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Who is ahead, who is getting by and who is left behind in the present-day information society

A research on Internet usage characteristics in the Netherlands

Nicole de Vries (5510937)

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Supervisor: Sanne Boschman

Second reader: Katia Begall

Department of Sociology

Utrecht University

Abstract

In this research, Internet usage characteristics were researched among certain social groups in the Netherlands. Almost everyone in the Netherlands has access to the Internet. Two types of Internet use can be distinguished: informational and leisure Internet use. Especially informational Internet use causes an increase in financial, human, social and cultural capital. Internet use can thus lead to an increase in social and economic status, which will lead in social and economic inequalities in society when not everyone uses the Internet in the same way. This has been named the *second digital divide* by academics. The results of this research show which groups use the Internet in a capital-enhancing way and which groups do not. Those with a higher income, considered high status groups, used the Internet more for informational purposes than those with a lower income. Those with a higher education did not directly conduct more informational activities online. However, a higher education leads to a higher income which leads to an increase in informational Internet use. Contrary to what was assumed, females spend more time on informational Internet use than men. Younger people spend more time on informational use than their older counterparts. Residing in an urban area will lead to more informational Internet use. Furthermore, urbanity has a positive effect on education and income. This results in even more informational Internet use. Letting those with lower education and income become more acquainted with using the Internet for informational purposes might lead to a closure of the second digital divide and affect economic inequality in general. Encouraging females to keep spending time on informational Internet use might lead to a decrease in stereotypes, creating gender equality in different types of capital. Policies focusing on getting older people to get acquainted informational Internet activities could decrease the divide in capital between age groups. The results of this research can be used to influence who is ahead, who is getting by and who is left behind in the Dutch information society.

Introduction

It might be hard to believe nowadays that there was a time when people lived without the Internet. Interestingly enough, having a computer at home only became popular in 1980 (Haddon, 1992). The first smartphone penetrated the market only in 1994 (Aamoth, 2014). Even though the arrival of computers for common use was encouraged, researchers in the nineties found that access to computers in the developed world was not as common as society would like to be. Earliest evidence of access related problems are found in a research conducted by the United States government, which showed that those in rural areas, minorities, the young, the poor and lower educated often did not have access to computers (United States Department

of Commerce, 1995). A divide occurred between the rich and the poor, the old and the young, the higher educated and the lower educated and those living in the city and those living in rural areas. Because the divide was caused by the rise of modern technology, academics began naming it the *digital divide* (Sidney Howland, 1998; Attewell, 2001). Advancement in technology and implementation of policies made personal computers, laptops and smartphones affordable and available for almost anyone in every social category (United States Department of Commerce, 1995; Rosoff, 2015). In 2017, 97,6% of Dutch households owned a personal computer (OECD, 2018a) and 98,2% had access to the Internet (OECD, 2018b). The importance of having access to computers and the Internet is important, as a new divide started gaining attention by sociologists.

This second divide has little to do with access, but with the difference in usage of computers. This divide between groups was named the *second digital divide* by academics (Van Dijk, 2000; Attewell, 2001). Using the Internet in a certain way can lead to an increase in financial, social, human and cultural capital (Hargittai, 2008; Ellison, Steinfield & Lampe, 2007; Valenzuela, Park & Kee, 2009). Internet use can thus lead to an increase in social and economic status, creating social and economic inequalities in society when not everyone uses the Internet in the same way.

The types of Internet use are divided in "capital-enhancing" use versus recreational use (DiMaggio, Hargittai, Celeste & Schafer, 2004). The first type of use is beneficial to one's social status, whereas the latter use has fewer pay-offs. In many articles on the second digital divides, the two types of uses are usually divided in informational use and leisure use (Howard, Rainie & Jones, 2001, Kalmus, Realo & Siibak, 2011, Amichai-Hamburger & Ben-Artzi, 2000, Landers & Lounsbury, 2006, Swickert, Hittner, Harris & Herring, 2002).

Especially informational Internet use will lead to many advantages later in life. Information retrieval on the Internet, whether it is for hobby, study or work, will lead to a great enhancement of financial, human, cultural and social capital (Hargittai, 2008). The difference in informational Internet use will evolve in social and economic inequalities between groups (Robinson, Cotton, Ono, Quan-Haase, Mesch, Chen & Stern, 2015). Inequalities due to informational Internet use have become apparent in earlier research. Christmann, Badgett and Lurking (1997) show that computer-assisted instruction has a positive effect on academic performance. Using the computers and the Internet at home has found to improve academic performance at school as well (Attewell, P. & Battle, J., 1999; Jackson, Von Eye, Biocca, Barbatsis, Zhao & Fitzgerald, 2006). In addition, Malamud & Pop-Eleches (2011) found that

home computer use among students lead to increase computer and internet skills as well as an increase in cognitive skills. Those who use a computer at work earn 10 to 15 percent higher wages than those who do not use a computer, based on similar professions (Krueger, 1993). The Internet lowers the cost of information search, making it easier to find and compete for jobs (Anderson, 1995). Those who are more comfortable in using the Internet for information retrieval are ahead in finding jobs. The information intensity of all activities are so high in western societies, that the majority of functions largely or completely rely on tasks regarding information processing (Van Dijk, 2012). This requires knowledge on how to acquire and process information online. As De Haan (2003) concludes: "the use of IT and the level of digital skills influence who is ahead, who is getting by and who is left behind in the information society". This quote is referred to in the title of this research, as it captures the essence and importance of the second digital divide.

Leisure, stress-relieving Internet use will also lead to capital, but less so as using the Internet for information retrieval. Research shows that leisure Internet use will lead to an increase in social capital, examples being life satisfaction, psychological well-being and trust (Ellison, Steinfield & Lampe, 2007; Valenzuela, Park & Kee, 2009). Individuals use the Internet to keep in contact with distant relatives, maintaining larger social networks than non-Internet users (Uslaner, 2004). These networks can be in turn used for obtaining forms of capital. Even though the effects of leisure Internet use on capital are smaller than informational Internet use, it is still important to take these effects into account.

The beneficial use of Internet is relevant to societal practice, as certain groups might use the Internet in ways to enhance their capital whereas other groups might not. This will eventually lead to more social and economic inequality between these groups.

Even though the Netherlands has the highest Internet access rate of all developed countries (OECD, 2018b), little is known on the effect of the second digital divide on Dutch society as most research has been performed in the United States. As the Netherlands differs much from the United States in economy, government and culture, these results might not be applicable on the Dutch society. Another troublesome fact is that theories on the second digital divide are isolated from each other. There is no cohesive theoretical framework on the second digital divide. In this paper theories on the existence of the second digital divide will be compared, combined and translated into hypothesis matching the Internet usage characteristics of the Dutch population. To understand how the second digital divide persists in the Netherlands, the Internet usage patterns of different groups need to be researched.

The following research question will be answered in this research: *"to what extent does the difference in informational or leisure Internet use exist among different social groups in the Netherlands?".*

Seeing how different groups in the Netherlands use the Internet show the essential fundamentals of the second digital divide. When it is clear which groups do not use the Internet for capital-enhancing purposes, policies can be implemented to encourage these groups to use the Internet to increase their social and economic status. This will close the second digital divide and create a stepping-stone to total social and economic equality. There will be a predominant focus on informational Internet use, as this is the type of Internet use that causes the most inequality in capital between certain groups.

This research is divided into several parts. First, there will be a discussion of theories on the second digital divide in the theoretical framework. Motivations behind Internet usage will be discussed. Next, the groups in which Internet usage differs will be discussed. Hypothesis are developed to test if these differences appear in the sample of the Dutch population used in this research. Second, the methods will be discussed. In this section, there will be an overview of the used data. The data originates from the Longitudinal Internet Studies for the Social sciences (LISS) panel. A total of 11677 respondents are included in this research. This section also contains the analytic strategy. Third, the results will be discussed and it will be made clear if the data supports the hypothesis established in the theoretical framework. Fourth, a conclusion will be given. There will be an interpretation of the results given and see what the probable causes of the dividing nature in Internet use between groups are. Fifth, a discussion will take place. A summary will be given on what impact the results have on Dutch society. Limitations of this research will be discussed as well. Advice will be given on further research on the second digital divide in the Netherlands.

Theoretical framework

In this paragraph, theories regarding the second digital divide will be discussed. Theorists argue there are certain motivational needs that lead to the use of the Internet in a certain way (Katz, Blumler & Gurevitch, 1973; Maslow, 1943; Jackson, Ervin, Gardner & Schmitt, 2001). These motivational needs are elaborated on, as they might provide insight in why there is a digital divide. Researches have shown that there are certain groups in which the difference in Internet usage is very persistent. These groups are based on educational level, income, gender, age and the urban character of their place of residence (Van Dijk, 2012; Madden, Richards & Zambito,

2013; Martin & Robinson, 2007; Van Deursen & Van Dijk, 2009; Van Deursen, 2012; Hale, Cotten, Drentea & Goldner, 2010; Stern, Adams & Elsasser, 2009) . The motivational needs per group will be discussed. Based on data in the Netherlands, there will be a review of earlier research to see if this divide is persistent in the Netherlands as well. Hypothesis are developed to test the assumptions based on the theory.

Motivational needs

Long before the Internet even existed, Katz et al. (1973) developed the 'uses and gratifications theory' based on other forms of mass media like television and radio. In this theory, Katz et al. argue that humans have social and psychological needs. These needs generate expectations of the use of mass media. To fulfil these needs, different patterns between media exposure and use start to occur between humans. These different patterns of exposure and use will then result into need gratifications. Summarizing, different types of needs lead to different types of media use. Certain types of media use will lead to certain types of gratification.

The fundamentals of the uses and gratifications theory are based on Maslow's (1943) theory of human motivation. According to Maslow, there are five levels of needs one can achieve. The first are physiological needs. These needs are necessary to be alive, such as food and water. The second are safety needs. These are needs for physical and emotional safety, but also economic stability. The third is the need to socially belong. The fourth are esteem needs. These needs are used to gain status, importance and recognition from others. The fifth is the need for self-actualization. This is the strive towards full potential and may differ from person to person. According to Maslow, individuals are motivated to achieve all the levels of needs, but must focus on the first level of needs first before they can focus on the next level(s). Whereas leisure use is most likely to be placed under socially belonging, informational use is most likely used for esteem and self-actualization. It is possible that not everyone in the Dutch society is motivated to achieve the levels of esteem and self-actualization, as they are concerned with needs below them.

Affective and cognitive factors play a role in Internet use as well (Jackson, Ervin, Gardner & Schmitt, 2001). When one has a negative affective experience on the Internet, he or she will tend to avoid these activities on the Internet in the future. Cognitive factors include the familiarity and the belief that one can learn how to use the Internet properly, mainly for informational use. Trust in technology and attitudes regarding the Internet are important cognitive factors as well. When an individual has no familiarity, little belief and trust and negative attitudes towards the Internet, he or she may avoid using the Internet for informational

use.

Needs, gratifications, affective and cognitive factors all have influence on Internet usage. To understand why certain groups have different types of Internet use, the underlying motivations need to be discussed. The groups in which different Internet usage is persistent are discussed below, as well as the motivations why this difference in usage occurs.

Education

The lower and higher educated are found to differ in using the Internet. In the Netherlands, the following categories are maintained to distinguish educational levels:

Lower	Primary school	8 years
	Vmbo (intermediate secondary education, US: junior high school)	12 years
Middle	Havo/vwo (higher secondary education/preparatory university education, US: senior high school)	13/14 years
	Mbo (intermediate vocational education, US: junior college)	13, 14, 15 or 16 years, depending on the level
Higher	Hbo (higher vocational education, US: college)	17 years
	Wo (university)	18 years

There is no literature on the population with middle levels of education. This is why the distinction between lower and higher educated will be made throughout this research. Those who are higher educated are found to easier obtain educational or occupational information than those who are lower educated in the United States (Robinson, DiMaggio & Hargittai, 2003). Van Dijk (2012) shows in his research that those with a higher level of education use the Internet more for informational use than those with lower levels of education, in the United States as well as in the Netherlands. This is likely because universities were the first to embrace computers (Hargittai, 2004). Those who finished university are likely to be exposed to computers and the Internet during the course of study. Those who are higher educated usually have more exposure with technology in general, making it easier to understand how information retrieval on the Internet works (Hargittai, 2004). Those who are exposed to innovative technology in their environment are more likely to adopt a personal computer, creating even more familiarity with information retrieval on the Internet (Dutton, Rogers & Jun, 1987). Those who are lower educated might find it harder to retrieve information on the Internet, making it more likely they retrieve their information somewhere else.

According to Cho, De Zuniga, Rojas & Shah (2003), the higher educated are motivated to use the Internet for information retrieval to increase their social status. Because those who are higher educated find it easier and have more needs to obtain information than lower educated, they will use the Internet more for informational use.

Hypothesis 1: The higher educated spend more time on informational use on the Internet than the lower educated.

Individuals with lower levels of education are more likely to participate in leisure activities on the Internet in the Netherlands (Van Dijk, 2012). There is mixed evidence for this assumption. Research done by Van Deursen & Van Dijk (2009) in the Netherlands show that there is no difference in leisure use between the lower and higher educated. On the contrary, later research does show that the lower educated Dutch population participate more in leisure activities on the Internet (Van Deursen & Van Dijk, 2014; Simons, de Vet, Brug, Seidell & Chinapaw, 2014).

There are no theories on the motivations behind leisure use on the Internet for differently educated groups. According to the theory of human motivation (Maslow, 1943), it is likely that higher educated have more need and time to participate in leisure use as they probably have their basic needs fulfilled. The lower educated might struggle with safety needs, such as financial security, making it less likely to be motivated for needs beyond creating a stable living situation. However, it is also possible that the higher educated have more motivation to spend time on informational Internet use, making them spend less time on leisure use in proportion to the lower educated. As there is no clear motivation behind the amount of time spend on leisure use between the higher and lower educated, there is no hypothesis established.

Income

Different income groups have found to differ on informational Internet use. Those with a higher income are more likely to use the Internet for informational use than those with a lower income in the United States (Madden, Richards & Zambito, 2013; Martin & Robinson, 2007). Statistics from the Netherlands on informational Internet use between different income groups are missing. Low-income communities are excluded from informational Internet use in general (Schön, Sanyal & Mitchell, 1999). Those with a low income often have a non-welcoming, untrusting attitude towards the informational properties of the Internet (Schön et al., 1999).

Furthermore, individuals with a higher income will use the Internet because they are motivated to achieve certain gratifications Cho et al., 2003). They will mostly use the Internet for learning and information acquisition to help increase their social-economic status even further. This is in line with Maslow's (1943) theory on human motivation. It is likely that those

with a higher income have a financial stable situation, making it possible to focus on status-enhancing activities. Concluding, those with a higher income are more likely to be motivated to use the Internet for informational use than those with a lower income.

Hypothesis 2: Those with a higher income spend more time on informational use on the Internet than those with a lower income.

Those with a higher income in the United States are more likely to use the Internet for leisure use (Madden, Richards & Zambito, 2013). Statistics on leisure Internet use in the Netherlands between different income groups are missing. Jansen (2010) argues that this is possible because those with a higher income are more likely to afford high-end devices to play games on. There are currently no theories available on the motivation behind leisure use regarding different income groups. As argued in the *education* section, it is possible that the higher educated spend more time on leisure Internet use as they have created an economically stable situation for themselves. However, those with a higher income might have a larger need for informational Internet use, spending less time on leisure use comparing with those with a lower income. As there is no real theoretical basis, there is no hypothesis established.

Gender

Gender plays an important part in explaining difference in Internet use. Men spend more on informational use than women at home in the United States (Hargittai, 2004). Van Deursen & Van Dijk (2009) found the same results in the Netherlands. This is likely because women have less leisure time at home than men (Hargittai, 2004). Household and other family-related tasks usually rely on the women in the household, even if these women have a job next to their household. Because they have less leisure time, it is harder for women to familiarize themselves with computers.

Women do not look up information as often, since women think they are not as good in retrieving information from the Internet as men (Hargittai & Shafer, 2006). Women report more computer anxiety and less efficacy (Jackson, Ervin & Gardner, 2001). Next to this, men often show greater sex-role stereotyping of computer use, creating more internalized stereotypes (Whitley, 1997). This causes society to motivate men from early on to use computers and the Internet, whereas females are discouraged (Van Dijk, 2012). Gender norms in society encourage men to try out new technology whereas women are too afraid of the accompanying risks (Fallows, 2005). As a result, men become more adept in using computers and the Internet.

Jackson et al. (2001) also found that men have a stronger overall motivation to search for information than women. Because women do not feel comfortable in retrieving information

and have less time and motivation to do so, they will invest less time in informational use than men do.

Hypothesis 3a: Men spend more time on informational use on the Internet than women.

Men spend more time on leisure on the Internet than women in the United States (Hargittai, 2004). Van Deursen & Van Dijk (2009) found that men spend more time on leisure than women in the Netherlands. It is likely that women spend less leisure time on the Internet as they have less leisure time in general (Hargittai, 2004).

Another explanation are the dominant gender norms in society. Gaming activities are often targeted towards men, containing masculine topics and sexist representations of women (Hayes, 2011 & Kirkpatrick, 2017). Because women do not feel as comfortable in using the Internet as men do and have less time to do so, they will invest less time in leisure use than men do.

Hypothesis 3b: Men spend more time on leisure use on the Internet than women.

Age

Age explains difference in Internet use. Fox & Madden (2005) show that older people in the United States, beginning at the age of 30, use the Internet for informational use more than their younger counterparts. Van Deursen (2012) performed a research in the Netherlands to test which age groups are better in obtaining reliable information. His results showed that those older than 30 were more likely to retrieve reliable information, whereas their younger counterparts failed to do so more often.

However, older people seem to only outperform younger people if they are more acquainted with computers (Van Deursen, Van Dijk & Peters, 2011). According to several authors, older people had less opportunities to get acquainted with computers and the Internet than younger people (De Haan & Huysmans, 2002; Hargittai, 2002). Most older people are less skilful using the Internet for informational use than the youngsters in the Netherlands (Van Deursen & Van Dijk, 2014; Van Deursen, Van Dijk & Peters, 2011). This may lead to avoidance of using the Internet for informational purposes.

The motivation to use the Internet as a youngster is the same as those with a high socioeconomic status discussed in *education* and *income* (Cho et al., 2013). Younger people will use the Internet for information retrieval and educational uses to improve their status. This is less apparent in older people. Because older people in general are less comfortable with using the Internet and younger people have more motivation to use the Internet for information

retrieval, it is more likely that younger people will invest more time in informational use than older people do.

Hypothesis 4a: Younger people spend more time on informational use than older people.

Research shows that younger users are more likely to use the Internet for fun activities than older users, in the United States as well as in the Netherlands (Howard, Rainie & Jones, 2001; Hargittai, 2007; Van Dijk, 2008). Younger people have a larger need to use media for leisure than older people (Katz et al., 1973). Leisure use will fulfil the need for self-esteem, affiliation with a network and will reduce anxiety.

Younger people have a larger need to connect with other people over the Internet than older people as well (Cho et al., 2003). Because younger people have more need for leisure of the Internet than older people, they will invest more time in leisure use than older people do.

Hypothesis 4b: Younger people spend more time on leisure use on the Internet than older people.

Urbanity

The urbanity of the place of residence can influence Internet use. Those living in urban areas access the Internet more for informational use than those living in rural areas (Hale, Cotten, Drentea & Goldner, 2010; Stern, Adams & Elsasser, 2009). This is a consequence of education and income (Hale et al., 2010). Those who live in rural areas often have fewer years of education compared with those who live in urban areas. This is partly because the young, skilled and educated often move from rural areas to urban areas as the latter has more economic and educational opportunities (Sullivan, Borgida, Jackson, Riedel, Oxendine & Gangl, 2002).

Those who live in urban areas have more need to use the Internet for informational use as Internet skills are often required for their occupations (Hale et. al, 2010). Rural residents have less need for informational use of the Internet, as the community is often tight-knit. Information on jobs is spread through face-to-face contact, rather than through the Internet (Orviska & Hudson, 2009). It appears that those living in urban areas have a seemingly larger need for informational use of the Internet than those living rural areas.

Hypothesis 5a: Urban residents spend more time on informational use on the Internet than rural residents.

The theory shows that motivations behind informational Internet use has little to do with the urban area itself, but rather the motivations discussed in the *education* and *income* section. If

someone lives in an urban area it is most likely that they are highly educated and have a decent income. Therefore, it is suspected that the effect of urbanity on informational Internet use is mediated through education and income.

Hypothesis 5b: The effect of urbanity on informational Internet use is mediated by education and income.

However, it is not possible to assume a parallel mediation as one of its conditions is that the mediators are not allowed to be causally related in any way (Hayes, 2013). It has causally been proven that education has an effect on income in numerous research in different settings (Tinbergen, 1972, Gregorio & Lee, 2012, Yang & Gao, 2018). A multiple-step multiple mediator model, also called a serial mediator model, is appropriate in this situation (Hayes, 2009; 2012). In this case the model argues that urbanity has a positive effect on education and income, where education has a positive effect on income. Urbanity, education and income are all expected to have a positive effect on informational Internet use. It is possible that there is full mediation, meaning that the effect between urbanity and informational Internet use disappears due to the effect mediators. It is also possible that there is a partial mediation, meaning that urbanity still explains some variance in informational Internet use next to education and income.

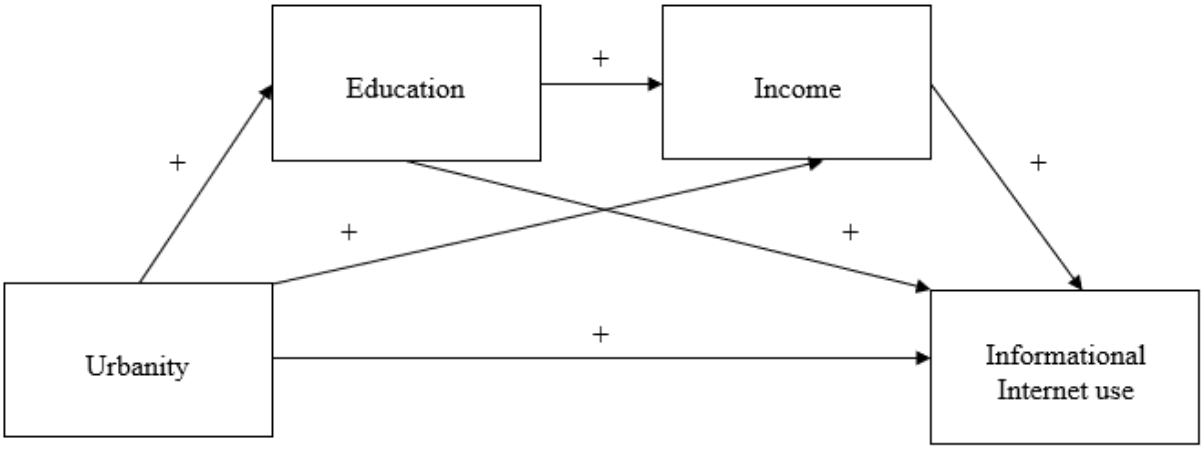

Figure 1. Serial mediator model for the effect of urbanity on informational Internet use.

As for leisure Internet use, there is little research available on the comparison of time spent on leisure on the Internet between rural and urban residents. However, there is theoretical evidence that rural residents have more need to use the Internet for leisure activities than urban residents. Those living in rural areas spend more time on addictive leisure Internet activities than those living in urban areas (Weinstein & Lejoyeux, 2010). There are not many activities in rural areas,

leading adolescents to seek pleasure and sensation elsewhere (Gordon & Caltabiano, 1996). This will result in rural residents for stimulus on the Internet, as there are not many around them in real life (Weinstein & Lejoyeux, 2010). Stern & Adams (2010) found that rural residents spend their leisure time on the Internet to connect with other people outside their area as well. Leisure time is also spend on finding out about events outside their area and buying goods that are only available outside their area. Those living in rural areas seem to have a larger motivation to participate in leisure activities online than those living in urban areas, as there are less leisure activities available offline.

Hypothesis 5c: Rural residents spend more time on leisure use on the Internet than urban residents.

Total model of informational Internet use

The total model explaining informational Internet use is depicted in figure 2.

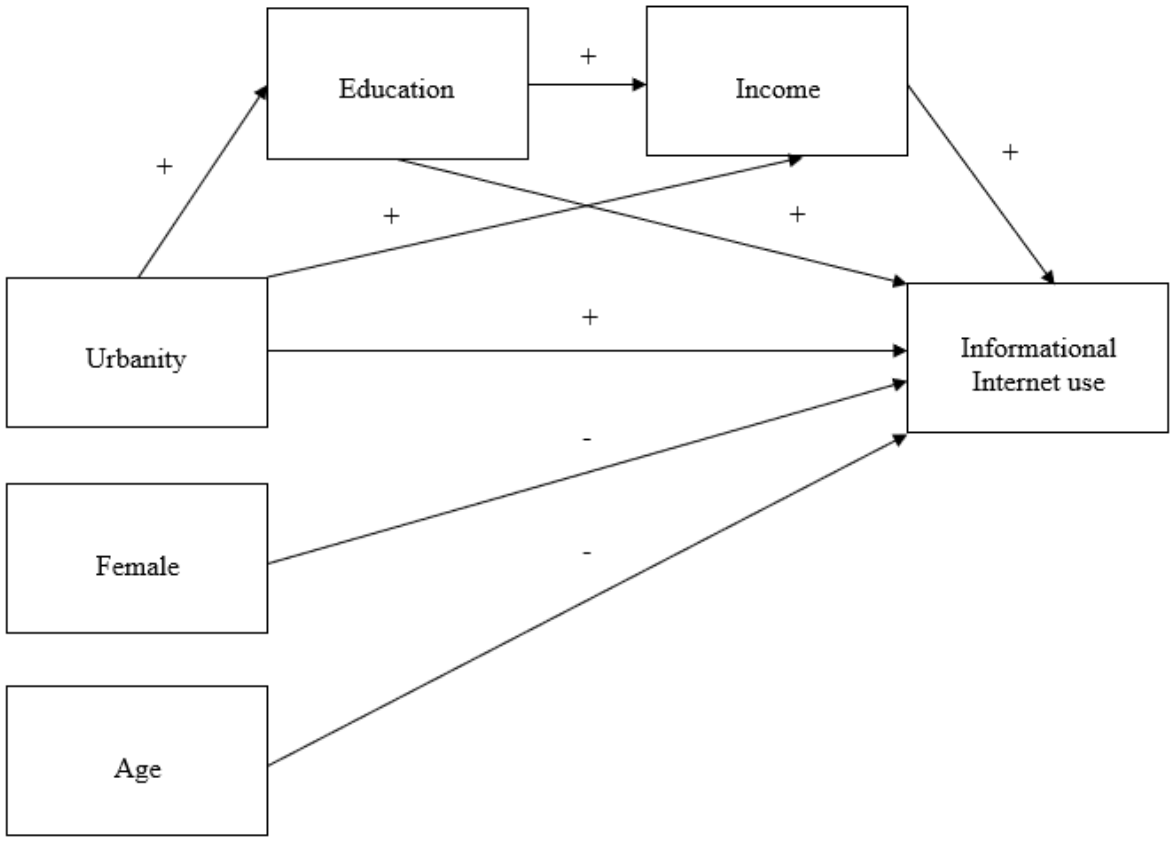

Figure 2. Variables that most likely have an effect on informational Internet use.

It is expected that living in an urban area has a positive effect on informational Internet use. However, this effect is mediated through education and income. Being female is expected to

have a negative effect on informational Internet use. It is expected that the older one gets, the less he uses the Internet for informational purposes.

Methods

Data from the LISS (Longitudinal Internet Studies for the Social sciences) panel, administered by CentERdata, was used to answer the research question and formulated hypothesis. The LISS panel is a representative sample of Dutch individuals who participate in monthly Internet surveys. The panel is based on a true probability sample of households drawn from the population register, provided by Statistic Netherlands. A longitudinal survey is fielded in the panel every year, covering a large variety of topics. Background variables gathered on October 2017 were used in this research, as they are compatible with the social integration and leisure module. This module contains variables on Internet use. Data from wave ten was used on the social integration and leisure model, which was gathered in the course of October 2017 as well. This was the most recent dataset for this module. The social integration and leisure module is fielded every year, whereas the background variables are fielded every month.

Combining the two datasets led to a total of 11677 respondents who answered questions from the panel. Some respondents reported missing values on the used variables in this research, only respondents that have a valid value on all used variables were taken into account in this research. This resulted into 5279 respondents that have values on all variables. As there are two different dependent variables used in this research, the number of respondents having values on all variables differed per dependent variable. 5399 respondents were taken into account when answering the hypothesis formulated on informational Internet use. 5305 respondents were taken into account when answering the hypothesis formulated on leisure Internet use. It is unclear where this discrepancy in respondents comes from. As the LISS panel claims to interview 7000 respondents in their monthly surveys, the amount of 11677 seems quite high in the first place. Almost all of the missing values are due to the variables on Internet use. It is possible that these respondents have participated in the past, but have not done so in October 2017. There is some attrition in the response rate of the LISS panel (LISS panel, n.d.). If these non-active participants are still included in the data, their background variables might still be persistent even though they did not answer questions in the social integration and leisure module. There are not any explanations given by the LISS panel on why the number of respondents is much higher in the dataset than their original 7000.

Principal axis factoring

The dataset contained seventeen variables on average numbers of hours spent on a specific Internet activity. Respondents were asked how many hours per week they spend on a certain online activity. All the variables are ratio scaled. The seventeen variables can be found in table 1. As there is no clear theory on which activities belong to informational Internet use and leisure use, several combinations of variables that seemed logical were put in a scale. Unfortunately, these scales constructed purely on intuition did not form a reliable measure. This is why a factor analysis was performed. Factor analysis is a data reduction technique where interrelationships between a large number of variables can be identified (Allen & Bennett, 2012, pp. 199-210). The factor analysis produced the underlying structure of the seventeen variables. The results were used to construct the seventeen variables into two separate scales, one for informational Internet use and one for leisure Internet use. Respondents were subjected to principal axis factoring with promax rotation. Promax is an oblique rotation method which assumes that factors are correlated with each other. The results can be found in table 1. The total amount of factors was fixed to two, as there are two types of Internet use to be distinguished according to the theory. In total, the factors accounted for 64.6% of the variance in the data.

Table 1. *Promax rotation with Kaiser Normalization for the PAF: Types of Internet use*

Variable	**Loadings***	
	Factor 1	Factor 2
Searching for information on the Internet (e.g. about hobbies, work, opening hours, daytrips, etc.)	1.016	
Chatting, video calling or sending messages via WhatsApp, Telegram, Snapchat, Skype or similar services	.993	
Other activities on the Internet	.988	
Searching for and comparing products/product information on the Internet	.985	
Reading and viewing social media (e.g. Facebook, Instagram, Twitter, YouTube, LinkedIn, Google+, Pinterest, Flickr, or similar services)	.954	
Email	.904	
Newsgroups	.539	.392
Dating websites (like Relatieplanet, Lexa, Tinder, Grindr or similar services)		.903
Visiting (discussion)forums and Internet communities		.897
Reading and/or writing blogs		.832
Purchasing items via the Internet		.830
Downloading software, music or films		.643
Reading online news and magazines	.486	.603
Posting messages, photos and short films on social media yourself (e.g. Facebook, Instagram, Twitter, YouTube, LinkedIn, Google+, Pinterest, Flickr, or similar services)		.551
Internet banking		.489
Watching online films or TV programs		.342
Playing Internet games/online gaming		.141

Notes: *Absolute values less than 0.3 are suppressed with the exception of playing Internet games/online gaming. Variables are ordered from highest factor loadings to lowest. The cumulative percentage of the variance explained is 64.6.

The variables in table 1 are ordered from higher factor loadings to lowest. The higher the loading, the more likely the factor underlies the variable. The closer a factor loading is to 1, the more they affect the structure of the variable. The first seven variables load high on the first factor. These activities can be classified as informational use. The last ten factors load high on the second factor, activities that can be classified as leisure use. There are some constraints in this analysis.

First, other activities on the Internet scored high on informational use. Unfortunately, it is not specified what these other activities might entail. However, it was decided to keep this variable in the analysis as it might contain valuable behavioural information regarding informational use.

Second, playing Internet games/online gaming has a very low factor loading on the second factor. Variables with factor loadings lower than 0.3 are usually not taken into account in factor analysis. However, playing games is a legimate leisure activity. For this reason, gaming is still taken into account when looking at the second factor.

Third, the factor analysis gave results on the underlying structure which are different than one might expect based on theory. There are certain variables that one might place under leisure Internet use, but load high on informational use and the other way around. Chatting, video calling and sending messages would be likely perceived as a leisure activity, even though this variable loads very high on Informational use. It can be argued that important information spread through these channels as well. To test if these factors really explain the underlying structure of the variables a reliability test was performed, particularly Cronbach's alpha. Cronbach's alpha is used to assess the extent to which a set of questionnaire items tap a single underlying construct. The seven variables loading high on the first factor have a Cronbach's alpha of .763. A Cronbach's alpha above .7 is believed to be acceptable in the social sciences (Allen & Bennett, 2012). After a closer examination of the statistics, deletion of none of the items would lead to a higher Cronbach's alpha. Therefore, it can be assumed that the variables loading high on the first factor are internally consistent and measure informational Internet use. The Cronbach's alpha of the other ten items that load high on the second factor is .746. The deletion of online gaming would lead to an increase, but it has been decided to still take this variable into account as it is a genuine leisure activity. The Cronbach's alpha show that the ten items are internally consistent and measure leisure Internet use.

Dependent variables

Informational Internet use

A scale was constructed of the seven variables using the sum of hours measuring informational Internet use. This was done by adding all the hours spend on informational activities online per week, leading to a total amount of hours spend on informational Internet use. 5897 respondents did not report any informational Internet use. Unfortunately, there were some very extreme values after constructing the informational Internet use scale. After deliberation, it was decided that a respondent can spend a maximum amount of weekly hours of 115 on internet activities. This is around 16.5 hours on the Internet per day. Whereas more hours is technically possible, it is practically not likely due to sleeping, eating and other necessary activities during the day. Twelve respondents with more than 115 hours spend on informational Internet use were recoded as missing. This lead to a total amount of 5909 missing respondents on the informational use scale. As mentioned before, the large amount of missing values is probably because Internet use is measured in a longitudinal survey which is measured once per year. It is believed that there are a lot of respondents that have answered questions on the monthly panel measuring background variables but have not participated in the longitudinal survey.

Leisure Internet use

The other ten variables measuring leisure Internet use were constructed into a scale using the total amount of hours as well. 6008 respondents did not report any leisure activities on the Internet. Four respondents with extreme values on the leisure use scale were recoded as missing, reporting more than 115 weekly Internet hours. This lead to a total amount of 6012 missing respondents.

Independent variables

Education

The variable *level of education in CBS (Statistics Netherlands) categories* was used to measure the educational level of a respondent. Respondents were asked what their highest completed educational level is. 587 respondents reported missing values on this variable. The *level of education* variable is coded in an ordinal scale based on categories of Statistics Netherlands and contains the following values:

1. Primary school	8 years
2. Vmbo (intermediate secondary education, US: junior high school)	12 years
3. Havo/vwo (higher secondary education/preparatory university education, US: senior high school)	14 years
4. Mbo (intermediate vocational education, US: junior college)	16 years
5. Hbo (higher vocational education, US: college)	17 years
6. Wo (university)	18 years

To use the *level of education* in analysis the levels have been recoded into total years of education, which can be found next to the name of the educational level. It is important to note that havo/vwo and the different levels in mbo differ in years. It has been decided to use the highest amount of years a respondent can get when completing one of these levels. This turns the variable into a ratio variable, suitable for most types of analysis.

Income

The variable *personal net monthly income in Euros, imputed* was used to measure the income of the respondent. Respondents were asked wat their individual net income in Euros is. When the respondent did not give an answer the value was estimated based on a number of variables by the LISS researchers, hence the variable being imputed. The imputation is based on the observations where net and gross income is positive and filled out exactly, position within the household and primary occupation. Despite the imputation, 769 respondents still had missing values on this variable. A box plot, a graphical display showing the distribution of the data, showed four extreme outliers. These four respondents reported a net income starting at 109107 and ending at 248081 per month. The random numbers are unlikely for a monthly income and their extreme values create noise in the data. Therefore, they were recoded using the *Limit of Detection* rule. This rule describes the smallest concentration of a measure that can be reliably measured by an analytical procedure (Armbruster & Pry, 2008). The general rule is to multiply the standard deviation by three and add the mean. The standard deviation in this sample is 344.986. The mean is 1325.61. The outcome of the formula is 11700 euros. The four extreme values were recoded to have a net income of 11700 euros per month. The *net monthly income* variable is coded in an ratio scale.

Gender

The variable *gender* was used to measure the gender of the respondent. Respondents were asked if they identified with being a male or female. One respondent has a missing value on this

variable. The original variable contained the values 1 and 2. For continuity reasons, the variable was recoded so it contains the values 0 and 1. The value of 0 means that the respondent is male, the value of 1 means that the respondent is female. For the sake of interpretation, the name of the variable was changed to *female*.

Age

The variable *age of the household member* was used to measure the age of the respondent. Respondents were asked to fill in their year of birth. The variable *age* is based upon their birthyear. One respondent did not fill in their birthyear. It is important to note that the panel on the subject social integration and leisure was only conducted on respondents who are 16 years and older. This means that next to the one respondent that did not fill in their birthyear, 1756 respondents younger than 16 years old were not taken into account in this research.

Urbanity

The variable *urban character of place of residence* was used to measure urbanity. Respondents were asked where they live. The urban character of their place of residence was then determined by address density per square kilometre. 117 respondents had missing values on this variable. As the theory makes a distinction between urban and rural areas, the variable was recoded into the dummy variable *urban.* The value of 0 means living in a rural area, the value of 1 means living in an urban area.

Descriptive statistics

Table 2 shows the descriptive statistics on the dependent and independent variables, for both samples.

There is a maximum of 114 hours spend per week on informational Internet use, and a maximum of 111 hours per week spend on leisure Internet use. The mean of both types of Internet use is quite low compared to the maximum hours spend. On average, respondents spend more time on informational Internet use per week than leisure use. The descriptive statistics on the independent variables do not differ much per sample. On average, the respondents have completed 15 years of education, which is associated with middle level of education in the Netherlands. There are respondents in the dataset with no income, filled in as zero. The highest net income is 11700 euros per month.

Table 2. *Descriptive statistics of used variables.*

Variable	**Min**	**Max**	**M**	**SD**	**Variable**	**Min**	**Max**	**M**	**SD**
Informational Internet use	0	114	14.51	14.64	Leisure Internet use	0	111	8.17	9.9
Education	8	18	14.96	2.75	Education	8	18	14.98	2.75
Income	0	11700	1615.73	1060.56	Income	0	11700	1619.5	1090.96
Female	0	1	.54	.5	Female	0	1	.54	.5
Age	16	100	50.76	18.1	Age	16	100	50.42	18.02
Urban	0	1	.85	.35	Urban	0	1	.85	.35
N=5399					N=5305				

Notes: N = sample size. Min = Minimum value of variable. Max = Maximum value of variable. M = Mean of variable. SD = Standard deviation of variable.

On average, respondents report a net income of around 1615 euros per month. 54 percent of the respondents are females, meaning there are a little more females in the dataset than males. The youngest respondents in the dataset are 16 years old, the oldest 100 years old. The average age is around 50 years old. Most respondents live in an urban area, around 15 percent live in a rural area.

Analytic strategy

PROCESS will be used to test the formulated hypothesis on informational Internet use. PROCESS is an add-on for the statistical program SPSS, and allows researchers to test more complex models regarding mediation and moderation. It combines the tests needed for complex models into one program. For our hypothesis, it allows to test for multiple mediators in a causal sequence alongside additional independent variables. This allows for easier interpretation than using multiple regression models, as it provides an overview of all direct and indirect effects of the variables. A serial multiple mediator model is used, also referred to in PROCESS as “model 6”.

A multiple linear regression model will be used to test the formulated hypothesis on leisure Internet use. A multiple linear regression model is used to predict a value of a dependent variable based on the value of two or more independent variables. In this research, leisure Internet use will be predicted by a number of variables hypothesized in the theory section.

Results

Serial multiple mediator model for informational Internet use

Before estimating the multiple mediator model using PROCESS, the assumptions of multiple regression analysis will be checked. These assumptions are constructed to ensure a reliable output. The following assumptions, as constructed by Allen & Bennett (2012, pp. 182-183), were checked: multicollinearity, normality and linearity of the residuals and the homoscedasticity of the residuals. Multicollinearity refers to the phenomenon of one ore multiple independent variables being highly correlated (Allen & Bennett, 2012, p. 183). This can render a regression model unstable. The collinearity statistics in SPSS, tolerance and VIF, both show that there is no problem with multicollinearity in this sample. The residuals have to be normally distributed and form a linear relationship with the independent variables. Unfortunately, these assumptions are not met. However, as Micceri (1989) argues, normality assumptions are often not met in social research. According to Rietveld & van Hout (2015), nonnormality and non-linearity should not pose a problem if the sample used is large enough. Because the variables were checked for outliers prior to the analysis and the sample contains 5399 respondents, there is enough support to believe that the violation of this assumption will not cause any troubles in the regression analysis. Homoscedasticity occurs when the variance of error is the same over all independent variables (Allen & Bennet, 2012, p. 183). After controlling the plot of the residuals in the regression model, there does seem to be homoscedasticity.

PROCESS delivered four models. The first model shows the effect of urbanity on education. The second model displays the effect of education and urbanity on income. The third model shows the direct effects of all the hypothesized variables on informational Internet use. The mediator variables, education and income, are not considered in this model. The fourth model shows the indirect effect of urbanity through education and income, as well as the direct effects of all predictor variables on informational Internet use.

Table 3. *Four models as a result of PROCESS, explaining the direct and indirect effects of the hypothesized predictor variables on informational Internet use.*

	Model 1		**Model 2**		**Model 3**		**Model 4**	
Outcome variables	**Education**		**Income**		**Informational Internet use**		**Informational Internet use**	
Predictor variables	**B**	**SE**	**B**	**SE**	**B**	**SE**	**B**	**SE**
Urbanity	.310**	.106	128.779**	38.393	2.414***	.538	2.009***	.532
Education			144.360***	5.005			.138	.075
Income							.002***	.001
Female					-.449	.384	1.148**	.404
Age					-.231***	.011	-.256***	.011
R^2		.002		.159		.085		.110
N		5399		5399		5399		5399

Notes. Unstandardized regression coefficients. *** = p <.001. ** = p<.01, *p<.05.

The first model shows the effect of urbanity on the first mediator, education. This effect is significant (*b*=.310, *t*(5397)=2.930, *p*<.01), meaning that residing in an urban place has a positive effect on education.

In the second model, the second mediator income is predicted by both the independent variable urbanity and the first mediator. The effect of urbanity on income is significant (*b*=128.779, *t*(5396)=3.312, *p*<.01) as well as the effect of education on income (*b*=114.360, *t*(5396)=28.842, *p*<.001). Residing in an urban place will lead to an increase of around 129 euros per month in net income. Every increase in educational level will lead to an increase of around 144 euros per month in net income.

The third model shows the direct effect of urbanity on informational Internet use, as well as the effects of gender and age on informational Internet use. The mediators, education and income, are not considered in this model. The direct effect of urbanity on informational Internet use is shown to be significant (*b*=2.414, *t*(5395)=4.484, *p*<.001). Being female has no significant effect on informational Internet use (*b*=-.449, *t*(5395)=-1.169, *p*=.243). There is a significant negative effect of age on informational Internet use (*b*=-.231, *t*(5395)=21.828,

p<.001). The third model explain 8.5% of the variance in informational Internet use (R^2=.085. F(3,5395)=116.850, p<.001).

The fourth model adds the two mediator variables, education and income, and explains 11% of the variance in informational Internet use (R^2=.110, F(5,5393)=132.862, p<.001). The fourth model predicts significantly more of the variance in informational Internet use than the third model (ΔR^2=.025 , ΔF(2, 5393)=75.014 , p<.001). As the fourth model including the mediators predicts significantly more variance, this model will be used to answer the formulated hypothesis.

There is a no significant direct effect of education on informational Internet. This means that the first established hypothesis, *the higher educated spend more time on informational use on the Internet than the lower educated,* is not supported by the data. However, the second model shows that there is a direct significant effect of education on income. Even though education has no direct effect on informational Internet use, the indirect effect still persists through income.

The direct effect of income on informational Internet use is significant and positive (b=.002, t(5393)=10.386, p<.001). This means that the second hypothesis, *those with a higher income spend more time on informational use on the Internet than those with a lower income*, is supported by the data. With every increase in income, one spends .002 more on informational Internet use. This means that the difference between the respondents with no income and the respondents with the highest income in informational Internet use is 23.4 hours per week.

Being female has a significant positive effect on informational Internet use (b=1.148, t(5393)=2.841, p<.01). This means that the third established hypothesis on informational Internet use, *men spend more time on informational use on the Internet than women*, is not supported by the data. The results show that women spend more time, around one hour and ten minutes, on informational use on the Internet than men per week. Interestingly enough, the effect of gender on informational Internet use was not found to be significant in the third model. It is possible that education, income or both variables suppressed the effect of gender on informational Internet use.

The effect of age on informational use is significantly negative (b=-.256, t(5393)=-23.541, p<.001). The fourth hypothesis on informational Internet use, *younger people spend more time on informational use than older people,* is supported by the data. With every year a respondent gets older, they spend around 15 minutes less on informational Internet use.

Even with the added mediators, urbanity still has a positive significant direct effect on

informational Internet use (b=2.009, t(5393)=3.776, p<.001). The data supports that there is a direct effect of urbanity on informational Internet use meaning that the fifth hypothesis established on informational use, *urban residents spend more time on informational use on the Internet than rural residents*, is supported by the data. As discussed before, the first model shows that urbanity has a positive effect on education. The second model shows that education has a positive effect on income. Income has a positive effect on informational Internet use. Because the effect of urbanity on informational Internet use does not disappear after adding the mediators, there is a partial mediation effect. The fifth hypothesis on the mediation effect, *the effect of urbanity on informational Internet use is mediated by education and income*, is therefore supported by the data.

The complete model including all effects are shown in figure 3.

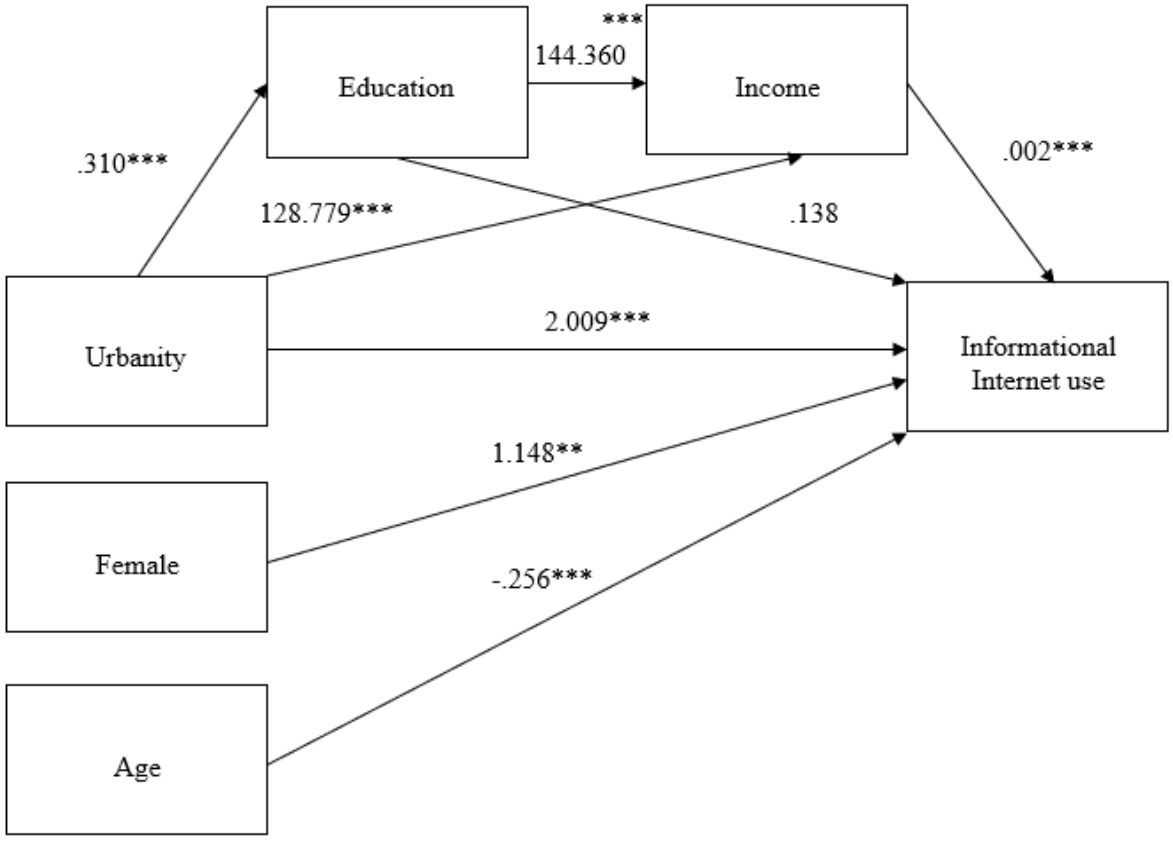

Figure 3. Results incorporated in the hypothesized serial multiple regression model.

Multiple regression model for leisure Internet use

Before estimating the multiple regression model, the assumptions by Allen & Bennett (2012) were checked. The collinearity statistics in SPSS, tolerance and VIF, both show that there is no problem with multicollinearity in this sample. The residuals have to be normally distributed and form a linear relationship with the independent variables. Unfortunately, the residuals in this sample are not normally distributed and do not form a linear relationship. However, this should not pose a problem if the used sample is large enough (Rietveld & van Hout, 2015). Because the variables were checked for outliers prior to the analysis and the sample contains 5305, there is enough support to believe that the violation of the normality and linearity assumption will not cause much trouble in the regression analysis. After controlling the plot of the residuals in the regression model, there does seem to be homoscedasticity.

The table below shows all the effects hypothesized on leisure Internet use.

Table 4. *Multiple linear regression with leisure Internet use as dependent variable*

	Variable	**B**	**SE**	***β***
N=5305	(Constant)	14.702	.927	
	Education	-.025	.052	-.007
	Income	.000	.000	-.024
	Female	-1.502	.283	-.076***
	Age	-.130	.008	-.237***
	Urban	1.848	.373	.066***

Notes. *** = p <.001. Dependent variable is the sum of leisure use.

There is no significant direct effect of education on leisure Internet use (*b*=-.025, *t*(5299)=-.486, *p*=.627). In addition, there is no significant direct effect of income on leisure Internet use found (*b*=.000, *t*(5299)=-1.489, *p*=.136). Due to lack of theory, there were no hypothesis established on the effect of education and income on leisure Internet use. The results in this model show that there is no effect of education and income on leisure Internet use supported by the data.

There is a significant negative effect of gender on leisure Internet use (b=-1.502, t(5299)=-5.314, p=<.001). Our third established hypothesis on leisure Internet use, *men spend more time on leisure use on the Internet than women*, is supported by the data. On average, females spend an hour and 30 minutes less on leisure Internet use than males.

There is a significant negative effect of age on leisure Internet use (b=-.130, t(5299)=-17.097, p=<.001). With every year the respondent ages, he spends around eight minutes less on leisure Internet use per week. This means that the youngest respondents in this dataset spend on average 7 hours more time per week on leisure Internet use than the oldest respondents in this dataset. The fourth established hypothesis, *younger people spend more time on leisure use on the Internet than older people*, is supported by the data.

Living in an urban area has a significant effect on leisure Internet use (b=1.848, t(5299)=4.954, p<.001). This effect is positive, meaning that respondents living in an urban area spend on average 1.8 hours per week more on leisure Internet use than those living in a rural area. This means that the fifth established hypothesis on leisure use, *rural residents spend more time on leisure use on the Internet than urban residents*, is not supported the data. Instead, there is evidence found that urban residents spend more on leisure use than rural residents.

Conclusion

In this research, the difference in Internet use was examined among certain social groups. Little is known on the Internet usage characteristics of the Dutch population. Most research has been performed in the United States, a country that differs in many ways from the Netherlands. Two types of Internet use are distinguished in the literature, informational Internet use and leisure Internet use. Internet use can lead to capital enhancement, resulting in a greater social status (Hargittai, 2008; Ellison et al., 2007; Valenzuela et al., 2009). Especially informational Internet use causes an increase in financial, human, social and cultural capital (Hargittai, 2008). This is referred to as the second digital divide, as certain types of Internet use have a dividing nature. To understand how the second digital divide persists in the Netherlands, the difference in Internet use among certain groups needed to be examined. Seeing the difference in Internet use among certain groups show the fundamentals for the second digital divide. Differences in Internet use can lead to social and economic in equality on societal scale, as some groups might use the Internet more for capital-enhancing purposes than other groups. The following research question was formulated to research the difference in Internet usage characteristics: "*To what*

extent does the difference in informational or leisure Internet use exist among different social groups in the Netherlands?".

First, educational level was taken into account. Previous research showed that those with higher levels of education were more exposed to advanced technology, making it easier to become familiar with informational retrieval on the Internet (Hargittai, 2004; Dutton, Rogers & Jun, 1987). Next to more familiarity, those with a higher education also feel the need to use the Internet for informational use to increase their social status even further (Cho et al., 2003). The data shows that there is no evidence that the higher educated spend more time on informational use on the Internet than the lower educated. This result is not according to the expectation, in which was argued that the higher educated do spend more time on informational Internet use. There were mixed results in earlier research on the effect of educational level on leisure Internet use. Motivations behind leisure use based on educational level lacked in the theory. The data shows no support that educational level has an effect on leisure Internet use.

Second, groups based on income were researched. Earlier results found that those with a lower income have a non-welcoming and untrusting attitude towards informational Internet use (Schön et al., 1999). Low income communities are often excluded from the informational Internet communities in general (Schön et al., 1999). Equivalent to higher educated groups, groups with higher income tend to use the Internet for informational use to increase their social-economic status even further (Cho et al., 2003). It is important to note that even though education did not have a direct effect on informational Internet use, it does have a direct effect on income. Indirectly, education does have an effect on informational Internet use. The data shows that higher income groups in the Netherlands use the Internet for informational purposes more than lower income groups. Income did not play a role in using the Internet for leisure use. Although there were no clear motivations in the theory, the data showed that income does not affect leisure use at all. The low prices of devices and the accessibility of the Internet makes it possible for everyone to conduct leisure activities (Rosoff, 2015).

It is important to note that education does have a positive effect of income. This means that even though there is no direct effect of education on informational Internet use, there is an indirect effect through income.

Third, gender was expected to be an interesting factor to research. The results found that females spend more time on informational Internet use than men. This is opposed to what earlier research found and theorists have argued. Women have less leisure time at home than men. Next to working, they have a household that relies on them (Hargittai, 2004). Persisting gender norms causes women to be discouraged to try out new technologies (Van Dijk, 2012). It is

possible that gender norms are more equal in the Netherlands, resulting in men doing more household tasks and women getting acquainted with technology. The data does show that women spend less time on leisure Internet than men. According to the theory, this is again because women have less leisure time in the household (Hargittai, 2004) but also due to the sexist stereotypes in online leisure activities (Hayes, 2001; Kirkpatrick, 2017). Perhaps it is true that women have less time to spend on the Internet next to their daily tasks and want to spend the time they have on informational Internet use, rather than leisure.

Fourth, different age groups have been proven to differ in Internet use as well. The data found that younger people use the Internet more for informational purposes than those who are older. Older people are less skilful in using the Internet for informational purposes (Van Deursen & Van Dijk, 2014; Van Dijk & Peters, 2013), which may lead to avoidance of informational Internet use. Younger people also feel more motivated to improve their social and economic status and will use the Internet to do so (Cho et al., 2013). This is less common in older people. The data shows that younger people use the Internet more for leisure purposes as well. This is likely, as younger people have more need to use the Internet for leisure purposes (Katz et al., 1973; Cho et al., 2003).

Fifth, research show difference in Internet usage between those living in urban areas and those living in rural areas (Hale et al., 2010; Stern et al., 2009). Those who reside in a place characterised by high urbanity spend more time on informational Internet use. According to theorists, this has little to do with urbanity itself, but rather with the motivations argued for education and income. Those who live in an urban area are often higher educated (Hale et al., 2010). Urban areas also offer more economic and educational opportunities (Sullivan et al., 2002). The data did support the assumption that the effect of urbanity on informational Internet use is mediated through education and income. Urbanity has a positive effect on education, most likely due to better educational and economic opportunities. Education has a positive effect on income, which has been causally proven in earlier research as well (Tinbergen, 1972, Gregorgio & Lee, 2012, Yang & Gao, 2018). Income has a positive effect on informational Internet use. Even though there was a mediation effect found, the direct effect of urbanity on informational Internet use did not disappear. This means that next to the mediation through education and income, urbanity also partly explains informational use on its own. Urban residents in the Netherlands spend more time on leisure Internet use as well. These results are opposed to the theory and constructed hypothesis, wherein is argued that rural residents have more need to use the Internet for leisure activities than urban residents. As there are not many activities in their area, rural residents tend to find pleasure and connect with people online

(Weinstein & Lejoyeux, 2010; Stern & Adams, 2010). The data shows, however, that urban residents spend more time on leisure use, suggesting that they might have more motivations to use the Internet for leisure.

Looking back at the formulated research question, there are clear differences among social groups in Internet usage. Those with higher income due to higher education, groups that already have an enhanced status in society, spend more time on Informational use than those with a lower income. Education and income do not have an effect on leisure Internet use. Based on these results it is expected that the second digital divide will only increase in the future, as higher income groups enhance their status even further through informational Internet use. This will eventually lead to more inequality between certain social groups.

Females spend more time on informational Internet use than men. Men, on the other hand, spend more time on leisure Internet use. As females often have a lower social and economic status, the second digital divide will lead to more closure in gender inequality.

Younger people spend more time on both informational and leisure Internet use than older people. Seeing as older people are already left behind in the digital era, their capital will decrease if they do not invest in overall Internet use.

Based on the results, it is expected that the second digital divide will persist, adding to the already existing inequalities in Dutch society. The only exception could be gender, as females tend to spend more time on informational Internet use.

Discussion

There were some empirical limitations in this research. The merged data caused a lot of missing values on the variables on Internet usage. The LISS panel data contains 7000 respondents. The data containing background variables of the respondents, retrieved from the LISS panel, consisted of 11677 respondents. It is not quite clear where these extra respondents came from. The LISS panel does unfortunately not have an explanation It is possible that they participated in earlier monthly panels, and their data was kept in the recent files. If these respondents dropped out of the panel, they could not have answered the yearly longitudinal survey on social integration and leisure. However, it is unclear if the LISS panel keeps these respondents in their datasets or if all the respondents are active panel members. If all questions were answered by every respondent, the sample would be a more accurate representation of the Dutch population.

There are no theories on what is defined as informational use and what is defined as leisure use. The LISS panel does not give a distinction on the two types of Internet use

either. Activities that could be perceived as leisure activities were placed in the informational use scale and the other way around. A clear distinction would be helpful but is not realistic as there are activities that can be interpreted as informational as well as leisurely. Even though the factor analysis and reliability statistic provided good fundamentals for scaling the variables on Internet use, the final scales did not seem perfect.

The conclusions of this research offers certain interesting opportunities for further research. The motivations behind informational and leisure Internet use are based on previous theories. It would be interesting to research the motivations behind Internet use in the Dutch population and empirically test these.

Ethnicity might be an interesting factor to explain Internet use with. Unfortunately, there was not a representative variable of ethnicity in this dataset. It would be interesting to include groups of a different ethnicity in further research to discover their patterns in Internet use and see where they stand within this digital era.

A longitudinal study could be interesting to research if Internet use between certain groups change over time. Higher status groups might spend less time on informational Internet use, whereas low status groups might spend more over time. This could mean the closing of the second digital divide.

The results of this study are an important contribution to societal practice in the Netherlands. Informational Internet use will lead to status enhancement (Hargittai, 2008; Ellison et al., 2007; Valenzuela et al., 2009). The results of this research show that high status groups, those with high education and high income, spend more time on Informational use. This could increase the economic inequality between high and low education and income groups. There are possibilities for policies to encourage lower status groups to use the Internet for informational purposes. Theory shows that when one is more acquainted with using the Internet for informational purposes, they will feel more comfortable using the Internet for these purposes (Jackson et al., 2001). Training students from a young age to become acquainted with informational Internet skills, especially in high school and vocational education, might lead to a closure of the second digital divide. Getting those with lower education to become acquainted with informational skills may lead to necessary skills needed to find and maintain jobs in the Dutch information society.

There is also difference in informational Internet use between genders. Females tend to spend more time on informational use than males. Seeing females become more acquainted

with computers and the Internet might lead to a decrease in stereotypes based on gender. It might be a good strategy to encourage females even more to use the Internet for informational purposes, as it may lead to more gender equality in different types of capital.

Difference in informational Internet use is also apparent in different age groups. Younger people tend to spend more time on informational Internet use than older people. This is likely because older people are less acquainted with using the Internet for informational purposes (De Haan & Huysmans, 2002; Hargittai, 2002). Policies could focus on getting older people to participate in informational Internet activities, which could decrease the divide in capital between age groups.

Summarizing, this research aimed to discover the Internet usage characteristics of certain groups in the Netherlands. The results of this research show which groups use the Internet in a capital-enhancing way and which groups do not. This research can be used to influence who is ahead, who is getting by and who is left behind in the Dutch information society.

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