Too Much Information – Too Much Apprehension

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Abstract

The information age along with the exponential increase in information technology has brought an unexpected amount of information. The endeavor to sort and extract a meaning from the massive amount of data has become a challenging task to many educators and managers.

This research is an attempt to collect the most common suggestions to reduce the stress related to informational overload. Informational overload can be a major source of stress and often confusion. Some facts concerning informational overload are discussed. Further, it invites the reader to explore some of the advance features found in major search engines such as Google.com, Yahoo.com and Mamma.com. Understanding Boolean search and utilizing advance searches can alleviate the problem associated with informational glut. Finally, by being aware of the problems caused by informational excess, a learner is headed to a more manageable and a more productive learning environment.

Introduction and Problem Statement

Information overload is intuitively noticeable in our daily lives. Walking any street, we can hardly measure the amount of information we are exposed to. Information hits us from all directions, newspapers, television, voice mail, cellular phones, email, electronic memos, and the World Wide Web, to name a few. This increase in information, combined with the factor of change in many aspects of our lives, can lead to an unhealthy effect. Heylighen (1999) noted, "People exposed to the rapid changes of modern life may develop a state of helplessness and inadequacy."

The amount of information doubles every few years and the process of managing such incredible amounts of information is not adequate to prevent the negative impacts caused by information overload. While the amount of information increases at an exponential rate, we still have the same number of hours every day. Krill (2000) stated that information overload is a "condition [that] results from having a rapid rate of growth in the amount of information available, while days remain 24 hours long and our brains remain in roughly the same state of development as they were when cavemen communicated by scrawling messages in stone."

The workplace has become a "complex knowledge environment" caused by flow of information delivered by misunderstood technological advances (Kirsh, 2001). The author continues by stating that the workplace is filled with multitasking, disturbance, and an unmanageable amount of information. Kirsh adds, "The effects of this cognitive overload at a social level is tension with colleagues, loss of job satisfaction, and strained personal relationships."

This research studies the background of the information overload problem. The reviewed literatures show evidence of the negative impacts of dealing with such huge amount of information. It examines some of the symptoms associated with information overload and produces a list of suggestions to deal with it.

Problem Background

Change has struck our daily lives in unmanageable ways. Managing change, if it can be managed, is a tedious task. The only way we can cope with the impact of change on our societal, economical, educational, environmental, and technological lives is to deal with the effects not the cause. The change will take place regardless.

Advances in technology have made data and information widely available. Adams (2003) referred to McGovern who stated that fast processors and cheap storage media resulted in an enormous amount of data and information. Further, by the urge to create more and establish more, the result was a "glut situation." To illustrate his point, Adams also referred to Shenk who named the case of information overabundance as "information obesity."

What makes dealing with information overload a difficult issue is the nature of the problem itself. The subjectivity of the matter and lack of finding concrete ways of dealing with information overload have caused a lack of understanding and resulted in informational anxiety. Heylighen addressed this issue by stating that "change, complexity and information overload are abstract phenomena which are difficult to grasp. Therefore, few people have as yet understood that they contribute to the anxiety they feel." What makes the matter even more challenging is what Wurman (2001) stated. Wurman showed that every new technology is introduced with the hope of replacing an old one, but what happened is the "new" technology will be added to the existing list of others and the "old" and the competing one will "adapt."

Review of Literature

This section defines information overload, shows evidence of the negative impact of informational overload, discusses some of the symptoms associated with it, and states some of the statistics available regarding the amount of data and information accumulated each year.

Defining information overload

Nelson (2001) defines information overload as the incapability to obtain a form of knowledge from a massive amount of information for one reason or another. By referring to Wurman, Welson elucidates his point by noting that information overload can take place for one of these reasons:
1. Not understanding the existing information
2. Feeling inundated by the need to absorb huge amounts of information
3. Not knowing if the needed information exists or not
4. Not knowing where to obtain the information
5. Knowing where the information is but have no access privilege.

Evidence of information overload

Kirsh (2001) referred to a study that investigated the impact of information overload in several countries. The study surveyed 1,313 lower, middle, and top managers in the U.S., U.K, Australia, Hong Kong, and Singapore. The study showed the following results:

1. Two thirds of the managers complained about existing tension between them and other colleagues, and their job satisfaction was decreased as a result of information overload.
2. One third of the managers reported health problems related to stress and this figure jumped to 43% among top managers.
3. Two thirds (62%) stated that their personal relationships suffered as a result of information overload.
4. Of all the managers, 43% felt that important decisions were delayed and their ability to make decisions was affected as a result of dealing with excessive amounts of information.
5. Of all the managers, 44% felt that cost of "collating information exceeded its value."

Symptoms of information overload

There are some symptoms for information overload that we should watch for when they take place. According to an article titled "Avoiding information overload," the author warned us by stating that information should be used to empower the employees, and should not be a source of stress. When employees suffer from information overload, they have the following symptoms:

1. "Increasing the perceived workload"
2. Feeling incapable of dealing with information they do not understand fully
3. Confusion is created as a result of "blurring the edges of role responsibility"

Data, data and more data

Mullen (2004) stated if we were already overwhelmed by how much information available, we would even be more besieged. Mullen added that it would take us only two years to double the information we collected throughout our history.

In the executive summary for a study done at Berkeley University to measure how much information we accumulate every year, some of the findings are:

1. "Print, film, magnetic, and optical storage media produced about 5 exabytes of new information in 2002." Out of this much information, 92% was stored in magnetic media such as hard disks. To visualize how much information there is in an exabyte, we need to raise 10 to the power of 18. To explain further the size of five exabytes, the summary stated that it would take us 10 terabytes (1012) to store the 19 million books and the additional printed materials at the Library of Congress. Doing the math, five exabytes will require a half million libraries as big as the Library of Congress to store this much information as print materials.
2. The summary stated that "the United States produces about 40% of the world's new stored information, including 33% of the world's new printed information, 30% of the world's new film titles, 40% of the world's information stored on optical media, and about 50% of the information stored on magnetic media."

3. The summary stated that between 1999 and 2002, there was an increase of 30% in the amount of information yearly. The summary discussed in detail every type of media. It stated how information has been stored in each type. Any reader who is interested in finding out more about storage and how much is available in each medium would find the summary extremely interesting.

Purpose of the Study

The purpose of the study is to assist the reader in understanding information overload. This paper defines information overload, states some of the symptoms associated with information overload, and attempts to show the evidence for such trend. This study should help administrators or managers to realize the negative impact of information overload and invite them to deal with the problem in a productive and humane approach. The steps to deal with information overload in this paper should provide the reader with hints that can alleviate the harmful impacts resulting from dealing with the overwhelming and uncontrollable amount of information.

Dealing with Information Overload

This section discusses the difference among data, information and knowledge, shows the importance of thinking versus relying completely on technology, invites the readers to get only information they need and no more, looks at technology as a tool to deliver the solution instead of the solution, shows the value of library, invites the readers to learn Boolean operators and finally examines two search engines.

Know the difference between data, information and knowledge

Data are raw facts without any meaning until they are processed into a meaningful outcome: information. Numbers, figures and images can be classified as data. Information on the other hand has meaning. When we apply a set of rules, mostly found in a program such as database, we acquire information. Therefore, information is processed data. Knowledge is processed information. When we apply an information processor to information, the end result is knowledge. The information processor is affected by many factors. These can include qualitative data such as insight, beliefs, experience, judgment, and perception, to name a few (Hijazi and Kelly, 2003). From a technological point of view, data mining is defined as the process of sifting through massive amounts of information to extract awareness or add meaning (Williams and Sawyer, 2003).

Users, when they have the choice, should always seek knowledge. If meaning is there, an open gate to understanding will exist. Bostock (2002) takes us a step higher by focusing on the nature of knowledge by asking interesting questions. Bostock asks, "How much do we really know about knowledge?" What's the meaning of meaning?" and "What does the word 'mean' mean?" Further, in dealing with methodologies such as knowledge management or trying to understand how intelligent agents work, essential questions rise and invite us to examine how we take things for granted.

Think and think frequently

Those silent moments with yourself trying to visualize a solution or attempting to formulate a procedure are necessary to establish your uniqueness in the mad race of dealing with information. The same practice can lead you challenge and sharpen your mental ability to deal with the negative impact of information overload. De Bono stated that:

Thinking is now becoming more important than information - because we are no longer short of information. Thinking is needed to create value from information. Information has a high value if you specifically need that information to fill a gap. If not, then information has a general value, but this is actually quite low. More and more information may make you a better informed and more interesting person to talk to, but that is all.

Get only what you need

Once we obtain what is needed to solve our immediate problem, we need to stop searching for additional information. Similar to the excessive use of fertilizers that leads to polluting rivers and seas and diets too rich in calories that cause health problems, the overabundance of substandard information can result in an unconstructive outcome (HeyLighen, 1999). The author discussed the concept of "overshooting" where people continue to seek more information even though their needs are met. Further, in the past, information was considered a rare issue and the attempt to have more of it was considered a good activity. That is why some people still feel the need to intellectually overindulge themselves by finding additional information.

Don't treat your computer as a "technological messiah"

Postman (1990) eloquently used the expression "technological messiah" in his speech at a meeting of the German Informatics Society (Gesellschaft fuer Informatik). Postman knew that computer technology is an integrated part of the modern machinery. As a result, he did not warn us about using the computer, however, he discussed the mistake of relying on the computer to solve problems that only we can deal with. Postman asked about the nature of information we need to improve our relationship with our spouses or what information we need to alleviate hunger in Ethiopia. Postman believed none of the problems that cause us difficulties have anything to do with the type of information we obtain from a computer and "the computer and its information cannot answer any of the fundamental questions we need to address to make our lives more meaningful and humane."

Visit your local library for assistance

You can save many hours doing research by using the library server (Winkle, 1998). No matter how technologically advanced we are, technology will never replace the need for human contact. Most, if not all, librarians are positive people and find an incredible amount of satisfaction helping people. When it comes to finding a book, an article, or even a website, your library staff can be of great help.

Organize your life without full reliance on technology

We are all guilty of a lack of organization in our lives. Initially, the concept of organization itself has nothing to do with technology. If you cannot know which paper is important to keep and which one to discard, then having a fast computer will not provide you with the answer. It is incorrectly assumed that your life will be organized by the use of technology (McGovern, 2002). Further the writer stated, "One of the biggest mistakes you can make is to assume that technology will organize your life. If you don't learn the skills of organization, then technology will overload your life."

Invest some time to learn the Boolean operators

Most of the search engines have advanced searches where the features found in these sections are based on Boolean operators: AND, OR, and NOT. Winkle (1998) indicated that it is a good idea to learn Boolean terms since this will reduce the number of unrelated returned websites. The three operators work as follows:
1) AND. AND is a limiting Boolean operator. With AND, both keywords (it could be a phrase) must be presented before a hit is found. For example, if the search is asking for information overload and technology, then both keywords must exist in the web site. Nothing will be returned if only one of the keywords exist.
2) OR. OR is an inclusive Boolean operator. With OR, both or one of the keywords must exist before a web site is returned. If the website includes Information overload and technology, the search engine will return the website. Further, if only information overload exists without technology, the search engine will return a hit. Similarly, if only technology exists without information overload, the search engine will still return a website. The danger with using OR is that the number of the returned sites can be overwhelming.
3) NOT. NOT is an exclusive Boolean operator. With NOT, one of the keywords can be excluded completely. For example, if a user excludes technology from the search, the search engine will return only websites that have no mention of technology but have the phrase information overload.

Know your search engine

Knowing how to use a search engine effectively can alleviate the problem of information overload. The use of Boolean (logical) operators can facilitate a search. Further, knowing how to use AND, OR, and NOT can limit, include, or exclude the number of the returned websites. This subsection will discuss three search engines, Google.com, Yahoo.com and Mamma.com.

Google.com. Let's take a look at Google.com. When I asked a group of my students, "How many of you know that you can search a specific domain in the WWW?" Very few students knew that Google.com has that feature, found in the advanced option. What does searching by domain mean, anyway? When users needs to search only educational websites, they need to select the domain ".edu."

Just like most of the powerful search engines, Google.com utilizes Boolean search for limiting, including, and excluding keywords from a search. If we examine its advanced section, we find the following options:

1) "With all of the words." Listing key words using this option will return web sites with the selected words, but no guarantee that these words will be within a reasonable proximity to each other. In that sense, this feature corresponds to the use of the logical operation "and" where all keywords are found, but there is no guarantee that the users will find exactly what they need.

2) "With the exact phrase." This option is more precise since the returned hits should include the exact wording of the search. This will guarantee that the keywords are adjacent in the text.

3) "With at least one of the words." This option applies to the logical operator "or." The returned website will include at least one of the keywords or all of them. This option of searching is very inclusive and it will return unrelated websites. it should be used when the research includes keywords pertaining to a rare subject.

4) "Without the words." This option applies the logical operator "not." It works on excluding all the keywords typed within this option.

A user can use all the above options combined, however, a search strategy is required before typing the keywords. To effectively use a search strategy is to consider the use of additional powerful parameters for further refining the search. These include:

1)   Language. A user can limit their findings to a specific.
2)   File format. A user can choose from the following file formats:
    a)   MS Word
    b)   Ms Excel
    c)   MS PowerPoint
    d)   Postscript
    e)   Adobe .pfd
    f)   Rich Text Format

A user can choose documents written by others and saved in MS Word format. PowerPoint format is helpful to retrieve a previously written presentation about a specific topic. The additional option is that a user can exclude a specific format and return all the websites with the other format. For instance, if users want the contents of a website with all the formats except MS Excel, they can choose the option "Don't" instead of "Only" to exclude an MS Excel format from being returned.

3)   Date. Users can specify a certain period of time where the returned web pages have been updated last month, the past three months, a year ago, or anytime. This is a helpful option if users want to obtain data within a certain time frame.

4)   Domain. This is very powerful feature where users can search by domain only. If users want to find reliable materials, users can access websites from educational sites by choosing ".edu." Similarly, users can choose ".com" for commercial sites, ".gov" for governmental locations, ".org" for non-profit organizations, and any other domain.

5)   Returning keywords when they occur in one of the following places:
    a)   "Anywhere in the page"
    b)   "In the title of the page"

c)   "In the URL [address] of the page"
d)   "In links to the page"
e)   "In the text of the page"

This feature definitely refines a search strategy even further. For example, users will know for sure if the returned page has something to do with search if the keywords are part of the title of the page.

6)   Safe Search. This feature is useful if users want to prevent all the adult websites from being returned. Users can apply this feature to the image search too.

Yahoo.com. This search engine is one of the biggest search engine around. Similar to Google.com it has advanced features. Yahoo implements the use of Boolean search and it gives the options to users to choose the file formats. In the option "Update," Yahoo.com gives users the options of searching for documents that have been updated in the last three months, six months, a year ago, or anytime. Yahoo.com has SafeSearch Filter similar to Google.com. Also users can turn on additional features found in the "preferences." Similar to Google.com, Yahoo.com provides the user with the options of choosing a country or a specific language.

Mamma.com. This search engine is a small but yet a very powerful one. Mamma.com is a comprehensive search engine. This is also referred to as a "meta-search." Clickquick.com notes that Mamma.com is a meta-search engine "that pools results from many of the other leading search engines into one ranking of sites. The main advantage of this type of system is that it creates a much more thorough search than any one engine can provide on its own."

Mamma.com supports advanced search features by the use of quotations for exact text, minus sign for exclusion and plus sign for inclusion. It allows one to select by a specific search engine. Two of the engines are Google.com and MSN.com. Further, Mamma.com allows users to set their preference by reducing adult contents, highlighting search terms, opening the returned results in new windows, and the number of displayed results per page. Of course, just like Google.com, there are features available with additional advanced options. In a final note, Mamma.com is a neat and powerful meta-search engine that meets most people's need for informational retrieval.

The Importance of the Study

This study attempts to show the impact of information overload on us as educators, administrators, managers, and knowledge workers in general. The most notable contribution of this study is its suggestive steps in dealing with such phenomena. Also, this study provides some steps to help deal with information overload. Everyone has their unique situation that calls for local examination. The main benefit of the study is first to acknowledge the subjectivity of information overload. The second benefit is to see that even technology has been extremely helpful in automating our lives by making our jobs easier and faster. It also can produce a negative result in our lives by allowing us to collect unfiltered and an incredible amount of information. Finally, this study shows that unless we organize our environment, data, and the way we disseminate information, technology will be of little help.

Conclusion

This study found that information overload is a lasting phenomenon and a serious one that we need to manage. After defining and evidencing information overload in our daily practices, this research explored the negative impacts and the symptoms associated with it. The statistics shown in this study show the alarming rate of information explosion in our daily lives.

Information technology has changed our lives, practices, and the way we communicate in many positive ways. However, it also allows us to produce a gigantic amount of information that usually leads to confusion, interruptions and stress.

Finally, information overload is a subjective issue and it is hard to find a solution that deals with it as a process. Therefore, this study comes with a list of suggestions to deal this significant issue. Most of the suggestions call for the human component to be the center of any technological environment. The need to ease the overwhelming and negative feeling created by information overload should mostly be looked at with our human rules, not the machine's. The machine produces informative reports, quicker computation, and faster reports, but it cannot supply the type of information, within our local and imperfect parameters, that we need to use to enjoy a memorable afternoon with our children.

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