An Essay on Information Overload

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Abstract

Purpose/thesis: Information overload, whether we realise it or not, is commonplace and affects various kinds of knowledge workers and ordinary consumers of information. The purpose of the paper is to identify main sources and reasons of the information flood and information overcharge, propose a remedy complete with the method of implementing personal trophic information pyramid, information firewall and everyday filtering routines, and envisage measures that the information science could elaborate on and employ in order to help limit the information overload.

Approach/methods: The author's personal experience as a researcher and teacher at a technical university and a heavy consumer of information, informal interviews with other scholars and knowledge workers of the high-tech corporate world, and talks with students and ordinary information users supplemented by desk research and statistics are the ground against which this essay was devised and written.

Results and conclusions: The major conclusion of the reported research is that the overwhelming feeling of personal overcharge with information and some vulnerability to the information flood is commonplace regardless of the category of information consumers. However, rarely can one observe the cases of devising and implementing countermeasures to control the information flow and intake and shape conscious information users. The result of the study is a set of guidelines for individuals concerning self-protection against the information flood. The author has also discovered that the discipline of information science does not provide information users with explicit methodologies helping them to control the information intake and resist the information pollution.

Originality/value: Information overload is a widely discussed topic in the international literature; however, it is virtually absent from Polish academic and scientific journals. This essay is an attempt to fill the gap in question, though to a certain degree only, and provide some recommendations for the information science concerning this issue, in particular by boosting and promoting digital literacy and awareness that information overcharge does exist and is a threat to human brains and mind.

Keywords

Democratization of information. Digital literacy. Information and communications technologies (ICT). Information overload. Information overcharge countermeasures. Information science.

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1. Introduction

Information is the mainspring of the modern world. It has always been in one form or another, whether this fact has been realised or not. It has been a gateway and instrument to win wars, gein and maintain power and control, and to produce goods and services; it was also a way to seize upper locations on the social pyramid and gain recognition, privileges and comparative advantage in professional and social circles. Its horizontal impact on almost everything what humans are doing and feeling is an undeniable fact, even though

it is not always explicitly manifested or acknowledged. But almost throughout the whole human history information was scarce and available to very limited and closed groups of people, usually associated with or related to religious institutions and secular power entities and agencies, and also to only some individuals who enjoyed access to education and information sources. The establishment and quick spread of universities across Europe, the new intellectual currents brought by the Renaissance, and eventually the invention of the printing press by Gutenberg in the 16th century and then the proliferation of books of various purposes and forms, be they on philosophical subjects, religious matters, or political pamphlets, or just pieces of entertainment, journals, and newspapers begun the process of generating information on a mass scale. This was actually the technology of printing together with a number of innovative organisational solutions to disseminate and distribute printed items that made this incredible process possible and led to a gradual yet continuous democratisation of information. Since then information could be cheaply printed on paper and made available or just sold for profit or on a cost recovery basis. The general public starved for news, information and entertainment delivered by printed words, which literally and metaphorically opened the window to the world and along with overseas travels to discover new continents and lands triggered the process of globalisation. It turned out that Aristotle was not mistaken when he wrote: "All men desire to know" which very sentence opens his *Metaphysics*. Today, given the experience of the pop-culture we could squarely complement this insightful assertion by adding: "...and get distracted". We shall come back to this note later on.

The industrial revolution, inventions of telegraph, radio and television, and eventually digital media relaying on computer and telecommunications platforms one by one added new dimensions to the information realm. Nowadays information is seen everywhere, in a multitude of forms, and is available anytime, also on the move. The today's picture of information presence and availability is in the entire opposition to the one of the past. Now we tend to complain on the torrent of information that falls down on us from different origins, whereas in the past we had to look for information and sometimes even to struggle to get it. The omnipresence of information, in the air through radio, television, and wireless devices such as tablets and smartphones, on paper by a myriad of newspapers and magazines, in books, in commercial ads, and also, or perhaps one should say above all, on the internet via its numerous services such as email, messaging systems, RSS and of course social networking platforms results in what is dubbed an *information overload*.[1] Every day our brains are exposed to a dense and immense stream of information that because of its intensiveness, speed, a tremendous amount of news it carries out and also its diversity, and often aggressive and intrusive content, is a challenge to our cognitive abilities and social, cultural and moral values, the challenge that we often cannot withstand. It is then not surprising that complains on the information overload are commonplace. This ailment affects various kinds of knowledge workers and ordinary consumers of information. Especially, the e-literate people who are more exposed to information flows and carry out

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[1] At this point we should have made a distinction between data and information by emphasising the raw character of data and a semantic component of information, and accordingly to somewhat differentiate data overload from information overload. However, for the sake of succinctness further on we shall use the term *information overload* to encompass both cases as it is more general and widely used in the literature.

intense communications activities on the internet have justified reasons to complain on the information overflow that hampers their time management schemes, and on information pollution and chaos that make the digital universe unfriendly and even hostile. We can see how information providers in order to push information toward us, try to urge us to absorb it, are competing to attract our attention that, incidentally, has become one of the most precious commodities and currencies on the marketplace. Those who claim or believe that in this case, as it often happens to other goods contending on the market, more providers and competition give rise to a better offer and quality are wretchedly wrong; it is just the opposite, the inflation of information providers and consequently information itself causes and promotes by and large inferior information products and worse information-based services. We witness here an equivalent of Copernicus-Gresham law saying that poor information drives out good one. Yet let us immediately add that the providers of information are not the only side to blame; part of the guilt goes also to the receivers of information. This assertion will be reiterated later on.

Quite common is the analogy that compares information overload with excessive consumption of food and obesity. The reaction to the immoderate food consumption, especially offered by fast food services and discount shops is the growing movement of slow food and the emphasis on appreciating and promoting a healthy lifestyle and quality rather than quantity. Although regulating and controlling the world of information is much more difficult than the realm of food, undoubtedly the times has come to systematically and scientifically tackle also the problem of information overload and to work out solutions for scientists and researchers as well as for ordinary information consumers, and to widely and aggressively champion and promote these solutions. This paper attempts to contribute to this process by drawing attention to the fact that the information flood is commonplace regardless of the category of information consumers. But at the same time, only rare are the cases of devising and putting into practice countermeasures to control the information flow and intake and to become conscious users of information. The paper claims that although most media and ICT may cause information overconsumption, it is still possible to avoid the trap of information overload through a sensible administration of information diet and establishing information filters. We propose a set of hints to apply for protecting oneself against the information flood. Also, since the discipline of information science has not yet provided information users with comprehensive methodologies to help control information intake and resist against the information pollution, we try to fill out this gap, though to a certain degree only, and provide some draft recommendations to information science regarding this issue, mainly based on boosting digital literacy. The paper is structured as follows: in the next chapter information flood generators will be identified and briefly characterised, then the possible measures against the information overcharge will be proposed, and eventually a few final remarks will be added at the end of the paper.

2. Information flood generators

In 1964 Bertram M. Gross in his book *The Managing of Organisations* and later in 1970 Alvin Toffler in his seminal book *Future Shock* were probably the first researchers who used the term *information overload*. In (Speier at al., 1999, 338) this notion was defined as follows:

> Information overload occurs when the amount of input to a system exceeds its processing capacity. Decision makers have fairly limited cognitive processing capacity. Consequently, when information overload occurs, it is likely that a reduction in decision quality will occur.

This formulation pays attention to two aspects caused by a vast quantity of information, namely to the inability of processing it because of insufficient processing capabilities and its negative influence on the faculty to make decisions. Noteworthy, both aspects refer to the limits of cognitive capacities of the person who is subject to the information overload. Incidentally, this definition can be directly applied also to machines that can be exposed to information overloads, too. One of the observations made by Toffler in his book (Toffler, 1970) was that technology and information flows grow faster than people can absorb and tame them, which consequently have to lead to emotional tensions, stress, and disorientation. The years coming after Toffler's note proved he was entirely right and the phenomenon of information overcharge has become commonplace. Metaphorically speaking, the information sword of Damocles that hanged over our minds has already fallen and, as neurologists clearly confirm it, has been changing our brains. We shall come back to the impact of information overload on the neural structure of the brain later on in this chapter. The readers who are interested in understanding the concept of information overload from various standpoints, different contexts, and its effects of on individuals, organisations, and societies are referred to the portal of Information Overload Research Group[2] and also to the portal of Information Overload Research Centre[3].

Let us thence ask: What/Who is responsible for the information deluge and for information overload? The answer to the first part of the question is that the culprits of the information flood are media, various types of intellectual technologies, and networks along with easy access to them, create and propel the information deluge. The answer to the second part of the question is that information overload is mainly a result of inappropriate intake of information, in other words, the responsibility lies on the side of information receivers and users. Needles to present here intellectual technologies that help and speed up authoring, copying, publishing and disseminating multimedia information produced by individuals, groups of hobbyists, special interest groups, professional media agencies, corporations, administration, etc. for they are well known and their users are counted in hundreds of thousands, millions or even more. The popularity of such tools as various text and image editors, calculation spreadsheets, graphical presentations editors, email, instant messaging, videoconferencing, tools for video clips making and publishing, etc. along with social services, of which Facebook has gained the status of almost universal social communication facility, has become a remarkable social, economic, and political fact. What is interesting is the amount of information generated by these tools and transmitted throughout the world via the wireless and stationary internet. In order to show the dynamics of information flow on the internet we quote statistics showing what happens there over 60 seconds[4]:

> 168 million emails are sent;
> 694,445 searches on Google;

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[2] http://iorgforum.org
[3] http://informationoverloadresources.com
[4] http://www.go-gulf.com/blog/60-seconds

695,000 Facebook status updates;
370,000 Skype calls are made;
98,000 tweets on Twitter;
20,000 new posts on Tumblr;
13,000 iPhone apps downloaded;
6,600 new pictures on Flickr;
1,500 new blog entries posted;
600+ videos posted totalling over 25 hours duration on YouTube;
WordPress Plugins are downloaded more than 125 times;
13,000+ hours of music streaming is done by personalized Internet radio provider Pandora.

The above data was collected in the year of 2011; at the time of writing this paper the amount of such data has considerably increased and will still increase in the years to come. The Cisco report (Cisco, 2013) predicts that:

the annual global IP traffic will pass the zettabyte threshold by the end of 2015, and will reach 1.4 zettabytes per year by 2017 (zetta stands for 10^{21}),

and that:

Global IP traffic has increased fourfold over the past 5 years, and will increase threefold over the next 5 years.

Further on, following the International Data Corporation (IDC) report we can expect that:

From 2005 to 2020, the digital universe will grow by a factor of 300, from 130 exabytes to 40,000 exabytes (exa stands for 10^{18}), or 40 trillion gigabytes (more than 5,200 gigabytes for every man, woman, and child in 2020). From now until 2020, the digital universe will about double every two years (IDC, 2012).

The readers interested in the process of information accumulation in society and in factual data on the accumulated amount of information over the years, decades and centuries are referred to the paper (Hilbert, 2012).

Now let us heed to an extremely vital fact that often escapes from the attention of the users of digital intellectual technologies. This fact is that the efficient and powerful digital tools and networks that we so keenly and widely use, and the tremendously dense, unstoppable, and omnipotent stream of information to which we are exposed in public and private circumstances considerably impact not only our minds and lifestyle; they also directly impact our brains, their physiology. M. Merzenich, an eminent neuroscientist who studied brain neuroplasticity in the context of modern technologies, especially those that run on the internet, expressed the following blunt opinion:

Their heavy use has neurological consequences (Merzenich, 2008).

This opinion was thoroughly elaborated by Nicholas Carr:

Dozen of studies by psychologists, neurobiologists, educators, and Web designers point to the same conclusion: when we go online, we enter an environment that promotes cursory reading, hurried and distracted thinking and superficial learning... Net may well be the single most powerful mind-altering technology that has ever come to general use. At the very least, it's the most powerful that has come along since the book (Carr, 2011).

The author of this opinion continues as follows:

> The Net seizes our attention only to scatter it. We focus intensively on the medium itself, on the flickering screen, but we are distracted by the medium's rapid-fire delivery of competing messages and stimuli. Whenever and wherever we log on, the Net presents us with an incredibly seductive blur. Human beings 'want more information, more impressions, and more complexity', writes Torkel Klingberg, the Swedish neuroscientist. We tend to 'seek out situations that demand concurrent performance or situations in which [we] are overwhelmed with information' (Klingberg, 2009, 166–167 – quoted after Carr, 2011).

Noteworthy, surprisingly enough such situations were prophetically predicted by the Nobel Prize poet T. S. Eliot in his *Four Quartets* published in the year of 1944:

> Distracted from distraction by distraction
> Filled with fancies and empty of meaning
> Tumid apathy with no concentration.

This seems to be the best thought-provoking wrap-up of what modern intellectual technologies combined with the information torrent can do to us if we do not learn to control and use them to our advantage.

We have to finish this chapter by noting that information consumption is basically a sedentary act that often lasts long (while reading longer texts, doing a desk jobs such as preparing an executive presentation or writing a blog or doing a homework, watching a movie, conducting a videoconference, etc.). Having said that let us quote Dr J. Levine of the Mayo Clinic who wrote on his blog[5]:

> Researchers have linked sitting for long periods of time with a number of health concerns, including obesity and metabolic syndrome — a cluster of conditions that includes increased blood pressure, high blood sugar, excess body fat around the waist and abnormal cholesterol levels. Too much sitting also seems to increase the risk of death from cardiovascular disease and cancer.

It seems that these findings do not need any further comments.

3. A remedy

In 1826 Jean Brillat-Savarain published the book *The Physiology of Taste* that is a masterpiece of the gourmand culture. We can find there the following aphorism:

> The destiny of nations depends on the manner in which they nourish themselves.

We believe that we can rightly rephrase this sentence by claiming that the destiny of nations largely depends on the manner in which they consume and make use of information. This rephrased adage should encourage us to start devising, establishing, and implementing an information diet strategy, an information trophic pyramid, information firewalls, and filtering routines. Information science that is a multidisciplinary approach to the realm of information has in its arsenal a number of tools that have been specifically conceived and developed for different purposes but the information overcharge. However, we think that some of these facilities can be adopted to cope with the information flood, especially

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[5] http://www.mayoclinic.com/health/sitting/AN02082

if it is supported by the experience and expertise of psychology and sociology. Which are then these facilities? The first and the most fundamental ones are the measures to promote information awareness, which emphasises that collecting, possessing, and consuming data and information entails both positive and negative implications. The positive ones are widely known and recognised for they strengthen and enhance the faculties and potential of the information possessors. The second aspect is about potential threats related to the possession of information, among which are misuse of information and information overload. Here, we note that the information awareness has two dimensions, which are the following:

  – a general understanding of the role information plays in the contemporary life;
  – a set of practical measures allowing one to make conscious and productive use of information.

Now, let us take a closer look at the second dimension within which the most essential is digital literacy that includes three components, namely: e-skills, information literacy, and media literacy.

Being digitally literate has become one of the key requirements to be able to participate in the present society whose many activities and makings happen within the internet or by means of the internet and its services, and to a considerable extent they relay on various types of media and information sources and channels. These days for an active member of society who wants to be productive, efficient, and visible it is hardly possible to live outside the internet and to ignore media and the overall infosphere created and supplied by them. Therefore, digital literacy is a condition sine qua non for not only "civic existence" in the public sphere but also in the private sphere in which members of the family and close friends also make use of digital technologies and often communicate with each other via the internet or mobile telephony networks. Thus, by *digital literacy* we understand a set of competencies and skills that allow one to understand and operate within the digital universe composed of media, the internet, and data transmission wireless and stationary networks of various kinds. Being digitally literate requires a possession of e-skills that is practical, hands-on knowledge of how to make smooth use of digital devices such as smartphones, tablets, laptops, TV sets and digital intellectual technologies such as text editors and videoconferencing facilities for being able to participate actively (as an author and/or publisher) and passively (as a recipient) in the universe of media and cyberspace. Noteworthy, the requirement of e-skills, at least in its basic meaning, is not relevant to the generation of digital natives, i.e. the people who were born after the point when digital technologies reached the status of maturity (around the mid of '90s of the previous century) and for whom the internet, mobile technologies and digital devices are part of what they consider a natural environment.

Information science has a particularly important role to play when it comes to information literacy, because in order to acquire information literacy, to become information literate, the methodologies and tools so far developed by and within information science need to be applied. The American Library Association defines the notion of information literacy as follows:

> To be information literate, a person must be able to recognise when information is needed and have the ability to locate, evaluate, and use effectively the needed information (ALA, 1989).

The last but not least component of digital literacy is the notion of media literacy. According to the Centre for Media Literacy:

> Media Literacy is a 21st century approach to education. It provides a framework to access, analyse, evaluate and create messages in a variety of forms – from print to video to the Internet. Media literacy builds an understanding of the role of media in society as well as essential skills of inquiry and self-expression necessary for citizens of a democracy[6].

Noteworthy, this definition pays attention to the fact that media literacy addresses the rights of citizens of democratic societies to information in both senses, namely as those who can produce and disseminate information and provide information services and those who can look for and obtain information and be users or beneficiaries of information services. Undoubtedly, we can address this note also to digital literacy as a whole. Another vital question the above definition raises is the role of media. Media's original mission—and to be frank rather idealistic and rarely fulfilled—to objectively inform general public about facts and to explicitly distinguish facts from opinions, has notably eroded over the past decades. Now, a large part of media mainly broadcasts and sells affirmation that confirms opinions, beliefs, and prejudices of their audiences for this is the simplest way to keep and maintain readers, listeners, and viewers and thereby to profit more from commercial ads. This is why it is crucial that information consumers realise this fact and can divide the wheat from the chaff.

Individual consumers of information who have to manage the information flow on a daily basis in the workplace or at home need practical hints on how to organise an "information diet". Below we quote a common sense recipe addressed to an individual user of information for coping and controlling information overload as provided by the portal *Infogineering*[7]:

> Spending less time on gaining information that is nice to know and more time on things that we need to know now.
> Focusing on quality of information, rather than quantity. A short concise e-mail is more valuable than a long e-mail.
> Learning how to create better information. Be direct in what you ask people, so that they can provide short precise answers.
> Single-tasking, and keeping the mind focused on one issue at a time.
> Spending parts of the day disconnected from interruptions (e.g. switch off e-mail, telephones, Web, etc.) so you can fully concentrate for a significant period of time on one thing.

To this pragmatic list we may add the following 10 recommendations that should help to control the information tide and better manage information flows:

(1) To use information aggregation services and tools that according to a predefined user's profile can collect relevant information, edit it, and deliver it to the user in the way s/he has defined (e.g. Factiva, InsideView, LexisNexis, Semantic Visions).

(2) Whenever possible, to visualise the obtained factual information in forms of charts, graphs, animated flowcharts, etc.

(3) To organise research, meaning to define and carry out queries and search heuristics by means of semantic tools and context facilities (metadata) such as tags, annotations, ontologies, and employing metadata standards such as Dublin Core, ISO Digital Object Identifier, Ecological Metadata Language, etc.

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[6] http://www.medialit.org/media-literacy-definition-and-more
[7] http://www.infogineering.net/understanding-information-overload.htm

(4) To prioritise the types of information and sources of information to be taped into and get acquainted with them.

(5) To minimise information pollution by using thematic information filters, tools for documents classification, clustering and sorting, and installing anti-spam tools.

(6) To diversify sources of information and beware of affirmation information that flatters its consumers but rarely bears value.

(7) To reduce the amount of daily amount of time to consume information; note that "today, you're likely to spend upwards of 11 hours per day to consume information" (Johnson, 2012).

(8) To use the tools for tracking the carried out activities and measure the amount of time spent on interacting with digital devices (e.g. RescueTime software package can do it in a friendly and efficient way on a personal computer); this should help to adjust the information intake to one's 'digital metabolism'.

(9) To determine and observe the time slots on daily office and home agendas, which are free of using digital devices and intellectual technologies; note that "average computer user checks forty web sites a day and switches programs up to thirty six times an hour" (Sieberg, 2011).

(10) Whenever there is a choice between paying attention to a device or access to the internet and heeding to people, a better choice is almost always to work towards people.

The readers interested in devising their own information trophic pyramids, and information diet strategies (perhaps a sort of "infovegan" diet) are referred to the books (Johnson, 2012) and (Sieberg, 2011). Also getting acquainted with the research on information ecology that is seriously concerned about information overcharge can be helpful; towards this end, a visit to the MIT portal of the Information Ecology Group[8] can be paid and a reading of a seminal book (Davenport, 1997) and the paper (Babik, 2008) is advised.

We close this chapter by informing the readers that efforts have been made under the SYNAT programme[9], which is a strategic initiative of the Polish Ministry of Education and Scientific Research to help the Polish scientific community, scholars, and students to provide them with easy access to scientific information and primary documents and to help them better organise their work also in terms of avoiding information overload (Ryżko & Muraszkiewicz, 2013).

4. Final remarks

It seems that in a democratic society and capitalist free market economy the major tasks to limit the negative effects of information flood are on the side of information consumers rather than on the side of information generators and disseminators, be they commercial companies, public establishments, or just individuals. Obviously, for commercial agents profit is the mainspring of their operations, meaning producers always try to address as many potential customers and users as possible. Also non-for profit agents are usually

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[8] http://eco.media.mit.edu
[9] http://www.synat.pl

interested in a wide dissemination of the information they generate. So it is hardly possible to devise and implement facilities and measures to limit the generation of huge quantities of information. We can put it bluntly: it would be against the basic philosophy of the social and economic model of free market democracy we live in, and it would also sooner or later become an element of a censorship mechanism that is not acceptable in democracy. Looking at this problem from another angle we should accept the fact that complaining on and blaming media and other information generators and transmitters for flooding the information universe is a hopeless cause, it is like accusing a fox that it chases hens. This is actually the justification of the stance we adopted in this paper, namely that we focused and looked for solutions on the user/customer side, arguing that this is the user of information only who can in practical terms organise her/his information milieu, especially regarding the management of incoming streams of information and the way the information is consumed. We need to emphasise that the role of information science in this approach is only to help information users and consumers to cope with information deluge and its implications, rather than to replace them in the process of getting rid of the information pollution and information obesity.

Having presented and discussed in the above chapters the threats information overload can cause we feel obliged to note that the information abundance is not always a burden and inconvenience, on the contrary, it might be a desirable case. The paper (Jacobfeuerborn, 2013b) discusses the development stages of science and puts forward a conjecture that the so-called Big Data, i.e. very large datasets whose volume is measured in peta-, exa-, and even zettabytes (10^{15}, 10^{18}, 10^{21} bytes, respectively), can be used for discovering scientific knowledge by means of computers that may become not only instruments but also partners on an equal footing of human researchers while generating hypotheses and setting up scientific models and theories. Noteworthy, already now the Big Data approach is successfully applied in business situations as a plausible methodology of business analytics aimed at identifying actual and potential customers' needs and preferences, and market trends. An interesting concept of how Big Data could be harnessed to enforce innovativeness and to innovate innovation processes is proposed in (Jacobfeuerborn, 2013a).

Let us close this essay by the advice that goes beyond what information science can offer in order to overcome and fix the problem of information that overcharges and stresses our brains. This advice has a slight Zen flavour; it reads: in order to be wise and conscious consumers of information we should learn, value and practice from time to time the art of listening to the silence, and to reduce the use of digital intellectual technologies in favour of considerations, cogitations, thoughtfulness and reflections.

5. Acknowledgments

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Esej o nadmiarze informacji

Abstrakt

Cel/teza: Nadmiar informacji, czy sobie go uświadamiamy czy też nie, jest powszechny. Dotyka on różnego rodzaju pracowników wiedzy i zwykłych konsumentów informacji. Celem tego artykułu jest określenie głównych źródeł i przyczyn zalewu informacją i przeciążenia informacyjnego, oraz zaproponowanie remedium wraz ze sposobem implementacji osobistej troficznej piramidy i zapory informacyjnej, oraz codziennych procedur filtrowania informacji, a także wskazanie środków, które może wypracować nauka o informacji, aby pomóc ograniczyć zalew informacyjny.

Koncepcja/metody badań: Podstawą opracowania tego eseju są osobiste doświadczenia autora jako naukowca i nauczyciela na politechnice oraz intensywnego konsumenta informacji, nieformalne wywiady z innymi pracownikami naukowymi ze środowiska akademickiego i świata korporacji Hi--Tech, a także rozmowy ze studentami i zwykłymi użytkownikami informacji, uzupełnione przez analizę źródeł wtórnych i danych statystycznych.

Wyniki i wnioski: Głównym wnioskiem z badań jest to, że niezależnie od kategorii odbiorców informacji powszechne jest silne odczucie osobistego przeładowania informacją oraz pewnej luki w zabezpieczeniu przed informacyjną powodzią. Równocześnie jednak rzadkie są przypadki opracowywania i wdrażania w praktyce środków zaradczych, które pozwoliłyby kontrolować przepływ informacji oraz jej przyswajanie, wspierając kształtowanie się postaw świadomych użytkowników informacji. Wynikiem badania jest zestaw wskazówek dotyczących indywidualnej ochrony przed zalewem informacji. Autor stwierdził także, że nauka o informacji jako dyscyplina badawcza nie zapewnia użytkownikom informacji wyraźnie określonych metod, które mogłyby im pomóc kontrolować „spożycie" informacji i chronić ich przed „informacyjnym zanieczyszczeniem".

Oryginalność/wartość poznawcza: Nadmiar informacji jest tematem szeroko dyskutowanym w światowej literaturze, jednak w małym zakresie jest obecny w polskich czasopismach naukowych. Niniejszy esej próbuje wypełnić tę lukę, jakkolwiek jedynie do pewnego stopnia, oraz wskazać pewne, dotyczące tych zagadnień, rekomendacje dla badań w zakresie nauki o informacji, w szczególności związane z pobudzaniem i promowaniem edukacji cyfrowej (digital literacy) oraz świadomości, że przeładowanie informacyjne istnieje i stanowi zagrożenie dla ludzkich mózgów i umysłów.

Słowa kluczowe

Demokratyzacja informacji. Digital literacy. Edukacja cyfrowa. Informatologia. Nadmiar informacji. Nauka o informacji. Środki zaradcze dla przeciążenia informacyjnego. Technologie informacyjne i komunikacyjne.

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