance of positive self-assessment with the correct answer among the students of economics in 4V Countries (percentage of respondents)

Type of analysis	AF		AT		AP		AB	
Stage of study	I	II	I	II	I	II	I	II
Czech Republic (CZ)								
positive self-assessment	21.9%	32.9%	**28.1%**	**36.5%**	21.4%	44.7%	24.0%	33.5%
correct answer	**35.4%**	**44.7%**	18.8%	22.9%	**58.9%**	**77.6%**	**39.1%**	**50.0%**
compliance of self-assessment with knowledge	10.9%	22.9%	6.8%	11.2%	16.1%	34.7%	9.4%	18.8%
p (for compliance)	p = 0.003		p = 0.198		p = 0.001		p = 0.014	
Hungary (Hu)								
positive self-assessment	**39,5%**	45.7%	**44,6%**	**45.7%**	45,2%	54.3%	**41,4%**	45.7%
correct answer	37.6%	**58.7%**	26.8%	39.1%	**49.0%**	**80.4%**	37.6%	**73.9%**
compliance of self-assessment with knowledge	19,1%	34.8%	16,6%	26.1%	30,6%	47.8%	21,0%	37.0%
p (for compliance)	p = 0.042		p = 0.214		p = 0.047		p = 0.044	
Poland (PL)								
positive self-assessment	37.9%	67.6%	**31.6%**	**67.0%**	32.8%	79.5%	36.2%	65.9%
correct answer	**58.2%**	**76.8%**	31.1%	47.0%	**49.2%**	**97.3%**	**41.8%**	**81.6%**
compliance of self-assessment with knowledge	20.3%	55.1%	10.7%	33.5%	20,3%	76.8%	16,9%	55.1%
p (for compliance)	p< 0.001		p< 0.001		p< 0.001		p< 0.001	
Slovakia (SK)								
positive self-assessment	27.2%	**79.5%**	**34.6%**	**79.6%**	33.1%	72.3%	**36.8%**	**66.4%**
correct answer	**38.2%**	76.6%	30.1%	62.8%	**69.9%**	**89.9%**	34.6%	64.2%
compliance of self-assessment with knowledge	13.9%	61.3%	10.99%	51.8%	23.4%	67.9%	13.9%	45.3%
p (for compliance)	p< 0.001		p< 0.001		p< 0.001		p< 0.001	

** I – students starting financial education, II – students finishing financial education*
*** Bolded and grey cell show the better results in areas of positive self-assessment and correct answer*

Source: Own compilation.

but do not answer correctly. In most cases (types of investment theories/analyzes) students usually are unsure of their knowledge. Considering the basic knowledge on investment theories, they usually more often answer correctly than declare their knowledge. The exception is technical analysis under which respondents more often declare their knowledge than they answer the question correctly. Such regularity may be named as illusion of knowledge and in the case of technical analysis the one of the reason may be false belief about knowledge due to easy access to information and supporting tools (analytic modules on brokerage platforms) retrieved via Internet.

The illusion of knowledge caused by unlimited access to information (via Internet) without its selection and usage in proper way may appears in many fields of education. It is serious threat for today's economies based on knowledge societies and does not facilitate the sustainable development.

Usage of card payments and mobile payments among the future young economists in 4V Countries. The determining the level of usage the most popular measures of e-payments (card payments) as well as the best promising ones (mobile payments) is aimed in examining in what degree the digital information technology sufficiently used by young people.

Considering the payments cards the results of research confirmed, that the most popular payment card is a debit card. The percentage of students starting financial education who use debit card fluctuates among 49% in Poland and 57% in Czech Republic and Hungary, while the percentage of students finishing financial education who use debit card varies between 63% in Slovakia and 81% in Poland. The level of usage debit cards increases with stages of financial/economic education and with age and is higher than average level all over the World, which was 40.1% in 2014 and 30.5% in 2011 (World Bank 2015).

The usage of the less popular credit cards does not increase with stages of financial education and with age. The reasons may be various. Important factor influencing the usage of credit cards among the students starting their study is financial support of their parents/legal guardians (in the form of credit card, which is easy to use and control). The students finishing the financial education more often may use alternately sources of borrowing money, because of higher level of financial knowledge and skills. They also often work and therefore have the more chance for borrowing money due to increasing possibility of having appropriate collateral. In addition, if they have a higher income capacity, they express less demand for credit. The charge cards and prepaid cards have definitely marginal meaning for respondents.

The alternative for card payments seems to be mobile payments, especially among the youth. Further stage of research shows that the usage of mobile payments level is lower in comparison to the usage of card payments level. Also changes in these levels among students starting and finishing financial education are slower in the case of mobile payments in comparison to card payments.

The analysis of usage the mobile payments does not allow for specifying the regular tendencies in all examined countries. It concerns to both mobile payments regardless the purpose of the usage as well as particular cases of mobile payment usage (to pay bills, to send money or to receive money). The situation in particular 4V Countries is not the same. The higher percentage of students-users of mobile payments was noticed in Poland and Slovakia, in turn the Hungarian and Czech students use the mobile payments in less degree.

There are also not reported appreciable tendency in increasing the level of usage the mobile payments together with following stages in financial education. In some countries is even observed a smaller percentage of students using mobile payments among students completing financial education in comparison to students starting financial education. In this case, the reason may be not the level of financial literacy (which certainly has improved under the process of financial education) but the different attitude to the technological innovations in e-payments. Contemporary young people (in the lower age bracket) – mostly in Slovakia – are more mobile than their older counterparts. There are probably different preferences of younger and older youth in means of e-payments. It confirms the statement that even in the generation of young people there are sub-groups, which depend on age range, which represent different attitude to the latest technological innovations – with the indication that, the younger generations are more likely to be technologically inclined.

The key research question is; whether the mobile payments are alternative or supplement to card payments? It turns out that in all countries young future economists prefer the card payments and the mobile payments are additional simultaneously used e-payment solution – table 2.

Table 2. Number and percentage of the students who use card payments and mobile payments

Countries	CZ	HU	PL	SK	p
Usage of at least one payment card only					
Students starting financial education	166 (86%)	140 (89%)	120 (68%)	125 (91%)	p<.001
Students finishing financial education	154 (91%)	41 (89%)	159 (86%)	130 (95%)	
Usage of mobile payments only					
Students starting financial education	98 (51%)	75 (48%)	121 (68%)	100 (73%)	p<.001
Students finishing financial education	96 (56%)	21 (46%)	133 (72%)	86 (63%)	
Usage of cards and mobile devices parallelly					
Students starting financial education	91 (47%)	71 (45%)	93 (53%)	93 (68%)	p<.001
Students finishing financial education	93 (55%)	19 (41%)	116 (63%)	82 (60%)	

Source: Own compilation.

The supplement of the results from table 2 and previous considerations is graphic presentation – figure 1.

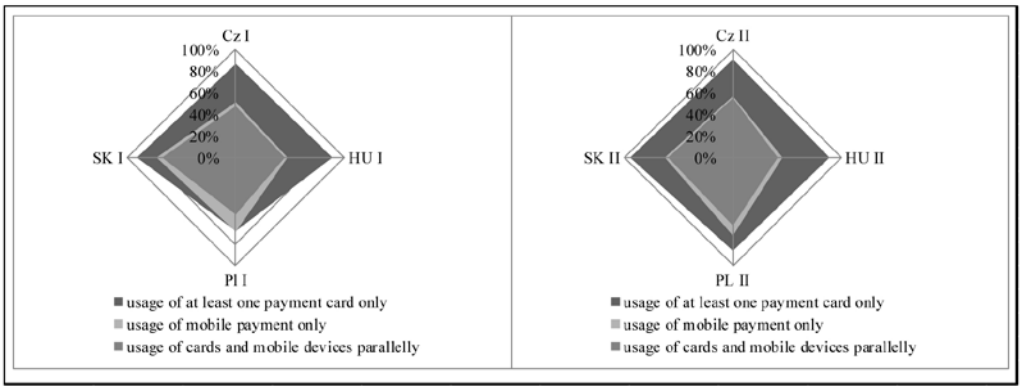

Fig. 1. Percentage of the students who use card payments and mobile payments

Note:
* CZ-Czech Republic, HU-Hungary, PL-Poland, SK-Slovakia, I-students starting economic study, II- students completing economic/financial study.
Source: Own compilation.

The figure 1 confirms, that the mobile payments are supplement to card payments. Very small percentage of students are only users of mobile payments (light grey area). In most examined countries the situation changes slightly.

The confirmed level of mobile devices usage in e-payments among young and educated in finance people, who may set the trends, may be considered as the both chance and treat. The chance is still unused potential of people who do not use the mobile payments. On the other hand, if the not to participating in mobile payments is results of first experience which were not positive, it may be very serious barrier in re-attempting to usage of mobile devices in payments.

Conclusions. Modern technology has experienced vast expansion in recent years and is extensive use by people from all generations. The technology development influences following generations and changes their personalities, viewpoints and values, which in turn may change the social and economic landscape. In most degree the modern technology has affected the young generations – they were born into technology and follow its daily development. It causes that youth as a great potential for future is very competent with technology. But although the technical features of different communication technologies facilitate different kinds of use, the potential applications of technologies are not always realized.

Conducted research confirms the possibility of appearance illusion of knowledge as the negative effect of unlimited access to unverified information and tools supporting the process of education gained in Internet and threat of disruption of the education

process. Considering students of specific education profile with specific interests it is important to identify all chances and barriers of effective education, including those concerning the usage of technology.

The results of research supply the evidence for unused potential of modern technology among the 'technology generations' – young people. The case of e-payment makes it aware, that despite of the compelling benefits of electronic payments, the slow pace with which some countries embrace particular forms of innovations in e-payments is still occurring. The results of research confirm that payment cards are still the leading non-cash payment instrument and next generations of innovations are rather complementary than alternative to the most popular card payments. The conducted research shows that although mobile payments develop very dynamically, they still remain a gadget and still are not such popular as payment cards.

Even though many unquestioned benefits of mobile payments, even in the youth environment, which widely and freely uses the most modern mobile devices and which is fascinated by technological innovations, there is a lack of interest in using new e-payment solutions using the most popular mobile devices. The findings of this study provide the evidence about the limited practical and functional dimensions emerging in the use of mobile phone devices among youth during making the financial decisions and realization the electronic payments.

Taking into account the importance of young people who study economics and finance, as the individuals, who are best educated in the finance, it may be assumed that they set the trends and patterns in the usage of different financial services, including e-payments. Therefore they are very important target group it for e-payment industry which should be examined.

The additional very important finding of this study is, that the level of usage of cards and mobile devices in e- payments by young people studying the economics fields shows that the potential of the electronic payment market is still undeveloped.

Young people are not aware about its meaning and responsibility in proper usage of modern technology in contemporary world. The fundamental problem to solve is to equip the young people in this awareness. Young educated and aware generation with technological affinity and openness towards innovative education and payment methods could drive changes in behavior other groups of societies.

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