

Anna Waligórska-Kotfas*

Infobrokering: an Ethical Challenge in the Knowledge-Based Economy

Keywords: infobrokering, information broker, infonomics, information services market, ethical aspects of infobrokering

Słowa kluczowe: infobrokering, broker informacji, infonomika, rynek usług informacyjnych, etyczne wyzwania infobrokeringu

Introduction

In the twenty-first century, due to the exponential growth of information and communication technologies (ICT), information and knowledge have begun to play a strategic role within a society. Information nowadays is represented by different categories of digital products, which can be saved, uploaded, reproduced, and sold. Accordingly, the Internet has become the current medium of exchanging information worldwide. As a result, the creation, distribution, use, and manipulation of information is not only possible, but has a significant impact on a society in economic, political, and cultural terms.

Historically, since the 1950s the development in the areas such as cybernetics, information theory, and cryptology has influenced the changes in a society. After the industrial society based on production, and the post-industrial one in which services played a key role, the development of the information society can now be observed where information is treated as a special intangible asset, frequently even more valuable than material possessions.

In the time of globalization and the world wide web, knowledge is a crucial factor of productivity and development. The term *knowledge-based economy* (KBE) results from the recognition of the role which knowledge and ICT play in modern economies.

* mgr Anna Waligórska-Kotfas, Państwowa Wyższa Szkoła Zawodowa w Koninie, Katedra Zarządzania i Logistyki, e-mail: anna.kotfas@konin.edu.pl

Investments in knowledge may lead to an increase in the productive capacity which translates into new products and processes. Moreover, the knowledge investments are characterized by increasing rather than decreasing returns, and, therefore, they become the key to the long-term economic growth.¹

Apparently, information acquisition, gathering, and retrieval, especially by the means of the Internet, have given a rise to new professions. One of them is an infobroker, a person who collects and processes information commercially for enterprises that can in turn use it for marketing, verifying, and strategic purposes. Simultaneously, since the infobrokering sector is not yet well-regulated, especially in Poland, there are some ethical issues concerning the use of information that have to be faced.

The objective of this paper is to define business information and its sources, as well as to show a role which infobrokering is playing in the business environment. Additionally, some conditions of infobrokering services are described together with the profiles of American and Polish infobrokers. Finally, the ethical aspects of the infobroker's profession are discussed, and some ethical questions which an infobroker should be aware of are presented. The paper is elaborated on the English and Polish literature studies available both in print and online, as well as on the research conducted in the United States and Poland.

Information as an asset in the knowledge-based economy

The companies increasingly recognize information as a key asset – it is even considered the most valuable strategic asset which can be possessed. By focusing on the information rather than the technology, the organizations optimize business performance so that the KBE emerges. The term is defined as follows: "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance (...). The key components of [the KBE] include a greater reliance on intellectual capabilities than on physical inputs or natural resources, combined with efforts to integrate improvements in every stage of the production process, from the R&D lab to the factory floor to the interface with customers."²

From the macroeconomic perspective the requisites of the KBE are:³ an economic and institutional regime (EIR); an educated and entrepreneurial population; ICT;

¹ OECD, *The Knowledge-Based Economy*, Paris 1996, p. 11.

² W.W. Powell, K. Snellman, *The Knowledge Economy*, "The Annual Review of Sociology" 2004, no. 30, p. 199–220.

³ OECD, WBI, *Korea and the Knowledge-based Economy: Making the Transition*, Paris 2000, p. 13–14.

an efficient innovation system. The development of the KBE can be recognized in Poland and is proven by the overall progress of the KEI indicator⁴ (Table 1).

Table1. KEI for Poland in the years: 1995, 2000, 2012

Year	Rank	KEI	EIR	Education	ICT	Innovation
1995	39	6.85	6.23	7.86	7.10	6.22
2000	35	7.23	7.04	8.11	6.92	6.86
2012	38	7.41	8.01	7.76	6.70	7.16

Source: own elaboration based on P. Nowak, *Polska w rankingach gospodarki opartych na wiedzy*, „Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego” 2013, vol. 22, p. 22–43.

In the light of the literature studies, the difference between *data*, *information* and *knowledge* needs to be distinguished. *Data* is exemplified as a raw fact, a date, a measurement, a figure, or a statement, while *information* is the data that has been processed so it is meaningful, and, therefore, a process involving collecting, categorizing, transforming, and summarizing should be applied. *Information* has a context, it is a message, an event, or a unit of *knowledge*.⁵

Business data, the essence of information, can be obtained from the following sources: news, market research, credit and financial information, company and executive profiles, statistical data, databases, and archives. The importance of so called *grey literature*⁶ needs to be underlined. Currently, the majority of corporate literature of any kind is found online – search engines and websites are the first sources of reference when business data are looked up.

The relevant data needs to be searched for, scanned, selected, and then processed to become information. The information, examined by *infonomics* – the discipline of asserting economic importance to information – can be treated as an asset since it is exchan-

⁴ *Knowledge Economy Index* (KEI) – a WBI indicator in the interval from 1 to 10 aiming to help countries identify the challenges in the process of building a KBE and enabling country comparisons. KEI is a part of a comparative methodology *Knowledge Assessment Methodology* (KAM) consisting of 148 structural and qualitative variables calculated for 146 countries to measure their performance on the KBE pillars. WBI, *Knowledge Assessment Methodology*, <http://web.worldbank.org/> (7.12.2014).

⁵ J.H. Bernstein, *The Data-Information-Knowledge-Wisdom Hierarchy and its Antithesis*, NASKO 2011, 2 (1), p. 68–75; T.H. Davenport, L. Prusak, *Working Knowledge: How Organizations Manage What They Know*, Harvard Business School Press, 1998, p. 2–6; E. Hardcastle, *Business Information Systems*, Elizabeth Hardcastle & Ventus Publishing ApS, 2008, p. 6; J. Hey, *The Data, Information, Knowledge, Wisdom Chain: The Metaphorical Link*, www.dataschemata.com/uploads/7/4/8/7/7487334/dikwchain.pdf (7.12.2014).

⁶ *Grey literature* is defined as the material not issued through standard commercial publishing channels, and, therefore, difficult to access. It includes: scientific and technical reports, patents, standards, translations, theses, conference papers, house journals, trade literature, official documents, annual reports, product and service catalogs, promotional material, company websites. W. Pindlawa, S. Cisek, *Grey Literature as an Information Source for Small and Medium-Sized Business*, in: *Konferencja międzynarodowa – VIII Międzynarodowe Seminarium Informacji Naukowej Krajów Europy Środkowej i Wschodniej*, Warszawa, 11–12 X 1999, OPI, Warszawa 1999, p. 47–53.

geable, measurable, and can generate a positive economic value. However, since information is an abstract resource, it does not behave like other assets: its value depends on the context and synergy effect.⁷ Six methods of information valuation can be found in the literature review:⁸

- intrinsic value of information (how good and easy to use is the data? vs. how likely are others, outside the organization, to have it as well?),
- business value of information (how applicable to the business or a particular business process is the data?),
- loss value of information (what would it cost to replace the data?),
- performance value of information (the value of information to business objectives),
- economic value of information (the performance value of information minus the cost of acquiring, administering, and applying it),
- market value of information (how much is a business partner willing to pay for the access to this information?).

In the KBE environment existing currently, Information System Management (ISM) is necessary to be applied in a company to help it manage the inside information. The vast majority of ISM are developed in functional areas, such as: manufacturing, human resources, accounting, finance, and marketing. Therefore, the process of transforming *data* through *information* into *knowledge* is perceived and acknowledged as a part of the KBE.

Infobroker: a new profession in the information society

Nowadays, information overload can be observed, and, therefore, the relevant information is difficult to obtain. Consequently, the importance of the *infobroker*⁹ professionals possessing adequate knowledge and skills to search for information, increases.

The need for the occupation was recognized in the 1990s together with the Internet expansion, as well as the diminishing costs of data storage. The vast amount of data started to be gathered, collected, analyzed, processed, stored, and transferred, and, as a result, the public and private sources of information, such as statistical data, census information, government records, social networking sites, and even web browsing histories, can be searched.

⁷ The vital information for one organization might be useless for another. The interaction of two or more pieces of information leads to the fact that the combined effect is much greater than the simple sum of the individual bits.

⁸ D. Laney, *Infonomics: The Economics of Information and Principles of Information Asset Management*, The Fifth MIT Information Quality Industry Symposium, July 13–15, 2011, p. 590–603.

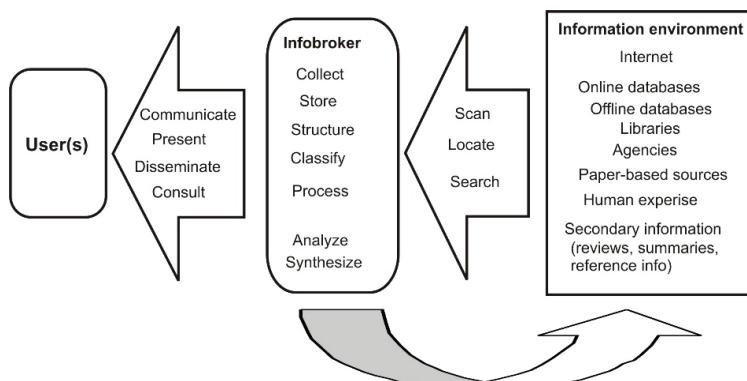
⁹ Also: *knowledge brokers, cyberians, freelance librarians, independent researchers, data dealers*.

There are five *sine qua non* conditions which should be met by a professional infobroker: being a mediator between information resources and the organizations in need of information; self-employment or being employed by an infobrokering enterprise; providing commercial services which are available for a fee; selling the service, not information as such; applying the appropriate skills and knowledge, and being guided by professional ethics.¹⁰

The infobroker's responsibilities should include: the implementation of searching strategies and data processing; the evaluation of the results; the assurance of information efficiency; the analysis and interpretation; the introduction of the ultimate product to a client in an earlier established form (a presentation, a report, a database).¹¹

The given above activities can lead to elaborating the infobrokering concept structure (Figure 2) where searching for the necessary information, locating, and scanning it, is followed by processing and analyzing so that a final report can be presented to a client.

Figure 2. Infobrokering: a concept structure



Source: D. Christozov, I. Nikolova, *Infobroker – an Emerging Profession of Informing Mediators?*, in: *Proceedings Informing Science Conference Krakow, Poland, 19 – 22 June 2001*, Krakow University of Economics, Krakow 2001, p. 136–142.

Furthermore, the issue of information assessment needs to be raised here. Such an assessment has to be made quickly and efficiently nowadays. What should be kept in mind is that there are few sources of information on the Internet which could be rated as fully reliable. Therefore, the work experience blended with information intuition seems to be crucial in the infobrokering profession.¹²

¹⁰ S. Cisek, *Broker informacji: istota zawodu*, http://eprints.rclis.org/archive/00012296/01/Cisek_broker_informacji_istota.pdf, p. 2. (6.12.2014).

¹¹ B. Grala, W. Kozakiewicz, *Infobrokering and Searching the Deep Web – the New Role of Employee of the Department of Medical Scientific Information*, www.eahil.eu/conferences/2007Krakow/www.bm.cmuj.krakow.pl/eahil/proceedings/oral/Grala%20i%20Kozakiewicz.pdf, p. 2. (3.12.2014).

¹² P. Hrabiec-Hojska, *Specyfika usług infobrokerskich a kompetencje informacyjne infobrokera*, Biblioteka Nostra 2013, no. 1 (31), p. 87–95.

Infobrokering, as a service, is the best developed in the United States. According to the study conducted by M.E. Bates, a profile of an American infobroker can be constructed:¹³

- age: 50–59,
- educational background: university graduates – 90%, 58% of which are MLIS,¹⁴
- prior experience: average 17+ years,
- business: full-time businesses – 60%, part-time businesses and employed elsewhere – 12%, part-time businesses and not employed elsewhere – 28%,
- format of business: sole proprietorship – 56%, LLC – 25%, corporation – 17%, others – 2%,
- average working hours per week: for full-time and part-time business – 42 and 18 respectively,
- employment: no employees – 90%, one to three employees – 8%, more than three employees – 2%.

The information brokerage market in Poland, since it is emerging, is not well established yet. The results of the research carried out by Nizioł can give an insight into an arising area of infobrokering services and are given below:¹⁵

- a) most enterprises offering infobrokering services are located in Masovian, Silesian, and Lesser Poland Voivodeship: five in each region; no enterprise can be found in Lubusz, Kuyavian-Pomeranian, Opole, Subcarpathian Voivodship;
- b) the education background: at least one person with a master's degree (mainly in the humanities) works in each enterprise surveyed, a half of the enterprises employ a MLIS;
- c) analytical skills, the ability to use foreign languages (two preferably), and the efficient use of the Internet are mentioned as the desirable skills required for the job;
- d) online sources, national and international databases, and direct contacts are mainly used as search tools;
- e) databases creation, data retrieval and analysis (research), preparation of reports are the services offered;
- f) the average working time on a typical commission is estimated to last for 10 days;

¹³ M.E. Bates, *2013 Info-Entrepreneur Report: Insights on Information Businesses*, www.batesinfo.com/extras/files/2013-iip-survey.pdf, p. 26–28 (4.12.2014). The survey was addressed to full members of the Association of Independent Information Professionals and conducted online between April 23 and May 10, 2013, no. of respondents: 117.

¹⁴ Master of Library and Information Science.

¹⁵ K. Nizioł, *Infobrokering w Polsce – wyniki badań w środowisku praktyków zawodu*, „PTINT Praktyka i Teoria Informacji Naukowej i Technicznej” 2010, no. 4, p. 3–19. The study examined 29 Polish infobrokering enterprises and was conducted between November 2009 and June 2010.

- g) the cost of a commission is determined by turnaround times, the subject of the enquiry, the availability of sources, their type, and a language;
- h) small and medium-sized enterprises, large corporations, law firms, students, academics are listed as the enterprises' clients;
- i) membership of the professional infobrokers' organizations was declared by only one enterprise, even though some information concerning law regulations and ethics issues can be found on the websites of 77% of the agencies.

Concluding, an infobroker has to comply with some essential requirements among which the commercial searching for information in a variety of sources, processing data, and synthesizing information are crucial. Although the information services market is not as developed in Poland as it is in the United States, some similarities, such as educational background, between American and Polish infobrokers' profiles, can be found.

Ethical aspects of infobrokering

The development of the information society and the KBE relies not only on the advance of information resources or assigning value to information, but also on expanding the awareness of responsibility for what can be and is done with information and dissemination of information ethics.¹⁶ Infobrokers, as professionals in the field of gathering and processing information, are required not only to respect the law, but they also should be able to handle information according to the ethical principles of conduct.

Code of Ethical Business Practice created by AIIP¹⁷ and followed by the members of the organization is the most widely-accepted these days. The Code emphasizes the importance of confidentiality, honesty, and competence of an info-broker, and states that the policy of secrecy should be applied not only in relation to the client, but also to the information gathered. The client ought to be informed about the information sources available, as well as about the level of information reliability and accuracy. Additionally, the copyright law and intellectual property rights should be recognized and respected.¹⁸

Some ethical aspects of infobrokering services need to be discussed to a greater extend. Firstly, an infobroker is required to use reliable and accurate sources. However, the validity and reliability of the information cannot be guaranteed since an infobroker

¹⁶ W. Babik, *Sustainable Development of Information Society: Towards an Ethics of Information*, "Geomatics and Environmental Engineering" 2012, vol. 6, no. 1, p. 13–20.

¹⁷ Association of Independent Information Professionals, formed in 1987, associates 400 members in over 20 countries around the world.

¹⁸ AIIP, *Code of Ethical Business Practice*, www.aiip.org/About/Code-of-Ethical-Business-Practice (7.12.2014).

is not the author of the information, but only a researcher. As it was stated above, the Internet can be a source of misinformation, so appropriate and thorough evaluation of web data is indispensable.

Secondly, analytical and synthetic skills, as opposed to creating subjective information, are fundamental. Any conscious, intentional, or planned actions to distort the information and influence the customer's decisions have to be treated as information tampering. The information manipulation may include providing information which is false, invalid, insignificant, or ambiguous. Information should also be selected correctly as an excess of it can lead to information noise.

Finally, certain commissions may be harmful, unwanted socially, or simply illegal. When such a situation occurs, an infobroker is obliged to draw the customer's attention to the possibility of conflict with the law, and withdraw from the task on account of the fact that corporate espionage is not an aspect of the infobrokering profession.

Conclusions

Modern economy is defined as the KBE where the gathering, processing, retrieval, use, integration, and manipulation of information have become the key factors of companies' growth. Although information is a concept, it can be measured in economic terms, and, as such is treated as an intangible asset. As a result of upsurge in information availability due to the Internet sources, a new profession, an infobroker, has emerged.

Despite being well-developed in the USA, infobrokering services market is still rudimental in Poland, and the profession might be misinterpreted by clients as business intelligence. In the author's opinion, firstly, information brokering services should be more recognized and established in Poland. Moreover, a code of ethical business practice ought to be implemented among the Polish professionals, who, on the one hand, might be aware of ethical issues regarding information handling, but, on the other hand, seem to be in need of a clear guidance in terms of their professional conduct, as they face ethical dilemmas, such as secrecy, confidentiality, and reliability. It has to be assumed that more questions concerning the ethical use of information will be raised along with the development of infobrokering services market.

Literature

- AIIP, *Code of Ethical Business Practice*, www.aiip.org/About/Code-of-Ethical-Business-Practice (7.12.2014).
- Babik W., *Sustainable Development of Information Society: Towards an Ethics of Information*, "Geomatics and Environmental Engineering" 2012, vol. 6, no. 1, p. 13–20.

- Bates M.E., 2013 *Info-Entrepreneur Report: Insights on Information Businesses*, www.batesinfo.com/extras/files/2013-iip-survey.pdf (4.12.2014).
- Bernstein J.H., *The Data-Information-Knowledge-Wisdom Hierarchy and its Antithesis*, NASKO 2011, 2 (1), p. 68–75.
- Christozov D., Nikolova I., *Infobroker – an Emerging Profession of Informing Mediators?*, in: *Proceedings Informing Science Conference*, Krakow, Poland, 19–22 June 2001, Krakow University of Economics, Krakow 2001, p. 136–142.
- Cisek S., *Broker informacji: istota zawodu*, http://eprints.rclis.org/archive/00012296/-/01/Cisek_broker_informacji_istota.pdf (6.12.2014).
- Davenport T.H., Prusak L., *Working Knowledge: How Organizations Manage What They Know*, Harvard Business School Press, 1998, p. 2–6.
- Grala B., Kozakiewicz W., *Infobrokering and Searching the Deep Web – the New Role of Employee of the Department of Medical Scientific Information*, www.eahil.eu/conferences/2007Krakow/www.bm.cmuj.krakow.pl/eahil/proceedings/oral/Grala%20i%20Kozakiewicz.pdf (3.12.2014).
- Hardcastle E., *Business Information Systems*, Elizabeth Hard castle & Ventus Publishing ApS, 2008.
- Hey J., *The Data, Information, Knowledge, Wisdom Chain: The Metaphorical Link*, www.datas-chemata.com/uploads/7/4/8/7/7487334/dikwchain.pdf (7.12.2014).
- Hrabiec-Hojska P., *Specyfika usług infobrokerskich a kompetencje informacyjne infobrokersa*, „Biblioteka Nostra” 2013, no. 1 (31), p. 87–95.
- Laney D., *Infonomics: The Economics of Information and Principles of Information Asset Management*, The Fifth MIT Information Quality Industry Symposium, July 13–15, 2011, p. 590–603.
- Nizioł K., *Infobrokering w Polsce – wyniki badań w środowisku praktyków zawodu*, „PTINT Praktyka i Teoria Informacji Naukowej i Technicznej” 2010, no. 4, p. 3–19.
- Nowak P., *Polska w rankingach gospodarek opartych na wiedzy*, „Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego” 2013, vol. 22, p. 22–43.
- OECD, *The Knowledge-Based Economy*, Paris 1996.
- OECD, *WBI, Korea and the Knowledge-based Economy: Making the Transition*, Paris 2000.
- Pindlówka W., Cisek S., *Grey Literature as an Information Source for Small and Medium-Sized Business*, in: *Konferencja międzynarodowa – VIII Międzynarodowe Seminarium Informacji Naukowej Krajów Europy Środkowej i Wschodniej*, Warszawa, 11–12 X 1999, OPI, Warszawa 1999, p. 47–53.
- Powell W.W., Snellman K., *The Knowledge Economy*, “The Annual Review of Sociology” 2004, no. 30, p. 199–220.
- WBI, *Knowledge Assessment Methodology*, <http://web.worldbank.org/> (7.12.2014).

Abstract

Modern economy is defined as the knowledge-based economy where the gathering, processing, retrieval, use, integration, and manipulation of information have become the key factors of companies' growth. In spite of the fact that information is a concept, it can be measured in economic terms, and, as such, is treated as an intangible asset examined and valued by infonomics. An incredible increase of information availability due to the Internet sources resulted in the recognition of a new profession – an infobroker.

The paper defines business information and its sources, and shows a role which infobrokering is playing in the business environment. In the further part, some conditions of infobrokering services are described together with the profiles of an American and Polish infobroker. Finally, the ethical aspects of an infobroker's profession are discussed, and some ethical questions which an infobroker should be aware of are presented.

Infobrokering: etyczne wyzwanie gospodarki opartej na wiedzy

Współczesna ekonomia to gospodarka oparta na wiedzy, w której kluczową rolę odgrywa informacja. W kategoriach ekonomicznych informacja jest traktowana jako dobro niematerialne, a oceną jej wartości zajmuje się infonomika. Ze względu na rozwój technologii informacyjno-komunikacyjnych i globalną sieć przepływu informacji, którą stał się Internet, pojawił się nowy zawód – infobroker, specjalista komercyjnie wyszukujący, analizujący i udostępniający informację.

W artykule w pierwszej części zdefiniowano informację biznesową, jej cechy i źródła. Następnie przedstawiono warunki konieczne do uprawiania działalności infobrokerskiej oraz zaprezentowano profil infobrokersa w Stanach Zjednoczonych i w Polsce. W ostatniej części wymieniono problemy etyczne, z którymi musi się zmierzyć broker informacji. Konkludując podkreślono potrzebę zaimplementowania na rozwijającym się rynku usług informacyjnych w Polsce kodeksu etycznego postępowania, szczególnie w kontekście narastających wyzwań związanych ze skokowym rozwojem dostępu do informacji i możliwościami jej przetwarzania.