

INFORMATION ETHICS IN THE SOCIAL NETWORKS ERA

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Abstract

Social networking is commonly defined as the technological grouping of individuals and organizations into an open community. Social networking platforms such as Facebook, You Tube, LinkedIn, Twitter and many others support new kinds of online media and provide their users with countless opportunities to share thoughts, ideas, photos and any other aspect regarding their lives. Due to recent developments in mobile technologies, in most cases, social networking capabilities are available through mobile devices as well. Using social networks, people can find information, inspiration, interesting communities and collaborate easier and faster than ever before. However, the social collaboration model of "friends with everyone and share everything" might have some ethical drawbacks, especially with regards to privacy and intellectual property rights. This paper examines a social networking site dedicated to the exchange of academic papers. The study analyzes students' usage trends over a period of five years with a special emphasis on the total number of papers and the specific learning disciplines that were mostly affected. During the past five years, the number of papers on site increased by a factor of 11, which represent the new and emerging ethical challenges associated with the social networks revolution. The next step in social networking is the Social Circles which will support more complex social relationships and focus on dynamic creation of specific groups with similar interests. Unfortunately, Social Circles in which content will be shared selectively with only the relevant friends, will not improve the ethical issues, but will make it significantly worse.

1. Introduction

The rapid advancement in information technologies during the last three decades significantly influenced many aspects of society. Changes in communication's economics enable new fast, easy and cheap mass dissemination of information. This efficient dissemination triggers new and innovative solutions to current and future potential challenges. Currently, organizations of all kinds and sizes depend on information technology in order to achieve their goals. As stated by one of the leading marketing and competitive strategy experts [Porter, 1979], for successfully competing in the marketplace, an organization needs cost leadership, differentiation and focus. In the modern society, none of these strategies can be achieved without information technology. The Internet is a well known example of a relatively new technology that enabled the development of new business models for cost reduction. All e-commerce based solutions are utilizing the internet platform for lowering marketing expenses and distribution costs. The many enterprise systems based solutions, such as ERP (Enterprise Resource Planning), CRM (Customer Relationship Management), SCM (Supply Chain Management) to name just a few, are additional examples of

information technology used for decision support and cost reduction. In the modern economy, differentiation and focus provide a significant competitive edge. There are many companies that offer various computers, laptops, handheld devices, etc. However, the most known example for successful differentiation and focus is Apple with its unique and novel design, concentrating not only on usage, but providing a special user experience. Information technology however is not limited only to the commercial organizations and it shaped our social lives as well. In addition to enhancing innovation and increasing productivity, in the last decade information technology had tremendous impact by connecting people and communities, and providing the means to improve standard of living. Social networking for example contributes to societal modernization and holds the potential to bridge between geographically and ideologically dispersed societies. A very well-known and successful example is Facebook, the popular online service for social networking. In approximately seven years since its launch Facebook has over 800 million users [Facebook, 2011]. However, although currently Facebook is the largest social network, there are many other multi-million networks like: Tencent QQ with over 670 million users [Bloomberg, 2011], Qzone with over 480 millions [RIA Novosti, 2011], NetEase with over 360 million [China Tech News, 2011] to name just a few. It is estimated that over 3 Billion people worldwide are engaged in some social activity using one or more of the available networks. As such, social networks have become a mainstream activity for internet users across the globe. This "social revolution" is affecting our real lives and it seems that as a society we share almost everything, starting with our user experiences related to products and services and up to even intimate feelings. It looks as if the sense of shame, originated with Adam and Eve (according to the bible), does not exist anymore, since sharing became the new norm.

Based on these users' trends that were fueled by the "social revolution" several social network applications have augmented their offerings by adding a new usage layer. This layer consists of an open infrastructure that enables interested individual engineers and organizations to develop additional services to be integrated in the network and be available to all its users. Furthermore, for enhancing the social experience, Facebook, for example developed several Software Development Kits (SDKs) that provide a two-way communication between any website and the Facebook platform. Users and organizations are using this platform in new ways, some that were not originally anticipated by its creators. The wealth of available applications and uses was driven mainly by user needs and ease of implementation. Most social networks provide diverse means for content creation including links, stories, blog posts, photo albums and many others. The new technologies, particularly ICT (Information and Communication Technologies), for which social networks are a concrete example are having an enormous social and economic impact and are the force behind the transition to a post-industrial information society [Masuda, 1980]. The new information society, or the social era in which knowledge plays a significant role, raises new ethical issues, ranging from access and intellectual property rights to individual dignity, privacy, and security [Petrovic-Lazarevic and Sohal, 2004]. A simple example for such ethical problems is the mash-ups phenomena. Mash-ups are the combination of two or more pieces of content for creating something new. This integration became possible due to the openness of the social networks platforms. A very popular type of mash-up can be found on YouTube with thousands of cannibalized imitations to popular videos or music and even original copyrighted materials which were uploaded to the site while crushing all related IPR.

2. The History of Social Networking

Social networks that provide the most widely used connectivity infrastructure create an easy, flexible and simple accessible virtual world in which every friend is just a click of a button away. However in spite the currently wide prevalence, the social networking era was developed during time [Boyd and Ellison, 2007] and is based on previously developed technological infrastructure. In 1971 the ARPAnet (Advanced Research Projects Agency Network) project started to form a network of computers, which later triggered the development of the Internet [Lukasik, 2010]. The project was funded by the U.S. Department of Defense and back in 1971 it looked for possible ways to extend a network of computers and by using packet switching to provide a platform for resource sharing. Ray Tomlinson, one of the developers was looking for ways to send messages between computers on the network. He enhanced an existing SENDMSG program that was used to send messages between users on the same computer by adding the networked capabilities. This activity is considered the first email message [Tomlinson, 2007]. Sending text messages (emails) between networked users was the first step in the Internet revolution. At the same time, in parallel to Tomlinson's achievements the Internet structure and supporting protocols were defined and developed. The main idea was that the Internet should support multiple independent and heterogeneous networks integrated together. This open architecture allowed the design and development of individual networks, each one with its interfaces and unique capabilities. This concept was translated into a set of ground rules that later were developed into the currently known TCP/IP (Transmission Control Protocol/Internet Protocol). Only after a reliable networked infrastructure was developed, additional applications started to emerge. However, in 1978 during the development of the Internet protocols and due to users demand, another technology was developed, the BBS (Bulletin Board System). These were privately owned and isolated systems that provided some means of information sharing. The only way users could communicate with these systems was by dialing in. BBS were in use until they were replaced by similar Internet based systems called Usenet. Usenet is a distributed system without a central server, which allows users to post and read messages, sometimes referred to as news. Usenet provided a mechanism for organizing the messages into hierarchical categories that maintained the posting order. All messages relating to a specific topic were called a thread or a newsgroup. Technologically, Usenet represents an important development in the social revolution, since, like email systems it used a store and forward mechanism. The message is stored on the user's local server and then communicated to one or more connected server and so on, until it reaches its final destinations. The popularity of the various newsgroups and the simplicity of adding messages provided the seeds for unethical usage in the form of spam messages. These were bulk messages, unrelated to the newsgroup, that were aimed at promoting some hidden agenda. Once the spam usage was introduced, it leaked back into the email systems that provided an excellent mechanism for spammers. The global nature of the inter-connected world makes it extremely difficult to legally handle the spammers, since in many cases the origin is in other countries. The spam problem is well known and since it could not be addressed by laws, it was partially solved by the development of technological tools or anti-spam filters that automatically detect and delete such messages.

The Internet provided a wealth of business opportunities for many innovative founders. One of the interesting ideas relating to the social revolutions came through a web hosting service. In 1994 David Bohnett and John Rezner came up with an idea to

provide users with a mechanism to store their own pages on the Internet. As a result in mid 1995 GeoCities, which originally was called Beverly Hills Internet, was formed. GeoCities provided a platform on which users could "build" their own "homes". The mechanism was copied from ordinary cities, which are divided into neighborhoods and streets. Each such "home" had an address and users could store there any information they desire. This simple and free service allowed millions to get some web exposure, since the pages housed in the "homes" were publicly available to all internet users. Following the GeoCities success additional similar sites started evolving. One of the first social media sites was theglobe that created online communities of worldwide registered users who could interact with others. Theglobe offered similar capabilities to GeoCities, however in addition users could personalize their web experiences by publishing their own content. Unfortunately, its days of glory did not last and additional more appealing solutions emerged. In 1997 AOL released its IM (Instant Messaging) application and at that time ICQ, another Instant Messaging application was released. IM uses the wide spread of Internet based interlinked computers and provides a real time chatting application in which two or more people are exchanging text. Later versions supported additional types of media such as voice and video. IM was an excellent platform for socialization in which participants as well as the content are totally flexible. Technology continued to develop and various additional solutions emerged, such as peer-to-peer file sharing communities like Napster, Gnutella and KaZaa to name a few. This new direction was stopped due to large debates regarding its legality and the fact that in most of the time these applications were used to infringe on copyright laws.

The most important development in socialization is the emergence of social networks applications. These web based applications provide an online service, or platform used to create and maintain social relations among people or organization that share common interests. Such platforms include some user representation (or profile), social links and additional services or application to be used. The social network's success is demonstrated by the billions of people who regularly use it and the fact it is integrated into their daily normal practices.

3. Ethical Issues in the Social Network Era

In spite the many benefits gained by users in using the social network, there are some significant ethical issues associated with this usage. Technology related ethical issues are not new and started long before the social revolution was initiated. There might be many reasons for the ethical misconduct, some even legitimate ones. Most Western cultures and civilizations are based on some fundamental principles, such as freedom and the right for privacy. Unfortunately, sometimes unrelated events undermine these principles. The increased terror threats require a higher degree of security that in most cases hampers privacy. Airport security and the new imaging machines for screening passengers are one such good example.

In her book *The Gift of Fire* [Baase, 2008] the author draws a comparison between fire and computer systems. Like fire which was given to humans, and enhanced their lives, but also caused some terrible disasters, so computer systems enhanced human lives, but also created undesired and dangerous situations. One of these potentially dangerous situations is the fact that being active on the web, even by just browsing leaves a digital trail. Individuals often provide personal information required by the system they are connected to. This information may include name and address

(shipping address for example, credit card information for billing and even just names for registrations). However, this basic and naive information sometimes provides valuable knowledge. By using common and simple Internet technologies, it is possible to collect this type of information without the user's knowledge or consent.

For defining the infrastructure for the Internet, several technological tools and protocols were developed, such as HTTP (Hypertext Transfer Protocol) which is the main data communications foundation, and cookies, which, for web applications, provide the means to authenticate the client and maintain its states and preferences [Yadin, 2011]. With these technologies, the Internet became the dominant web based information systems platform used in e-commerce and ignited the definition of many new business models for the commercial market. Unfortunately, as stated by Sara Baase [Baase, 2008] all these technologies have some side effects that can be used for unethical and unlawful activities. Each of the technological stages that lead to the development of the social networks was exploited for wrong doing hampering the users' basic rights. In many cases, in an attempt to better exploit technology, the commercial companies develop additional legitimate capabilities, which are later unethically used. For example, email was used by companies for marketing by sending relevant information to customers and suppliers. In order to enhance the process, distribution lists had to be maintained. Unfortunately, short after that spam mail started to appear. Spam mail, or junk mail refers to unsolicited bulk messages sent to many recipients. In many cases the mail sent is anonymous and the sender address does not exist, so no reply is possible. According to a report released in May 2009 by the security vendor Symantec, spam mails account for 90.4% of all emails. Spam emails have become a major concern and were addressed by many researchers. Currently most email systems include some mechanism for filtering these annoying mails. The BBS, Usenet Newsgroups and IM provided additional opportunities for misconduct, starting with posting or sending irrelevant, sometimes misleading information, with some other hidden purpose and even analyzing other people posts for collecting a variety of private information. Maintaining privacy in a networked world is extremely difficult as was already stated by Scott McNealy, CEO of Sun Microsystems, who said in 1999: "You have zero privacy anyway. Get over it".

Social networks, with their vast amounts of private data represent a golden opportunity for various information seekers, both legitimate commercial companies that are looking for additional business opportunities as well as criminals and hackers. During the past two decades we have witnessed a paradigm shift from the old traditional industrial economy to a new economy characterized by information, services and intangible resources. This new "digital economy" has changed many business models and practices and in essence it is about using information and communication technology (ICT) for all aspects of society [Gärden, 2002]. The digital economy is expanding the economic potential [Persaud, 2001] by utilizing the new business models and using information and ideas rather than tangible materials. As such the business focus has moved towards creation, maintenance, distribution and trading of knowledge. Knowledge obtained from the social networks, in many cases is genuine, un-biased and extremely valuable. Considering the large amounts of data to be analyzed, over 800 Million Facebook users for example, various tools and methodologies were developed to ease the process of knowledge discovery. Unfortunately, these relatively new set of tools for data mining are being exploited for additional unlawful activities as well. In an article Nick Collins (2011) describes a recent event in which criminals in West Sussex were using the social network for

locating empty homes, after their owners publicly announced their holiday plans. Similar events were reported in other locations as well by the BBC (2011), WMUR (2010), Johnson (2010) to name a just a few. However, one of the most well known phenomena of misconduct behavior using the Internet in general and the social networks in particular is plagiarism.

4. Plagiarism and IPR

The term plagiarism has several meanings and is not easily defined. Usually plagiarism refers to some ethical violation in academic writing [Howard, 2001]. However, the common usage of plagiarism refers to copying, or "borrowing" work done by someone else. The Merriam Webster dictionary defines plagiarism as: "the act of using another person's words or ideas without giving credit to that person". As such plagiarism is a serious ethical matter, sometimes with legal implications due to the theft of IPR (Intellectual Property Rights). Such IPR infringement cases, when brought to court can lead to significant financial and professional consequences. A good example of plagiarism and IPR infringement trend fuelled by the Internet is the music industry. Prior to 1982, most of the music industry was based on vinyl records (LPs) [Graham et al., 2004]. Since then the music industry transitioned into new digital based standards. This trend was accelerated due to the high availability of computers and their reproduction capabilities. Originally the intention was to create an audio backup for an original CD, but with the development of new ripping tools users could listen to music directly from their computers' hard drives. The wide spread of the bulletin boards, Usenet and later the Internet provided additional capabilities for sharing music. The real boost however occurred with two new technological developments. In 1989 the MP3 standard was invented. It uses a compression standard that reduces the digital audio file to one tenth of the original size with very minimal loss to the audio quality. In parallel the network access speed was enhanced which allows user access to the Internet services at a very high speed, so downloading a song was just a matter of minutes. During 1999 a new type of Internet based services started to emerge – P2P (Peer-to-Peer) networks for music sharing. These were Internet based, direct collaborations between many connected PCs. One of the first and most known services for music sharing was Napster, which allowed users to search for and download content from other connected PCs. Napster that was founded in 1999 had one year later more than 20 million users. With so many users and utilizing the P2P technology, in which the files reside on the different PCs, Napster was the biggest music repository ever created. Even if each of the 20 million users shared only 20-30 songs, it means a repository of over 500 million songs available for the Napster community.

This new trend changed the music industry and many artists and bands were severely affected. The first to take actual measures was the heavy metal band Metallica. By using technology developed by NetPD a Cambridge, UK consulting firm, it was concluded that more than 335,000 Metallica files were traded in just three days [Borland, 2000]. On May 5, 2000 District Judge Patel ruled against Napster. Soon many additional artists and bands sued Napster and less than a year later it was ordered by the court to stop trading all copyrighted materials. Unfortunately, the artists and the recording companies won the fight but lost the battle. Instead of one file sharing platform and community, nowadays there is a variety of similar offerings.

You Tube for example offers hundreds of millions of songs, some by the original performers and other performed by various amateurs.

Even when combining the strong economic interests represented by the artists and the recording companies with ownership copyrights, it is almost impossible to eliminate the music sharing and reproducing. One can only imagine what the situation is regarding plagiarism of academic papers, where no economic interests exist at all. Written plagiarism, like music reproduction, is not a new phenomenon and it exists for centuries. For example it is believed the Shakespeare used Holinshed's work as the basis for his historical plots [Moss, 2005]. However, unlike the music industry it remains at large undetected. In an old essay Joe Chidley (1997) wrote that Cheating in schools "has been around as long as organized education". However, not only plagiarism is 'the problem that won't go away' [Paldy, 1996], with the help of technology it is even increasing. Many scholars and researchers addressed the issue and used various definitions for the phenomenon, such as "a writers' worst sin" [Miller, 1993] or "the unoriginal sin" [Colon, 2001], etc. Although the number of studies regarding the plagiarism magnitude is large, the scale and nature of the problems is not consistent. It can be partially explained by the fact that some studies are based on students' self reporting, while others are using some detection mechanisms. Nevertheless the picture drawn from these studies is alarming. A study by Haines et al. (1986) revealed that over a half of the 380 students that participated in the study reported that during the previous academic year, they were engaged at least once in plagiarism. Another study by Hollinger and Lanza-Kaduce (1996) found that over 75% of the students were involved in plagiarism in that same semester. These numbers are consistent with finding by Brown (1995) which relates to graduate business students who 80% of them were admitting some form of cheating. Stern and Havlicek (1986) further support these numbers and in their study 82% of the 314 undergraduate students who participated in the survey reported some type of plagiarism. Some researchers claim that these high numbers represent the entering of generation Y in to the academic world. People belonging to this generation were influenced by the rapid expansion of technology and regard technology as an integral and fundamental part of their ordinary life.[Oblinger, 2003]. These students grew up using the Internet, cutting and pasting information from various sources for their high school work. Plagiarism may have been around for centuries, however the technological rapid advancements makes it accessible and significantly easier. Even sharing or comparing homework has dramatically changed. If in the past written homework could be transferred only in person, the modern assignments are mainly in a digital form that is easy to distribute and share. Furthermore, with the social networks era, even distributing the assignments is not needed any more. A student can post his/her assignment on Facebook for example and all group members can immediately access it.

Several studies that examined students' academic research habits revealed that most students prefer using search engines on the Internet over visiting the campus library [Jones, 2002]. Furthermore, due to its 24/7 availability the Internet is always their first choice [Fast and Campbell, 2004]. These trends provided tailwind for many existing paper mills sites that use the Internet for improving their visibility. Paper mills is a commonly used term that describes an information system that offers academic papers on a variety of topics and related to many disciplines. When students search the web for relevant information, the papers offered by these paper mills are often high on the

results list providing an additional source for possible plagiarism. The combined forces of paper mills on one hand and the social networks on the other provide an additional example of the negative side effects of technology as described by Baase (2008).

5. Getting "Smarter"?

One such paper mill that provided all the data for the current study is "Smarter" (<http://www.smarter.co.il>). This is an Israeli site that resells Hebrew academic papers (essays, research and seminar papers, book reports, and bibliographic lists). The name chosen for the site is quite strange – to say the least. By using the site, students may benefit in some ways, but none is related to getting smarter. This is a perfect example of the downside of using technology as described by Baase. The site provides a technological plagiarism infrastructure by utilizing IT (Information Technology) based tools and solutions (a large database where students can upload their papers, a search engine for locating the relevant papers and a "royalties" bookkeeping system). This is not the only site in Israel engaged in this type of activity, but it was chosen because it is the newest, and contains less outdated and irrelevant material. Unlike other similar sites that provide their "services" for a fixed fee, or use a price per page mechanism, Smarter uses a different price for each paper. The required price is defined by the person uploading the paper. During the five years since it started, the number of papers offered exceeded 18,000. Due to the site's success, a new similar, English based site was launched (<http://www.universitip.com/>). In a few years it reached over 57,000 papers. The study objective was to get an unbiased view into the magnitude of plagiarism and especially as it relates to the various learning disciplines. The methodology used was based on downloading all metadata (the data about the existing papers) that is freely available and analyzing it. The metadata saved on site relates to several attributes:

- Essay or research paper name;
- The knowledge discipline or study area (biology, art, communication, etc.);
- The academic institute, where the paper was submitted;
- Publication year;
- Total number of words in the document;
- Number of references (sources) used;
- The required paper price

The site was visited three times, during 2006, on August 2009 and August 2011. In each such visit a computer program scanned the whole site and collected all papers' attributes. The analysis concentrated on highlighting the differences in the number of papers as an indication to trend in unethical behaviors in the various learning disciplines.

6. Results

The analysis performed revealed some interesting results. Some Qualitative trends such as reselling the same paper over and over again, were observed, however although this represents an additional unethical behavior it is not part of this study.

The first qualitative result refers to the total number of papers and their distribution over the years. Between the two samples (2006 and 2011) the number of papers increased by a factor of eleven (Figure 1). As can be seen some papers are being loaded to the site some time after their publication, may be even after graduation, probably in order to avoid any possible student identification or other implications. This means that while in the previous sample the maximum yearly paper upload was around 600 papers per year, in the last sample this figure is close to 3,000 papers per year. This increase is extremely troubling since the number of students in Israel between 2006 and 2011 increased roughly by 40% while the number of papers loaded per year increased by a factor of 5.

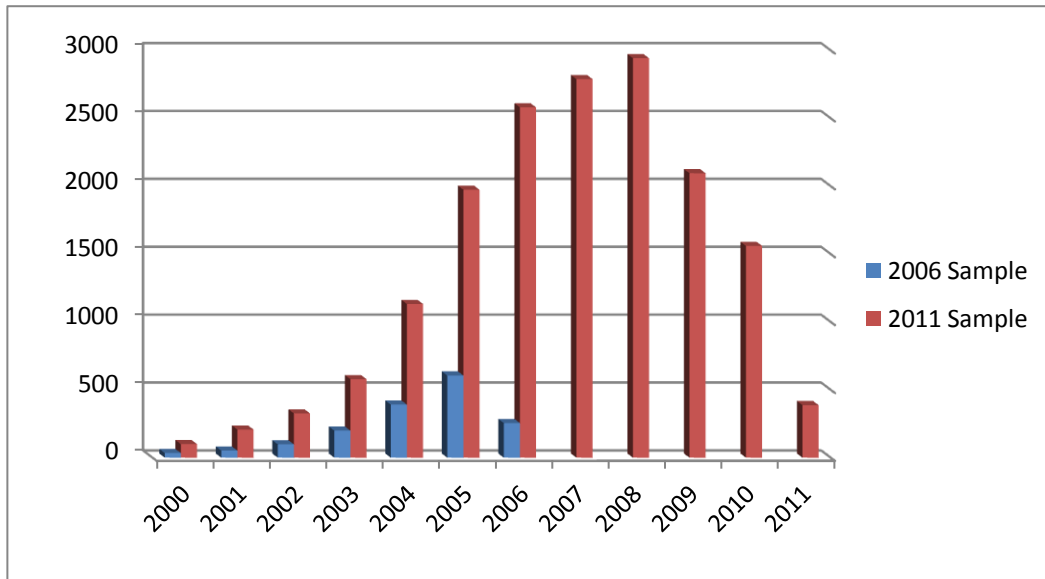


Figure 1: Number of papers

Another interesting finding relates to the cost per paper and its fluctuations over time (Figure 2). As can be seen the average price tendency is decreasing. The average requested price per paper uploaded during the past three years is around 220 Israeli Shekels, or roughly 40 Euros.

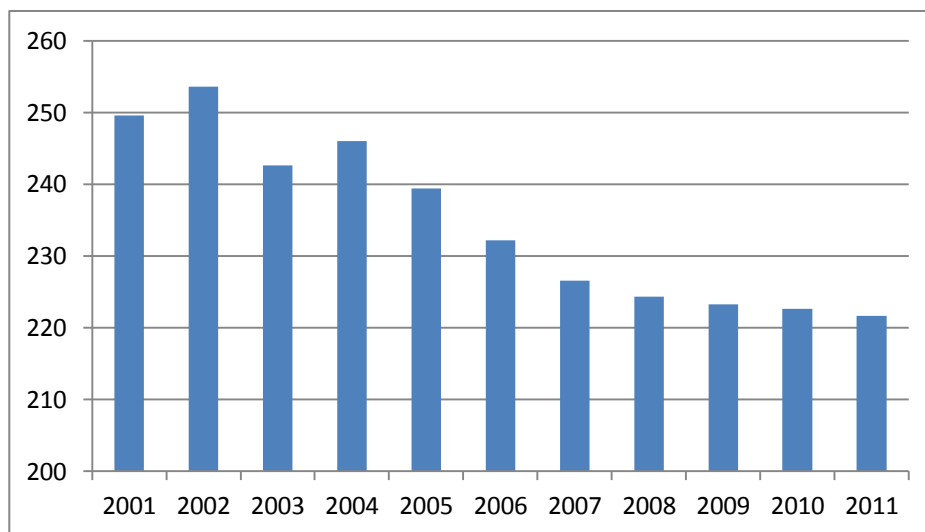


Figure 2: Average paper price (in Israeli Shekels)

The third qualitative result relates to the increase for each of the learning disciplines on site. For practical reasons the analysis presents only the disciplines for which the increase is a factor of 5 and more (Figure 3).

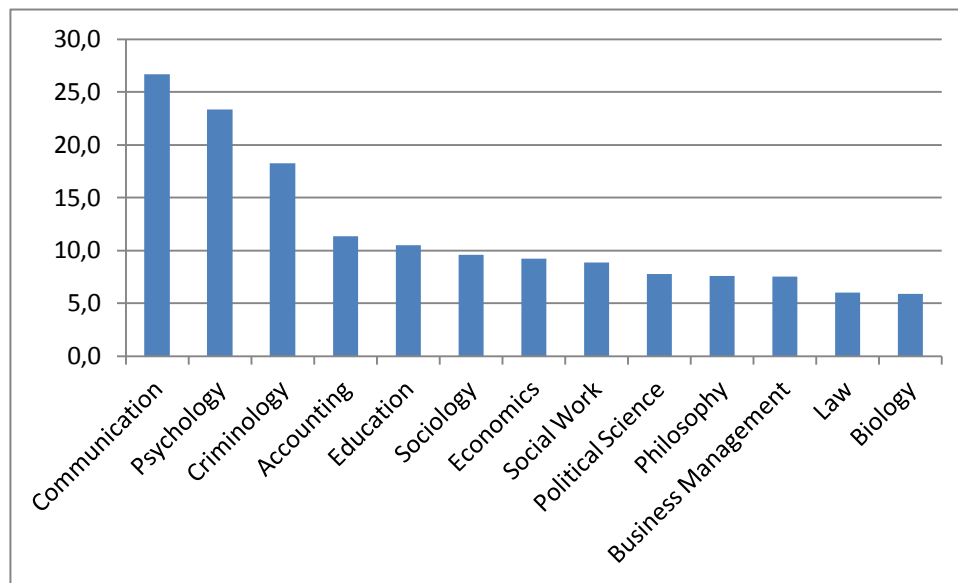


Figure 3: Papers increase per discipline

Surprisingly, the three disciplines in which the increase was the largest are: Communications with a factor of 26.7, Psychology with a factor of 23.4 and Criminology with 18.3. These were followed by Accounting and Education with a factor of 11.3 and 10.5 respectively. Although these two disciplines were not on top of the list, this represents a potential problem considering the future activities these students will be involved in.

7. A Concluding Remark

This study examined a site dedicated to selling academic papers. The site does not provide data about the people who bought papers; however by examining trends about the number of papers loaded, in general and per discipline and the average paper price, some conclusions can be drawn. The fact that during the past five years the average number of papers uploaded per year increased in a factor of 3.4 related to the increase in the number of students provides some indication to the site's popularity. This popularity can be attributed to the students' unethical behavior represented by plagiarism as well as the fact that in the modern technological society the site gets a high degree of visibility. Students exposed to the papers on site, especially if they lack the time or the capabilities to work on their own assignments, find it convenient and relatively cheap to use it. Plagiarism was been around for a long period of time; however the new technological advancements and the emergence of the social networks have contributed to its popularity. In an era when the young generation is "friends with everybody and shares everything" it becomes common to share homework, assignments and essays. Unfortunately, by being exposed to the site, even just by uploading papers to it increases and promotes unethical behavior. Unfortunately, as seen by the large percentage of students admitting some form of cheating, unethical behavior among students has become a norm.

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