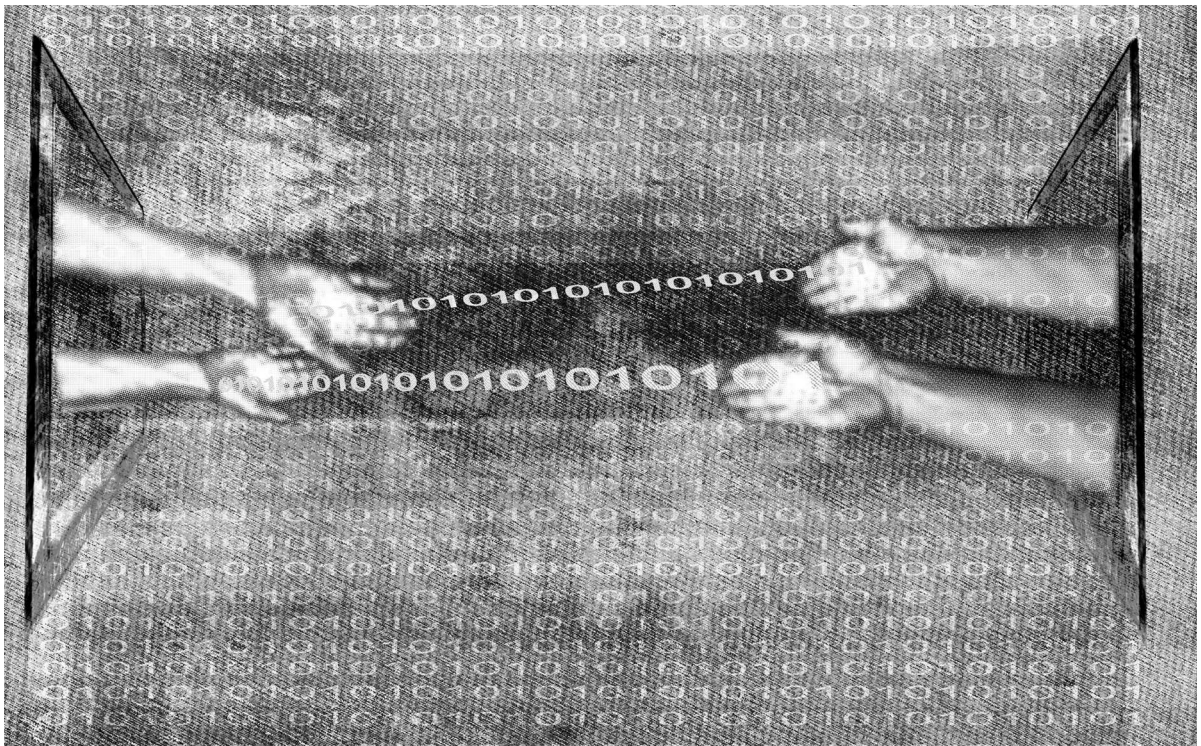


Internet Skeptics: An Analysis of Intermittent Users and Net Dropouts



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The "digital divide" — the divide between those with access to Internet technologies and those without — is now one of America's leading economic and civil rights issues [15]. Recent studies have found that the number of Americans connected to the nation's information infrastructure is increasing, yet a digital divide is actually widening over time [1],

[6], [8]. According to Hamelink [5], "To just have more "surfers" on the Web does not equate to the equal possession of information capital" [5, p. 91]. Minorities [6], women [20], and the less educated [2a] are groups that lack access to information resources, for example. Cooper [1] calls for a continuing effort to enable low-income populations to access information technology, including the Internet, to allow them

the equal opportunity in an information era. He asserts that: "a close look at the data shows that the perception that the digital divide has disappeared is simply wrong. Consequently, the claim that we no longer need policies to close the gap is wrong, placing tens of millions of American households at risk of being left out of the digital information age" [1, p. 2].

The digital divide has often been

discussed with respect to the two opposite sides of the spectrum: the “haves” and “have-nots.” However, there is a gray area which consists of two particular categories: a) Internet users who did use the Internet at one time and have since stopped, or b) the large number of Internet users who stopped using the Internet but then restarted using it. Such Internet users have not received much academic attention. Studies of the digital divide would be incomplete without an analysis of these categories; we believe that these are not citizens who lack access to information resources, but stop because of other extraneous reasons. Understanding these reasons would have an impact on narrowing the digital divide.

Probable reasons these people stopped using the Internet are changes in perception regarding trust (or the lack thereof), excessive costs, danger, user interface issues of the Internet [8], and/or confusion resulting from information overload [3]. These are barriers and hurdles that keep dropouts from being connected beyond the demographic and economic differences [8], [10]. The main obstacles among others are known as 1) “no idea about how to do it”, 2) “costs too much,” 3) “difficulty with access,” 4) “too complicated,” and 5) “uncomfortable sitting at a computer” (for example, eye strain or back strain) [8]. By understanding the needs and troubles of potential user groups, the Internet can be developed to make it easier to return to the Internet and make it more useful and satisfying once the user begins exploring the Internet. Without improvements for the acknowledged barriers (some of which are assessed in this study), efforts to induce the dropouts to return to the Net may not succeed. The current study, therefore, investigates the probable grounds for the difficulty in accessing the Internet.

We anticipate that among different gender, race, and education level groups, the importance of the above reasons will be differently perceived. The recognized victims of the digital

divide might be more vulnerable to unfavorable perceptions of the Internet such as cost, danger, trust, and confusion since they do not have a chance to accumulate experience with developing technology environments, and hence, remain doubtful just like the early adopters of the Internet. The negative feeling may in return cause them to voluntarily stay away from the Internet. This is why the cognitive factors blocking Internet dropouts should be reduced for them to be reconnected. We investigate the extent that various groups differ in their experience with the Internet; for example, women may be more or less sensitive to cost, danger, and confusion than male users. We depict this in Fig. 1.

We base our research on the Pew Internet Survey of 2002. The survey defines two categories: Net dropouts (DO) as “the non-users who were once online but stopped and have not gone back” and intermittent users (IU) as those “who are online Americans who dropped offline for an extended period and are now back online” [11]. We recognize IUs or DOs as those who responded “yes” to “Did you EVER at some point stop using the Internet or email, but have since started for some reason?” or “Have you ever STOPPED using the Internet for an extended period of time?” This study presents a preliminary analysis of the characteristics of IUs and DOs to understand why people have stopped using the Internet and do (or do not) return to the Internet.

Critical Issues

Trust

Several studies have focused on the impact of trust on e-commerce. For instance, Gefen *et al.* [4] revealed that highly trusted sites conquer the market. Another study claims that trust is the strongest predictor of a consumer’s purchase intention on the Internet [[9]. Clearly trust is an important and critical aspect of any commercial activity and is applied to e-commerce stake-

holders as well as Internet users [13]. *Disposition to trust* means a general propensity to trust others, which can also influence an individual’s beliefs and intentions towards *Institution-based trust*, an individual’s perceptions of institutional environment, the Internet [13]. The construct, disposition to trust, is included in the survey and will be used as a surrogate to measure trust on the Internet.

Danger

While people transact on websites to purchase a product or a service, they have fears about several issues such as credit card abuse or missed delivery. The Internet Fraud Complaint Center (a division of the U.S. Federal Bureau of Investigation) has made tremendous efforts to investigate and prevent misdemeanors in e-commerce. Intrusion and access of private information through hacking is becoming a worrisome issue on the web. In addition parents are also worried about the influence of pornography and exposure to violence on children. In some cases, assurance services can build confidence for consumers and decrease the perception of danger in the Internet [16], [18]. The perception of danger about the Internet may be different from that of trust, in that the former focuses on anxiety when potential accidents really occur, while the latter is general trust towards the Internet in normal situations. Drawing on this distinction, the experience of the danger of losing one’s credit card information and the danger some parents feel about porn and violence against children is similar in that in both cases the experience is an active one pertaining more to accidental incidents where the perception is closer to danger rather than trust. (We argue that this is analogous to the danger a driver would perceive while driving a car due to the possibility of accidents and facing exposure to injury, pain, harm, or loss in contrast to the normal trust in the reliability of the vehicle and its brand name – that it will not let the driver down in normal driving conditions).

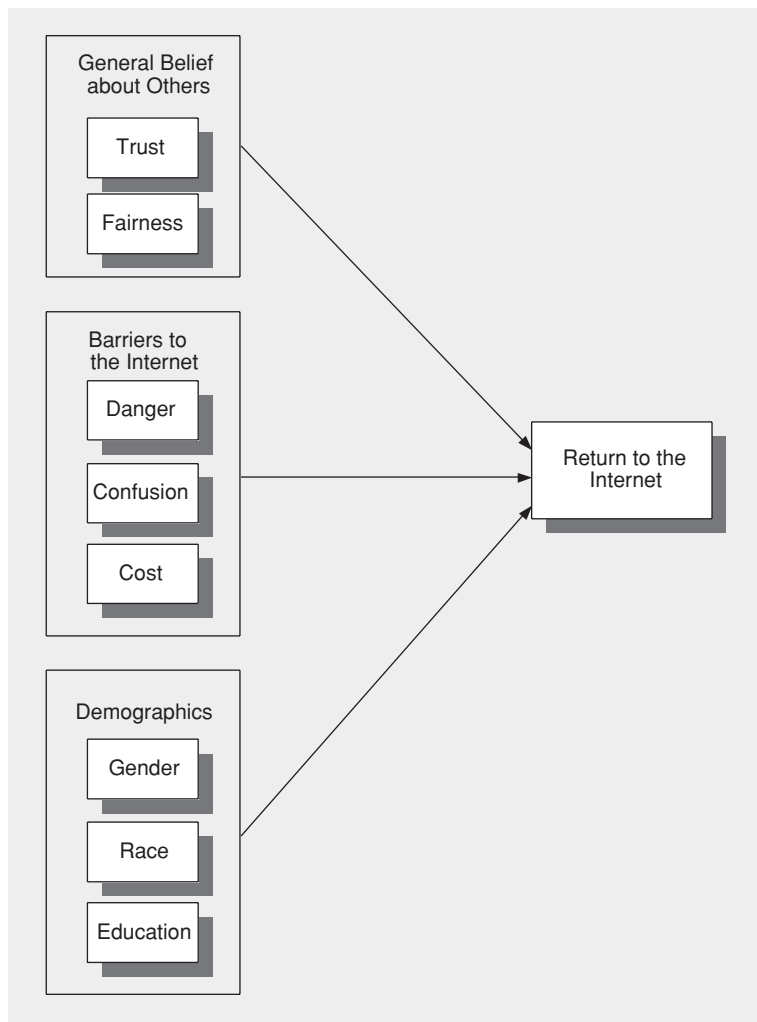


Fig. 1. Factors influencing return to the Internet.

Confusion

It has often been observed that information overload is a critical burden on people’s lives, and therefore, users often feel confused [3]. Ease of use and usefulness have long been considered critical factors of information systems success [2]. If Internet users feel confused about using the Internet far above an acceptable threshold, they may be reluctant to get rewired. For example, those who have little experience with technologies need to spend a reasonable amount of time adjusting to the new interface environment. Some minorities, the less-educated, and older people might not have the necessary resources or impetus to be involved with new technologies.

Cost

Economic literature has shown that monetary costs have always been one of the powerful determinants that influence customers’ purchasing behavior [17]. Even though Information Service Providers have marketing campaigns to offer lower (or temporarily free) prices to customers, the regular payment of \$40-60 a month is not affordable for households in middle or low-income categories. However, what really matters is the extent that Internet users perceive the cost of the Internet use as a barrier to being (re)wired.

Gender, Race, and Education

The demographic structure of users’ response to the Internet environment also gives us insights regard-

ing differences between intermittent users (IU) and drop outs (DO). Research on IT professionals reports that the ratio of males to females in the IT workforce is asymmetric [7], [19]. A possible reason claimed is that women may be underrepresented in IT because women may have difficulty in adjusting to the education and work environment in information technology because their coping mechanisms are not always conducive to survival in this male-dominated field [7]. The barriers of Internet access [8] might also reflect different trends among racial groups. In addition, educational status may also affect Internet use. Following Truth [19], we believe that women and minorities will be encouraged to use the Internet if the barriers discussed above can be minimized.

Why Do People Stop Using the Internet?

The Pew Internet and American Life Project, led by Princeton Survey Research Associates conducted a survey to examine what Americans think about Internet use (www.pewinternet.org). This research uses a national telephone survey of 3553 Americans, 18 or older, between March 1-31 and May 2-19, 2002. Selected questions from this survey are used to answer our research questions. IU and DO have different sample sizes — therefore, we utilized proportional statistics to understand the differences. First, perceptions on trust and fairness were evaluated based on the response to the question “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?” (trust) and “Do you think most people would try to take advantage of you if they got the chance, or would they try to be fair?” (fairness).

Results show that a higher percentage of intermittent users (IU) (45%) stated that most people can be trusted compared to dropouts (DO) (31%) (Table I). Also, a greater proportion of IU (62%) than DO (42%)

perceive that most people would try to be fair even if they got the chance to take advantage of others. As proposed in the previous section, those with a higher disposition to trust others have a higher possibility of returning to the Internet. A larger share of DO (61%) agree that the Internet is a dangerous thing, the Internet is confusing and hard to use (39%) (Table I) (based on responses to: “The Internet is a dangerous thing” and “The Internet is confusing and hard to use”). Further, there is no statistically significant difference between percentages of DOs and IUs who regard Internet access as too expensive (based on responses to “Internet access is too expensive”).

The proportion of IUs (63%) with higher education is greater than those of DOs (43%) and this gap increases with higher levels of education. However, the number of high-school graduates is not statistically greater than that of less-than-high-school graduates between DOs (78%) and IUs (81%). Clearly the possibility of returning to the Internet increases with education level.

In terms of race, more whites (87%) have returned to the Internet than Hispanics (79%). However, the pattern regarding the proportion of whites-to-Hispanics returning to the Internet is not significantly greater than the proportion of whites-to-blacks returning to the Internet. Furthermore, there is no gender divide when it comes to intermittent users or dropouts.

Next, we examine demographic differences in factors influencing IUs and DOs to become such skeptic users of the net. Tables II-VI show the demographic characteristics of those who generally have a high sense of trust and fairness, and those who perceive the Internet to be dangerous, confusing, and costly.

For those who are more trusting than others, no statistically significant difference in the proportions of males over females between IUs (50%) and DOs (52%) is observed (Table II). However, among those

with high level of trust, more people with “above some-college” education levels (SC/AC, 71%) than “less-than-high school” or “high-school graduates” (LH/HS, 29%) restarted using the Internet. Similarly, more high-school graduates (HS, 80%) trust others and return to the Internet than less-than-high-school

graduates (LH, 20%). IUs who trust others in general are more white (91%) than Hispanic (9%), and more Hispanic than black relative to trusting DOs; the representation of whites over blacks is greater for trusting DOs than for trusting IUs.

The demographic characteristics of those who generally accept that

Table I
Comparison of Intermittent Users and Dropouts

	Mean (Proportion)		t
	IU	DO	
Trust(hi) ¹	.45	.31	4.964**
Fairness (hi) ²	.38	.58	-7.071**
Danger(hi) ³	.50	.61	-4.132**
Confusion (hi) ⁴	.27	.39	-4.677**
Cost (hi) ⁵	.51	.57	-1.840
Male_Female ⁶	.50	.49	-.144
SC/AC_LH/HS ⁷	.63	.43	7.874**
HS_LH ⁸	.81	.78	.798
White_Black ⁹	.89	.87	.608
White_Hispanic ¹⁰	.87	.79	3.566**
Black_Hispanic ¹¹	.55	.65	-1.886

Notes: ¹ 45% of Intermittent Users have high level of trust in the Internet, 55% of IU have low level of trust, 31% of Dropouts have high level of trust and 69% of DO have low level of trust.
² 62% of IU and 42% of DO believe in high level of fairness of the Internet.
³ 50% of IU and 61% of DO feel the Internet is highly dangerous.
⁴ 27% of IU and 39% of DO feel Internet use is highly confusing.
⁵ 51% of IU and 57% of DO feel the Internet is expensive.
⁶ 50% of IU and 49% of DO are males
⁷ 63% of IU and 43% of DO are some-college, and above-college (SC/AC), compared to less-than-high-school and high-school graduates (LH/HS).
⁸ 81% of IU and 78% of DO are high-school graduates (HS), compared to are less-than-high-school (LH).
⁹ 89% of IU and 87% of DO are white – others are black
¹⁰ 87% of IU and 79% of DO are white – others are Hispanic.
¹¹ 55% of IU and 65% of DO are black – others are Hispanic.
 *: p<.05, **p<.001, t-test of proportion

Table II
Demographic Characteristics of IU and DO with High Sense of Trust

	Mean (Proportion)		t
	IU	DO	
Male_Female ¹	.50	.52	-.340
SC/AC_LH/HS ²	.71	.55	3.597**
HS_LH ³	.80	.68	2.039*
White_Black ⁴	.93	1.00	-2.523*
White_Hispanic ⁵	.91	.79	3.942**
Black_Hispanic ⁶	.56	1.00	-4.171**

Notes: ¹ 50% of IU and 52% of DO are males
² 71% of IU and 55% of DO are some-college, and above-college (SC/AC), compared to less-than-high-school and high-school graduates (LH/HS).
³ 80% of IU and 68% of DO are high-school graduates (HS), compared to less-than-high-school (LH).
⁴ 93% of IU and 100% of DO are white – others are black
⁵ 91% of IU and 79% of DO are white - others are Hispanic.
⁶ 56% of IU and 100% of DO are black – others are Hispanic.
 * p<.05, ** p<.001, t-test of proportion

Table III
Demographic Characteristics of IU and DO with High Sense of Fairness

	Mean (Proportion)		t
	IU	DO	
Male_Female ¹	.49	.51	-.544
SC/AC_LH/HS ²	.68	.52	4.114**
HS_LH ³	.79	.61	3.270**
White_Black ⁴	.93	.95	-.716
White_Hispanic ⁵	.90	.81	3.399**
Black_Hispanic ⁶	.60	.82	-2.415*

Notes: ¹ 49% of IU and 51% of DO are males
² 68% of IU and 52% of DO are some-college, and above-college (SC/AC), compared to less-than-high-school and high-school graduates (LH/HS).
³ 79% of IU and 61% of DO are high-school graduates (HS), compared to less-than-high-school (LH).
⁴ 93% of IU and 95% of DO are white – others are black
⁵ 90% of IU and 81% of DO are white - others are Hispanic.
⁶ 60% of IU and 82% of DO are black – others are Hispanic.
* p<.05, ** p<.001, t-test of proportion

Table IV
Demographic Characteristics of IU and DO who Consider the Internet Dangerous

	Mean (Proportion)		t
	IU	DO	
Male_Female ¹	.43	.48	-1.357
SC/AC_LH/HS ²	.58	.40	5.136**
HS_LH ³	.77	.82	-1.216
White_Black ⁴	.89	.91	-.805
White_Hispanic ⁵	.86	.83	1.046
Black_Hispanic ⁶	.57	.67	-1.361

Notes: ¹ 43% of IU and 48% of DO are males
² 58% of IU and 40% of DO are some-college, and above-college (SC/AC), compared to less-than-high-school and high-school graduates (LH/HS).
³ 77% of IU and 82% of DO are high-school graduates (HS), compared to less-than-high-school (LH).
⁴ 89% of IU and 91% of DO are white – others are black
⁵ 86% of IU and 83% of DO are white - others are Hispanic.
⁶ 57% of IU and 67% of DO are black – others are Hispanic.
* p<.05, ** p<.001, t-test of proportion

most people are fair are similar to those who are trusting of others, except that the proportion of white over black in DOs (95%) is not significantly greater than IUs (93%) (Table III).

With respect to “danger,” race and gender patterns for IUs and DOs are similar (Table IV); however, the proportion of IUs and DOs are significantly different when low (LH/HS) versus high (SC/AC) education groups are compared.

Among those who find the Internet confusing and hard to use, the proportion of male IUs (44%) is not significantly different from that of DOs (52%) (Table V). There is no

racial difference between confused IUs and DOs.

There are no racial or gender differences regarding the perceived cost of Internet connectivity and use between IUs and DOs (Table VI). Among those who consider the Internet costly, people with “above some-college” educations are more among those who restarted using the Internet (SC/AC, 62%) than among those who stayed offline (SC/AC, 36%).

Discussion

We differentiate our study from prior literature on broad comparisons of Internet users and non-users by

looking more closely into the demographic characteristics of people who have used the Internet at some point in time and had never returned, and those who are currently using the Internet but had dropped out once. We also categorize intermittent users and net dropouts based on their perception of trust, fairness, and barriers to the Internet (dangerous, confusing, and costly).

The results are summarized below:

- The return to the Internet is not based on gender but based on the educational level of the user.
- Selected racial differences exist between DOs and IUs. For instance, whites are more prone to getting rewired than blacks and/or Hispanics among those who trust others or those who regard others as fair, but not among people who believe the Internet is dangerous, confusing, or costly.
- People with high sense of trust and fairness returned to the Internet rather than stay unwired.
- People who did not return to the Internet regarded it as dangerous and confusing.

The results show that intermittent users trust others more in general, perceive less danger, and experience less confusion in the Internet environment than the Internet dropouts. The results provide some indication regarding the transformation of the DO into IU. If the pessimistic perspective about the Internet can be reduced, the digital divide in the current society will be minimized. An interesting finding is, however, the cost to access the Internet is not a main factor deterring DO from using the Internet — this suggests that the current costs of internet connection are not aggravating the digital divide. The different effect of each barrier to using the Internet for distinct demographic groups also

suggests how industry or government-based web designers can attract more DO to the Internet with targeted websites. This will result in involving a larger group and remove any elitist connotation used in conjunction with the use of information technology in everyday life.

This study has been a descriptive investigation of the populace that is neither a digital-have nor a digital-have-not. Further analysis of Internet leanings of minorities and the less-educated is necessary to gain valuable insights for the creation of better technological environments, which in turn will allow underrepresented groups to benefit from the Internet.

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Table V

Demographic Characteristics of IU and DO who Consider the Internet Confusing

	Mean (Proportion)		t
	IU	DO	
Male_Female ¹	.44	.52	-1.765
SC/AC_LH/HS ²	.56	.32	5.520**
HS_LH ³	.86	.82	.861
White_Black ⁴	.91	.92	-.299
White_Hispanic ⁵	.90	.91	-.132
Black_Hispanic ⁶	.52	.53	-.131

Notes ¹ 44% of IU and 52% of DO are males
² 56% of IU and 32% of DO are some-college, and above-college (SC/AC), compared to less-than-high-school and high-school graduates (LH/HS).
³ 86% of IU and 82% of DO are high-school graduates (HS), compared to less-than-high-school (LH).
⁴ 91% of IU and 92% of DO are white - others are black
⁵ 90% of IU and 91% of DO are white - others are Hispanic.
⁶ 52% of IU and 53% of DO are black - others are Hispanic.
 * p<.05, ** p<.001, t-test of proportion

Table VI

Demographic Characteristics of IU and DO that Perceive the Internet to be Costly

	Mean (Proportion)		t
	IU	DO	
Male_Female ¹	.50	.51	-.462
SC/AC_LH/HS ²	.62	.36	6.988**
HS_LH ³	.80	.74	1.471
White_Black ⁴	.89	.88	.268
White_Hispanic ⁵	.85	.80	1.350
Black_Hispanic ⁶	.59	.64	-.674

Notes ¹ 50% of IU and 51% of DO are males
² 62% of IU and 36% of DO are some-college, and above-college (SC/AC), compared to less-than-high-school and high-school graduates (LH/HS).
³ 80% of IU and 74% of DO are high-school graduates (HS), compared to less-than-high-school (LH).
⁴ 89% of IU and 88% of DO are white - others are black
⁵ 85% of IU and 80% of DO are white - others are Hispanic.
⁶ 59% of IU and 64% of DO are black - others are Hispanic.
 * p<.05, ** p<.001, t-test of proportion

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