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THE THIRD-LEVEL DIGITAL DIVIDE: WHO BENEFITS MOST FROM BEING ONLINE?

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ABSTRACT

Purpose – *Research into the explanations of digital inclusion has moved from investigations of skills and usage to tangible outcomes, what we label here as the third-level digital divide. There is a lack of theoretical development about which types of people are most likely to benefit. Understanding how achieving outcomes of internet use is linked to other types of (dis) advantage is one of the most complex aspects of digital inclusion research because very few reliable and valid measures have been developed. In the current study we took a first step toward creating an operational framework for measuring tangible outcomes of internet use and linking these to the inequalities identified by digital divide research.*

Methodology/approach – *After having proposed a classification for internet outcomes, we assessed these outcomes in a representative sample of the Dutch population.*

Findings – *Our overall conclusion in relation to the more general relationship between offline resources and third-level digital divides is that*

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the internet remains more beneficial for those with higher social status, not in terms of how extensively they use the technology but in what they achieve as a result of this use for several important domains.

Implications – *When information and services are offered online, the number of potential outcomes the internet has to offer increases. If individuals with higher social status are taking greater offline advantage from digital engagement than their lower status counterparts, existing offline inequalities could potentially be acerbated.*

Keywords: Outcomes; third-level digital divide; internet use; digital inequality; social inequality

INTRODUCTION

By now a vast array of studies have illuminated the consequences of digital inequalities for many different offline activities and life realms. Examples include research on political participation, educational attainment, and employment outcomes. What the field lacks is a comprehensive and systematic study which charts gaps in offline outcomes among sociodemographic and socioeconomic groups across multiple domains of activity. More specifically, we know little about such gaps in societies where internet access is very widely diffused within the population.

Such a task is important if we want to gain a deeper and broader understanding of the third-level digital divide and its repercussions for offline inequalities. The third-level digital divide concerns disparities in the returns from internet use within populations of users who exhibit broadly similar usage profiles and enjoy relatively autonomous and unfettered access to ICTs and the internet infrastructure. Third-level divides, therefore, relate to gaps in individuals' capacity to translate their internet access and use into favorable offline outcomes. Research into the third-level divide, therefore, seeks to determine who benefits in which ways from internet use in terms of a broad range of offline outcomes (Amichai-Hamburger, McKenna, & Tal, 2008; Stern, Adams, & Elsasser, 2009; van Deursen, van Dijk, & Helsper, 2014).

Research into the third-level divide has taken many steps forward in recent years, but it has not yet attempted to chart gaps in returns from internet usage across multiple life realms within a uniformly wired society where internet access is almost universal. Advancing this research necessitates

linking types of digital engagements to specific offline life realms such as economic, social, and political life realms. Quantitative research into the third-level divide stands to gain, if specific digital engagements can be linked to outcomes in particular life realms, a deeper understanding of the mechanisms translating internet use into specific offline outcomes (e.g., Stern et al., 2009). Such an exercise would also afford the opportunity for the development of theoretically informed classificatory schemes by which researchers can sort internet users in terms of the likely offline benefits accruing to specific types of internet use. Rather than assuming that more digitally advantaged users will automatically enjoy greater offline benefits across all life realms, the strength and character of the links between skills, online activities, and offline outcomes should be treated as factors which can potentially vary across domains and fields of activity. Indeed, where existing digital divide research does touch on the third-level divide, it suggests that, as a rule, internet use and online activities will confer greater benefits to internet users in life realms where the user already has significant resources at his or her command (DiMaggio & Hargittai, 2001; Hargittai & Hinnant, 2008; Helsper, 2012; van Deursen & van Dijk, 2011, 2014; van Dijk, 2005).

The study presented in this paper should be considered as a preliminary step toward devising an operational framework useful for charting the contours of the third-level digital divide in a society where internet access is near-universal. It also will serve to elucidate some of the mechanisms through which internet usage is converted into offline benefits. It does so by identifying which groups derive greater and lesser offline returns, given particular levels of internet usage, across distinct economic, political, and institutional life realms. We therefore ask: *What are the returns on internet use for particular sociodemographic groups identified by digital divide research and how are these returns linked to particular usage patterns?* We hypothesize at the outset that greater returns will accrue to those more favorably situated users.

THEORETICAL BACKGROUND

Digital Divides

Conceptualized at the dawn of the digital age, the notion of the first-level digital divide trains attention on individuals' access to the ICT infrastructure, including such dimensions as autonomy and continuity of access

(Newhagen & Bucy, 2005; van Dijk, 2005). As more and more people obtained access to this infrastructure, second-level divides in skills and usage patterns became more evident and drew more attention from researchers (e.g., Dimaggio et al., 2004; Katz & Rice, 2002; Selwyn, 2006; van Dijk, 2005; Witte & Mannon, 2010; Zillien & Hargittai, 2009). Studies of second-level digital divides have now provided, for example, useful classifications in terms of the types of skills needed to use ICTs and the types of activities people perform online (e.g., Blank & Groselj, 2014; Kalmus, Realo, & Siibak, 2011; van Deursen & van Dijk, 2011, 2014; Warschauer, 2003) and how these digital divide aspects interact (e.g., Livingstone & Helsper, 2007; van Deursen & van Dijk, 2015). It is well known that first-level and second-level digital divides have important implications for offline outcomes in societies or groups where access is unevenly distributed (Robinson, 2009; Witte & Mannon, 2010).[1]

The third-level digital divide differs from first-level and second-level divides, inasmuch as the first-level digital divide concerns differences in infrastructural access, and second-level digital divides have to do with difference in skills and usage patterns (Hargittai, 2002). Insufficient skills have been found to play a role in limiting success or efficiency in the undertaking of specific online tasks. In societies such as the Netherlands with near-universal internet access, however, third-level digital divides have become increasingly salient. Research into third-level divides presume that, even among users with autonomous and unlimited access to the ICT infrastructure, there will be important differences in their proficiency in enlisting digital resources for the achievement of specific objectives. Even when two users have high-quality autonomous access and adequate skills, they may not obtain the same returns on their internet use (Stern et al., 2009; van Deursen et al., 2014). Moreover, individuals who consistently convert their internet use into high offline returns such as earnings may benefit from a feedback effect where greater economic resources enable them to further develop their internet skills. For example, someone gaining a better job through the use of the internet might have access to an increased wage which in turn can be used to get better access, improve their skills and, thus, buy products cheaper online. The outcomes achieved from internet use provide feedback into someone's offline status which then again influences the digital inclusion factors as illustrated in Fig. 1.

In this paper, we focus on measuring the benefits that result from internet use across multiple life realms and how these benefits relate to membership in specific sociodemographic groups. These outcomes are rarely

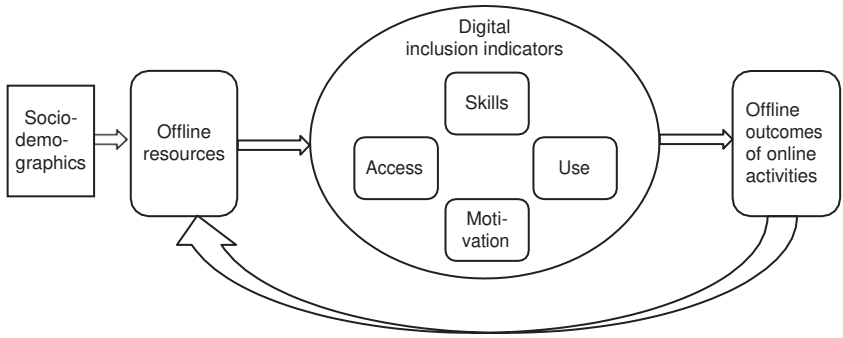

Fig. 1. A Model for Replications of Inequalities in a Digital Society.
Source: Adapted from Helsper (2012) and van Dijk (2005).

measured in large-scale, population-wide surveys that aim to provide a broader understanding of what people gain from internet use. Some studies focused on the so-called "opportunity divide" (e.g., Akca, Sayili, & Esengun, 2007; Mossberger, Tolbert, & Stansbury, 2003; Stern et al., 2009). These studies are mostly concerned with tracking different types of internet use, rather than identifying the offline outcomes that result from these online usage patterns. Many other studies focus only on one particular type of outcome, for example on establishing social networks (e.g., Boase, Horrigan, Wellman, & Rainie, 2006) or increasing political participation (e.g., Sylvester & McGlynn, 2010). As a result, the actual implications of internet use in terms of real opportunities in everyday life are increasingly important to digital divide research.

When studies measure outcomes they either focus on a very narrow range of indicators of one particular type (e.g., Boase et al., 2006; Sylvester & McGlynn, 2010) or collapse a whole range of outcomes together without specifying why different types of outcome items were included (Stern et al., 2009). To enrich quantitative work in this area, we gauge offline outcomes across multiple fields of activity as effects of specific types of internet usage, laying the groundwork for generalizations about the linkages between pathways from attitudes, access, skills, use, and digital engagements to offline outcomes. However, before we begin this exercise, we need to settle on an analytical framework which allows us to categorize the relevant fields of offline activity. In this regard, systematic theorization-based conventional understandings of offline inequality can serve as a useful starting point.

Classifications of Internet Outcomes

In this study, we conceptualize and operationalize offline outcomes in economic, social, political, institutional, and educational fields of activity. We then relate these outcomes to individuals' digital engagements. The outcome classification scheme we employ in the current study follows van Dijk's (2005) fivefold categorization of activity fields into economic, social, political, institutional, and educational fields. One of the advantages of this scheme is that it meshes well with Bourdieu's (1984) division of individualized forms of capital into economic and noneconomic forms, a distinction used in many studies to explore associations between online and offline inequalities (e.g., Halford & Savage, 2010; Robinson et al., 2015; Witte & Mannon, 2010). While this fivefold scheme could be further refined and elaborated, as each of these fields of activity could be operationalized along many dimensions of variation, this classificatory scheme serves as a useful starting point for our analysis.

Studies regarding the effects of internet use on economic outcomes have already revealed that, in societal contexts where internet usage is less uniform than in the Netherlands, more intensive internet usage can lead to increased employment earnings (DiMaggio & Bonikowski, 2008). Some preliminary research suggests that more engaged internet users enjoy advantages when it comes to finding information about job opportunities (Kuhn & Mansour, 2014). From the consumption side, digitally advantaged individuals may be able to obtain goods and services at better prices than their less advantaged counterparts, enjoying a digital consumer dividend (Bhatnagar & Ghose, 2004).

Studies of social outcomes have likewise identified a range of payoffs accruing to the digitally advantaged, such as an increased diversity and scale of social connections, often theorized as social capital (Putnam, 2000). Internet use can open the door to the acquisition of many kinds of social resources (van Dijk, 2005). Individuals who engage more intensively and effectively with digital resources can capitalize on social media sites and online dating sites to make new friends, find romantic partners, and generally augment their social networks (e.g., Muscanell & Guadagno, 2012). Furthermore, online communication boosts both the amount and intensity of interactions within local communities (e.g., Kavanaugh et al., 2005). In the view of Katz and Rice (2002), certain applications of the internet reinforce preexisting offline interactions, as the internet "provides frequent uses for social interaction and extends communication with family and friends" (p. 326).

As individuals with larger and more diverse social networks tend to participate more actively in civic and political affairs than those with smaller networks (Son & Lin, 2008), digital engagements can also lead to increased participation in formal and informal politics, particularly among those citizens already oriented toward political activity. Political participation encompasses both engagement with formal political processes and institutions (e.g., elections, being a member of a political party) as well as less formally organized politics (e.g., opinion formation and engagement with political issues outside of formal political structures and parties).[2]

Where the individual is interacting directly with state institutions, and such institutions have adopted digital communication technologies, it stands to reason that digitally advantaged citizens would get more out of their encounters with such institutions. This is particularly the case in countries such as the Netherlands, where digital communication channels have been widely promoted as a means of improving contact between citizens and the government.[3] Existing investigations have disclosed a prominent effect of internet usage on civic participation; citizens who used the internet more often in their homes are more likely to contact governmental entities (Sylvester & McGlynn, 2010). We would imagine that digitally advantaged individuals would have an easier time interacting with a wide range of governmental entities in such countries, including tax authorities and public health providers for example.

Because of the wealth of research dealing with educational outcomes and internet use, we distinguish educational outcomes from other kinds of outcomes. We know that the internet provides access to a wealth of formal and informal learning opportunities – from primary schools to university training and from hobby courses to professional training (Moore & Kearsley, 2011), but it is unclear whether some groups acquire more educational resources (whether defined as credentials or learning outcomes) because of their more productive internet use.

General Differences in Engagement

Digital divide research has defined several socio-demographic variables linked to differences in these offline resources which are related to differences in internet use; the ones most commonly examined are income, gender, age, and education (van Deursen & van Dijk, 2014). High education and income levels are considered indicators of socio-economic resources, linked by Dimaggio et al. (2004) to more productive use of the internet. Other

factors such as a disadvantage in health (e.g., disability) or a certain occupational status (retirement, unemployment, or caretaking) are also frequently associated with lags in internet adoption (e.g., Dobransky & Hargittai, 2006; Pautasso, Ferro, & Raguseo, 2011). Furthermore, lower levels of social isolation (e.g., not living alone or being in a relationship) improve one's chances of engaging more widely with the internet (e.g., van Deursen & Helsper, 2015). Besides the socio-demographic factors linked to different types of individual resources, internet patterns also mirror aspects of social (infra) structures (Graham, 2008) which are reflected, for example, in that people in rural areas have lower levels of access to high-quality internet connections (Hale, Cotten, Drentea, & Goldner, 2010; Stern et al., 2009).

METHOD

Sample

We conducted an exploratory study in the Netherlands, a country with a well-developed digital infrastructure and near-universal access; in 2013, 97% of the population had a broadband internet connection at home (71% used the internet on a desktop computer, 79% on a laptop, 72% on a smartphone, and 64% on another device). The Netherlands provides a perfect setting for this study, because internet access and use are near-universally distributed throughout this society.

Participants were recruited from a Dutch online panel (PanelClix) consisting of 108,000 individuals comprising a representative sample of the Dutch population. Members of the panel receive a few cents for every survey in which they participate. In total, 2,600 people were randomly selected to represent the population in terms of age, gender, and educational level. The selected panel members received an e-mail inviting them to participate and explaining the topic of the survey and how much time it would take to complete. A total of 1,159 responses were received (46%), of which 10 were rejected for being incomplete. Thus, a total of 1,149 responses were used for data analysis. The sample represented the Dutch population (see van Deursen et al., 2014). The mean age of the respondents was 48 years (SD = 17.4), ranging from 16 to 87.

Several measures were taken to increase the survey response rate. The time needed to answer survey questions was limited to approximately 15 minutes. In addition, the online survey used software that checked for

missing responses. Two rounds of survey piloting were conducted with 10 internet users and amendments were made at the end of each round based on the feedback provided. Respondents in the second round gave no major comments, at which point the survey was finalized.

The variables of gender, age, and education were compared with official census data from the Netherlands. Because amendments were made during data collection to ensure accurate population representation, analyses showed that the gender, age, and formal education of our respondents matched official statistics. As a result, only a very small correction was needed post hoc. Finally, we recognize that this form of data collection would not be appropriate for less uniformly wired populations.

Measures

To determine which groups benefit the most from internet use, the fields of participation discussed in the theoretical background are used as a starting point. For each field, we designed use items from existing classifications of internet use. Then, we translated these uses into items that measured a corresponding outcome. For example, using the internet for job hunting could potentially result in the outcome of finding a better job, or online dating might result in finding a potential partner.

The following categories of internet use were based on previous research.

- *Economic uses* (divided into commerce and labor related activities): Trading goods, booking holidays (e.g., Zillien & Hargittai, 2009), buying products (e.g., Bhatnagar & Ghose, 2004), and job searching (e.g., Fountain, 2005).
- *Social uses*: Meeting people (Ridings & Wasko, 2010), social interaction (e.g., Quan-Haase et al., 2002), and online dating (e.g., Valkenburg & Peter, 2007).
- *Educational uses*: Searching educational information.
- *Political uses*: Political participation and online voting (e.g., Bakker & de Vreese, 2011).
- *Institutional uses* (divided into government and health activities): Contacting the government (e.g., Sylvester & McGlynn, 2010) and searching medical information (e.g., Rice, 2006).

Table 1 provides an overview of the outcomes derived from these use items that were used in this study.

Table 1. Internet Outcomes.

Field	Through the Internet, …	%
Economic labor	I found a (better) job	18
	I earn more money	14
Economic commerce	I bought a product more cheaply than I could in the local store	75
	I booked a cheaper vacation	62
	I traded goods that I would not have sold otherwise	68
Social	I have more contact with family and friends	67
	It is easier for friends and family to get ahold of me	70
	I made new friends whom I met later offline	34
	A met a potential partner using online dating	13
Political	I expressed my political opinion in online discussions	13
	I joined a political association, union, or party	5
	I found what political party to vote for	30
Institutional governmental	I am better up-to-date with government information	63
	I have better contact with the government	33
	I have discovered that I am entitled to a particular benefit, subsidy, or tax advantage	30
Institutional health	I determined the medical condition from which I was suffering	16
	My life is healthier because of online medical information	29
	I found the best hospital for a condition I suffered from	17
Educational	I found an educational course that suits me	21
	I followed a course that I would not have been able to follow offline	14

Note: Base - All respondents to the survey $N = 1{,}149$ (weighted data).

The outcome measures designed for this study reflect benefits that are commonly assumed to result from internet use for a wide range of individuals, outcomes that can be observed and verified relatively easily. For each potential outcome, respondents reported on whether they had ever obtained that particular benefit from using the internet. The question was asked in a straightforward manner using items with a dichotomous response scale (no/yes) asking respondents to report on actual behavior (facts of outcomes) and not subjective opinions or attitudes, overcoming some of the issues with self-report measures.

Frequency of internet use was measured by employing a five-point Likert scale ranging from "monthly" to "several times a day" ($M = 4.05$, $SD = 0.64$). To measure *age*, respondents were asked for their year of birth. *Gender* was included as a dichotomous variable. To assess *education*, data regarding degrees earned were collected, which were used to divide respondents into three overall groups according to low, medium, and high

educational achievement. *Occupation* was coded as dummy variables for the following groups: the employed, the retired, the disabled, househusbands or housewives, the unemployed, and students. Income was measured using total family income over the last 12 months, assessed on an 8-point scale ranging from "10,000 euros" to "80,000 euros or more." *Marital status* was coded as dummy variables of the following categories: single, married, living together, divorced, and widow(er). Finally, *residency* was included as a dichotomous variable (urban and rural).

Data Analyses

Principal axis factoring (PAF) with varimax rotation was used to determine the factor structure of the 20 outcome items. Costello and Osborne (2005) suggest the use of the PAF method if the assumption of multivariate normality is violated. Here, the multivariate normality assumption will not be met because the scales of the internet outcomes are composed of binary items that can take only one of two values. An eight-factor structure representing the theoretical concepts identified a priori fitted the results best. This solution accounted for 68% of the variance. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .82 was obtained, which exceeds the target of 0.7 suggested by Pett, Lackey, and Sullivan (2003). This result indicates that factor analysis was an appropriate strategy for analyzing this study's data. Bartlett's Test of Sphericity was also statistically significant, $\chi^2 = 3516.60$, $p < .001$. Tabachcick and Fidell (2001) suggest .32 as a good rule of thumb for the minimum loading of an item. In total, 17 items (all with factor loadings exceeding .40) were used to construct the eight-factor structure (Table 2).

The factors were interpreted as follows: Factor 1 represents educational outcomes, Factor 2 economic commerce outcomes, Factor 3 social outcomes, Factor 4 political outcomes, Factor 5 institutional government outcomes, Factor 6 institutional health outcomes, Factor 7 economic labor outcomes, and Factor 8 relationship outcomes. For each factor, we created a summary scale from the underlying dichotomous items. This summary scale was then transposed to a dichotomous scale (i.e., if one of the questions for each factor was answered with "Yes," the factor value was 1. If all of the questions were answered with "No," the factor value was 0). Logistic regression analyses were performed for the newly created dichotomous scales to determine the nature of the relationship between people's socio-demographic background and internet outcomes. The regression models included the

Table 2. Subscale Loadings of Internet Outcomes.

Subscale	Factors							
Through the Internet, …	1	2	3	4	5	6	7	8
I found an educational course that suits me	.73							
I followed a course that I would not have been able to follow offline	.67							
I bought a product more cheaply than I could in the local store		.67						
I booked a cheaper vacation		.48						
I traded goods that I would not have sold otherwise		.40						
I have more contact with family and friends			.60					
It is easier for friends and family to get ahold of me			.50					
I made new friends whom I met later offline			.45					
I expressed my political opinion in online discussions				.59				
I joined a political association, union or party				.53				
I am better up-to-date with government information					.60			
I have better contact with the government					.54			
I determined the medical condition from which I was suffering						.56		
My life is healthier because of online medical information						.52		
I found a (better) job							.58	
I earn more money							.42	
I met a potential partner using online dating								.68
R^2	24%	10%	7%	6%	6%	5%	5%	5%
A		.64	.67					
r (significant at 0.01 level)	.57			.41	.41	.34	.37	

Note: Base – All respondents to the survey $N = 1{,}149$.

independent variables of gender, age, education, employment status, income, household composition, residency (rural/urban), and amount of internet use.

RESULTS

To determine which group benefits most from internet use we investigated the relationship between the eight outcome factors and the independent variables through a logistic regression. The results (see Table 3) will be discussed by relating them to the five outcome fields.

Table 3. Logistic Regression Analyses for Internet Outcome Clusters.

Explanatory Variables	Economic Commerce Odds-ratio	Economic Labor Odds-ratio	Social Friends Odds-ratio	Social Dating Odds-ratio	Political Odds-ratio	Institutional Government Odds-ratio	Institutional Health Odds-ratio	Educational Odds-ratio
Constant	1.72	0.39	0.10**	0.10	0.15*	0.14	0.08***	0.13**
Gender								
Female	1.31	1.06	1.01	0.43***	0.65*	0.87	1.15	1.02
Age (ref. 16–35)								
36–45	2.25	0.57*	1.25	1.33	0.80	1.69*	0.78	0.50**
46–55	1.68	0.26***	1.13	0.51*	0.43**	1.78*	0.90	0.87
56–65	1.04	0.11***	0.85	0.57	0.28**	1.76*	0.60*	0.45**
66+	0.56	0.09***	1.07	0.12**	0.94	1.40	0.60	0.45
Educational level (ref. low)								
Medium	1.72*	1.04	0.95	1.68*	1.10	1.64**	1.69**	1.20
High	2.62**	1.38	0.94	1.86*	1.02	2.75***	1.24	2.48***
Income (ref. below average)								
Average	2.27**	1.11	1.32	1.77*	1.16	1.49*	1.66**	1.36
Above average	1.68	1.32	0.87	1.31	1.56	2.28***	1.41	1.60
Marital status (ref. single)								
Married	1.76	1.00	0.99	0.27***	1.27	1.05	0.83	0.61*
Living together	2.86*	0.93	2.21*	0.82	1.44	1.51	1.18	1.16
Divorced	2.33	1.30	3.14**	2.49**	1.65	2.03*	1.26	1.02
Widow(er)	0.99	1.58	1.04	4.41**	1.66	0.85	0.51	0.64
Occupation (ref. employed)								
Unemployed	1.97	1.78*	1.31	1.49	1.40	3.44**	2.68***	1.51
Disabled	0.54	0.33**	0.81	0.62	0.99	0.86	1.75*	0.51
Retired	0.94	0.40	1.34	1.00	0.79	1.50	1.47	0.60
Househusband/wife	0.67	0.22**	1.11	1.80	1.05	0.71	1.60	0.40*
Student	2.85	0.89	1.00	0.65	1.64	1.47	1.72	1.04

Table 3. (*Continued*)

Explanatory Variables	Economic Commerce Odds-ratio	Economic Labor Odds-ratio	Social Friends Odds-ratio	Social Dating Odds-ratio	Political Odds-ratio	Institutional Government Odds-ratio	Institutional Health Odds-ratio	Educational Odds-ratio
Residency (ref. rural)								
Urban	1.02	1.17	0.98	0.75	0.82	1.35*	0.91	0.91
Frequency of internet use	2.04***	1.14	2.24***	1.23	1.18	1.35*	1.31*	1.26
Nagelkerke R^2	.19	.29	.14	.22	.07	.16	.08	.18
Chi-square	101.86***	234.73***	87.93***	138.03***	44.38***	127.25***	64.06***	138.91***

Note: Base – All respondents to the survey $N = 1{,}149$.

*Significant at the 5% level, **significant at the 1% level, ***significant at the 0.1% level.

Economic Outcomes

Gender and residency were not related to either of the economic outcome indicators, and only occupation was related to both commerce and labor outcomes. The youngest group (i.e., those aged 16-35) was more likely than the older groups to achieve labor outcomes. Individuals with medium and high levels of education were more likely to experience economic outcomes related to commerce than less educated individuals. People with an average income were more likely to benefit from internet use than those earning a below-average income. Students were more likely to achieve commerce-related outcomes than employed people. People living together in one household were more likely than singles to benefit in this respect. As expected, unemployed people were more likely to benefit from internet use in terms of labor (i.e., finding jobs) than employed people. Disabled persons and househusbands/wives were less likely than employed individuals to reap these benefits. Finally, frequency of internet use was positively related to commerce.

Social Outcomes

Educational level, income, and occupation, three economic resources, did not relate significantly to enjoying social benefits from internet use. Amount of internet use was positively related. Furthermore, people living with others and divorced individuals were more likely than singles to enjoy social benefits. Outcomes related to dating were more likely among men than women and less likely among people aged 46–55 and over 66, as compared to those aged 16–35. Medium and higher-educated people were more likely to achieve outcomes related to dating as compared to those lower educated. Unsurprisingly, married people were less likely than singles to benefit from online dating, while divorced and widow(er)s were much more likely.

Political Outcomes

Educational level, income, marital status, occupation, and residency did not relate significantly to political participation. However, men were more likely to gain political outcomes than women. These outcomes were less likely among people aged 46-65, as compared to people aged 16-35.

Institutional Outcomes

Gender was the only factor that was not related to any institutional outcome. All the other factors, with the exception of marital status and residency, were related to both health and government services outcomes. Achievement of institutional outcomes related to the public services of the government was more likely among people aged 36–65, as compared to people aged 16–35. With respect to healthcare-related institutional outcomes, people aged 56-65 benefited less than people aged 16-35. Finally, frequency of internet use was positively related to both institutional outcomes.

Individuals with a medium or high level of education were more likely than their less educated counterparts to obtain government outcomes such as staying up-to-date with public information and maintaining better contact with the government. People with a medium level of education benefitted more than people with a lower level of education. Furthermore, people with an average or above average income were more likely to benefit politically. Those with an average income benefitted more than those earning a below-average income. Divorced people seemed to achieve more political outcomes than singles. Furthermore, it seems that unemployed people benefitted more than employed people. Students and unemployed people benefitted more than employed people from health outcomes. Finally, individuals from urban areas benefitted more than people living in rural areas.

Educational Outcomes

Gender and residency did not significantly relate to educational outcomes. All the other factors did; individuals aged 36–45 and 56–65 were less likely to benefit than people aged 16–35. Furthermore, individuals with a higher level of education benefitted more. Married people benefitted less than singles, and househusband/wives benefitted less than employed people.

DISCUSSION

Main Findings

Digital divide research has demonstrated the important consequences of first-level and second-level digital divides in a range of offline life realms.

As it has now expanded its purview to include third-level divides (Helsper, 2012), it is critical to understand how internet usage itself contributes to particular offline outcomes across a range of life realms, particularly in societal contexts with near-universal access. In this paper we explore how sociodemographic and socioeconomic differences translate into inequalities in the offline benefits gained through internet use. We asked whether traditional frameworks of digital exclusion that link disadvantages in economic, social, institutional, political, and educational fields to lower levels of motivational, material, skill, and usage access (van Dijk, 2005) can be applied to inequalities in the outcomes achieved from internet use.

In the exploratory study presented in this paper, we examined a set of eight specific, theoretically grounded categories of outcomes from internet use in the Netherlands, a country with very high household internet penetration and a high level of educational attainment by citizens. We used self-report measures of beneficial outcomes that were easily verifiable by an external observer and, therefore, testable as factual outcomes in a person's everyday life. Our analysis of the data from a representative population survey suggests that the internet contributes to the lives of many Dutch individuals in the economic, social, political, educational, and institutional fields. Common economic outcomes achieved relate to commerce, such as gaining price advantages. Social gains facilitated by internet use include increased contact with family and friends and the creation of new friendships online that continue offline. Furthermore, the internet facilitates institutional engagement by providing access to up-to-date public information. Striking is the fact that over a quarter of the respondents claimed to live healthier due to online information.

The results suggest that most of the digital divide indicators related to skills and types of internet use contribute to similar levels of inequalities in the categories of outcomes. We observed differences in economic outcomes related to economic resources such as education and income. Differences in social outcomes related to social resources such as marital status. Institutional outcomes related to economic and social resources, and political outcomes to educational resources. Furthermore, differences in educational outcomes related to economic, social, and educational resources.

To some extent the findings suggest that access to and use of the internet might amplify existing inequalities above and beyond the intensity of internet use. For example, when comparing outcomes by gender, the differences that emerged concerned relationship and political outcomes. It is a common and consistent finding in political science research that in most countries women exhibit lower levels of political knowledge and participation

than men (Dolan, 2011). This difference in knowledge may influence the political outcomes of online engagement. Nevertheless, the results from this study suggest that, at least in the Netherlands, gender inequalities in relation to who benefits from internet use are overall small or inexistent.

Generational inequalities in outcomes were apparent across the life realms. With respect to economic outcomes related to commerce, findings in prior studies regarding age have been inconsistent; some research showed that older internet users are more likely to buy products online, while other research found that younger consumers are more likely than older consumers to shop online (Cowart & Goldsmith, 2007). In the political domain, middle-aged people seem to benefit more than the youngest and oldest groups. Other research has shown that people in their 40s are more politically engaged (e.g., Putnam, 2000; Rosenstone & Hansen, 2003). Perhaps younger people have not developed traditional political habits and are therefore much more open to being influenced by new political experiences online (Quintelier & Vissers, 2008). Thus our findings suggest that this offline gap in resources is only partly reflected in inequalities in outcomes, with the middle aged benefitting more than others but not the older generations which were assumed to have more political resources. That young and middle-aged people seem to benefit more from the internet in the area of healthcare is concerning since this is a domain in which people over 55 have relatively high needs. Overall, it seems that age has a negative influence on internet outcomes, suggesting that the young gain more from internet use than the elderly. This does support the hypothesis that traditional digital exclusion frameworks can be applied to outcomes as well, since the elderly in the Netherlands tend to be socially and economically excluded offline, and this seems to replicate itself to some extent in the outcomes they achieve from internet use.

The results suggest that highly educated individuals benefit more from the internet than those with less education, especially in the domains of economic commerce, institutional government, and educational outcomes. This again suggests an amplification of traditional inequalities in outcomes similar to that proposed for inequalities in first- (i.e., access) and second-level (i.e., skills and use) digital divides. Similar results can be observed when investigating differences in income. Economic resources such as income and occupation are especially strongly related to economic outcomes and political and institutional outcomes rather than social and educational outcomes.

Our overall conclusion is that although more and more people might be online, the internet has the most to offer to people with higher social status

for several important outcome domains. When information and services are offered online (or replaced by online counterparts), the number of potential outcomes the internet has to offer increases. If individuals with higher social status are better at achieving offline benefits from digital engagement than their lower-status counterparts, existing offline inequalities could potentially be amplified. Conversely, the internet can affect an individual's access to these types of capital, for example, it enables users to obtain economic capital by facilitating access to commercial and labor resources, social capital by extending physical networks to virtual ones, and educational capital by enabling learning experiences. It is, therefore, important to systematically conceptualize and measure different types of outcomes and not group them all together or assume outcomes are achieved automatically from use.

As previous investigations of access, skills, attitudes, and internet activities emphasize, overcoming digital exclusion is a complex challenge. The current study's results concerning occupational and marital status, both of which affect specific outcome domains, highlight this complexity. Divorced people seem to gain social benefits, inasmuch as they broadened their pools of friends and potential romantic partners. Notably, widow(er)s benefit socially by finding potential new partners through internet use. In contrast to previous research, this study's results indicate that unemployed people gain more benefits from internet use than employed people. Unemployed individuals are often considered to have a low labor market status. However, at least they have time to spend using the internet. Such contradictory findings may be attributable to some weaknesses in the design of the study, but this does not mean that this complexity should be ignored. For example, the classification of resources used in this study did not look at compound disadvantage (Helsper, 2012). Future research should not just look at occupational status or social isolation or educational level but should, for example, investigate how these interact by looking at differences in outcomes for those who are unemployed and have higher levels of education as compared to those who are unemployed and have lower levels of education.

Limitations

This study should be considered exploratory in the sense that it was a first attempt at conceptualizing and measuring a wide range of outcomes for a population study of the digital divide in a society where access is

near-universal. We attempted to broaden our focus to encompass multiple life realms in which internet use may bear on offline outcomes. Our goal was to establish a systematic framework to think about and operationalize outcomes of internet use rather than to arrive at definitive measurement tool. We proposed a new instrument, creating items for several outcomes loosely related to fields as defined by van Dijk (2005). Although a factor structure emerged that corresponded to eight fields, the outcome domains were represented by only two or, in some cases, three items. Future research should build upon these results, making it possible to develop more robust classifications of internet-dependent outcomes. In these investigations, we should also control for access, skills, or internet use. There is little empirical evidence showing how skills and use translate into specific outcomes.

Although our measures are designed with specificity and objectivity in mind, they are still grounded in self-reports of offline outcomes, rather than independently verifiable third-party information such as reports from governmental entities. This is unavoidable in cohort-based survey research. Future studies should validate outcome measures through observational and longitudinal research backed up by qualitative in-depth research around outcomes. The authors of this article recently undertook a study in which a broad range of outcomes was validated in cognitive interviews (Helsper, van Deursen, & Eynon, 2015). Field tests are time-consuming and expensive but would be the best way of validating these self-report measures.

Some of the findings in this study, such as that unemployed individuals get more labor-related benefits, could be explained by the fact that employed people do not use the internet for labor-related purposes in the way it was defined here. That is, employed people do not look for jobs online and therefore do not find a better job since they already have jobs. Similarly people in a relationship probably do not use online dating sites and therefore have less outcomes related to this than those who are not in a relationship. Research currently in progress by the authors has taken up some of these weaknesses (Helsper et al., 2015), using a slightly different classification of offline resources. Nevertheless, the current study is a valuable exploration on a nationally representative sample using established theoretical frameworks for domains in which inequality manifests itself and gives pointers for many future directions of research. The notion of digital exclusion has become important in communications research, and this study suggests that the internet has an impact in economic, social, political, educational, and institutional domains.

NOTES

1. Digital inclusion research is rooted in discourses around digital divides which refers to inequalities in access to and use of Information and Communication Technologies (ICTs). Although much of the digital divide research is based on the presupposition that more intensive usage is better, a number of studies have pinpointed ways in which unproductive kinds of usage can actually hinder the achievement of offline objectives.

2. Although several scholars argued that the internet may alter politics by involving individuals from social groups previously less engaged in political participation (e.g., Willis & Tranter, 2006), other investigations suggest that the internet does not particularly draw more people into the political process from disadvantaged groups, as technical opportunities cannot compensate for a lack of political engagement by citizens (Brundidge & Rice, 2008; Hindman, 2010). Note that the assumption of a lack of motivation is considered unnecessary since most citizens fall into categories along a continuum from motivated to apathetic (Chadwick, 2013), and empirically disputed (Delli Carpini, Cook, & Jacobs, 2004).

3. In the ideal case, digital access to public entities could provide for round-the-clock government, open public access to information, continuously updated information (e.g., Reddick, 2005). Similarly, providing online health information and services has many potential benefits, including saving time and effort, easier access, getting help when feeling embarrassed or stigmatized, lifestyles, early detection of potential medical problems, collaborative treatment of illnesses, and access to treatments that a local provider may not have access to (e.g., Griffiths, Lindenmeyer, Powell, Lowe, & Thorogood, 2006).

REFERENCES

Akca, H., Sayili, M., & Esengun, K. (2007). Challenge of rural people to reduce digital divide in the globalized world: Theory and practice. *Government Information Quarterly*, *24*(2), 404–413.

Amichai-Hamburger, Y., McKenna, K. Y. A., & Tal, S. A. (2008). E-empowerment: Empowerment by the internet. *Computers in Human Behavior*, *24*(5), 1776–1789.

Bakker, T., & de Vreese, C. (2011). Good news for the future? Young people, internet use, and political participation. *Communication Research*, *38*(4), 451-470.

Bhatnagar, A., & Ghose, S. (2004). Segmenting consumers based on the benefits and risks of internet shopping. *Journal of Business Research*, *57*(12), 1352–1360.

Blank, G., & Groselj, D. (2014). Dimensions of internet use: Amount, variety, and types. *Information, Communication & Society*, *17*(4), 417–435.

Boase, J., Horrigan, J. B., Wellman, B., & Rainie, L. (2006). *The strength of internet ties: The internet and e-mail aid users in maintaining their social networks and provide pathways to help when people face big decisions*. Washington, DC: The Pew Internet and American Life Project.

Bourdieu, P. (1984). *Distinction: A social critique of the judgment of taste*. London: Routledge.

Brundidge, J., & Rice, R. (2008). Political engagement online: Do the information rich get richer and the like-minded more similar? In A. Chadwick & P. Howard (Eds.), *The handbook of internet politics* (pp. 144-156). London: Routledge.

Caplan, S. (2003). Preference for online social interaction a theory of problematic internet use and psychosocial well-being. *Communication Research*, *30*(6), 625–648.

Chadwick, A. (2013). Recent shifts in the relationship between the internet and democratic engagement in Britain and the United States: Granularity, informational exuberance, and political learning. In E. Anduiza, M. Jensen, & L. Jorba (Eds.), *Digital media and political engagement worldwide: A comparative study*. Cambridge: Cambridge University Press.

Chen, W., & Wellman, B. (2005). Minding the gaps: The digital divide and social inequality. In M. Romero & E. Margolis (Eds.), *Blackwell companion to social inequalities* (pp. 523–545). Oxford: Blackwell.

Costello, A., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting most from your analysis. *Practical Assessment Research & Evaluation*, *10*(7), 1-9.

Cowart, K., & Goldsmith, R. (2007). The influence of consumer decision-making styles on online apparel consumption by college students. *International Journal of Consumer Studies*, *31*, 639-647.

Delli Carpini, M. X., Cook, F. L., & Jacobs, L. R. (2004). Public deliberation, discursive participation, and citizen engagement: A review of the empirical literature. *Annual Review of Political Science*, *7*, 315–344.

DiMaggio, P., & Bonikowski, B. (2008). Make money surfing the web? The impact of internet use on the earnings of U.S. workers. *American Sociological Review*, *73*(2), 227–250.

DiMaggio, P., & Hargittai, E. (2001). *From the 'digital divide' to 'digital inequality: Studying internet use as penetration increases*. Working paper series 15. Princeton, NJ: Princeton University Center for Arts and Cultural Policy Studies.

Dobransky, K., & Hargittai, E. (2006). The disability divide in internet access and use. *Information, Communication & Society*, *9*(3), 313–334.

Dolan, K. (2011). Do women and men know different things? Measuring gender differences in political knowledge. *Journal of Politics*, *73*(1), 97-107.

Gil de Zúñiga, H., & Valenzuela, S. (2011). The mediating path to a stronger citizenship: Online and offline networks, weak ties, and civic engagement. *Communication Research*, *38*(3), 397–421.

Goldin, C., & Katz, L. (2008). *The race between education and technology*. Cambridge, MA: The Belknap Press of Harvard University.

Graham, R. (2008). The stylisation of internet life? Predictors of internet leisure patterns using digital inequality and status group perspectives. *Sociological Research Online*, *13*(5).

Griffiths, F., Lindenmeyer, A., Powell, J., Lowe, P., & Thorogood, M. (2006). Why are health care interventions delivered over the internet? A systematic review of the published literature. *Journal of Medical Internet Research*, *8*(2), e10.

Hale, T., Cotten, S., Drentea, P., & Goldner, M. (2010). Rural-urban differences in general and health-related internet usage. *American Behavioral Scientist*, *53*(9), 1304-1325.

Halford, S., & Savage, M. (2010). Reconceptualizing social digital inequality. *Information, Communication & Society*, *13*(7), 937–955.

Hargittai, E. (2002). Second-level digital divide: Differences in people's online skills. *First Monday*, *7*(4), Online.

Hargittai, E., & Hinnant, A. (2008). Digital inequality: Differences in young adults' use of the internet. *Communication Research*, *35*(5), 602-621.

Helsper, E. J. (2012). A corresponding fields model for the links between social and digital exclusion. *Communication Theory*, *22*(4), 403–426.

Helsper, E. J., van Deursen, A. J. A. M., & Eynon, R. (2015). *Tangible outcomes of internet use: From digital skills to tangible outcomes project report*. Retrieved from www.oii.ox.ac.uk/research/projects/?id=112

Hindman, M. (2010). *The myth of digital democracy*. Princeton, NJ: Princeton University Press.

Kalmus, V., Realo, A., & Siibak, A. (2011). Motives for internet use and their relationships with personality traits and socio-demographic factors. *Trames*, *15*(65–60), 385–403.

Katz, E., Blumler, J., & Gurevitch, M. (1973). Uses and gratifications research. *Public Opinion Quarterly*, *37*(4), 509-523.

Katz, J., & Rice, R. (2002). *Social consequences of internet use: Access, involvement, and interaction*. Cambridge, MA: MIT Press.

Kavetsos, G., & Koutroumpis, P. (2010). *Technological affluence and subjective well-being.* Retrieved from http://ssrn.com/abstract=1552404

Kuhn, P., & Mansour, H. (2014). Is internet job search still ineffective? *The Economic Journal*, *124*(581), 1213–1233.

LaRose, R., & Eastin, M. (2004). A social cognitive theory of internet uses and gratifications: Toward a new model of media attendance. *Journal of Broadcasting & Electronic Media*, *48*(3), 358–377.

Livingstone, S., & Helsper, E. (2007). Gradations in digital inclusion: Children, young people and the digital divide. *New Media & Society*, *9*(4), 671–696.

Moore, M., & Kearsley, G. (2011). *Distance education: A systems view of online learning*. Cengage Learning.

Mossberger, K., Tolbert, C., & Stansbury, M. (2003). *Virtual inequality: Beyond the digital divide*. Georgetown University Press.

Muscanell, N. L., & Guadagno, R. E. (2012). Make new friends or keep the old: Gender and personality differences in social networking use. *Computers in Human Behavior*, *28*(1), 107–112.

Newhagen, J. E., & Bucy, E. P. (2005). Routes to media access. In E. Bucy (Ed.), *Living in the information age* (pp. 221–230). Belmont, CA: Wadsworth, Thomson Learning.

Papacharissi, Z., & Rubin, A. (2000). Predictors of internet use. *Journal of Broadcasting & Electronic Media*, *44*(2), 175-196.

Pautasso, E., Ferro, E., & Raguseo, E. (2011). Understanding eInclusion gaps across European regions: A benchmarking analysis. *Proceedings of the IEEE Conference Information Society*, 279–286.

Pett, M., Lackey, N., & Sullivan, J. (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. Thousand Oaks, CA: Sage.

Putnam, R. (2000). *Bowling alone: The collapse and revival of American democracy*. New York, NY: Simon & Schuster.

Quintelier, E., & Vissers, S. (2008). The effect of internet use on political participation: An analysis of survey results for 16-year-olds in Belgium. *Social Science Computer Review*, *26*(4), 411–427.

Reddick, C. G. (2005). Citizen interaction with e-government: From the streets to servers? *Government Information Quarterly*, *22*(1), 38–57.

Rice, R. (2006). Influences, usage, and outcomes of internet health information searching: Multivariate results from the Pew surveys. *International Journal of Medical Informatics*, *75*(1), 8–28.

Ridings, C., & Wasko, M. (2010). Online discussion group sustainability: Investigating the interplay between structural dynamics and social dynamics over time. *Journal of the Association for Information Systems*, *11*(2), Article 1.

Robinson, L. (2009). A taste for the necessary. *Information, Communication & Society*, *12*(4), 488–507.

Robinson, L., Cotten, S., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., … Stern, M. (2015). Digital inclusion and why it matters. *Information, Communication and Society*, *18*(5), 569-582.

Rosenstone, S., & Hansen, J. (2003). *Mobilization, participation, and democracy in America*. New York, NY: Longman.

Selwyn, N. (2004). Reconsidering political and popular understandings of the digital divide. *New Media & Society*, *6*(3), 341–362.

Selwyn, N. (2006). Digital division or digital decision? A study of non-users and low-users of computers. *Poetics*, *34*(4–5), 273–292.

Son, J., & Lin, N. (2008). Social capital and civic action: A network-based approach. *Social Science Research*, *37*, 330–349.

Stern, M., Adams, A., & Elsasser, S. (2009). How levels of internet proficiency affect usefulness of access across rural, suburban, and urban communities. *Sociological Inquiry*, *79*(4), 391–417.

Sylvester, D., & McGlynn, A. (2010). The digital divide, political participation, and place. *Social Science Computer Review*, *28*(1), 64–74.

Tabachcick, B., & Fidell, L. (2001). *Using multivariate statistics*. Boston, MA: Allyn and Bacon.

van Deursen, A. J. A. M., & Helsper, E. J. (2015). A nuanced understanding of internet use and non-use amongst older adults. *European Journal of Communication*, *30*(2), 171–187.

van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2011). Internet skills and the digital divide. *New Media & Society*, *13*(6), 893–911.

van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2014). The digital divide shifts to differences in usage. *New media & Society*, *16*(3), 507-526.

van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2015). Towards a multifaceted model of internet access for understanding digital divides: An empirical investigation. *The Information Society*, *31*(5), 379-391.

van Deursen, A. J. A. M., van Dijk, J. A. G. M., & Helsper, E. J. (2014). *Investigating outcomes of online engagement*. Media@LSE Working Paper Series, 28. Department of Media and Communications, London School of Economics and Political Science, London, UK.

van Dijk, J. (2005). *The deepening divide: Inequality in the information society*. London: Sage.

1 Wasserman, I., & Richmond-Abbott, M. (2005). Gender and the internet: Causes of variation in access, level, and scope of use. *Social Science Quarterly*, *86*(1), 252-270.

3 Willis, S., & Tranter, B. (2006). Beyond the digital divide: Internet diffusion and inequality in Australia. *Journal of Sociology*, *42*(1), 43-59.

5 Witte, J., & Mannon, S. (2010). *The internet and social inequalities*. New York, NY: Routledge.

7 Zillien, N., & Hargittai, E. (2009). Digital distinction: Status-specific types of internet usage. *Social Science Quarterly*, *90*(2), 274–291.