World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:9, No:4, 2015

Knowledge and Information Sharing in the Opinion of the Polish Academic Community

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***Abstract*—**The purpose of this paper is to describe the perceptions of knowledge and information sharing by the Polish academic community. An electronic questionnaire was used to gather opinions of respondents. The presented results are a part of the findings of empirical studies carried out amongst academics from various types of universities and academia located throughout Poland.

***Keywords*—**Academics, Information Sharing, Knowledge Sharing, Scholarly Communication.

I. Introduction

SCHOLARLY communication plays a crucial role in the knowledge and information creation, enabling innovation and development of research and disciplines. Scientists, researchers and academic lecturers are share their scientific and professional knowledge and information among themselves constantly, especially through publications. Monographs, articles and conference proceedings belong to the so called formal communication in science. However, conversation, discussion and other forms of informal channels of sharing knowledge and information have always played and will play the basic role in scientific communication. Formal scientific communication is easy to observe and measure due to bibliometric tools, bibliographic databases and citations analysis etc., whereas sharing ideas and thoughts during conversations is much more difficult to observe. However, informal scholarly communication creates greater connections and promotes academic progress more effectively than the formal communication [1]–[4]. We know a lot about informal channels of communication between researchers, which have been the subject of studies since the early 1960's [3]. However, we still need new analysis because of the permanent technological and organizational changes in scientific communication. Moreover, the national issues seem to be important in such analysis. Academic faculties were surveyed in a variety of faculties including Malaysia [5]–[8], United Kingdom [9], Iran [10], South Korea [11].

The purpose of the empirical studies conducted by the author of this paper was to identify how Polish scientists perceive knowledge and information sharing, especially in the context of informal communication. The focus of this research was face to face communication as well as connections between researchers via information and communication technologies. The aim of this paper is to present a part of the findings from these studies, which were the first in this subject after reforms of research and higher education systems in Poland [12].

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II. Problem Statement and Literature Review

A. Knowledge, Information, Management and Sharing

Both terms: *knowledge* and *information* are used in this paper (and in the studies) intentionally. They are different, but often used to describe each other. Information is considered a physical surrogate of knowledge (e.g. language) used for communication [13] and a part of knowledge [14]. In the current subject literature some kinds of knowledge are described as tacit, implicit and explicit [15]–[18]. The explicit form of knowledge is the closest to the notion of information [16], [19], [20]. The fact is that although we can define the term *knowledge*, we still cannot isolate it at an operational level. Nevertheless, both can be the subject of sharing and management processes. In other words, knowledge sharing is communication of all types of knowledge (tacit, implicit and explicit) and the term knowledge and information sharing is more appropriate and clear.

An integrated approach to knowledge sharing and information sharing was assumed in this research, influenced by the same approach to the overriding areas of interests of knowledge management and information management [21]-[23]. It is worth highlighting that in practice it is very difficult to estimate clear boundaries between them. Knowledge and information sharing is one of the components of knowledge and information management process, along with others, e.g. gathering, selecting and organizing. Moreover, it is a crucial point of this whole process. Sharing knowledge and information by means of exchanging experiences, thoughts, documents etc., is necessary for creating new knowledge and information. In other words it is important to development, competitive advantage and success of individuals and organizations. That is why knowledge and information sharing is the subject of studies in various environments and sectors, e.g. business, administration, healthcare and academic [4].

B. Knowledge and Information Sharing in an Academic Environment

There is a strong body of research into knowledge management and sharing in commercial environments, and growing interest in public sector organizations, whereas research into knowledge management and sharing in universities is limited [9]. Existing publications about sharing of knowledge and information amongst the academic community are diverse. Some of the studies were more

general in nature, which were focused on attitudes and intentions towards knowledge sharing [9], [10], others were devoted to more detailed problems e.g. knowledge sharing through institutional repositories on campus [11]. The selected review of these studies is described in this section, beginning from a focus on cultural and organizational variables, than individual, to technological variables influencing knowledge sharing.

According to the study in three universities in Denmark among almost 500 academics, knowledge sharing had more positive associations with diversity related to internationalization (cultural and linguistic) than demographic (age and gender) [24]. The study of China-United Kingdom higher education alliances showed that the scale of academic and organizational knowledge sharing was affected by knowledge attributes and partner characteristics [25]. In the light of studies in Malaysia, private universities are more effective and more willing than public universities to share knowledge [7]. In the context of public universities there was a significant relationship between knowledge sharing and such independent factors as nature of knowledge, working culture, staff attitudes, motivation to share and opportunities to share [8]. Respondents in UK (over 200 from 11 universities) had positive attitudes towards knowledge sharing as well as positive intentions [9]. They believed that knowledge sharing can improve and extend their relationships with colleagues, and offer opportunities for internal promotion and external appointments. Academics from UK had a relatively low level of affiliation to their university, perceptions of high level of autonomy and a high level of affiliation to their discipline. The results of the Iranian study showed that in academic institutions in Iran, the influencing factors on knowledge sharing were not favorable [10]. The barrier was unsuitable organizational structure and other barriers were connected with the human factor, e.g. lack of trust and lack of enough time. The organizational culture did not support the knowledge sharing. The most important limitation was lack of team work. Results of an analysis of academic attitudes towards knowledge sharing and collaboration in South Korea showed that perception was the most influential factor and reward systems were the second most influential factor for faculty knowledge sharing [11]. In the light of Spanish studies about factors affecting researcher engagement in knowledge transfer exchanges in an open innovation context, apart from recognition, most other factors such as personal and professional profile, institutional variables and social networks had positive influences on it [26]. Another Spanish study, among 500 academics engaged in commercially oriented fields of research, revealed the positive role played by business (industrial and financial) networks on academics' entrepreneurial intentions [27].

Individual and personal variables are not more important in knowledge sharing than cultural, environmental and organizational ones. Scientists from Taiwan explored the relationship between individuals' personality (five dimensions: openness to experience, conscientiousness, extraversion, agreeableness, neuroticism) and their intentions to share knowledge [28]. They observed a positive relation between extraversion, agreeableness and conscientiousness and scientists' intentions to knowledge sharing (participants worked in a high-technology laboratory). Authors from Malaysia [29] revealed that extrinsic motivation, reciprocal relationships, sense of self-worth and subjective norm (theory of reasoned action) were important determinants of an academician's attitude towards knowledge sharing (over 400 respondents from 10 public universities). And authors from United States analyzed sharing and non-sharing behavior amongst over one thousand geneticists and other life scientists from 100 universities [30]. They found that beyond individual-level explanations, information withholding was influenced by the behaviors of peers as well as the attitudes of superiors in the profession.

New technologies play a vital role in all spheres of academic life: research, teaching and administration. In the light of Swedish studies [31] there is a reciprocal relationship between information and communication technologies, and the ways in which information is used and shared. These technologies function both as a source of meaning and as a preconfigurator of actions. According to further Swedish studies [32], trust issues connected to information sharing appear in relation to the information to be shared, the people involved, the tools used for sharing, and the place where information sharing occurs. Recently in the subject literature the role of various technological tools has been analyzed, e.g. blogs, wikis, Open Access, Facebook, Twitter [33]–[35].

C. Polish Context

Poland, as a European Union member country, is a knowledge based society, in which the economic growth, technological advancement and infrastructure development is still being observed. Research and the higher education system were reformed only recently, in 2011. This reform [12] focused on giving Polish students top quality education, on enabling scientists to participate in the most important international research projects and on providing the higher education schools with the possibility of continuous development. Moreover, it was focused on solving the problems that the Polish scientific workers faced, e.g. obstacles hindering daily work, involvement in innovative research and career development. Thanks to this diagnosis, the Polish government developed regulations that can ensure greater comfort and prestige for the work of Polish scientists. Furthermore, the government planned a pay increase for academic lecturers between 2013 and 2015. At the same time improved possibilities of competing for additional funds were created. To facilitate careers for a larger group of scientists and to give the best of them a chance at quick development, a rule was introduced stating that all the academic posts in higher education schools are now filled via open competitions. All scientists should apply for grants financed by external institutions – the National Science Centre (NCN) and the National Centre for research and development (NCBiR). Regarding career development it is worth adding that there are, in Poland, three levels of scientific status: PhD,

Habilitation and Professor; and this reform only changed the requirements for each of these steps. Scientific independence is achieved after habilitation. Poland is a hierarchical society [36], which is especially visible in science and high education system.

The obvious fact is that knowledge sharing enables innovation, cooperation and research development. It is not clear how Polish academics perceive knowledge sharing and how Polish reforms of the science and higher education systems influence on their opinions.

In general the subject of knowledge sharing in Polish science is underestimated in the national literature. The authors' monograph about knowledge and information sharing [4] is probably the first in the Polish language describing this phenomenon in a broad meaning. The theoretical basis of knowledge and information sharing regarding various environments (academic, business, healthcare) was presented in this book along with the empirical studies conducted among Polish academics. This was the first national survey about knowledge sharing amongst the academic community in Poland. Results showed how they perceive knowledge sharing, variables influencing it and technologies used in this process. Moreover, the value of this study is the opinion of Polish academics about knowledge and information sharing in the new reality of their work, after the reforms of the research and higher education system.

III. Research Questions and Methodology

This research was focused on knowledge and information sharing through face to face conversations or via information-communication technologies. The aim of this study was to explore this phenomenon in a Polish academic environment. It asked the following research questions:

- How does the Polish academic community perceive knowledge and information sharing in general?
- What are Polish academics' experiences with knowledge and information sharing in current everyday work?

The empirical studies were conducted at the end of 2013. An anonymous electronic questionnaire was used in this national survey. Over 40 thousand inquiries with the link to the questionnaire were sent to Polish academics, registered in the Polish Science database. Over one and a half thousand answers were received (return rate 3.6%). All respondents were employed in Polish universities or other types of academia, state or private, located throughout the whole country. All respondents were PhD or above (Habilitation or Professor) and represented various kinds of academic disciplines: humanities, social science, life science and technical. The questionnaire consisted of two main parts: structured and non-structured.

The purpose of this paper is to present the study results, which stem from the non-structured part of the questionnaire. It was descriptive part, which enabled academics to describe their thoughts and experiences of knowledge and information sharing in an academic environment in a freeway. This open question was not obligatory for respondents and for this reason the return rate was low; 264 academics decided to write their own opinions (about 17% of them, who filled the structured questionnaire). This part of the study was qualitative in nature. Content analysis was used and the attempt to categorize the descriptions was made. The received material was vast, diverse and difficult to organize. Some opinions were rather general statements, whereas others contained descriptions of detailed problems or personal situations. Nevertheless, the reading of these stories was very interesting and involving. The author of the study has tried to classify them according to the main subject or central theme of respondents' statements. Results – citations – are presented in the next section in following subject categories: individualism; trust; engagement; non-scientific obligations; academia – atmosphere, management; science in Poland – general remarks; technologies; parametric assessment; dependent vs. independent scientists; external cooperation; grants; ideas and best practices. These citations or fragments were translated into English (full citations see [4]). The number of the questionnaire respondents is in parentheses.

IV. Results

A. Individualism

In this section the respondents' descriptions dedicated to the individualistic nature of their scientific work or preferences to individual work are presented.

The majority of researchers prefer to work individually. (1025)

Individual scientific work dominates in humanities. (530)

A lot of scientists do not want to allow other scientists to be co-authors. (1429)

Individualism of scientists is not always their choice, sometimes it is forced by external variables.

I often see the lack of willingness to share knowledge because of the necessity to care about their own career and publications as a sole author. (358)

There is the lack of specialists in my subject in my institution, and I do not have not enough time for the relations with researchers from other academia. (185)

Success stems from group work. However, our publications and faculty assessment system prefers individual work. (1446)

B. Trust

Many opinions were devoted to the trust issue, which is a common problem in the context of knowledge sharing.

In relations with other scientists from the same area of interests, I do not see openness, only competition anxiety. My ideas were stolen twice. (258)

I share knowledge only with my students, because regarding faculty I encounter theft of ideas. (438)

In general, the scientific environment is closed and envious, the colleague from the next desk is your rival.(645)

Once somebody attributed to himself the result of my study. The only lesson for me from this occurrence is, that I am only a provincial PhD. (717)

Researchers compete more often than share. (1517)

One citation classified to this section was dedicated to the

complex nature of knowledge.

Knowledge as every asset is valuable. You cannot give it to everybody for free. Only to relatives or for exchange. (102)

C. Engagement

Some of the descriptions were connected with the effort which scientists put into research and knowledge sharing activities.

Sometimes my colleagues from humanities are not interested in experience-exchange and project teams. That is why I share knowledge with my students. (329)

I share knowledge when somebody asks me, but I do not initiate sharing knowledge. (743)

Causes of low engagement may be different.

The lack of willingness to share knowledge is caused by low salary, which makes you discouraged (694).

Unwillingness to share knowledge is related with our reality (…) focused on profits and benefits. (244)

D. Non-Scientific Obligations

Numerous opinions of the Polish academic community were dedicated to overwhelming duties in their work. A lot of teaching hours, lectures, exercises, seminars, along with administrative work do not allow them to be fully dedicated to scientific research. It is worth adding that there are not separate scientific and teaching positions in Polish universities.

The fundamental barrier in the whole scientific work, not only in knowledge sharing, is didactic work load. Not in the meaning of quantity, but quality – the large rotation of subjects caused by permanent reorganization of study programs. (736)

Free knowledge and information sharing involve time for reflection, but we live under pressure of current obligations. (1394)

We do not have time for sharing knowledge, because of the vast administrative work connected with teaching. (536)

In my opinion, and my colleagues', all this paper work related to National Qualifications Framework is not of great value, it brings only additional work. (446)

Others academics were too busy because of other jobs, especially when they were in a difficult personal financial situation.

We do not have enough time for conversations, because we have to seek potential sources of income. Especially people with families and children. (832)

My salary is very low (…) most of my time I devote to making ends meet. (1038)

E. Academia – Atmosphere, Management

Descriptions collected into this section were related to respondents' closest environment; their institute or department.

Academics from one department compete rather than cooperate. (118)

We often do not know what the research area of our colleagues from other departments are. (169)

The unique problem of Polish science is lack of scientific independence after PhD. Only after habilitation do Polish academics achieve a level of independence and be able to supervise PhD students and create their own project teams.

The majority of young scientists with PhD are very much alone, nobody takes care of them; I do not feel any scientific support (252).

It seems that at my university everybody cares only about his/herself; this is the rat race. (1334)

There is no help from everywhere, you have to do everything by yourself (…) there will be no acknowledgements in my habilitation. (1142)

Another problem was connected with the lack of support from university managers and leaders.

In my department everybody looks after their own. (882)

I feel the lack of seminars in my department. I think that people feel anxiety in knowledge sharing, maybe they do not believe that their knowledge is valuable… (599)

Organizational culture is the best motivator for knowledge sharing. The good example is from above. (1465)

F. Science in Poland – General Remarks

The majority of opinions collected in this study were general in nature. For example they were related to the level of science in Poland. Respondents wrote about the causes of common problems.

There is the lack of tradition of cooperation in Poland, as well as lack of willingness and skills. (1263)

Research activity in Poland in many disciplines amounts to work for three degree PhD, habilitation and professor and nothing else. Only in some disciplines do we achieve a high level, and there is no barrier to knowledge sharing. (1372)

Knowledge sharing among Polish is very difficult, it is easier to receive information from foreign scientists. (1265)

From the beginning of the education process in Poland, our children and youth are not educated in cooperation. This cause is systemic in nature.(1296)

We do not have networking culture. (1449)

An example of insufficient cooperation may be seen at national conferences.

Most conferences are a waste of time. The level of presentation is low, only some single presentations are valuable. (191)

There is not enough time for discussion during conferences after every presentation; mainly one or two questions and trite answers. (314)

The importance of discussions at conferences is not appreciated. Everybody concentrates only on his own presentation. (1511)

The important problem is the lack for financial support for Polish academics to attend conferences, especially international conferences, which are very expensive in comparison to Polish salaries.

Knowledge sharing is limited because of the lack of funds for conferences, national and abroad. (429)

Young scientists have very limited access to conferences, they do not know each other. (477)

Having such support might be a cause of envy.

Many colleagues hide their scientific travels and visits abroad; this is connected with competition and I think it is not normal. (819)

Some descriptions were connected with Polish non-state universities.

The majority of private academia do not have any motivation system. (15)

The aim of non-public universities is simply business, not the scientific achievements. (1042)

G.Technologies

This section presents the respondents' descriptions connected with the impact of information and communication technologies on knowledge and information sharing.

Maybe our internal systems are insufficient and we do not know which research is being conducted by our colleagues. (1085)

Overload of low quality information on internet forums, discussion lists or blogs is overwhelming. (140)

My e-mail box is permanently overloaded, and I know that sometimes I probably lose important information. (208)

One of the causes of poor knowledge sharing is the lack of inter academia platform, which could enable interdisciplinary cooperation and finding potential partners. (301)

Internet is not able to replace face to face communication. (295)

It is easier to find international publications than Polish. There is a lack of Polish databases with Polish books and journal articles, such as world databases, e.g. Ebsco. (30)

Young scientists learn more from older colleagues during conversations than from the Internet. (1230)

H. Parametric Assessment

Many descriptions refer to a new assessment system of publications, institutes and single academics, which has been implemented by the reforms. Difficult issues in today's Polish universities include: benchmarking, impact factor of journals and, especially, a number of marks for every activity connected with scientific, teaching and administration work. Every Polish academic has to collect these marks and is assessed every two years. Two negative assessments terminate their employment.

The current parametric system of assessment changes a culture of the research work and limits knowledge creation. (529)

Our new system of assessment promotes egoistic attitudes among the academic community. There is no knowledge sharing. (1011)

The main motivation for sharing of knowledge amongst academics should be scientific ethics, but it is a thing of the past; now only marks for publications and number of citations matter. (1169)

The effect of the pressure for the large amount of publications, which nobody is interested in, are the only marks demanded by the ministry (…). The real problem of Polish science is underfunding and overloading of scientists with bureaucratic work. An ordinary academic at a Polish university thinks only about maintenance of work, doing habilitation and earning a living. (774)

Collecting marks is a new scientific religion. (1330)

Focusing only on IF publications is not authentic scientific cooperation. (1390)

The impact factor is now more important than teaching young academics. (1463).

Knowledge sharing is the past in our current stressed and antagonistic academic environment. (1499)

Only a single statement was positive.

The lack of articles in journals with IF is a good illustration of scientific skills, especially in life science. (447)

No one was connected with humanities.

In the reform of science in Poland the humanities were forgotten. Humanities, a gem in Polish science in the past, has no chance in the future. (381)

I. Independent vs. Dependent

On the one hand, Polish society likes hierarchy. On the other, it is a cause of many problems in professional relations. Polish universities are especially hierarchical.

There is artificial and hierarchical atmosphere in our academia, which is highlighted even by the clothes and the language of communication. (1281)

Becoming an independent researcher was very late in Polish universities before the reform (after forty-forty five years old). One of its aims was to shorten the period of time between PhD and habilitation (about 10-14 years). However, it is very difficult in practice, because of the new high requirements for this promotion.

The vast majority of independent researchers that is after habilitation do not fulfill current habilitation criteria. (532)

The great mistake of our high education ministry was to cancel the special leave for the progress of scientific work. (1327)

In general, 'young' scientists – in the meaning of the lack of scientific independence – complained about older academics.

Many professors are not interested in opinions-exchange. Do not try show them their mistakes. (420)

I feel the lack of traditional good relations between master and student, are now 'old school'. (802)

When I began working at the university, I hoped to join any team, but I was left alone. In other words, after my master's degree I became in a way an 'independent' academic. (314)

I never met a real master who wanted to teach the younger generation of scientists (1027).

Professors were generally positive about younger academics, particularly regarding doctoral students.

The best cooperation is possible with young scientists, especially doctoral students. (506)

Occasionally, there were negative comments about younger academics.

In my opinion, the older generations are willing to share knowledge, but young ones are not. (615)

J. External Cooperation

Some opinions were devoted to respondents' cooperation

with other organizations, institutions and scientific societies.

I combined a job in corporation with my work at university. I have to say that I share knowledge and innovation every time, but in corporation projects, not at university. (42)

I work in industry and partly in academia, and see the lack of cooperation between universities and industry. (365)

We do not have a platform for discussions between scientists, entrepreneurs and businessmen. Polish scientific conferences are limited to scientists only. (427)

This small number of statements in this subject is an important illustration of insufficient cooperation between universities and business, industry and services. One of the aims of the reform of the Polish research and education system was to enhance such cooperation.

K. Grants

Descriptions connected with financial support from the external bodies were collected in this section.

National Science Centre and National Centre for Research and Development should make a new call – for national cooperation. It is not good, when you are looking for professionals from abroad, not from our country. (1277)

To receive a grant in Poland is very difficult. And without it, it is impossible to attend international conferences. (825)

Sometimes academics who apply for grants many times suppose that other scientists-reviewers might be envious of their success.

In my opinion decisions about who receives a grant should be in the hands of the office workers, not professors; it would be much fairer and clearer. (58)

The fact is that applying for grants is necessary not only for the research development. In the near future they will be a guarantee of having employment at university.

L. Ideas and Good Practice

Because many opinions received in this study were negative in nature, the positive statements are presented at the end. The time of reforms is always difficult, but it is important that a light is seen at the end of the tunnel.

Our researchers should be interested in work at world level. This is much more difficult than to write a paper for a national conference. It is up to the individual. (31)

I appreciate when our managers force us to attend scientific meetings and to share knowledge during them. (93)

We need a broader presentation of our achievement in our institute and faculty in order to show other faculty members results of our research. (193)

If I see something which should be improved, I immediately talk about it with my subordinates. (338)

It is very important to have regular obligatory seminars for the faculty along with the presentation of their achievements on a university webpage. (368)

I am very open to every kind of cooperation and knowledge sharing, and the salary or marks for publications are not important to me. (330)

Interdisciplinary seminars and meetings are valuable. (566)

Talking with other scientist gives you benefits even when he/she does not want to share their knowledge. (624)

Creation of interdisciplinary teams is necessary. Competition is needed but not at any cost. (754)

Discussion is helpful in understanding your own thoughts and ideas. (1083).

The best method of knowledge sharing is face to face conversation. (1311)

In my department we talk every week during our two hour meetings. (1322)

I think that publications of many authors should be marked higher than now in the current assessment system; without it we do not have motivation to cooperate. Moreover, we need longer projects; three years are too little for serious research. (1493)

Nowadays places for conversations and meetings in the area of university campuses do not exist. We old professors remember them from the past, that there were professors clubs or university cafe houses. Faculty members were sitting there during breaks and after lectures. (1509)

The valuable conclusion is that nowadays being only scientists is not enough to keep a job at a university in Poland.

Today you have to be a scientist, lecturer, manager, visionary and accountant combined; and someone said that the Renaissance is past. (730)

V. Conclusion

Science and the higher education system in Poland are still changing. Reforms are under way and a higher level of the whole system is expected. It seems that it is possible and realistic, but in the far future, e.g. 20-30 years. The current situation means that a professor, who has never collected marks for their job, has to do it now. However, younger scientists may think that to become professor in the past was much easier. Every liminal state is complex and may cause problems.

Moreover, other issues are urgent in today's Polish education system. One of them is the decreasing number of students, which is not an effect of the education system, but of the lack of jobs for qualified young people in Poland. That is why a lot of problems, resentment and disappointment are covered in the cited opinions of the Polish academic community.

Knowledge and information sharing is a kind of activity, which needs time, reflection, willingness and trust. The results described in this article are an illustration of the public feeling of Polish academics, and are predominantly negative and doubting. It seems that the current situation in Polish universities and academia is much more complicated than ever before and does not enhance willingness and trust to knowledge sharing. It is difficult to say whether the future will bring a friendlier climate for free scientific conversations.

Knowledge and information sharing is a complex and important area of research interests, interdisciplinary and multidisciplinary in nature. The conducted studies are valuable for the development of some research areas and disciplines, e.g. information science, education, knowledge management and intellectual capital. To better understand the mechanisms

influencing knowledge sharing between experts, a deeper psychological and social insight is necessary. Such studies as conducted by the author of this article may be helpful for others in the development of new technologies and tools, more appropriate for scientific knowledge sharing than existing ones. Moreover, they are valuable for all managers in universities and academia, not only in Poland, because they highlight their role and the role of organization climate in promoting knowledge sharing.

ACKNOWLEDGMENT

This research was supported by the National Science Centre in Poland under number: NCN 2011/03/B/HS2/04436.

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