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ICT usage as a key prerequisite for open knowledge environment creation

Marcin Gryczka
Faculty of Economics and Management University of Szczecin
Mickiewicza 64, 71-101 Szczecin, Poland; e-mail: gryczka@wneiz.pl

Development of information and telecommunication technologies (ICT) and growing popularity of the Internet as communication medium were the most important incentives having influenced the global knowledge-based economy for at least two decades. Although the ICT infrastructure development degree is still often considered as an information society measure, it seems that nowadays, when so many people has broadband and mobile access to the Web, more appropriate ones are those reflecting ICT skills and efficient Internet usage qualifications. One of the new concepts is "open innovation", which in a wider sense could be understood as an exemplification of networked knowledge and innovation exchange method possible thanks to the contemporary Internet revolution. The main purpose of this paper is to evaluate the general concept of open innovation environment, which could be created in Poland to facilitate and foster a scientific and innovation-oriented cooperation among different stakeholders, like companies (especially SMEs), universities, public institutions and the mass of individual Internet users. To achieve this goal, the latter part of the paper is dedicated to the electronic survey results analysis and discussion. This survey has been conducted via social media and other electronic communication channels in course of author's research concerning new models of knowledge diffusion and technology transfer in electronic networks, especially on the Web.

JEL Classifications: O31, O33, D83

Keywords: Technology transfer, knowledge absorption, open innovation environment

Introduction

The concept of knowledge-based economy has become very trendy for a few last decades. It resulted inter alia from the observation concerning the evident feature of the contemporary economy, which is a visible correlation between the level of innovation and the availability and efficient usage of resources that contribute to the creation of knowledge. Moreover, knowledge creation and R+D results dissemination processes increasingly depend on IT infrastructure, in particular on the global Web. This means that the intensification of international flows of scientific and technical knowledge not only requires increased availability of modern ICT infrastructure but also developing proper IT skills.

A growing flows of foreign direct investment indicate the maintained popularity of traditional forms of technology transfer that usually occur within transnational corporations (TNCs). However, the increasing availability of the Internet, exponentially expanding electronic databases, the development and usage of mobile technologies and the creativity of Internet users increase altogether the importance of the Internet as an essential component of the global innovation system. The main purpose of this paper is to analyze some innovation indicators for selected developed and newly industrialized countries (with emphasis on Poland) and to introduce a general concept of the national innovation system based on network structures, influenced not only by endogenous factors such as education level and quality of human capital, expenditure on R&D and state support of innovation activities but also the advanced skills making the cooperation

and exchange of knowledge through the Internet available. Moreover, some interesting and valuable results of the original e-survey involving networked knowledge diffusion issues are presented and discussed in the latter of the article.

Innovation economy creation determinants in the context of ICT accessibility

Due to the increasing information noise and stronger and stronger competition in the search for talented people that are essential for building knowledge-based economy, it seems that intensifying the international knowledge exchange process should be based on the promotion of comprehensive solutions for building integrated, open innovative environments (Lindegaard, 2010, pp.47-58). Despite the continuing debate concerning the protection of intellectual property rights (see for example widespread protests against ACTA; also Granstrand, 1999; Branstetter et al., 2006), it can be assumed that the growth of the Internet should lead to the wider dissemination of Open Innovation model. Interestingly, transnational corporations (especially those associated with high-tech and IT sectors), which are widely recognized as interested in preserving at all costs the status quo in order to protect their eroding technology monopoly (Carr, 2004), were the first to see and use the potential of this method of knowledge management (Chesbrough, 2006, p.63; Bingham and Spradlin, 2011, p.117).

In this context, data on the Polish economy and the development of a digital society in Poland are decidedly negative, confirming the fact that in this respect the country's standing is one of the last in the European Union. This means that Poland is not only behind developed countries but also behind an increasing number of developing countries (especially the newly industrialized Asian countries).

TABLE 1. SEVERAL INNOVATION INDICATORS FOR POLAND AND THE SELECTED COUNTRIES IN 2008–2012

Country	Research and development expenditure (% of GDP)	Resident patent applications (per million people)	ICT expenditure (% of GDP)	High-technology exports (% of manufactured exports)	Researchers in R&D (per thousand people)
	2011	2012	2008	2012	2011
European Union (27)	2.05	-	-	15.4	2.92
United States	2.77	856	7.4	17.8	4.65[b]
Switzerland	2.87[c]	1013	7.2	25.8	3.29[c]
Japan	3.26[d]	2250	6.7	17.4	5.15[c]
Poland	0.77	124	5.5	7.0	1.68
Czech Republic	1.84	96	7.6	16.1	2.89
Hungary	1.20	80	8.9	18.1	2.30

[a] EU-15, [b] Data for 2007, [c] Data for 2008, [d] Data for 2010

Source: Own elaboration based on data from the World Bank website, http://data.worldbank.org/, Eurostat website, http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database, WIPO website (as for 06/15/2014).

The data presented in Table 1 clearly confirms low innovativeness of Poland compared with other countries of the European Union, the United States, Switzerland and Japan. Moreover, much better results in the innovation policy record have recently been achieved by other post-socialist countries, such as the Czech Republic and Hungary. This is particularly evident in the application of knowledge, indicated by the share of high-tech goods in manufactured exports or residents patent applications. For such reasons innovation performance of Poland is still unsatisfactory, although according to the Innovation Union Scoreboard 2014 Poland is only country that changed group

membership by advancing from the Modest to the Moderate innovators, compared to the last year edition (European Commission, 2014, p.11).

TABLE 2. SEVERAL INFORMATION SOCIETY INDICATORS FOR POLAND AND THE SELECTED REGIONS IN 2011

Region/country	Fixed telephone lines (per 100 inhabitants)	Mobile-cellular subscriptions (per 100 inhabitants)	Percentage of individuals using the Internet	Fixed broadband subscriptions (per 100 inhabitants)
World	16.6	86.7	34.7	8.5
Developed countries	39.8	117.8	73.8	25.7
Developing countries	11.6	78.8	26.3	4.8
United States	47.9	105.9	77.9	28.8
Switzerland	60.8	130.1	85.2	39.2
Japan	51.1	102.7	79.5	27.4
Germany	63.1	132.3	83.0	32.5
United Kingdom	53.2	130.8	82.0	32.7
Finland	20.1	166.0	89.4	29.5
Poland	18.1	128.5	64.9	14.4

Source: Own elaboration based on data from International Telecommunication Union website, http://www.itu.int/ITU-D/ict/statistics/ (as for 07/10/2014).

These unsatisfactory achievements of Poland in implementation of innovation policy and building national innovation system are at odds with the progress of information society creation process (Mowery and Oxley, 1995; Devlin, 2001). According to selected data presented in Table 2, one can notice that the results of Poland are closer to developed than to developing countries in areas like mobile (cellular) subscriptions and fixed broadband subscriptions. The same applies to percentage of individuals using the Internet in Poland, but value of almost 65 percent is still 10-20 percentage points lower than in the countries, which are the most advanced in this field, like Finland, Germany or Switzerland. The discrepancy between development stage of fixed telephony and mobile telecommunication services should be considered as a clear evidence of the leapfrog effect that occurred in Polish telecommunication market during two last decades. Another proof of this transformation is the fact that Poland is located in the forefront of implementation of the most advanced, mobile ultra-broadband Internet access called Long Term Evolution (LTE).

On the other hand, the above mentioned, relatively low percentage of Internet users in Poland should be explained among others as a consequence of astonishing - especially at the beginning of 21st century - lack of such need in a large part of population of the country. According to Polish Central Statistical Office, in 2010 even 53 percent of households in Poland declared that they don't' feel the need of Internet usage. Paradoxically, it was caused by neither high equipment costs nor Internet access prices, but the lack of Internet skills and knowledge how to use Internet resources efficiently. Furthermore, the proportion of such answers had grown since 2008 by 7 percentage points (GUS, 2010, p.83).

It must be stressed that many other recent trends in innovation geography haven't been described here, e.g. increasing role of newly industrialized Southeast Asian countries and so called BRIC countries. For example, China's cumulative net foreign direct investment (FDI) inflow more than tripled in 1995-2010, reaching nearly US$300 billion. One of the result of such massive FDI inflow to Chinese economy was knowledge absorption and innovation capacity development, which in turn could lead to growth of net license obligations (Brambilla, 2009, pp.89-101). In fact, in just one decade (2000-2010) Chinese obligations in this respect have increased more than 10 times, from 1.2 to over 12 US$ billion. Similar phenomena, i.e. growing both FDI inflow and royalty and license fee

obligations can be observed in relation to the other BRIC countries, especially Brazil and India.[1]

The intensification of processes of knowledge diffusion and absorption on an international scale in recent years (Archibugi and Michie, 1995) are indicated not only by the increasing flows of foreign direct investment but also by changes in the international trade in high-tech commodities (including so-called creative goods) and commercial services. According to the World Trade Organization, only in 2005-2010 the share of Asian countries in the export of other commercial services rose from 20.6 to 25.4%, and in 2010 India and China occupied respectively the third and fourth place in the exports of these services, after the European Union and the United States. In addition, Hong Kong and Singapore were respectively the fourth and fifth in exports of financial services (directly after Japan). It is also significant that in computer services exports India overtook the United States and is second only to the European Union (WTO, 2011).

The trends mentioned above don't prove by no means that the post-industrial countries have lost their central position in innovation and technology transfer in contemporary global economy. Instead, it shows the growing competition in this area, especially from rapidly transforming Asian economies. For example, a large decline in the share of high-tech goods in the Finnish exports does not mean that the country has ceased to be innovative (in the Global Innovation Index ranking Finland is still ranked at the top).[2] However, it can be argued that one of the manifestations of the rapid global changes is the intensifying technological race which has resulted in weakening the position of existing powers, such as the United States, Japan or the European Union, and increasing the importance of developing countries, the BRIC countries at the forefront. Moreover, the newly industrialized countries may also be a source of inspiration and innovation for the post-industrial countries, what is evidenced by the noticeable phenomenon known as reverse innovation - the transfer of innovation originally meant for developing countries to developed countries (Govindarajan and Trimble, 2012). Among others factors these transitions are probably triggered by development of the Internet, including its contribution to the possible reduction in the asymmetries between developed and developing countries in accessing information and emerging opportunities for knowledge absorption of the latter.

Concept of networked knowledge environment in Poland

In this context, it should be considered whether Poland can play a considerable role in the global innovation race, which will increasingly rely on the Internet. Undoubtedly, TNCs are still major players in the international knowledge transfer, using both traditional forms (i.e. foreign direct investment, international trade or licensing agreements) and the Web-based ones. Moreover, it is corporations that increasingly associate their competitive advantage with further development of business models based on open and reverse innovation. It shows that TNCs open up to new models of innovation; in this way they lose their technological monopoly while remaining the driving force behind the fast advancing "Schumpeterian destruction" (Hope, 2008; Dicken, 2011).

Assuming the deterministic approach, it can be considered that Poland, without native, technologically advanced transnational corporations which could boost the internal processes of innovation, is confined to traditional and less innovative industries. It is indicated by the current trends in the FDI inflow, with the predominant role of assembly plants of foreign products, but rarely accompanied by research and development centers (Aizenman, 2002). This situation could be changed by the emergence of a creative knowledge environment based on networking technologies, enabling domestic companies

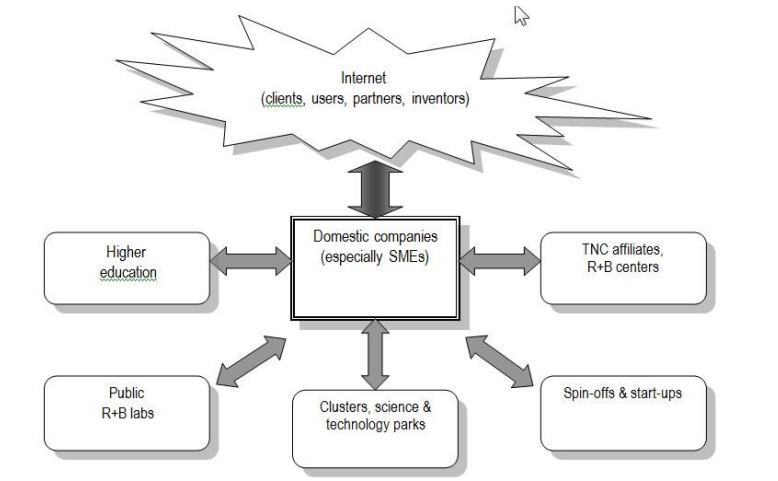
[1] Author's calculations based on data from the World Bank website, http://data.worldbank.org/, and UNCTAD website, http://unctadstat.unctad.org/ (as for 03/15/2014).

[2] http://www.globalinnovationindex.org/gii/main/fullreport/index.html (as for 04/02/2014).

to be more effective participants in the international transfer of technology and knowledge.

In such a model a key role should be played by national enterprises, which, due to their limited financial capacity, should strengthen cooperation in scientific research, for example, within cluster structures and science and technology parks (see Figure 1). The role of universities, not only those from the list of National Leading Research Centres, should consist in conducting basic scientific research and training people for the purposes of science and business, as well as greater involvement in the processes of commercialization of R&D outputs. Based on the experience of developed countries it should not be expected, however, that universities will be in a position to commercialize research results on its own, with the still unresolved issue of intellectual property rights in relation to the results of research conducted at state universities.

FIGURE 1. CONCEPT OF OPEN KNOWLEDGE ECOSYSTEM IN POLAND BASED ON DOMESTIC COMPANIES



Source: Own preparation.

Assistance in achieving this goal may be offered by university centers of innovation and technology transfer but also domestic private companies, which - similarly to foreign companies - should be more interested in establishing business contacts with academic staff. Moreover, building such relationships may be easier thanks to investments in university research infrastructure and the creation of laboratories and R&D centers that can provide commercial services to companies. Cooperation between universities and businesses (or clusters) could result in the emergence of university spin-offs and start-up companies engaged in the commercialization of knowledge, that is, its transfer from academia to the business sector.

It must be noted that the newly created innovative companies should continue to maintain and develop contacts with the scientific community, which would bring clear benefits to both parties. For businesses, this could mean the possibility of further development and access to qualified personnel (e.g. talented graduates), while the universities would obtain opportunities of connecting science with business practice, which is particularly valuable in the context of training meant to address the needs of the labor market.

The subsidiaries of foreign TNCs located in Poland could and should play an important role in the presented model, particularly R&D centers operating within the corporate structures. Although at present such centers are not a common FDI form in Poland, growth of cooperation between the national academic community and local enterprises would be a clear signal for TNCs that Poland is not only a country for investing in production plants but also in research and development centers. Such initiatives are extremely valuable especially in the context of building a future competitive position of the Polish economy. This follows from the fact that industrial production can be relatively rapidly transferred to other countries with a more favorable investment climate, while investment in R&D potential has a lasting, structural character and contributes to raising the level of innovation throughout the economy.

On the other hand, in times of economic and political crisis in the European Union and the widening gap between the Member States and innovative economies of the United States and Asian countries, there are also voices that international specialization based on the service economy may increase susceptibility to the adverse effects of turbulence in the global economy, while the development of the domestic industry, especially medium and high technology sectors, may enhance the economic resistance to such slowdowns (e.g. in Germany).

As in the case of an open ecosystem of knowledge created by multinational corporations (Chesbrough, 2006), the effective use of the Web, as a medium for intensifying knowledge diffusion and absorption, is the crucial element also in the concept of cooperation based on domestic firms. Currently this is quite difficult, because many companies in Poland, especially the most numerous ones, i.e. small and medium enterprises, do not always see the innovative potential inherent in the Internet. A large percentage of companies do not have their corporate website, not to mention their own Internet community assisting in the development of their products. However, this should gradually improve along with the modernization of the ICT infrastructure (particularly the spread of the mobile technology, both among consumers and businesses perceiving them as the opportunity to develop their own business models), the inflow of foreign direct investment stimulating the development of the domestic economic environment, and as a result of consistent implementation of policies supporting innovation in the common European market (Dachs et al., 2008; Lembke, 2002).

Therefore, for the domestic companies to become more competitive in international markets, and for the Polish economy to be more innovative, companies must become more involved in their R&D as well as actively participate in international projects (or strategic alliances). Due to the limited resources of domestic companies, financial institutions need to change their attitude towards R&D funding, but above all a change is necessary in the approach of public entities assigning EU funds intended for supporting innovation activities. It is also necessary to further increase venture capital funding, consulting services from "business angels", and the development of cooperation within cluster structures, science and technology parks, business incubators and technology transfer centers at universities.

These pro-innovation orientations are reflected in the common European policy, evidenced by the latest program to support research and innovation, called Horizon 2020. Implementation of this program, planned for 2014-2020 with a budget of EUR 80 billion, is expected to improve the EU's position in research, provide funding to small and medium enterprises for industrial technologies, and also contribute to the development of key areas such as combating climate change and development of transport and renewables. The formation of the European Research Area is expected to create a common market of knowledge, research and innovation, through which innovative

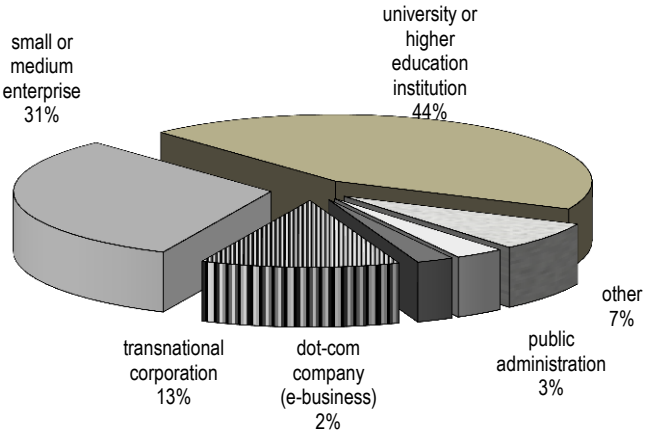
companies can easily transform their breakthrough technologies into products with real commercial potential.

Internet as a medium of international knowledge and innovation transfer - survey results

As stated earlier, the quite important factor for efficient utilization of Internet in the global knowledge and technology transfer processes are developed IT skills and Internet users' inclinations to sharing knowledge on the Web. To check his assumption, a dedicated electronic survey was conducted in 2013. The survey consisted of 20 closed-ended questions (both Polish and English versions were prepared), and due to objective obstacles with determining representative target population the invitations to fill the survey were distributed via social networking website (LinkedIn) and personal communication by e-mail. Although using this method made return rate calculation difficult, 228 filled questionnaires had been returned. Based on demographic data one could notice that:

- The majority of survey participants comprised of respondents with length of service shorter or equal to 20 years (18% with 5 years or less, 21% - from 6 to 10 years, over 45% - from 11 to 20 years).
- As for educational structure, even 90% of respondents held advanced university degree (master's or PhD).
- Greater part of survey participants came from education (44%), IT (20%), and services other than IT (17%) sectors.
- Almost half of participants was hired by university or other higher education institution, the second and the third group in this respect were small and medium enterprise (SME) employees and transnational corporation employees (see Figure 1).
- Poles were definitely the largest national group of respondents (over 88%).

FIGURE 2. RESPONDENTS' DISTRIBUTION BY HIRING ORGANIZATION



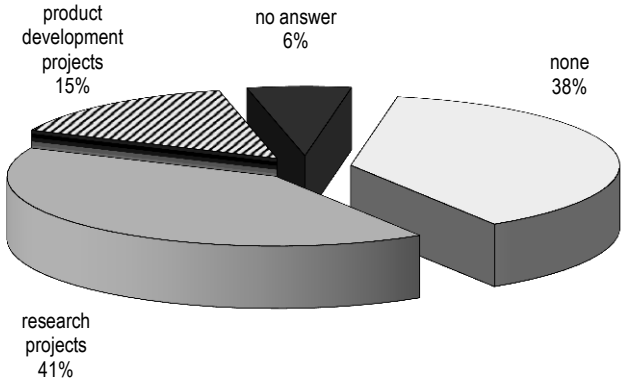
Source: Own preparation based on Web survey results.

Based on this data one can suppose that the majority of survey participants was quite experienced users of Internet considered as a communication medium. Their relatively short length of service could be treated as a good indication of such statement, because

their education and professional career periods coincided with the Internet revolution era. The fact that the large group of respondents was affiliated to the ICT industry was another argument having supported this supposition.

It's worth emphasizing that more than half of the survey participants was in a way engaged in R&D processes. As presented in Figure 2, as many as 41 percent declared their participation in scientific research (being probably conducted at universities), while 15 percent of respondents informed about their contribution to products and services development. So large representation of R&D project participants could imply that global Web should have been treated by them as a perfect environment for knowledge transfer, collecting and managing information and data useful in R&D processes, binding professional and scientific relationships, and finally - dissemination of research outputs and innovations.

FIGURE 3. RESPONDENTS' DISTRIBUTION BY R&D ENGAGEMENT



Source: Own preparation based on Web survey results.

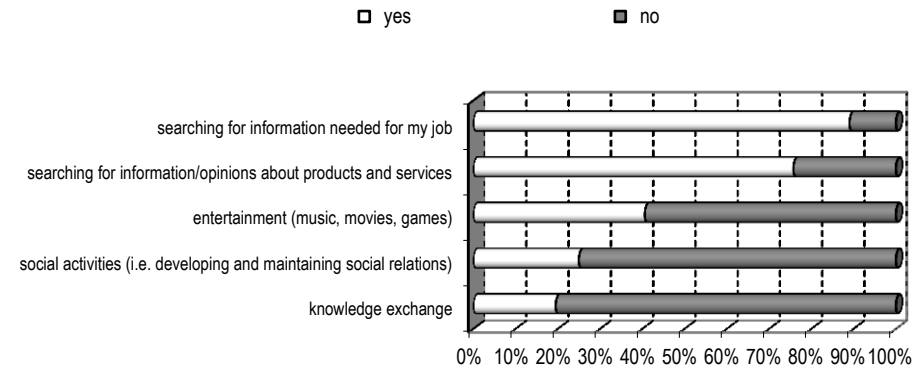
Unfortunately, this assumption was not backed by the answers' distribution for the question concerning the most popular ways of using Internet. It occurred that the majority had used the Web mainly as a source of information needed for their job and a source of information/opinions about products and services (89 and 76 percent, respectively; see Figure 3). On the other hand, only 20 percent of respondents confirmed that the Web was used as knowledge transfer environment, but it is hard to determine unambiguously what kind of knowledge they meant.

Data presented on Figures 1-3 could suggest that the survey participants are mostly consumers of the content available on the Internet, and usually adopt the passive attitude towards publishing their own works online. It is confirmed by the answer distribution for the question about general Web activities of survey respondents. Nearly 93 percent of them indicated that unquestionably more often used information and knowledge available on the Internet, while only 5 percent admitted making his/her knowledge available online. Moreover, as many as 86 percent considered the Internet content as useful or very useful in the context of his/her job.

On the other hand, the survey participants showed themselves to be very reluctant to publish their feedback online. A scarce percentage of them admitted that often published useful information and guidance or expressed his/her opinion on general matters on the Internet (see Figure 4), whereas a great number of respondents never or very rarely presented such forms of Web activities. It should be stressed again that only slightly better

results were achieved in the question about the frequency of e-learning materials and online courses utilization and/or making usage of Internet users feedback, although even in this case the most common answer was "sometimes".

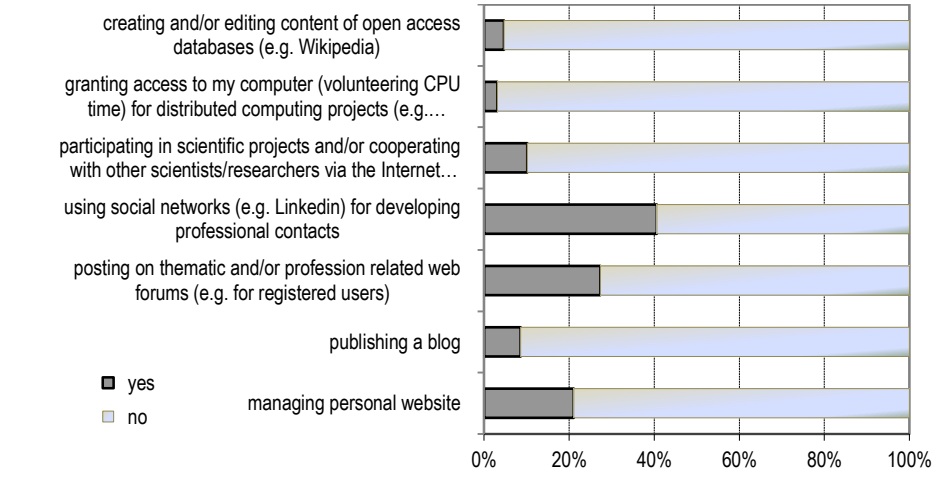
FIGURE 4. ANSWERS TO THE SURVEY QUESTION "HOW DO YOU USE INTERNET MOST OFTEN?"



Source: Own preparation based on Web survey results.

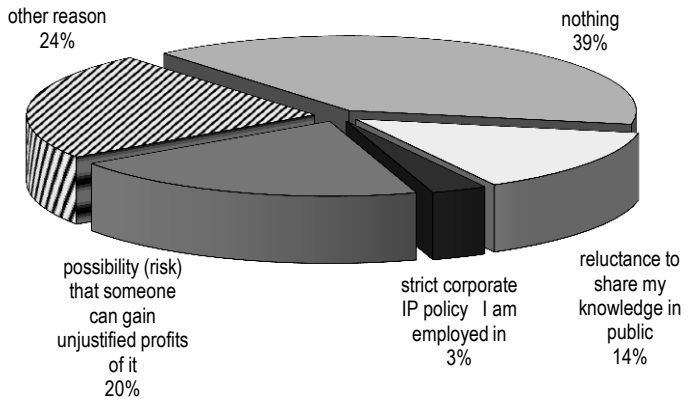
In the question about the selected Internet-based activities connected with knowledge transfer the most affirmative answers (over 40 percent) were in turn received for using social networks for developing professional contacts (see Figure 5). It is quite interesting that almost one fourth of respondents on second place pointed at posting on thematic and/or profession related web forums, what in comparison with survey results presented above (i.e. predominant aversion to express opinions on general matters on the Web) could suggest that after all the survey contributors prefer rather closed Internet communities as information and knowledge exchange forums.

FIGURE 5. ANSWERS TO THE SURVEY QUESTION "WHAT INTERNET ACTIVITIES DO YOU PREFER?"



Source: Own preparation based on Web survey results.

FIGURE 6. ANSWERS TO THE SURVEY QUESTION "WHAT STOPS YOU FROM MAKING YOUR KNOWLEDGE AVAILABLE ON THE NET?"



Source: Own preparation based on Web survey results.

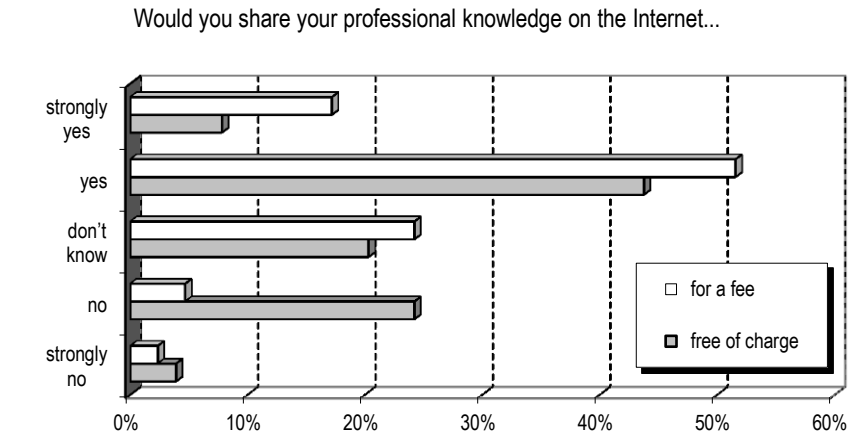
It's curious, however, the scarce respondents' engagement in so little absorbing - in terms of required effort and time consumption - form of activity like granting access to the computer for distributed computing projects (so called volunteering CPU time), or in other very popular among Internet users actions like publishing blogs or editing Wikipedia content. Moreover, the majority of respondents didn't commit themselves to research projects managed by Internet, too. It should be considered as very disturbing due to the fact that great part of the survey participants consisted of academic community representatives.

Based on previous result analysis one can agree with the assumption of peculiar laziness of Internet users in Poland having manifested in poor utilization of Web resources, but first and foremost in visible reluctance to develop Web content by adding their own works. Answers to the question about the obstacles for more active participation in knowledge exchange via Internet are some kind of confirmation. As presented in Figure 6, even 40 percent of survey participants confirmed they didn't notice such obstacles. Two subsequent answers were risk that someone can gain unjustified profits of it, and reluctance to share knowledge in public (20 and 14 percent, respectively). It's worth adding that the most frequent answers in the "other reason" group were "lack of time" and "no such need", what should also be considered as a bit negative phenomenon.

Although the research conducted on the target group consisting of 228 respondents is hard to regard as fully representative for Internet community as a whole, but the feedback concerning expected profits resulting from a more active and energized participation in knowledge networking is characteristic and self-evident. Unsurprisingly, there is a rapid increase in support of sharing expertise and knowledge on the Web, if such activities involved any financial bonus (almost 70 percent of participants answered "strongly yes" or "yes" to this question, while "no" answer share has decreased from 24 to 5 percent; see Figure 7). This "self-interest" approach showed by respondents can indicate they highly appreciate knowledge in their possession, but on the other hand clearly stands in opposition to the ideas having actuating the Internet growth as an open and global network created for information, views and knowledge exchange. It is even possible to propose a thesis that without the active users who develop the Web content free of charge the Internet would be far more poor in valuable resources. It must be remembered,

however, that great deal of information available on the Web is unreliable and by many users still considered as "information dump".

FIGURE 7. ANSWERS TO THE QUESTIONS CONCERNING PAYMENTS FOR KNOWLEDGE PUBLISHED ON THE INTERNET



Source: Own preparation based on Web survey results.

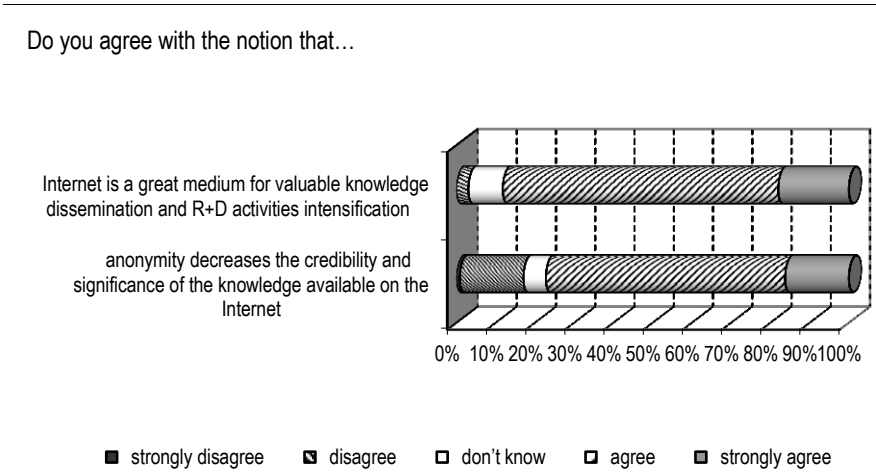
Apparently, this general opinion about Internet is also shared by the survey contributors, and the answers to the question "What are the fundamental features of the knowledge available on the Internet?" are in a sense the confirmation of such feelings. In the first place they indicated free access to the Internet knowledge (over 66 percent of respondents selected this feature as the most important), and the subsequently chosen Web knowledge features were "free of charge", "up-to-date" and "developed and enriched by network community" (based on results described above it is possible they meant the knowledge developed by others). Credibility and usefulness were in turn considered as the least distinctive features of Web-based knowledge (it refers especially to the former, which was ranked lowest by more than a half of participants).

On the other hand, the survey participants appreciate the Web as a global medium, which could facilitate and foster innovation commercialization process. In the question "In your opinion, could Internet users' comments, feedbacks and views help in developing innovative products and services?" more than 60 percent of participants answered "yes" or "strongly yes", but only 13 percent of them answered "no". Notwithstanding this, once again it showed that the survey contributors recognize such possibility, but very rarely are active parties of these processes. The answer distribution for the question "Do you participate in such discussions/projects, adding your expertise to product development process?" is a quite visible evidence of this behavior. More than 40 percent of respondents answered that never participated in product improvement process via the Internet, but only 30 percent of them admitted they took actions like these very rarely. Once again taking into consideration the fact that a larger part of respondents originated from academic institutions and declared participation in any phase of R&D processes, the results concerning Web-oriented scientific engagement seem to be simply catastrophic. Even 86 percent of respondents replied that had never participated in Internet research projects, and among the ones with PhD only one of ten acknowledged the very rare commitment of that kind.

If we look at the answers to the question "Would you expect any gratification when you had been asked for participation in Internet-coordinated research program (e.g. testing of new software)?", we will find the confirmation of the supposition that some financial or

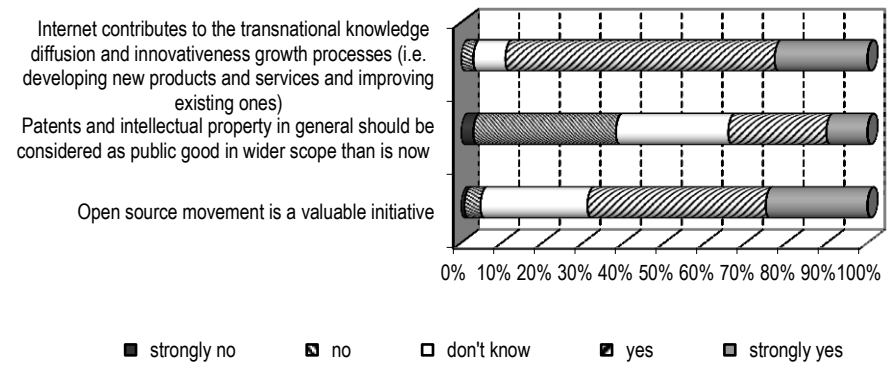
non-financial benefits could stimulate the networked knowledge transfer participation. Relatively large share of respondents (23 percent) indicated the best reward for them would be the belief that shared knowledge has practical application, nevertheless the majority would expected some kind of reward. As justification of such expectations 27 percent of survey participants stated the managing/coordinating party was probably going to make money on shared knowledge, and 21 percent of them would appreciate any discount on marketed product.

FIGURE 8. ANSWERS TO THE QUESTIONS CONCERNING CREDIBILITY AND VALUE OF KNOWLEDGE AVAILABLE ON THE WEB



Source: Own preparation based on Web survey results.

FIGURE 9. ANSWERS TO THE QUESTIONS CONCERNING KNOWLEDGE AVAILABILITY AND PROTECTION ON THE WEB



Source: Own preparation based on Web survey results.

Before concluding, it is important to emphasize that the bothering picture of passive Internet user has been emerging from the presented survey results. On the one hand, such user appreciates the importance of the Web in information and knowledge spreading process (thereby is keen to using Internet resources), and on the other hand is reluctant to publish his/her own works online and to participate in electronic content development. As presented in Figure 8, up to 88 percent of respondents agree with the thesis that the global Web is a perfect medium for valuable knowledge dissemination and R+D activities intensification. However, previously analyzed data shows that respondents contribute to a small extent to scientific initiatives conducted on the Internet, and make sharing knowledge conditional on possible profits (lack of time is also a common excuse). Despite many of them agrees with the notion that anonymity (in fact sometimes ostensible) decreases the credibility and significance of the knowledge available on the Internet, even very popular Internet initiatives like Wikipedia or projects managed online by commonly acknowledged institutions don't win respondents' recognition.

The incoherence of respondents' views can be also observed in relation to the issues of availability and intellectual right protection on the Web. As presented in Figure 9, in opinion of straight majority of the survey participants the Internet definitely contributes to the transnational knowledge diffusion and innovation growth, and open source movement is a valuable initiative. Therefore, it could be anticipated that open innovation model (Chesbrough, 2011) would be more acceptable to them than closed innovation one. When it concerns the issue of wider access to patents and intellectual property, however, almost half of the respondents reckon IP shouldn't be treated as public good. Although it is difficult to generalize the survey conclusions, but the general remark is as follows: The survey participants appreciate the Internet as the environment allowing to download digital content quickly and free of charge, but at the same time they would like to preserve the status quo as regards intellectual property protection related issues.

Conclusion

Based on presented considerations it can be assumed that global Web has already become a digital environment for facilitating the international knowledge and innovation transfer. Although an open innovation model was originally developed for fostering internal innovation activities of TNCs and enabling them more efficient use of external knowledge resources, ideas and talented people, the Internet seems to be its natural complement. Moreover, thanks to the Web the benefits resulting from innovation and creativity can be distributed on the larger scale, and Alvin Toffler's "active consumer" or "prosumer" concept might finally come true.

As regards to commented survey results, it is impossible to formulate any general conclusions based on such relatively small target survey population, but they are in a way coincident with the statistical data derived from other (official) sources. It is probable that Internet users in Poland are oriented toward online available content consumption, not creation, and even to a lesser extent interested in sharing own knowledge and expertise over the Web or participating in global knowledge transfer. The attitude "protect my knowledge, exploit the content published by others" presented in the survey could be interpreted as confirmation of their astonishingly passive behavior. Polish internauts do not use the Web as the space of creative expression, and the possible reasons are social capital deficit and still noticeable lack of confidence hindering the process of binding bilateral relations over the Web. Another evidence is quite common disrespect to intellectual property rights and resulting large scale of intellectual and computer piracy in Poland. It seems that an fundamental change in Poles mentality is required to allow them to become a valuable part of Internet community, who strives to transform the Web into free accessible, open environment of knowledge.

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