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Perceptions of unsolicited electronic mail or spam

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ABSTRACT

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The proliferation of unsolicited electronic mail or spam is becoming a global concern for many organizations. This paper explores perceptions of unsolicited email, its impact on personal productivity, the question of whether spam is an invasion of privacy, the perceived need to control spam, and the effectiveness of unsolicited email. The results clearly show that while the respondents find spam annoying, they spend very little time in dealing with it. Although the respondents express the need to control spam, they do not believe that governmental control is the solution, but rather that Internet Service Providers and organizations should take the responsibility for controlling unsolicited email. Lastly, the respondents are very unlikely to open, let alone read, and respond to unsolicited email. The results of this study will be useful for guiding organizational, university, and public policies.

INTRODUCTION

The term "spam" is often used to refer to unsolicited electronic mail and originated from a comedy skit performed on a British television show called Monty Python's Flying Circus (i.e., "Spam, spam, spam. I'm sick of spam!"). Therefore, spam is electronic mail from Internet marketers or other organizations that attempt to sell or advertise products or services or solicit monetary contributions not expressly requested by the receiving individual. This often includes commercial advertisements for questionable products or services, get-rich-quick schemes, or pornography. These direct Internet marketers, who flood the Internet with many copies of the same message target individual electronic mail accounts, are often called spammers. According to Solomon (2002a), spam or junk email can be categorized as unsolicited bulk email, unsolicited commercial email, chain letters, duplicate postings, pop-up ads, virus warnings, banner ads, jokes, or Internet service provider information.

The main reason why spam has proliferated over the years is because it is a relatively inexpensive means to reach a large audience. For example, the cost of an electronic mail campaign is only \$1,000 compared to \$20,000 for doing the same campaign using direct mail (Disabatino, 2000). However, the effectiveness of an electronic mail campaign becomes a numbers game. Depending on what product or service a direct marketer sells, a response rate of about 2% is typical (Mangalindan, 2002). To be effective, therefore, a direct marketer must send out 5,000 emails in order to receive 100 responses. Moreover, the cost of sending out bulk emails is so low there is very little need to target the emails directly to individuals. Subsequently, adults and children often receive unsolicited email that is either inappropriate or offensive. It is estimated that the number of worldwide email messages sent annually will increase from 230 billion in 1996 to 9.15 trillion by 2006. Of the 9.15 trillion email messages to be sent in 2006, 2.92 trillion will be spam (Solomon, 2002b).

Subsequently, many direct Internet marketers place a great deal of value on the email lists that they create. These lists are often created by scanning Usenet postings, buying other Internet mailing lists, or searching the Web for email addresses. In addition, direct markets can purchase a "spambot" for \$39.95 that searches message boards and lists that can provide up to 100,000 email addresses in an hour (Solomon, 2002b).

However, the cost of unsolicited electronic mail usually comes at the expense of the Internet user, especially to anyone who has a measured Internet service – i.e., where an individual pays for their connection while he or she reads or sends their email. Often it costs money for Internet Service Providers (ISPs) to store and transmit these messages to their subscribers. These costs are usually passed on to their customers. It is estimated that Internet subscribers are unknowingly paying an estimated euro 10 billion a year in connection costs just to receive unsolicited electronic mail (The European Commission, 2002).

Unsolicited electronic mail is a growing concern for many organizations worldwide. One concern in particular focuses on the loss of personal productivity when employees must wade through a daily plethora of spam in addition to important email. Another concern is the flow of unsolicited junk email that degrades network performance and floods email boxes while taking up valuable server space. In addition, since 1996, the growth of electronic mail viruses has led to a growing concern. For example, in 1996 about 74% of computer viruses were spread from diskettes, while 9% came from electronic mail. By 2001, only 1% of the viruses are transmitted by diskette, while electronic mail accounts for 83% (Disabatino, 2002a). A study conducted by ICSA Labs in Mechanicsburg, PA reported that the estimated cost of virus infections costs from \$100 to \$1 million, while a study conducted by Ferris Research in San Francisco estimates that viruses cost organizations at least \$6 billion a year (Disabatino, 2002b).

Many individuals believe unsolicited electronic mail is an invasion of privacy and several organizations have been formed to combat spam. For example, although most unsolicited emails allow individuals to opt out or be removed from a direct marketer's database, the argument is that one should not have to do anything to get off a list you never intended to join. Moreover, some unscrupulous direct marketers use these requests as a way to confirm that the email

address is valid and active. Even though most direct marketers may remove someone from their list, the growth of spam and the number of requests to opt out would be a drain on organizational productivity. Although an individual may elect to use the delete key when dealing with unsolicited emails, over time he or she may find that they use this key more and more frequently and inadvertently deleting legitimate email.

Many companies have attempted to block unsolicited email; however, the process has not been easy or inexpensive. For example, Xerox set up a firewall in the summer of 2001 and was blocking 150,000 spam emails each month. By the fall, it increased to over 60,000 messages a day (Solomon, 2002b). Some organizations have gone as far as instituting a policy where employees are not allowed to give out their email address (Disabatino, 2002b). This unfortunately limits contact with important stakeholders such as customers and vendors.

As a result, many countries and organizations have taken steps to limit or at least control the flow of unsolicited electronic email. For example, Austria's Parliament unanimously voted to make unsolicited "junk" email illegal, while Germany and the Netherlands have taken equally hard positions (D'Amico, 1999). Although sending spam is still legal in the United States, the Federal Trade Commission, has begun an initiative to control and monitor deceptive or fraudulent spam and Internet scams (Rosencrance, 2002). However, the Senate Commerce Committee is considering two bills that will limit spam by requiring email marketers to include a valid return address, prohibit the use of phony or misleading subject headers, and require recipients to opt-in before companies can send unsolicited email to them.

However, many ISPs and other organizations are fighting spam. For example, Microsoft announced that it would incorporate spam filter technology in its free Microsoft Network (MSN) Hotmail email service that serves over 110 million worldwide users (Pruitt, 2002). In addition, Sprint has also announced that it would provide a new service called Sprint Email Protection Services that will filter spam and cleanse incoming email messages of viruses before they enter an organization's network (Weiss, 2002).

A disadvantage of using filters is that many use a simple keyword-matching approach that either lets too much get through or blocks many real messages. There is an inherent risk associated with trying to distinguish between spam and legitimate email (Thibodeau, 2000). Moreover, many people do not feel that the government, organization, or service provider has the right to stop unsolicited emails any more than they would not want the U.S. Postal Service from stopping delivery of unrequested store coupons or appeals from charitable organizations. Many people believe that they should be the judge of what is useful information or offensive. On the other hand, the Direct Marketing Association (DMA) has argued that taking drastic measure against all unsolicited email can infringe upon a medium that has many potential benefits for customers (Thibodeau, 1999).

The problem is that most people believe that spam is annoying and counterproductive; however, most people cannot agree on a common definition of spam. For example, is one's perception of spam influenced by the frequency of receiving unsolicited electronic mail? Does it depend on the subject matter or message contained in the email? Or is the timing of a particular product or service important?

Depending upon an individual's definition of what spam is or is not, will this person believe unsolicited email is an invasion of privacy or a drain on their personal productivity? Subsequently, the individual may believe that spam should be controlled. And if so, should it be controlled by Internet marketers (i.e., self-control), Internet Service Providers, organizations, or the government? Finally, it is important to understand how individuals deal with unsolicited electronic mail in order to realize its effectiveness.

The results of this research will be useful to organizations and researchers. For organizations, this may help focus policies and procedures for dealing with unsolicited email. For researchers, this is a new and important area of study that has not been fully explored, but has important implications for understanding the use of technology and how it may guide public policies.

METHODOLOGY

An online survey was used in this study. The online survey conducted through the Web has the advantages of reduced cost and reduced response time compared to mail surveys or interviews. This study was conducted in November 2002. The research subjects were undergraduate and graduate business school students at a large Midwest university in the United States. Over 200 students participated in the survey. Although the use of students is often criticized in academic research, the use of students as subjects may not only be acceptable but appropriate when trying to explore certain patterns of relationships (DeSanctis, 1989). There are two advantages to using students as subjects: they are a homogeneous sample that reduces extraneous variation and they are significant users of email.

The survey form was designed in ASP.Net. ASP.Net is the latest server-based technology from Microsoft for creating dynamic Web applications. Figure 1 shows the screen of the online survey form. A copy of the complete questionnaire is provided in Appendix 1.

The respondents filled in the answers by clicking appropriate boxes and then submitted their responses to a Web server, which was used to administrate the survey. All respondents' inputs were recorded into a relational database. The entire process took only about 10 minutes to complete. Perceptions on unsolicited email were measured using a Likert scale ranging from 1 to 7 with "1" for strongly disagree and "7" for strongly agree.

Figure 1. The Online Survey

Online Questionnaire

1. Gender:

Male Female

2. Age:

0-19 20-29 30-39 40-49 50-59 60-80

3. Education:

Below high school
 High school degree
 Some college
 2 year college degree
 4 year college degree
 Masters degree
 Ph.D.

4. How many email accounts do you have?

1 2 3 or more

5. How often do you check your email?

Done Internet

RESULTS

Of the 204 responses to the survey, 68% were male and 32% were female. Approximately 92% of the respondents were between the ages of 20 to 29. In addition, 42% indicated that they have 2 email accounts, while 51% said they have three or more accounts. Table 1 provides a summary of email usage. As can be seen, 78% of the respondents check their email at least twice a day. Moreover, it can be seen by the percentage of emails sent and received that students are heavy users of electronic mail.

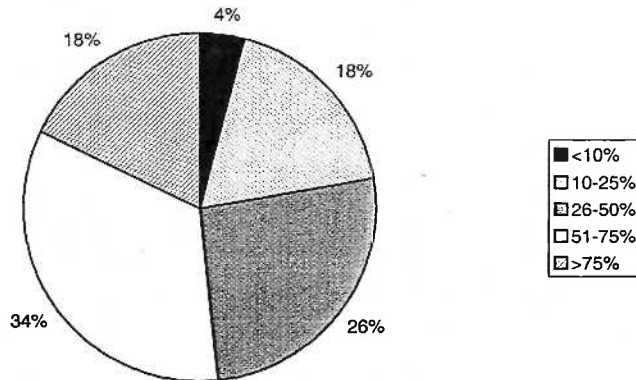
Table 1. Summary of E-mail Usage

How many email accounts do you have?	
1	7%
2	42%
3 or more	51%
How often do you check your email?	
Less than once a week	1%
Once a week	0%
Twice a week	1%
Every other day	5%
Once a day	15%
Twice a day	20%
More than twice a day	58%
On average, how many emails do you receive a day?	
<=5	15%
6-10	31%
11-20	23%
>20	31%
On average, how many emails do you send in a day?	
<=5	55%
6-10	37%
11-20	4%
>20	4%
I am very dependent on email for communicating with others.	5.78 *

* Based on 7-point Likert scale ranging from "1" for strongly disagree to "7" for strongly agree.

In addition, Figure 2 provides a summary of the respondents' self report of their email that is unsolicited. As can be seen, over 50% of the respondents reported that over 50% of their total email received is unsolicited

Figure 2. Percentage of unsolicited email



PRIVACY CONCERNS

Table 2 provides a summary of the respondents' perceptions of privacy. A seven point Likert scale has a median of 4 and thus provides a benchmark for neutrality. As can be seen in Table 2, the respondents tend to believe that unsolicited email is an invasion of privacy and annoying. However, they are somewhat neutral about being offended by the contents or subject headings of unsolicited email and asking to be taken off the senders list. It also appears that the respondents are not likely to complain about receiving unsolicited email.

Table 2. Summary of Respondents - Privacy Concerns

Question	Mean	Std Dev
I consider unsolicited email to be an invasion of my privacy.	5.23	1.58
I do not like getting a lot of unsolicited emails from a single person or organization.	6.16	1.58
In general, receiving unsolicited email does not bother me.	2.47	1.67
In general, I become annoyed when I get unsolicited email.	5.57	1.65
I am often offended by the subject headings or contents of unsolicited.	4.31	1.93
I am very likely to ask the sender of unsolicited email to take me off their email list.	4.61	2.09
I am very likely to complain to a third party about a sender of unsolicited email.	3.42	1.82

Note: Based on 7-point Likert scale ranging from "1" for strongly disagree to "7" for strongly agree

PRODUCTIVITY

On average, 61% of the respondents said that they spend less than five minutes a day dealing with unsolicited email, while only 15% said that they spend more than ten minutes a day. Table 3 provides a summary of the respondents' perceptions concerning their personal productivity. It appears that the respondents are neutral in their belief that unsolicited email impacts their personal productivity. However, they are likely to delete these emails because they do not have time to read them.

Table 3. Summary of Respondents - Productivity

Question	Mean	Std Dev
Dealing with unsolicited email has little impact my personal productivity.	4.00	1.83
I am most likely to delete unsolicited email because I do not have the time to read it.	5.33	1.80

Note: Based on 7-point Likert scale ranging from “1” for strongly disagree to “7” for strongly agree.

CONTROL

Table 4 provides a summary of the questions that relate to the respondents’ perceptions regarding the control of unsolicited email. It appears that there is a strong belief that unsolicited email should be controlled. However, it appears that the responds lean towards control by Internet Service Provides or the organization itself and to a lesser extent by the government and self-regulation of the direct Internet marketers.

Table 4. Summary of Respondents - Control

Question	Mean	Std Dev
In general, I believe that unsolicited email should be controlled.	6.20	1.35
Unsolicited email should be controlled by the government.	4.39	1.90
Unsolicited email should be controlled by my Internet Service Provider	5.57	1.52
Unsolicited email should be controlled by my company or the organization that provides me with my email address.	5.58	1.52
Unsolicited email should be self-controlled by the senders themselves.	4.89	2.05

Note: Based on 7-point Likert scale ranging from “1” for strongly disagree to “7” for strongly agree.

EFFECTIVENESS

In this study, we define effectiveness as whether users are likely to open unsolicited email, read, or even respond to them. Table 5 lists detailed items surveyed in this study to measure the effectiveness of unsolicited email. It appears that the respondents are not likely to open or respond to unsolicited email. In fact, it appears that they are very likely to delete unsolicited email without even opening it. Interestingly, however, they do prefer unsolicited email over unsolicited phone calls.

Table 5. Summary of Respondents - Effectiveness

Question	Mean	Std Dev
I am likely to open unsolicited email if I am interested in the topic or subject heading.	2.99	1.88
I am likely to open unsolicited email if the topic or subject heading is timely to my needs.	3.00	1.86
I am likely to open unsolicited email if the address is from some one or an organization with a good reputation.	3.66	1.94
When I receive unsolicited email, I am very likely to open and read the email.	1.83	1.37
When I receive unsolicited email, I am very likely to delete the email.	6.45	1.23
When I open and read unsolicited email, I am very likely to respond.	1.56	1.32
When I open and read unsolicited email, I am very likely to delete it without responding.	6.38	1.41
I am most likely to delete unsolicited email because I am not interested in the subject heading or topic.	5.94	1.56
I am most likely to delete unsolicited email without opening it because I am concerned that it may contain a harmful computer virus.	5.61	1.70
I prefer unsolicited email more than unsolicited telephone calls.	5.64	1.79

Note: Based on 7-point Likert scale ranging from "1" for strongly disagree to "7" for strongly agree.

CONCLUSION

As the Internet continues to grow, Internet marketers will continue to reach millions of potential customers through unsolicited electronic mail. Although this marketing channel provides ample opportunities for sellers, many countries, organizations, and individuals have taken steps to limit or control the flow of unsolicited electronic mail. However, unsolicited electronic mail that may be annoying or considered "spam" by one individual may be welcome and valuable to another. Although some people may consider spam an invasion of privacy, others feel that limiting or controlling the free flow of information is a violation of their civil liberties.

It appears that many organizations may be caught in the middle. An increase in unsolicited electronic mail will degrade network performance and take up precious disk space on servers. In addition, harmful viruses attached to emails can lead to lost data and productivity, as well as major disruption. Email filters, virus protection software, firewalls, and the implementation of

security policies and procedures consume organizational resources. Although an organization must ensure that protective measures are taken, strict controls and security measures can limit employee contact with key stakeholders such as customers and vendors. Moreover, security policies and procedures meant to protect the organization and its employees raise several issues. For example, what types of electronic mail will be filtered? Electronic mail filters tend to restrict email based on keywords. Certain words may have different connotations and could result in restricting legitimate email, while allowing offensive or undesirable email to get through.

Another issue concerns ownership. Does an organization own the email address or does the employee or student? Many people use their email address for both personal and professional purposes so they may feel that an email address belongs to them. On the other hand, if one believes that the organization owns the email address, does that give the organization the right to read and limit the types of emails that an employee or student sends and receives?

This paper explores individuals' perceptions of unsolicited electronic mail in terms of its impact on personal productivity and its effectiveness. A sample of students provided a homogeneous sample of frequent users of electronic mail. The results suggest that although the respondents receive a large number of unsolicited emails that they find annoying, they tend to spend little time dealing with it. More importantly, the respondents are very unlikely to open, let alone read, and respond to unsolicited electronic mail. Interestingly, however, the respondents to this survey overwhelmingly prefer unsolicited electronic mail to unsolicited telephone calls by telemarketers.

Although the respondents believe that unsolicited email should be controlled, it is not quite clear as to who should control it. However, it appears that control by the government is the least preferred choice. Unfortunately, control by Internet service providers and organizations results in a myriad of different policies and procedures with many being ineffective, illegal, or immoral.

More research is needed to further explore these issues. This study provides a first step, but is limited to a small section of the population of Internet users. Future research should focus on cross sections that include different demographics, as well as other private and public organizations. Of particular interest would be the study of peoples' perceptions in an organization with respect to the policy and procedures the organization under study has in place. Moreover, although this study suggests that most respondents prefer a non-governmental or private sector solution, the issue concerning the cost of such a solution was not addressed. No doubt there will be a substantial cost to the host organization or the Internet Service Provider who will be responsible for controlling unsolicited electronic mail. Therefore, it would be interesting to gauge electronic mail users' preferences and attitudes towards an increase in costs for service or a reduction in access or service if the electronic mail address is hosted by an individual's employer.

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APPENDIX 1: ONLINE QUESTIONNAIRE

1. Gender:

- Male Female

2. Age:

- <= 19 20-29 30-39 40-49 50-59 >= 60

3. Education:

- Some high school
 High school degree
 Some college
 2 year college degree
 4 year college degree
 Masters degree
 Ph.D.

4. How many email accounts do you have?

- 1 2 3 or more

5. How often do you check your email?

- Less than once a week
 Once a week
 Twice a week
 Every other day
 Once a day
 Twice a day
 More than twice a day

6. Approximately, what percent of your email is unsolicited?(*Unsolicited email is defined as email from Internet marketers or organizations that sell or advertise products or services or solicit monetary contributions that you did not specifically request.)

- < 10% 10-25% 26-50% 51-75% > 75%

Please select one choice for each item below. The measurement represents:

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Somewhat Disagree
- 4 - Neutral
- 5 - Somewhat Agree
- 6 - Agree
- 7 - Strongly Agree

7. I consider unsolicited email to be an invasion of my privacy.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

8. Dealing with unsolicited email has little impact my personal productivity.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

9. I am likely to open unsolicited email if I am interested in the topic or subject heading.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

10. I am likely to open unsolicited email if the topic or subject heading is timely to my needs.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

11. I am likely to open unsolicited email if the address is from someone or an organization with a good reputation.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

12. I do not like getting a lot of unsolicited emails from a single person or organization.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

13. In general, I believe that unsolicited email should be controlled.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

14. Unsolicited email should be controlled by the government.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

15. Unsolicited email should be controlled by my Internet Service Provider (ISP).

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

16. Unsolicited email should be controlled by my company or the organization that provides me with my email address.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

17. Unsolicited email should be self-controlled by the senders themselves.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

18. When I receive unsolicited email, I am very likely to open and read the email.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

19. When I receive unsolicited email, I am very likely to delete the email without opening and reading it.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

20. When I open and read unsolicited email, I am very likely to respond.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

21. When I open and read unsolicited email, I am very likely to delete it without responding.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

22. I am most likely to delete unsolicited email because I do not have the time to read it.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

23. I am most likely to delete unsolicited email because I am not interested in the subject heading or topic.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

24. I am most likely to delete unsolicited email without opening it because I am concerned that it may contain a harmful computer virus.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

25. I am very likely to ask the sender of unsolicited email to take me off their email list.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

26. I am very likely to complain to a third party about a sender of unsolicited email.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

27. In general, receiving unsolicited email does not bother me.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

28. In general, I become annoyed when I get unsolicited email.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

29. I am often offended by the subject headings or contents of unsolicited email.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

30. I am very dependent on email for communicating with others.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

31. On average, how many emails do you receive a day?

° < 5 ° 6-10 ° 11-20 ° > 20

32. On average, how many emails do you send in a day?

° < 5 ° 6-10 ° 11-20 ° > 20

33. On average, how much time do you spend dealing with unsolicited email each day?

° < 5 minutes ° 6-10 minutes ° 11-20 minutes ° > 20 minutes

34. I prefer unsolicited email more than unsolicited telephone calls.

Strongly Disagree ° 1 ° 2 ° 3 ° 4 ° 5 ° 6 ° 7 Strongly Agree

