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Abdelfattah, Belal M.; Bagchi, Kallol; Udo, Godwin; and Kirs, Peeter, "Understanding the Internet Digital Divide: An Exploratory Multi-Nation Individual-Level Analysis" (2010). *AMCIS 2010 Proceedings*. 542.

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Understanding the Internet Digital Divide: An Exploratory Multi-Nation Individual-Level Analysis

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ABSTRACT

As evidenced in the digital divide literature, various and diverse sets of indicators and analytical techniques have been applied that have contributed to different purposes. Some investigations try to measure the gap of digital divide, while others have attempted to explain its determinants. However, certain facets are yet to be addressed in the literature. This study uses an individual-level multi-nation approach to study both developed and developing nations with the aim of identifying factors of digital divide that separate the digitally deprived and the intense users of internet. This unique research examines the two extreme sides of the inequality—citizens with no access to the internet and frequent users of the internet. We empirically test conventional (e.g., age, education, and income) and novel (e.g., income perception, media channels, and religion) factors. We find some interesting significant results that are later outlined in the study.

Keywords

Digital divide, internet access, internet use, human development index, religion technology, media channel, multi-nation, individual-level

INTRODUCTION

Digital divide is defined as the gap between those who can access and use digital technologies (in particular, the internet) and those who cannot (Lu, 2001). This problem is manifested in both developing and developed nations. Although the price of information and communications technologies (ICTs) is falling in many nations, access to certain technologies such as the internet (the focus of this research) is not uniform among nations. The internet use (per 100 people) varies widely across various nations. Many projects (such as one laptop per child) have been initiated in developing nations that try to mitigate the acute non-availability of ICTs in these countries. In developed nations, digital divide in the use of internet also exists, as shown in Figure 1.

Many academic studies exist that investigate the digital divide issue from various angles. Even with the high intensity of research focusing on digital divide, certain facets are yet to be addressed in the literature. The focus of digital divide has shifted from access to the actual use of the technology (van Dijk, 2006). However, it cannot be ignored that citizens in various nations (whether developed or less developed) still have no access to the internet. A component of this individual-level multi-nation research study focuses on both developed and developing nations and aims to identify factors of digital divide that separate the digitally deprived and the intense users of internet. We examine citizens of multiple nations with “zero access,” which is a gap that is critical in understanding the digital divide. Most research on digital divide focus on the digital divide between nations with “more access” and “less access”. A study focusing on nations with “zero access” could expose the typical reasons for lack of internet access among this group. Thus, this research explains what causes the

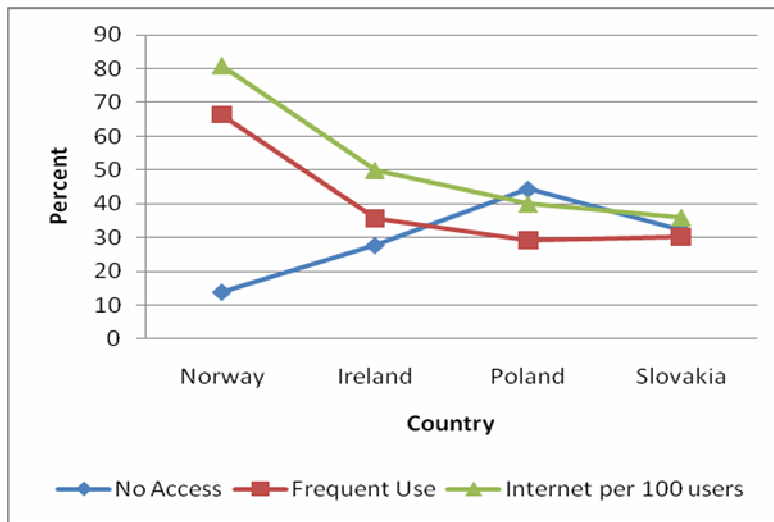
difference between the information rich and information-deprived within nations and between nations, which may further contribute to our understanding of the digital divide concept.

An individual that has no access to the internet is constrained from potential information retrieval. However, having physical access to the computer and internet does not necessarily guarantee access to the information society (Warschauer, 2003; Ono and Zavodny, 2007). Access to information, though, can be from long-established sources. A variety of information and communication technologies (ICTs) such as newspaper, radio, and television still exist and are presently utilized. Hargittai (1999) posits that the internet serves as a complement rather than a substitution for these traditional media. The role of more traditional channels of communication has not been a contributing factor to digital divide. In addition, people often receive information through word-of-mouth or other external channels as those mentioned above (Mahajan and Peterson, 1985). A common finding is that word-of-mouth has a more pronounced effect than the influence of an external channel in spreading the information about a product (Trusov, Bucklin, and Pauwels, 2009). We initiate an investigation that considers how the role of media channels may explain the difference between individuals on either side of the digital divide.

Another issue presented in this research is the role of religion (self-perception and attendance) in digital divide. A recent study by Barnes (2009) examines religion and technology acceptance; however, the focal point of his study is not on understanding the difference between the digitally deprived individuals and those with access to the internet per se. Other research studies focus on religion and economic development (Barro and McCleary, 2003) as well as religion and economic attitudes (Guiso, Sapienza, and Zingales, 2003) that may be relevant in explaining internet access and use as economic growth and technology growth are inherently integrated (Hargittai, 1999).

Based on the evolving nature of digital divide research, this present study considers two types of people – those with no access to the internet (NA) and frequent users (FU) of the internet from a set of four nations. We also contrast high human development index (HDI) with low HDI nations. Figure 1 shows the percentage of people in each country with NA and FU. Our empirical analyses show results similar to some previous studies that consider the well-known explanatory factors of digital divide (e.g. age and income). However, our study also offers some new findings. Some media channels can significantly explain the digital divide, but not for all countries. This contradicts the assumptions of some research that the internet is a compliment to, rather than a substitute for traditional media channels. Individual perceptions about income were found to be significant for lower HDI ranked countries. Religion was not found to be significant in explaining both NA and FU segments (with one exception).

The paper begins with an overview of the literature on the internet digital divide. The next section details the premise of the study and a conceptual model. Afterwards, the results are illustrated followed by a discussion of our findings. Finally, limitations and future research are proposed.



Source: ESS & World Bank (2006)

Figure 1. No Access, Frequent Use, and Internet per 100 users

OVERVIEW OF THE LITERATURE

In examining the literature of digital divide, several studies focused on developed countries (e.g., Hargatai, 1999; Corrocher & Ordanini, 2002; Vicente and Lopez, 2006; Hassani, 2006; Ono and Zavondy, 2007; Goldfarb & Prince, 2008; Agarwal, Animesh, and Prasad, 2009; Cilan, Bolat, and Coskun 2009), and both developed countries and developing countries (e.g., Abernethy & Reichgelt, 2003; Chinn & Fairlie, 2007; and Billon, Lera-Lopez, and Marco, 2009). The number of countries used in these studies ranged between one and 168 countries. Various and diverse sets of indicators and analytical techniques have been applied in the digital divide research that have contributed to different purposes. Additionally, while some investigations try to measure the gap of digital divide (e.g. Chinn & Fairlie, 2007), others have attempted to explain its determinants (e.g. Billon et al., 2009).

Vicente and Lopez (2006) investigate the gap between countries in the European Union (EU) using cluster analysis, and found that countries with close proximities seem to have similar digital profiles. They further suggested that divides between relatively proximal nations, such as North and South Europe, can be explained by disparities in social and economic factors. Agarwal, Animesh, and Prasad (2009) considered the variations of internet use that involve social interactions. Their research focuses on “ethnically isolated regions” to examine if social influence contributes to internet usage in particular geographic locations. Peer effects were found to have a strong influence in explaining the digital divide, differing from the commonly suggested belief that the divide is explained on the basis of individual characteristics.

Goldfarb and Prince (2008) found that internet adoption and usage patterns were not significantly impacted by gender, language, race, marital status, number of children in a household, and residence (urban versus rural), but also found that individuals with higher income and higher education tended to spend less time on the internet. Corrocher and Ordanini (2002) developed a model to measure the digital divide for ten developed countries. Elementary indicators were grouped into six factors and were then aggregated to create a synthetic index based on an objective approach. The index revealed that developed countries (which have similar economic indicators) have significant variations in digitalization levels.

Billon et al. (2009) examined differences in digitalization patterns between countries using several variables to capture the digital divide. Using a canonical correlation analysis, they found that high and middle income economies differ in ICT diffusion; while general ICT diffusion was notable for middle income countries, advanced ICT diffusion occurred more rapidly in high income countries, a finding they attributed to economic structures and governmental effectiveness.

Barnes (2009) examined the impact of religion on commercial website acceptance. The results indicated that religious faith increases benevolence which may promote early adoption of technology. Other studies have shown associations between religion and economic development (Guiso, Sapienza, Zingales, 2003), as well as religion and economic attitudes (Barro and McCleary, 2003). Barro and McCleary (2003) found partial relationships between religiosity and economic development indicators, and suggest a chain reaction: church attendance influences religious beliefs that in turn affects individual traits (e.g., honesty, work ethic, thrift, and openness to strangers), which ultimately results in economic growth. The implication is that belief in heaven, hell, and an afterlife increases economic development, whereas church attendance may hinder growth.

Guiso et al. (2003) also investigated the impact of religion on the economy. Religious affiliation and attendance of religious services by individuals were obtained to analyze persons' attitude toward cooperation, women, government, legal rules, the market economy and its fairness, and thriftiness. They found that “religion is good for the development of stronger institutions.” Similarly, Vicente and Lopez (2006) point out that egalitarianism has an influence on internet diffusion, and Hargittai (1999) found that economic strength matters in understanding internet connectivity.

THE STUDY: DIGITAL DIVIDE AND HUMAN DEVELOPMENT

This research considers NA and FU nations, unlike most previous research on digital divides, which focused on the difference between nations with “more access” and “less access”. The present study makes an effort to explain the differences between information-rich and information-deprived within a nation and between nations based on novel factors. In particular, an examination of media channels, perception of income, and religion are included in addition to the traditional demographic and socio-economic variables. The model shown in Figure 2 is a representation that captures the factors that are predicted to contribute to the digital divide. The following subsection develops our related hypotheses of the study.

Demographics and Socio-economic Factors

Research by Goldfarb and Prince (2008) found that younger people adopt the internet more than older people. Peter and Valkenburg (2006) point out that much of the research has focused on adults and their levels of computer anxiety and digital skill. As a contrast, the authors focus primarily on younger citizens who make up the majority of internet users. Separately,

internet use was found to be negatively associated with age in Ono and Zavondy’s (2007) study. Consistent with these studies, we assert that age will influence the digital divide.

H1a: Citizens’ age will be positively related to having no internet access.

H1b: Citizens’ age will be negatively related to frequent use of the internet.

Studies that investigate gender in the digital divide show no statistical significance (e.g., Goldfarb and Prince, 2009). Ono and Zavondy (2007) present mixed results regarding gender and computer use. The North American and European countries in their study were not statistically significant in relation to gender and computer use. In contrast, Asian countries were found to be negative and significantly related to computer use, a result that is possibly due to gender inequality. In line with the previous research, we foresee that gender will not impact the digital divide.

H2a: Gender will not be significantly related to having no internet access.

H2b: Gender will not be significantly related to having frequent internet use.

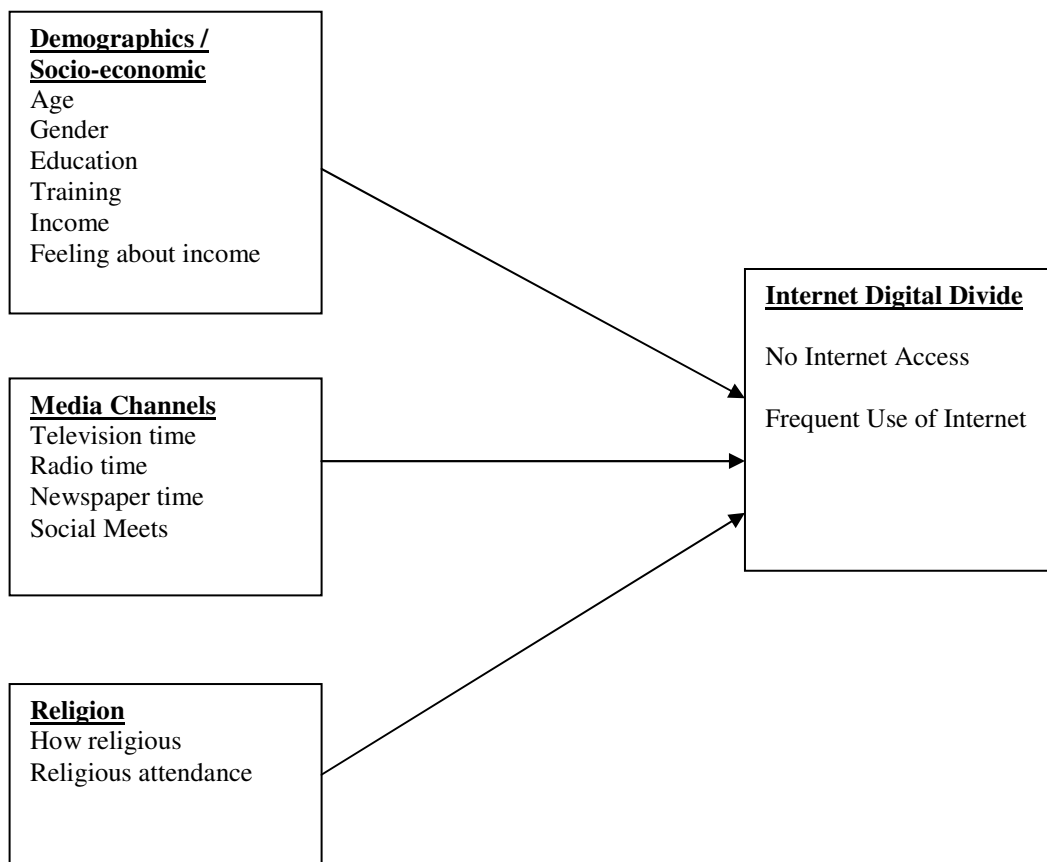


Figure 2. Conceptual Model

There is evidence that education in developed countries minimizes the digital divide. Studies that involve human capital have shown education to be vital in adopting ICTs (Chinn and Fairlie, 2003; Billon et al., 2009; Goldfarb and Prince, 2008). Hargittai (1999) addresses the role of individual knowledge and education in countries and its contribution to internet diffusion. We assert that citizens who are skilled through educational institutions and through training sessions are more likely to engage in internet use.

H3a: Education will be negatively related to having no internet access.

H3b: Education will be positively related to having frequent internet use.

H4a: Improved knowledge and skills will be negatively related to having no internet access.

H4b: Improved knowledge and skills will be positively related to having frequent internet use.

Previous studies that address income and the digital divide found significant impacts (Bagchi and Udo, 2007; Goldfarb and Prince, 2008; Hargittai, 1999). Higher income promotes access and use of the internet, making it the largest contributing factor (Chinn and Fairlie, 2007). Therefore, depending on the individual's income level, two results are likely. Low income impedes citizens' access to the internet while high income facilitates citizens' frequent use of the internet.

H5a: Household's total net income will be negatively related to having no internet access.

H5b: Household's total net income will be positively related to having frequent internet use.

Individual feelings about income have not been investigated in the digital divide research. We posit that negative feelings of individuals' income will contribute to having no access to the internet, whereas positive feelings of individuals' income will lead to frequent internet use.

H6a: Citizens' feelings about household income will be positively related to having no internet access.

H6b: Citizens' feelings about household income will be negatively related with frequent internet use.

Media Channels

The traditional sources of communication technologies such as the newspaper, radio, and television are mediums that have provided citizens with information for decades. Past research by Venkatesh and Brown (2001) discuss "secondary sources' influences" such as television and newspaper that contribute to individual behavior of technology adoption. Other research posits that the internet serves as a complement rather than a substitute for traditional media (Hargittai 1999). The present research suggests that citizens who are engaged deeply by the long-established media channels (i.e. television, radio, newspapers, etc.) for extended periods of time contribute to the digital divide.

H7a: The more time citizens watch television, the more likely they will have no access to the internet.

H7b: The more time citizens watch television, the less likely they will frequently use the internet.

H8a: The more time citizens spend listening to the radio, the more likely they will have no access to the internet.

H8b: The more time citizens spend listening to the radio, the less likely they will frequently use the internet.

H9a: The more time citizens spend reading the newspaper, the more likely they will have no access to the internet.

H9b: The more time citizens spend reading the newspaper, the less likely they will frequently use the internet.

As previously mentioned, people receive information through word-of-mouth or other external channels (Mahajan and Peterson, 1985). A study by Agarwal et al. (2009) investigates the social interactions and the digital gap. They find that peer effects have strong influence in explaining the digital divide. The authors imply that social influence on internet use is a function of geographic proximity. We hypothesize individuals who socially meet with friends, family, and colleagues will have an influence on internet access and use.

H10a: The less citizens meet with friends, family, or colleagues, the more likely they will have no access to the internet.

H10b: The more citizens meet with friends, family, or colleagues, the more likely they will frequently use the internet.

Religion

We address a gap in the literature and provide insight on religiosity and the digital divide. We believe this focus deserves attention given its prominence among individual beliefs. One study by Barnes (2009) investigates religion and technology acceptance and finds that people who are more religious are more benevolent which may result in early adoption of technology. Religion and economic development (Guiso et al., 2003) as well as economic attitudes (Barro and McCleary, 2003) have shown that religiosity and church attendance improve economic development. Based on previous research, we hypothesize the following:

H11a: *The more religious citizens are, the less likely they will have no internet access.*

H11b: *The more religious citizens are, the more likely they will frequently use the internet.*

H12a: *The more citizens attend religious services the less likely to have no internet access.*

H12b: *The more citizens attend religious services more likely they will frequently use the internet.*

METHODOLOGY / DATA

The study uses secondary data provided by the European Social Survey (ESS). The ESS data can be used to explain attitudes, beliefs, and behavioral patterns of individuals that cover over 30 nations. We selected four countries for this study from the 2006 (third wave) ESS study that was released in 2008. To obtain precise Human Development profiles for countries, the United Nations Development Programme (UNDP) industrialized the Human Development Index (HDI) in 1990 (UNDP, 1990). The HDI is based on three primary indicators, with each indicator given equal weight: Longevity (as measured by life expectancy at birth; Education Attainment (as measured by the combination of adult literacy and combined primary, secondary and tertiary enrollment ratios) and Standard of Living (as measured by real Gross Domestic Product). To minimize bias, two developed countries and two developing countries were chosen. Each country contained over 1000 data points. Norway and Ireland were designated as high HDI nations and Poland and Slovakia were designated as low HDI nations.

We ran our analysis using logistic regressions for each country. Several response variables and two criterion variables were employed in the analyses. Table 1 below provides a list detailing each variable. It should be noted that the two dependent variables, NA and FU are not mutually exclusive. In between these two variables there were moderate users who are not directly investigated. For the variable NA, the value “1” denotes the set of respondents not having internet access at home or at work and the value “0” otherwise. For FU, the second dependent variable, the value “1” refers to the respondents using the internet from several times a week to every day and the value “0” otherwise.

Code	Label
age	Age of respondent
gndr	Gender
edulvl	Highest level of education
atncrse	Improve knowledge/skills: course/lecture/conference, last 12 months
hinctnt	Household's total net income, all sources
hincfel	Feeling about household's income nowadays
tvttot	TV watching, total time on average weekday
rdttot	Radio listening, total time on average weekday
nwsptot	Newspaper reading, total time on average weekday
sclmeet	How often do you socially meet with friends, relative or colleagues?
rlgdgr	How religious are you?
rlgatnd	How often do you attend religious services apart from special occasions?

Table 1. Response Variables

RESULTS

Table 2 reports the results of the logistic regression based on NA. Providing strong support for our hypotheses, the variables age, education, training, and income were significant predictors of NA ($p < 0.05$). Gender was found to be insignificant, also supporting our hypotheses. Weak support for the impact of income perception was found. Specifically, feelings about income were found to be significant for the two lower HDI-ranked countries — Poland and Slovakia — at $p < 0.05$ and $p < 0.10$, respectively. The time citizens spend watching television and listening to the radio partially supported our hypotheses. There is a strong positive relationship between watching television and internet access in Norway and weak positive relationship in Slovakia. The variables time spent reading the newspaper and religion were not supported in relation to NA.

The results for FU are shown in Table 3. Age is negatively and significantly related to FU. Surprisingly, gender was found to be significantly related for Norway and Ireland (high HDI ranked countries) but not for Poland or Slovakia (lower HDI ranked countries). Education and training were also significantly related to using the internet frequently. The television, radio, and newspaper variables were all significant. FU was negatively and significantly related in Poland to watching television (at .10 percent), in Norway to listening to the radio, and in Slovakia to reading the newspaper. Except in Ireland, we find significant support for citizens who socially meet with friends, family, and colleagues. With the exception of Ireland, the two variables related to religion did not predict FU (as in the case for no access). The next section provides a discussion based on the results.

	Norway		Ireland		Poland		Slovakia	
	B	Sig.	B	Sig.	β	Sig.	β	Sig.
age	0.071	0.0000	0.024	0.0000	0.014	0.0000	0.015	0.0010
gndr	-0.075	0.6990	-0.015	0.9260	-0.065	0.6170	0.011	0.9430
edulvl	-0.550	0.0000	-0.345	0.0000	-0.418	0.0000	-0.401	0.0000
atncrse	1.047	0.0000	0.696	0.0000	0.754	0.0000	0.697	0.0000
hinctnt	-0.177	0.0000	-0.211	0.0000	-0.261	0.0000	-0.271	0.0000
hincfel	0.121	0.3730	0.143	0.2010	0.348	0.0020	0.186	0.0600
tvttot	0.211	0.0000	0.006	0.8760	0.032	0.3200	0.066	0.0910
rdttot	0.011	0.7660	-0.052	0.0890	-0.009	0.6860	-0.068	0.0170
nwsptot	-0.018	0.8220	-0.034	0.4720	-0.016	0.7610	-0.005	0.9290
sclmeet	-0.025	0.7240	-0.079	0.1010	-0.081	0.0490	-0.108	0.0200
rlgdgr	-0.012	0.7890	-0.007	0.8540	0.016	0.6670	-0.049	0.1520
rlgatnd	-0.020	0.8310	-0.068	0.2280	0.000	0.9990	-0.045	0.4290
R Sqr	.52		.35		.31		.22	

Table 2. No Internet Access (NA)

	Norway		Ireland		Poland		Slovakia	
	B	Sig.	β	Sig.	β	Sig.	β	Sig.
age	-0.058	0.0000	-0.016	0.0050	-0.051	0.0000	-0.046	0.0000
gndr	-0.689	0.0000	-0.405	0.0090	-0.248	0.1330	-0.075	0.6700
edulvl	0.495	0.0000	0.499	0.0000	0.594	0.0000	0.716	0.0000
atncrse	-0.490	0.0000	-0.889	0.0000	-0.674	0.0000	-0.898	0.0000
hinctnt	0.114	0.0000	0.219	0.0000	0.245	0.0000	0.180	0.0030
hincfel	-0.043	0.6600	-0.099	0.4020	-0.485	0.0010	-0.516	0.0000
tvttot	-0.049	0.2010	-0.018	0.6560	-0.074	0.0790	-0.012	0.7940
rdttot	-0.092	0.0010	0.026	0.4040	-0.029	0.3300	0.048	0.1550
nwsptot	0.056	0.3420	-0.019	0.6920	-0.016	0.8280	-0.171	0.0410
sclmeet	0.142	0.0060	-0.005	0.9140	0.225	0.0000	0.304	0.0000
rlgdgr	-0.011	0.7070	-0.060	0.1050	-0.051	0.2700	0.013	0.7650
rlgatnd	0.054	0.4120	0.122	0.0350	0.139	0.1240	0.119	0.1080
R Sqr	.43		.43		.51		.42	

Table 3. Frequent Internet Use (FU)

DISCUSSION

It can be observed from the results that NA and FU nations are quite different. For example, if the sign of a response variable in the regression for FU is positive, then it is negative in the regression analysis for NA. Age further highlights this difference. The results indicate that younger citizens use the internet more, whereas more older citizens tend to belong to the NA group, which is consistent with previous research (e.g. Ono and Zavondy 2007; Goldfarb and Prince, 2008). Additionally, the relationship between NA and old people increases with the decrease of HDI.

The results reveal that there is no statistical significance between gender and NA. Internet use shows that the role of gender is significant in the two higher HDI countries (Norway and Ireland) but not for the two lower HDI ranked countries (Poland and Slovakia). Interestingly, male users clearly dominate the high internet use population in high HDI nations. One reason could be that in low-income situations (in low HDI nations or high HDI nations people with NA), gender differences are too subtle to matter in internet use; however, as people become economically solvent, gender differences come into play. This requires further investigation. High education and training is important for FU and low education and training contributes to NA. Our results on education supports the findings of previous research (Chinn and Fairlie, 2003; Billon et al., 2009; Goldfarb and Prince, 2008); however, training is novel to this field of research and indicates that it plays an important role. Improving knowledge and skill through courses, lectures, or conferences was shown to be statistically significant in both NA and FU segments. For NA, the association is negative while for FU it is positive.

Household income plays an important role for both FU and NA citizens. Income is positively related to FU citizens and negatively related to NU citizens for all nations. Additionally, a pattern for NU people can be seen—the impact of income increases from high HDI to low HDI nations. The “feeling” or perception aspect of present household income was uniform in the sense that feeling was found to be insignificant for high HDI nations for both FU and NA. Conversely, for low HDI nations the feelings are quite strong. For FU, the respondents’ feelings are that they “live comfortably”; however, for NA citizens, the respondents’ feelings are that they “do not live comfortably”.

In terms of communication channels and FU, we find that the impact of word-of-mouth to be more influential in low HDI-ranked nations compared to other external channels communications. The result is inverse for NA people —word-of-mouth effect is less important in low HDI-ranked nations, compared to TV, radio, or newspaper. A possible implication is that low HDI-ranked nations consisting of NA citizens are less connected. TV/radio/newspaper mostly contributes negatively to FU suggesting that internet has a substitutive effect rather than complimentary effect, which contrasts with the results of Hargittai (1999). The impact of TV on NA citizens is mostly positive when significant, and the impact of radio based on NA citizens is mostly negative when significant. This means that citizens with no access to the internet watch more TV and spend less time listening to the radio. Future research may further investigate if FU citizens are in fact substituting traditional information mediums with internet that provides television, radio, and online newspapers.

The results are somewhat surprising for the impact of religion (self-perception and attendance) on NA or FU. Overwhelmingly, religion plays no role on either FU (except for a positive role in ‘attending religious services’ in the case of Ireland) or NA. One possible reason could be that citizens who are more religious or attend church frequently have commitments that may take time that could otherwise be spent online. The effect of religion on digital divide requires further investigation.

LIMITATIONS AND FUTURE RESEARCH

One main limitation of the research is the two-region focus (Northern and Central Europe). The study examines four European countries; thus, our findings cannot be substantially generalized. More relative research is needed to provide further insights on self-perception, traditional media, and religion. Also, having no internet access at home or work does not mean one cannot use the internet. It is possible that citizens access the internet elsewhere (e.g. public places such as coffee shops). One aspect in the study, word-of-mouth, is measured by how often the respondent socially meets with friends, family, and colleagues. A better word-of-mouth measure may provide more insight on the relationship between social influence and digital divide. Separately, future research must be cautious when investigating the digitally deprived granted the growth of accommodating technology that supplies internet access. Nowadays, to be “virtually connected,” the necessity for personal computers or laptops is no longer required.

CONCLUSION

This preliminary research addresses gaps in the digital divide literature that have yet been attended to. Digital divide has shifted from an issue of having access to technology toward actual use (van Dijk, 2006). Until now, there are citizens in

developed (and less developed) countries that do not have internet access. We examined traditional factors—age, income, and education and introduce distinctive factors—training, word-of-mouth, perception of income, media channels, and religion to discern the differences between the information rich and the information deprived. This individual-level multi-nation study focuses on citizens with “zero or no access” and “frequent use” of the internet, which differentiates from past research that focuses on “more access” and “less access.”

In summary, the results based on the majority of the traditional variables examined are consistent with the extant literature. The role of gender, however, is significant for FU citizens in Norway and Ireland (two highly ranked HDI countries) only. Improved knowledge and skills through courses, lectures, or conference contributed significantly for both groups—NA and FU, albeit in different ways. Perception of income has an impact on the two lower ranked HDI nations (Poland and Slovakia). The word-of-mouth effect is less important in low HDI-ranked nations, compared to TV, radio, or newspaper. Two of the three media channels are significant in at least two countries for NA people, whereas at least one of the media channels is significant in at least one country when examining FU. Religion (self-perception and attendance) is not significant except in Ireland. Furthermore, we find similar patterns in significance for the higher ranked HDI countries and similar patterns for the lower ranked HDI countries. Of the four countries, Slovakia is shown to have the most significant number of outcomes from the analysis (8 out of 12 variables); whereas Norway has the least number of outcomes that were significant (5 of 12 variables).

To our knowledge, this research is the first of its kind to examine how socio-economic/demographic variables, media channels, and religion impact the digital divide. This unique research studies the two extreme sides—citizens with no access to the internet and frequent use of the internet. Unsurprisingly, we observe, an inverse relationship between the two groups for most factors. With that said, more research is necessary to explicate the factors that contribute to this issue.

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