

INFORMATION OVERLOAD AND ITS EFFECTS ON ACADEMIC PERFORMANCE OF STUDENTS

By

Olayinka Mary Adekoya
and
Chirviter Akune

Abstract

Students like any other category of persons need information relating to their subject discipline, information to do their assignments, to prepare seminars papers and for carrying out research. However, where students are bombarded with too much information from the internet, social media and on library shelves, particularly unnecessary or irrelevant information, it leads them to confusion, distraction, lack of concentration, poor academic performance for students. The paper looks at the causes of information overload, effects of information overload and the effect of information overload on students' academic performance. Suggestion for overcoming this effect was suggested among which is the use of filtering and withdrawal strategy, making use of libraries where librarians will guide them to the best databases that have filtered information resources capable of meeting the students' information need.

Keywords: Information, Information Overload, Students, Academic performance

Introduction

Information is a valuable resource needed by every individual whether great or small. Individuals, families, organizations, institutions, churches, companies and government increasingly needs information on daily basis to guide their decision making. For instance, young people need information on education and job opportunities; farmers need information on improved seed varieties and loan opportunities, elderly people need information to manage their health, finances, and to participate in the political process. Students like any other category of persons need information relating to their courses, subject discipline and profession generally. Students also needs information to do their assignments, to prepare seminars papers and for carrying out research. However, where students are bombarded with too much information from the internet, social media and on library shelves, particularly unnecessary or irrelevant information, it leads them to confusion and delayed decision making (Lucas, 2016).

Information is any accurate and timely data organized and presented within a context that gives meaning and relevance, leading to increased understanding and decrease uncertainty (WebFinance, 2020). Information can be package in different forms and shared through different channels such as books, journals, magazines, newspapers, emails, radio broadcast, television broadcast, instant messages, Tweets, Facebook updates, blog posts, Tumblr posts, WhatsApp chats, phone calls, etc. (Grades, 2022). Most times, information comes to individuals in an unfiltered format, thereby raising the need for information literacy to be able to evaluate and use such information. The proliferation of information in different formats and the sharing of information on different channels has brought about information overload otherwise known as infoxication, or infobesity, or data smog (Dias, 2014).

Information overload occurs when an individual is confronted with too much information that he/she cannot easily (if at all he/she can), process within a given period of time to solve a particular problem. For instance, when excessive information is shared on different podiums like Google, website and social media platforms, it induces stress in the lives of people and also make it more difficult for them to take correct decisions over issues, both at home, school, church, mosque and at workplaces. Effects of information overload cut across age brackets, race, color, social class, marital status, religion and all the like. Like any other person, information overload greatly affects student's decision making and make them feel unnecessarily overwhelmed and stressed out (Lucas, 2016). In the United Kingdom and most commonwealth countries, the name student refers to those attending secondary school or higher institutions such as university, college, polytechnic, school of nursing and midwifery, while those in primary or elementary schools are called pupils (WENR, 2019). Therefore, a student in this work shall refer to those enrolled in secondary schools and higher institutions of learning such as universities, polytechnics, colleges of education, school of nursing and midwifery, Christian Theological schools, Islamic schools and Research institutions. Students usually engage in serious

academic pursuit that demands access to current information resources. They search information from the library and also browse the internet for needed information in their learning and research.

Too much information can also make students confused and unsure of where to focus their attention, whether they are to do assignment, prepare a paper presentation or their final year research work. This by extension affects their academic performance. Nevertheless, information literacy skills and other self-disciplines can help mitigate the effects of information overload on individuals and particularly on student's academic performance. So, this work focused on effects of information overload on students as pertains their academic performance.

Student's Academic Performance

Academic performance is the knowledge students gained which is assessed or measured by using continuous assessment or examinations results by teachers/lecturers over a specific period of time (Narad & Abdullah, 2016 cited by Abaidoo, 2018). Yusuf, Onifade and Bello (2016) opined that academic performance is a measurable and observable behaviour of a student within a specific period; they added that student's academic performance consists of scores obtained by a student in an assessment such as class exercise, class test, assignment, mock examination, and end of semester examination. Student's academic performance is a key feature in education, it is considered to be the center around which the whole education system revolves. It is important therefore to give maximum attention to anything that will negatively affect student's academic performance.

Recent studies have revealed numerous factors affecting student's academic performance including age, gender, parents or guardians social and economic status, parents or guardians educational background, medium of instruction, learning facilities, residential area of student (Ali et al, 2013). Other studies have classified the factors affecting students' academic performance into environmental factors, personal factors, social factors, psychological factors and economic factors. It

can therefore be said that, students' academic performance is dependent on a combination of factors such as the teacher, the student, the school and residential environment, the psychological and parental factors amongst others. In this information era, information overload has become one of the major and serious factors affecting academic performance of students, yet, not many people are aware including the students.

Information Overload

WebFinance Inc. as quoted by BusinessDictionary (2020) defined information to mean data that is: (1) accurate and timely, (2) specific and organized for a purpose, (3) presented within a context that gives it meaning and relevance, and (4) can lead to an increase in understanding and decrease in uncertainty. Adding that, information is valuable because it can affect behavior, a decision, or an outcome. However, a piece of information is considered valueless if after receiving it things remain unchanged. Again, Stand4Network (2020) defined information as: (1) a message received and understood; (2) knowledge acquired through study or experience or instruction knowledge acquired through study or experience or instruction; (3) a collection of facts from which conclusions may be drawn. Information is popularly known as power. Furthermore, Porter (2008-2023) sees information as: (1) any fact or set of facts, knowledge, news, or advice, whether communicated by others or obtained by personal study and investigation; and (2) any datum that reduces uncertainty about the state of any part of the world, or knowledge derived from reading, observation, or instruction. Whereas Stand4Network (2020) quoting Wiktionary defined information to mean: (1) things that are or can be known about a given topic; (2) the act of informing or imparting knowledge, notification; (3) The systematic imparting of knowledge through education, training. So, it can be concluded that information is any accurate and timely data organized and presented within a context that gives

meaning and relevance, leading to increased understanding and decrease uncertainty. It is any fact or set of facts, knowledge, news, or advice, whether communicated by others or obtained by personal study and investigation. Adekoya (2018) defined information as facts and knowledge needed by students.

Information can be written (in form of textbook, newspaper, magazines, journal article, novels, poems, play, map, text messages, emails, etc) or unwritten (such as Radio broadcast, images, audio sound, videos, TV show, chats/posts, WhatsApp/Facebook status, etc). Information helps people to take informed decisions and to take advantage of opportunities for self-improvement, societal growth and national development at large. Students rely on information to be successful in their academic pursuit and life-long learning. However, as good and important as information is, it becomes destructive when it is in excess. An oversupply of information in any form causes information overload, otherwise called infoxication, or infobesity, or data smog (Merriam Webster,2022).

Generally, the term information overload is associated with the excessive quantity of daily information. It is the kind of stress you feel when you consume more information than you can “digest” (that is, consuming more information than it is needed to make a decision). Information overload is defined as a state in which the amount of available information is so overwhelming that a person is unable to effectively process and utilize it (Ukessays, 2018). It is a state in which one struggles with more information than he can process to make sensible decisions. According to Bawden (2001), the concept of information overload defines situations where an individual is presented with an amount of data which exceeds his or her cognitive capacity. Furthermore, information overload can be seen as the mere presence of more information than an individual could possibly assimilate, absorb and synthesize,

thereby engendering feelings in individuals that the task of finding the information is an onerous one (Payne, 1998).

Information overload occurs when individuals are aware of relevant information but do not have the time to locate and use that information (Ukessays, 2018). For instance: using Web tools like search engines to find information may result in data smog, that is, finding poorly constructed sites or sites of questionable authority. In the same vein, Oksana (2018), pointed that information overload is the state of feeling overwhelmed by the volume of information to the point at which one feels more confused than knowledgeable about a particular topic; Oksana, 2018 added that information overload can manifest itself as brain fog and difficulty in making decisions. Renjith (2017) also maintained that information overload is a situation where the presence of too much information prohibits a person to find out required information and it causes difficulty in decision making. The abundance of videos in YouTube, multiple emails in the inbox, the endless stream of interesting articles on Facebook, innumerable tweets per second in Twitter are some examples of overloaded information.

Ukessays (2018) explains that information overload was experienced long before the appearance of information technology and electronic gadgets. He explained that complaints about “too many books” echo across the centuries, from when books were papyrus rolls, parchment manuscripts, or hand printed and after printing innovations, books were produced and accumulated in unprecedented numbers, causing their drop in cost and giving readers access to more books than they could read. According to Bhasin (2019), the term information overload came into limelight when Alvin Toffler, an American writer and futurist mentioned it in his book titled: “Future Shock” in the year 1970. In agreement, Ukessays (2018) said that the phrase “information overload” was used by the futurologist Alvin Toffler in 1970, when he predicted that the rapidly increasing amounts of information being produced would eventually cause people problems. This means that people foresaw and predicted the

problem of information overload years ago before its final attack on humanity. However, the situation is worsened by the advent of modern technologies.

In this information era, with just one click/touch, one is easily exposed to almost any information from any corner of the world. For instance: by one click, millions of results are displayed for a word or phrase that had been keyed into search engines; by one click, a lot of news stories are displayed on websites; the endless stream of interesting articles and photos on Facebook; and those viral videos on YouTube (videos that can play for 24 hours are being uploaded every minute). The result of information overload is either delay in decision making or making of wrong decisions, which for students can lead to poor academic performance. Information overload is experienced in form of distracting and unmanageable information such as too many journal and newspaper articles, too many published textbooks (both print and electronic, email notifications, instant messages, WhatsApp chats, Tweets, Telegram chats, Facebook updates, news stories, blog posts, Tumblr posts, unsubscribed SMS, frequent calls, etc

On the other hand, Bradley (2000) defined information overload as degradation of information. He explains that degradation of information occurs when information is noise like, irrelevant, and interferes with desired signals and when it is redundant, banal, or does not tell enough of interest. The effects of information overload is that there is too much information available in both print and electronic form so that when individuals attempt to sort out the appropriate, relevant and current information from everything else they develop feelings of helplessness and students are the most affected category (Lossee, 1999).

Again, Lavenda (2017) outlined three dimensions of information overload as: Too much information – this occurs where there is too much information such that it is no longer possible to effectively use it; second is: not enough time - this kind of information overload entails not having

enough time to process the information at hand; and the third being: poor quality of information - this is when you have a hodge-podge of irrelevant and redundant information more than your brain can handle effectively. Lavenda states that in the case of poor quality of information, the needed information is available but there is not enough time to process it because the information is spread out across email, apps, web pages, documents and a host of other places, and because the information is not organized in a uniform manner, it is cognitively taxing to piece together the shards of information and figure out what is relevant.

Causes of Information Overload

There have been symptoms and complaints about information overload; however, it has soared high in our information age on the wings of increased technological advancement. The advancement in modern technology has become a primary driver of information overload, in that, modern technology has simplified the process of content creation and dissemination as well as widening the scope of audience that can be reached with just a click. Generally, Bhasin (2019), outlined some causes of information overload to include:

1. Modern Journalism: that is, sharing of news on the internet every single second of the day to reach more and more people in a short period in order for companies to get a competitive edge in the news reporting;
2. Different platforms to share information: For example, television, radio, RSS feeds, mobile phones, emails, social media, etc. which are responsible for causing information overload;
3. Lack of methodologies to evaluate the authenticity of the information: there are hundreds of platform to get information from, but there is no method or platform to validate the authenticity of the information;

4. The abundance of historical information: we are fortunate that we can access information which is hundreds of years old by just entering the keywords in the search engine or just by getting the book from the library, but this same thing has become a curse for us as the abundance of this information is stressing us and causing us a lot of problems;
5. Easiness to share the information: This problem has become prevalent in our present age with the introduction of social media and high-speed internet. Unlike in the past when only authorized and professional news reports were allowed to share information with the public, in the present time, with the high-quality phone cameras and the accessibility to high-speed internet, every third person on the street has become a news reporter. This did not only create information overload but also created an abundance of inaccurate and baseless information which are copied and shared over and over again in different forms without checking the validity of the information and the platforms (Bhasin, 2019).

According to Matthew, Adebawale, and Sarhan (2016), the main causes of information overload is internet, wireless communication technologies, TV and newspaper. Adding that information overload manifests itself in the piling up paperwork, large numbers of emails, frequent phone calls, and exposure to multiple sources of information. This may lead to poorer judgment, losing track of things and losing focus, they added. Whereas, Clay Shirky (2009) quoted by Asay (2009) positioned that information overload in the modern age is a consequence of a deeper problem which he calls "filter failure"; that is, a situation where humans continue to overshare information with each other as a result of rapid rise of apps and unlimited wireless access to internet.

Lavenda (2017) maintained that information overload can occur as a result of too much information, not having enough time to process information and poor quality of information, otherwise known as unorganized information. Eppler and Menjies (2002) have identified five causes of

information overload to include: existence of multiple sources of information, over-abundance of information, difficulty in managing information, irrelevance/unimportance of the received information and scarcity of time on the part of information users to analyze and understand information. They added that the advancement in ICT, especially search engine technologies has resulted in overabundance of information from myriad sources in response to online searches, which causes time constraints for the information users to scan all information.

These means that, information overload does not occur only in the instance of too much information available but unorganized information, lack of enough time on the part of the information user amongst others are all capable of causing information overload. It is also clear that students are likely to suffer most from information overload because they depend solely on information for classwork, for research work and creativity. It can be stressful to scan-through different library shelves for relevant information in textbooks, journal articles and encyclopedias for assignment or seminar. Millions of search result makes surfing the internet is no better either. This challenges caused by information overload has tremendous effects on student's academic performance.

Effects of Information Overload on Students Academic Performance

Consequences of information overload are diverse and applied to almost all categories of men. It affects students, workers, businessmen/women, artisans, farmers, children, older people, health workers, patience, churches, companies, government parastatals, NGOs, etc. It has become a problem in everyday life, in that, the human brain is designed to process and retain information at a certain degree and this does not increase or expands in accordance with changing technological advancement (Lucas, 2016). Some findings have revealed that information overload can cause stress and anxiety, confusion and delay in decision making, waste of time, reduced productivity, monetary losses amongst others. According to Renjith (2017), huge amount of information causes our brain to function

stressfully. This affects thinking pattern and causes confusion to decision making system. It also causes delay in decision making, it stops people from making good decisions in addition to interruption from choosing a right option. Renjith itemized the consequences of information overload to include among others:

1. Untidiness: Information overload causes confusion in absorbing facts, which in turn causes to reduce peace of mind;
2. Kills time
3. Increases stress and anxiety: Information overload leads to spend more time to catch the necessary information; this reduces available time and causes stress and anxiety;
4. Destroys self confidence
5. It challenges cognitive capacity
6. It causes analysis paralysis: Analysis paralysis or paralysis by analysis is a state of never taking a decision or action by over thinking (analyzing), as a result paralyzing the outcome;
7. It reduces productivity: Overloaded information causes loss of precious time leading to lost productive outcome; this leads to monetary loses for businesses and poor academic performance on the side of students.
8. It leads to Failure to stay focus
9. It causes or disrupts social development. This is because people are the building blocks of the society, thus, those personal consequences have an extended effect on societal growth and national development.

In agreement, Lucas (2016) revealed that having access to information impacts our ability to make decisions and remain productive, but with a constant barrage of emails, communication, social media and more, it becomes difficult to retain information and it also slows down decision making

process. Along with weakened decision making, information overload can also lead employees to feel unnecessarily overwhelmed and stressed out. Too much information, particularly when it's unnecessary or irrelevant, can also confuse employees on their job role and make them unsure of where to focus their attention. This make affected people to become frustrated and to give up more easily than their non-overloaded counterparts, they need more time to make decisions, and they frequently make mistakes, often because of confusion.

Students suffers from the same consequences (if not more) of information overload mentioned above. First, information overload causes distraction and reduced attention span. Where students are confronted with so much information on a given topic, their attention is divided on which to give attention to. This condition leads to delayed and wrong decision making, the resultant effect is wrong answers to assignment question, late submission of classwork, poor performance in examination halls, etc. Just as pointed out by Renjith (2017), presenting huge amount of information in different formats before students causes their brain to function stressfully. This affects their thinking pattern and causes confusion to decision making system. It also causes delay in deciding which textbook, journal article or google result to use in research or in answering assignment or seminar questions. Students are also stops from making good decisions in addition to interruption from choosing a right option.

Bombarding students with excess information tend to reduce their peace of mind, it wastes their lecture and study time, it increases stress and anxiety. For example: presenting ten examination questions to answer three questions only. Students may likely waste time on deciding which of the questions to answer, especially if they have idea on all ten questions. This in turn destroys their self-confidence and cognitive capacity, thereby affecting their level of comprehension and thus poor academic performance. Bhasin (2019) agrees that it is a common tendency for students to search for

everything online before making a decision on which content to go with. But the more they read and watch videos, the more they find themselves lagging as there is infinite information on a single topic.

Another subtle weapon pulling down student's academic performance is free information on the internet and social media. The internet generally and social media particularly has brought the issue of FOMO factor – that is: “the Fear of Missing Out”. FOMO convinced students to continue browsing the internet, accessing chats on Facebook, WhatsApp, Twitter, Telegram, watching of videos on YouTube, Instagram, checking of mail box and even receiving of calls inside the library, lecture halls/classrooms, and even exam hall. This continuous surfing of the internet and interaction on social media networks has caused more harm on student's academic performance like no other factor. Their attention is divided and their time is shared between attending lectures, reading, doing homework, watching of films, chatting with friends, responding to mails and so on. No good conclusion is reached academically, even though they invest many precious hours of searching the web.

Information overload can also expose students to serious stress-related diseases. Once their health is affected, it affects their academic performance naturally. The following problems are also associated with information overload: Damaged health, Bad judgment and Information anxiety. Studies have linked both decreased vision and cardiovascular stress to information overload. Besides, overconfidence in information sources or the opposite has resulted in bad judgment or “paralysis of analysis”, not being able to discern truth from fact. Moreover, information anxiety is produced by the ever widening gap between what one understands and what one thinks one should understand. It happens when information does not tell the students what they want or need to know.

Overcoming Effects of Information Overload

Causes of information overload are multiple and complex, hence the difficulty in providing a general agreed strategy for overcoming it. This is because what is seen as information overload varies

from person to person and from generation to generation; for instance, what constitute information overload to a father of 80years old may not be considered as information overload by his son/daughter of 20years old, simply because of his generational and difference of interest. Nonetheless, various solutions have been proposed to mitigate information overload by both students and every individual suffering from information overload. They include: filtering and withdrawal strategy – this strategy attempts to eliminate useless information from the various information sources (Matthew, Adebowale & Sarhan, 2016). Mathew et al also believed that individuals and the society can regain control over the flow of information by organizing information in a way that filters useless information and optimizes human brain’s capacity. At this point, it’s important to advice students to make use of libraries where librarians (an information expert) have organized information using standard tools for ease of access and use. If students must browse the internet, librarians are there to guide them to the best databases that have filtered information resources capable of meeting student’s information need. By extension, librarians as information providers must present only relevant information and make it simple and yet, balanced.

More so, students and other information users must learn to ignore some information from questionable sources. They must develop skills to skim through information to grab only key points. This involved developing information literacy skills to enable them recognize when information is needed, knows what information is needed to address a given problem or issue and the ability to locate, evaluate and use effectively the needed information (Akune, 2018).

Recommendation

The study recommends that;

- i. Students should use filtering and withdrawal strategy to access the needed information, this strategy attempts to eliminate useless information from the various information sources.
- ii. The Government should also implement a policy to check mate and monitor unnecessary and irrelevant information being posted daily on Google, facebook, social media e.t.c.
- iii. Students should make use of libraries where librarians have organized information using standard tools for ease of access and use. If students must browse the internet, librarians are there to guide them to the best databases that have filtered information resources capable of meeting their information need.
- iv. Empirical study should be conducted in different universities and other high institutions to find out the extent of effects of information overload on students and their academics pursuit.

Conclusion

The current study contributed to literature by addressing the Information Overload and its effects on Academic Performance of Students. Too much information makes students to be confused and unsure of where to focus their attention, whether they are to do assignment, prepare a paper presentation or their final year research work, this by extension affects their academic performance. Advancement in ICT, especially search engine technologies has resulted in overabundance of information, which causes time constraints for the information users to scan all information. Information overload can cause stress and anxiety, confusion, reduces productivity, leads to failure to stay focus, and can damaged health. However, this can be overcome by using filtering and withdrawal strategy, making use of libraries where librarians are there to guide them to the best databases that have filtered information resources capable of meeting the student's information need. Moreover, the students need to develop skills (information literacy skills) to skim through information to grab only the key points.

References

- Adekoya, O.M (2018). Information needs and information accessibility as determinants of Information use among students with disabilities in federal college of education (special) Oyo, Nigeria (*Unpublished Master's thesis*). Federal University of Technology Minna, Niger state.
- Akune, Chivir (2018). Information literacy skills requirement of academic library staff for national development. *Benue Journal of Library, Management and Information Science*; 8(1): 31-45.
- Ali, S., Zubair, H., Hamid, K., and Awais, A. (2013). Factors contributing to the students academic performance: A case study of Islamia University Sub-campus. *American Journal of Educational Research*; 1(8):283-289. DOI: 10.12691/education-1-8-3.
- Anthony Abaidoo (2018), Factors contributing to academic performance of students in a Junior High School, Munich, GRIN Verlag. Accessed at: <https://www.grin.com/document/450284>
- Asay, M. (13 January 2009). Shirky: Problem is filter failure, not info overload. Accessed at: <https://www.cnet.com/culture/shirky-problem-is-filter-failure-not-info-overload/>
- Bawden, David (2001). Information overload. *Library and Information Briefings* 92(1): 1–15.
- Bhasin, Hitesh (Sept. 14, 2019). Information Overload: Definition, causes, and how to avoid it. Accessed at: <https://www.marketing91.com/information-overload/>
- Bradley, G. (2000). The information and communication society: How people will live and work in the new millennium. *Ergonomics*; 43(6)
- Buckland M. (2017). Information and Society. *Massachusetts*: MIT Press; 1–2
- Chamorro-Premuzic T. (13 May 2014). How the web distorts reality and impairs our judgment skills. *The Guardian*. Retrieved 15 June 2016.
- Dias, Patrícia (2014). From 'infoxication' to 'infosaturation': a theoretical overview of the cognitive and social effects of digital immersion. *Ambitos*. 24. hdl:10400.14/14939.
- Eppler, M., and Menjjs, J. (2002). The concept of information overload: a review of literature from organization science, marketing, accounting, MIS, and related disciplines. MCM Research Paper, HSG/MCM/01.12
- Grades, Fixer (2022). The impact of the internet on society's everyday life. Accessed at: <https://gradesfixer.com/free-essay-examples/the-impact-of-the-internet-on-societys-everyday-life/>
- Gross B. M. (1964). The Managing Organizations. *The Administrative Struggle*; 2: 856ff.

- IvyPanda (Sept. 19th, 2022). How to Overcome Information Overload: Complete Guide 101. Accessed at: <https://ivypanda.com/blog/information-overload-101/>
- Krejcie R.V. and Morgan D.W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*; 30: 607-610. Accessed at: *The Research Advisors*: <http://research-advisors.com>
- Lavenda, David (July 5, 2017). Information overload takes a toll. Accessed at: <https://www.cmswire.com/digital-workplace/information-overload-comes-in-3-flavors-heres-how-to-combat-it/>
- Lossee, R. (1999) Minimizing information overload: The ranking of electronic messages. *Journal of Information Science*; 15:179-189
- Lucas, Oliver. (Feb. 12, 2016). Information overload: What it is, its consequences and how to avoid it. Accessed at: <https://www.eleapsoftware.com/information-overload-what-it-is-its-consequences-and-how-to-avoid-it/>
- Matthew, N.O.S., Adebowale, E.S., and Sarhan, M.M. (2016). Information overload: causes and cures. *Journal of Multidisciplinary Engineering Science and Technology (JMEST)*; 3(4):4540 - 4542.
- Merriam-Webster.com (2020). Dictionary: Overload. Accessed at: <https://www.merriamwebster.com/dictionary/overload>.
- Oksana, Tunikova. (2018). Are we consuming too much information? Accessed at: <https://medium.com/@tunikova/are-we-consuming-too-much-information-b68f62500089>
- Porter, N.D.D. (2008-2023). *GNU Collaborative international dictionary of English (GCIDE)*. Published by C. & G. Merriam Co. Springfield, Mass. Accessed at: <https://gcide.gnu.org.ua/>
- Renjith R. (2017). The effect of information overload in digital media news content. *Communication and Media Studies*; 6(1):73-85.
- Rogers P. et.al (2013). Infobesity: The Enemy of Good Decisions
- Stand4Network (2020). Definition of information. Accessed at; <https://www.definition.net/definition/information>.
- Ukessays UK. (2018). Understanding The issues of information overload. Retrieved from <https://www.ukessays.com/essays/information-technology/understanding-the-issues-of-information-overload-information-technology-essay.php?vref=1>
- Wurman, R. S. (Winter 2012). Information Anxiety: Towards Understanding. *Scenario Journal*.

Yang C.C., Chen H. and Honga K. (2003). Visualization of large category map for internet browsing. *Decision Support Systems*; 35(1): 89–102. DOI:10.1016/S0167-9236(02)00101-X.