

Tangible Outcomes of Internet Use

From Digital Skills to Tangible Outcomes project report

Ellen J. Helsper, Alexander J.A.M. van Deursen and Rebecca Eynon

2015

Tangible Outcomes of Internet Use

From Digital Skills to Tangible Outcomes project report

When quoting this report please use the following reference:

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. Available at:
www.oii.ox.ac.uk/research/projects/?id=112

Correspondence	Ellen Helsper
E-mail	e.j.helsper@lse.ac.uk
Web	http://www.lse.ac.uk/media@lse/whosWho/AcademicStaff/EllenHelsper.aspx
Correspondence	Alexander van Deursen
E-mail	a.j.a.m.vandeursen@utwente.nl
Web	http://www.alexandervandeursen.nl
Correspondence	Rebecca Eynon
E-mail	Rebecca.Eynon@oii.ox.ac.uk
Web	http://www.oii.ox.ac.uk/people/eynon/

Acknowledgements	The authors are grateful for financial support for this project from the John Fell Fund (University of Oxford), the Department of Media and Communications (London School of Economics and the Department of Communication science (University of Twente)
------------------	---

TABLE OF CONTENTS

TABLE OF CONTENTS	5
TABLES AND FIGURES	7
1. INTRODUCTION	9
2. LITERATURE OVERVIEW.....	11
2.1 From skills to usage to outcomes	11
2.2 Conceptualisation of tangible outcomes	12
2.2.1 Tangible outcomes in the economic field	12
2.2.2 Tangible outcomes in the cultural field	13
2.2.3 Tangible outcomes in the social field	14
2.2.4 Tangible outcomes in the personal field	14
2.3 Scales and measures for Internet outcomes	14
2.3.1 Answer scales for outcomes: Quantity and quality.....	15
2.3.2 Initial development of tangible outcome items	16
2.4 Conclusions	19
3. COGNITIVE INTERVIEWS.....	21
3.1 Sample and Procedure.....	21
3.2 Results.....	21
3.2.1 Economic outcomes	21
3.2.2 Personal outcomes	22
3.2.3 Cultural outcomes	22
3.2.4 Social outcomes.....	23
3.2.5 Relationships between uses and outcomes: Intentions.....	24
3.2.6 The relationship between achievement and satisfaction of outcomes	24
3.2.7 Individuals relationships to outcomes.....	24
3.3 Summary	25

4. SURVEY PILOT TEST RESULTS.....	27
4.1 Introduction	27
4.2 Sampling.....	27
4.3 Dichotomous versus scale measures	28
4.4 Creating composite measures of tangible outcomes	29
4.4.1 Economic outcomes	30
4.4.2 Cultural outcomes	32
4.4.3 Social outcomes.....	33
4.4.4 Individual personal outcomes	34
4.4.5 Scale comparison.....	36
4.4.6 Relationships between different types of outcomes	38
4.5 Conclusions	41
5. POPULATION SURVEY TEST RESULTS	43
5.1 Introduction	43
5.2 Sampling.....	43
5.3 Scale characteristics.....	44
5.4 Comparing skew and kurtosis.....	47
5.5 Predicting achieved and satisfaction with outcomes	47
5.5.1 Explaining achievement of outcomes	48
5.5.2 Explaining satisfaction with outcomes	49
5.6 Conclusions	51
6. EXECUTIVE SUMMARY/CONCLUSIONS	53
6.1 Measurement	53
6.2 Explanations for differences in outcomes	54
REFERENCES	57
APPENDICES.....	57

TABLES AND FIGURES

Table 2.1 Economic field initial outcome items	17
Table 2.2 Cultural field initial outcome items	17
Table 2.3 Social field initial outcome items.....	18
Table 2.4 Personal field initial outcome items	19
Table 4.1 Demographic profile UK and NL Internet users pilot sample	27
Table 4.2 Items used to create economic outcomes scales	30
Table 4.3 Items used to create cultural outcomes scales	32
Table 4.4 Items used to create social outcomes scales	33
Table 4.5 Items used to create individual personal outcomes scales	35
Table 4.6 Skewness (G_1) and Kurtosis (G_2) outcomes scales in pilot survey	38
Table 5.1 Demographic profile Dutch Internet user sample	43
Table 5.2 Regression analysis of achievement of the outcome categories	48
Table 5.3 Regression analysis of satisfaction with the main outcome categories	50
 Figure 2.1 Theoretical framework for links between digital inclusion indicators and tangible outcomes.....	 11
Figure 4.1 Average achievement and satisfaction with different economic outcomes.	31
Figure 4.2 Average achievement and satisfaction with different cultural outcomes.....	32
Figure 4.3 Average achievement and satisfaction with different social outcomes.	34
Figure 4.4 Average achievement and satisfaction with different individual outcomes.	35
Figure 4.5 Percentage achievement of economic, social, cultural and individual outcomes	36
Figure 4.6 Satisfaction with economic, social, cultural and individual outcomes.....	37
Figure 4.7 Correlations between the different achievement (outcome) scales	39
Figure 4.8 Correlations between the different satisfaction (outcome) scales.....	40
Figure 5.1 Average achievement of different outcomes in Dutch population	44
Figure 5.2 Correlations (r^2) between different scales in the Dutch population	45
Figure 5.3 Average satisfaction with different outcomes in Dutch population	46
Figure 5.4 Correlations (r^2) between different satisfaction with outcomes scales for the Dutch population.....	46
Figure 6.1 The four proposed categories of outcomes and their sub-fields of resources	54

1. INTRODUCTION

Discourses around digital divides typically refer to socio-economic inequalities in access to and use of information and communication technologies. The assumption is that use of such technologies, particularly the Internet, might result in several beneficial outcomes and that non-use excludes people from full participation in contemporary society. The original conceptualization of the digital divide was simplistic; it merely considered a binary distinction of having or not having an Internet connection. Discrepancies were then attributed to differences in economic capital. In other words, you either had the financial resources to get a connection or you did not. In the past decade, digital divide discussions have moved from discussions of use or non-use, to a more nuanced recognition of different types and levels of access, motivation, skills and Internet use in a discourse that centres around digital inclusion and inequality (e.g., van Dijk, 2005; Witte & Mannon, 2010; Zillien & Hargittai, 2009). However, there remain challenges in measurement and conceptualisation.

In 2014, the authors of this report started a project with the main objective to develop theoretically informed measures that can be used to explain how people use the Internet and what the benefits might be. A first report (van Deursen, Helsper & Eynon, 2014) looked at how to measure digital skills, an area in which a good amount of research has been done, although good measures with a solid theoretical grounding are scarce. In the current report, we move towards a research area that is very underdeveloped: the *tangible outcomes* that Internet use might result in. Most research in this area focuses on measuring engagement or different uses of the Internet and then assumes that activities performed online result in the corresponding outcomes. An unequal distribution of these types of engagement in turn is assumed to reinforce existing levels of social inequality. In this report, the framework used to design measures of engagement and related outcomes starts from the premise that outcomes of Internet use can be mapped onto different types of offline resources (Helsper, 2012; Witte & Mannon, 2010). It argues that a clear separation needs to be made between undertaking different kinds of activities in the digital sphere (i.e. digital resource fields) and the tangible outcomes in different spheres of everyday life (i.e. offline resource fields) that result from this engagement. This new orientation towards studying tangible outcomes brings with it an empirical question that suffers from a lack of theoretical development around tangible outcomes of digital engagement observable in offline resources. The first research question we attempt to answer is:

What is the best (design for a) set of tangible outcomes of Internet use measures that can be used in large scale research, and practical, and policy impact evaluation settings?

Then, after proposing and testing the developed measures and accompanying answer scales, we focus on linking the derived outcomes to the inequalities typically proposed in digital exclusion research. Measuring how Internet use might impact on specific aspects of everyday life is essential in order to properly track who benefits most from being online and can therefore be considered highly digitally included. The second research question is:

Which individuals and groups get the most tangible outcomes from Internet use?

In order to answer both research questions, we:

- Conducted a systematic literature review of related studies to create an initial understanding of what *tangible outcomes* of Internet use might be, to develop an Internet outcomes framework, and to create measures for each of the identified outcomes (Section 2).
- Tested the developed measures by:
 - Conducting cognitive interviews both in the UK and in the Netherlands. These interviews were used to refine the scales and detect items that were not understood by respondents as intended by the survey developers (Section 3).
 - Pilot testing the measures in an online survey in both the UK and the Netherlands (Section 4).
 - Testing the measures in a full survey in the Netherlands (Section 5).
- Used the developed measures to identify who benefits most by using the large scale population survey in the Netherlands (Section 5).

2. LITERATURE OVERVIEW

2.1 From skills to usage to outcomes

As mentioned in the introduction, the focus within digital divide debates has shifted from differences in physical access to multi-faceted conceptualisations including different types of skills, motivation, and engagement with ICT content. Internet access is now considered in terms of quality, ubiquity, and mobility; skills as having technical, social, critical, and creative elements; motivation and awareness of the benefits as determined by both individual and social circumstances; and engagement as driven by the everyday life needs of individuals through content created by and for them so that engagement is effective and sustainable (Helsper, 2012). It is important to stress that tangible outcomes result from the combination of all of these components (see figure 2.1). Studies around skills and different types of engagement have developed considerably and do provide useful classifications in terms of the types of skills needed to use ICTs and the types of resources that are available online. However, it is by no means clear that skills and specific types of engagement result in actual beneficial outcomes. For example, insufficient skills might play a role in limiting success or efficiency in trying to undertake an online activity or when failing to turn this activity into a desired outcome. The focus in this report is on the benefits for economic, social, cultural, and personal well-being among the general population that result from engagement with different related activities online. Even when we look at them separately in this report; tangible outcomes of Internet use should always be contextualised within and linked to skills and types of engagement. We will explore the paths from social exclusion to skill, motivation and engagement, to tangible outcomes, in more depth in future publications.

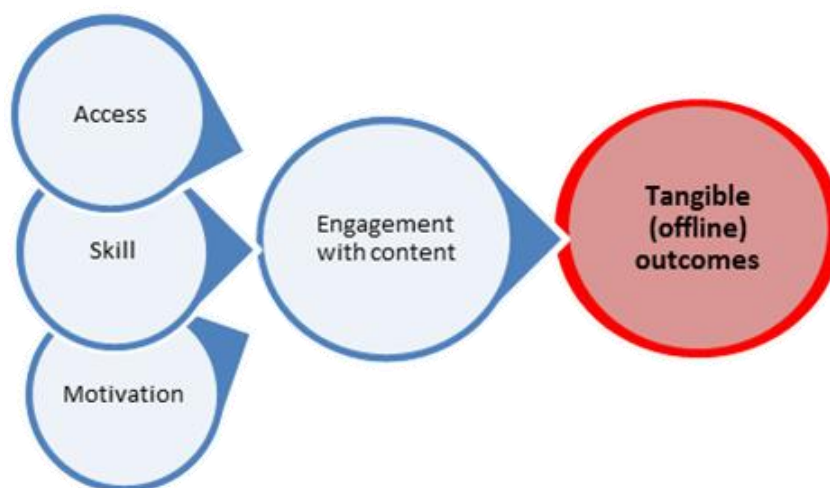


Figure 2.1 Theoretical framework for links between digital inclusion indicators and tangible outcomes (adapted from Helsper, 2012)

2.2 Conceptualisation of tangible outcomes

To understand the importance of the Internet, we need to focus on the tangible - or 'real' - outcomes that digital divide policies can address. Such a focus requires a classification (and operationalized measures) of benefits that can result from Internet use. Traditionally, for such a classification one of the following approaches is considered (van Deursen & Helsper, 2015):

1. A Uses and Gratifications approach, which would focus on expected outcomes or gratifications of Internet use. These outcomes can be used to predict individual engagement with the Internet that might result in achieved gratifications. Papacharissi and Rubin (2000), for example, examined *attitudinal* outcomes of Internet use this way. Bandura's (1986) Social Cognitive Theory stands at the basis of this Uses and Gratifications approach in which desired outcomes of behaviours (i.e. gratifications sought) are considered important determinants of engagement (i.e. use). However, outcomes are measured either through measuring engagement with the Internet or by looking at attitudinal outcomes (i.e. gratifications obtained). Tangible *behavioural* outcomes are rarely measured (van Deursen, Van Dijk & Helsper, 2014).
2. Using frameworks based on theories of reasoned action, such as the Technology Acceptance Model and the Unified Theory of Acceptance and Use of Technology (Davis, Bagozzi & Warshaw, 1989). These frameworks focus on intentions to use the Internet and subsequent behaviours associated with Internet outcomes. Both offer a psychological and individualistic approach since use is explained by ease of use and individual needs. There is no link to broader cognitive, social and economic resources nor do they link these needs or intentions to specific tangible offline outcomes (van Deursen, Van Dijk & Helsper, 2014).
3. Focussing on more general outcomes of Internet use, such as well-being or happiness (e.g., Caplan, 2003; Kavetsos & Koutroumpi, 2010). While these take into consideration more complex socio-economic and cultural processes, their operationalization of outcomes is rather intangible and the research descriptive rather than model or even theory driven (van Deursen, Van Dijk & Helsper, 2014).

The measures used in all three approaches are typically intangible because they are not easily detectable by an external observer and not testable as factual outcomes in a person's everyday life. The approach as discussed in this report helps us to move forward and focus on developing theoretical approaches to and measurements of tangible Internet outcomes. To establish a framework that classifies such outcomes, we turn to systematic theorization based on traditional notions of inequality, which identify valued resources in society. Well known is Bourdieu's (1986) classification of resources in economic, cultural, and social capital. Economic capital refers to economic possessions such as monetary assets or property. Social capital consists of resources taken from relationships, networks and social support. Cultural capital comprises the types of knowledge, skills, and education that increase one's social status. Van Dijk (2012) elaborated on this idea in his classification of participation in different societal fields. He added spatial (the extent to which one is able to visit geographical locations and lead a mobile life), political (civic and political expressions and participation) and institutional participation (engagement with public formal information and services). Helsper (2012) proposed a model of corresponding fields which hypothesizes how an

individual's specific digital and offline resources affect each other. The conceptualization of fields in this framework draws on Bourdieu's (1986) theorization of traditional inequalities in forms of capitals, but refers to van Dijk (2005) for its conception of resources. Helsper uses the term 'field' for spheres of influence in everyday life as well as frames of reference for individual action. Each separate field contains a collection of interlinked resources and each of these resources is operationalisable in research or the evaluation of interventions through specific indicators. The four fields of economic, cultural, social and personal resources are considered to be conceptually separate although they are often strongly interrelated because of wider underlying power structures that concentrate (dis)advantage in certain groups (Helsper, 2012). The idea of identifying specific resources in a field clearly fits the purpose of identifying tangible Internet outcomes. Therefore, we will discuss each field and the types of resources that might be proposed to operationalise these¹.

2.2.1 Tangible outcomes in the economic field

Resources related to the economic field concern poverty, joblessness, and wealth (i.e. capital), typically measured by income, education, employment, and financial indicators. Online, this might, for example, translate into someone finding a job because of immediate access to a wider range of job opportunities. Besides finding a job, tangible outcomes for workers might be improved performance (perhaps because they have greater access to information and learning opportunities, faster and more efficient forms of communication, or higher job satisfaction). Additionally, workers who use the Internet have been shown to obtain more generous performance rewards. Workers with less Internet access have suffered from wage inequality, suggesting that Internet-based behaviours are rewarded by the labour market. Wealth can also be obtained through, for example, buying cheaper products, obtaining discounts, trading goods for mutual benefit, getting insurance or capital (financial, investment products) and enforcing discounts by collaborating with others.

2.2.2 Tangible outcomes in the cultural field

The cultural field in the corresponding fields framework is connected to the idea of socialisation and acculturation, and defines cultural capital as the shared norms which guide behaviour that gives meaning to belonging to a certain group. Group norms include ideas about how certain groups of people are expected to behave and what their aspirations should be. This is also referred to as "social scripts" or norms that indicate characteristics of social status and appropriate behaviour. In this report, resources in the cultural field are, therefore, operationalised as identity categories that are associated with certain beliefs and the interpretation of information and activities as learned through socialization within these groups. Gender, generation, ethnicity, and religion can all be considered indicators of identities with different cultural resources, such that ascribing to one of these identities implies understanding the norms around appropriate norms and behaviour for members of certain groups within these broader categories. Helsper (2012) suggested operationalising cultural resources in terms of identification with and belonging to particular sociocultural groups that share a specific type of socialization or acculturation. Cultural participation can thus be defined as learning and understanding the normative conceptualizations of what is good

¹ The sections that follow (2.2.1 through 2.2.4) rely heavily on the Corresponding Fields paper published by Helsper in 2012 and some passages have been directly copied from this paper in order to do justice to the original intellectual work. Please read this paper for references to the work on which these ideas are based.

or bad, what is sophisticated or kitsch, and what is proper and improper, all acquired through socialization in the home, school, community and wider society. Therefore, cultural resources encompass knowledge, education, understandings of value of entertainment and art and other social-cultural distinctions that make up social status (Bourdieu, 1984) and are related to belonging to certain socio-cultural groups.

2.2.3 Tangible outcomes in the social field

Social resources reflect involvement in and attachment to networks that give a person access to the knowledge and support of others. Social resources include both weak and strong ties and networks that offer emotional or instrumental support. Social networks build on common interests, shared activities, and family, or other ties that join a group of people together and are mostly located in the private sphere. In general, more and stronger ties are considered indicators of high inclusion in this field. While related to the cultural field, resources in the social field are more fluid and subject to change throughout a person's lifetime.

In this report civic and political participation are considered social resources because they are formalized, public resources related to official organizational structures. Political participation includes both engagement with formal political processes and institutions (e.g. voting, being a member of a political party) and less formally organized politics (e.g. opinion formation and engagement with political issues outside of formal political structures and parties). Institutional outcomes, such as engaging with government and health services, could be enabled by the Internet if it leads to improved contact with these institutions and using government services of all kinds. Operationalisations of formalised social resources relate to having one's voice heard within a wider community (e.g. special interest, advocacy group, sport and hobby club membership). Thus, the number of ties and interactions with (representatives of) civic and political organizations or institutions is an operationalisation of the participation resources in the offline social inclusion fields.

2.2.4 Tangible outcomes in the personal field

Resources in the personal field reflect the ability to take advantage of new opportunities independent of a person's economic, cultural, or social background. Included are mental and physical well-being and aptitudes.

Psychologists use skill, personality, and health indicators to judge how people are equipped to manage their everyday lives. Personality and psychological health scales such as The Big Five, the UCLA Loneliness, self-efficacy, locus of control and the Minnesota Multiphasic Personality Inventory scales are examples of instruments that operationalize a person's disposition and well-being. An important element of personal resources in light of well-being is self-actualisation; informal knowledge gathering that makes a person feel better about themselves. There are also a large range of indicators that can be used to examine resources in terms of specific types of physical health; most common in digital inclusion research is looking at disability or whether a health condition allows for full participation in society and the workforce.

Also included in resources in the personal field is another component of well-being is the pursuit of common leisure activities, such as undertaking sports, watching television, going to events and other relaxing activities. It is important to separate these from the social resources discussed above because these are achieved by individuals on their own and not in organised, more formal or informal organisational structures.

2.3 Scales and measures for Internet outcomes

As noted in the introduction, our goal in this project was to develop a set of questionnaire items to measure outcomes of Internet use. When designing the survey, we aimed to create measures that ask for different tangible, i.e., externally observable, outcomes in each of the four fields discussed above. In the development of the items, behavioural types of outcomes were given preference over attitudinal outcomes whenever possible. The outcomes questions in the questionnaire were formulated in such a way that they could only be the direct result of a specific online type of engagement. This means that in operationalising these outcomes, we had to ask whether people engage in a specific Internet activity first. 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.

Furthermore, in the full survey, types of engagement were measured based on different levels, namely informative, social or creative (van Deursen, Helsper & Eynon, 2014)². For example, we asked survey respondents whether they looked for information on a product (informative), talked to others about the price of a product (social), and whether they made an offer on an online product (creative). If people engage in online shopping, then tangible economic outcomes of this economic activity can be measured. Use and engagement clearly always precedes obtaining tangible outcomes. In addition, the use of this framework also allows for the possibility of “unintended benefits”. This means that when people engage in an activity that could be mostly classified as, for example, economic, we might see tangible outcomes in other fields such as the personal or social fields.

2.3.1 Answer scales for outcomes: Quantity and quality

We choose to measure tangible outcomes in two ways, related to quantity (achievement) and quality (satisfaction) of the outcome. Quantity statements are measured by using agreement scales, and the quality of the outcome with satisfaction scales. We considered it important to separate satisfaction and achievement since obtaining an outcome does not mean that this outcome is of similar or better quality than what you might have achieved through different means. For example, getting a degree through an online course (quantity) does not mean that you are satisfied that it was a good course that taught you something useful (quality). To really understand outcomes both the quantitative and qualitative elements need to be included in the measurements.

In survey research the longer it takes for respondents to answer a questionnaire the more it will cost to administer the survey and also the more likely it is respondents drop out before the end.

² For the full survey please see <http://www.oii.ox.ac.uk/research/projects/?id=112>

Therefore, in the pilot stage of the survey development we tested items both in a Likert-type format and a dichotomous format to be able to make a decision about whether it is possible to economise in empirical research on tangible outcomes. If the dichotomous scale versions bring more or less the same distribution of answers we would have recommended using the less time consuming scale that uses dichotomous outcomes.

Achievement items (quantity)

The quantity aspect of outcomes was operationalised in the following ways:

Scale version	Dichotomous version
Thinking about your online activities in the past year, how much do you agree or disagree with the following statement? If you did not undertake the activity the question is about, just select Not Applicable (NA)	Thinking about your online activities in the past year, did the following happen to you? If you did not undertake the activity the question is about, just select Not Applicable (NA)
Disagree strongly (1)	Yes (1)
Somewhat disagree (2)	No (2)
Neither agree nor disagree (3)	Not Applicable (NA) (3)
Somewhat agree (4)	Don't know (4)
Agree strongly (5)	
Not applicable (NA) (6)	
Don't know (7)	

Satisfaction items (quality)

The quality aspect of outcomes was operationalised in the following ways:

Scale version	Dichotomous version
Thinking about your online activities in the past year, how satisfied or unsatisfied were you with the following? If you did not undertake the activity the question is about, just select Not Applicable (NA)	Thinking about your online activities in the past year, were you satisfied with the following things? If you did not undertake the activity the question is about, just select Not Applicable (NA)
Very dissatisfied (1)	Yes, I was satisfied with (1)
Somewhat dissatisfied (2)	No, I was not satisfied with (2)
Neither dissatisfied nor satisfied (3)	Not Applicable (NA) (3)
Somewhat satisfied (4)	Don't know (4)
Very satisfied (5)	
Not applicable (NA) (6)	
Don't know (7)	

We found through cognitive interviews and statistical testing that it is important to include the Not Applicable and Don't Know options (see sections 3 & 4 of this report).

2.3.2 Initial development of tangible outcome items

The individual items related to outcomes in the economic, cultural, social and personal field were developed based on an extensive review of the literature and previous surveys. Our starting point was the mapping of specific types of outcomes onto the different resources fields. To be able to do this, we had to use the existing research and literature on different types of engagement with the Internet as measured by Uses and Gratifications research and other classifications of Internet use. In the development of the items we moved between outcomes measures and use measures to make sure that activities could be mapped onto outcomes and outcomes onto activities. In taking such an approach we designed a final battery of use and outcomes measures that reflected the different

resources within all four fields. We have included the battery of use questions per field in appendix A. When looking at the outcomes, we want to stress again that the questions about tangible outcomes clearly depend on whether or not a person has undertaken an activity online.

To develop the questionnaire that would be used in the cognitive interviews we asked respondents whether they had engaged in an activity with a frequency of “never to several times per day”, for the scale items, and “in the past year” for the dichotomous items. These questions followed the skills items discussed in the previous report in this series (Van Deursen, Helsper & Eynon, 2014). Particularly important in this study was to separate tangible outcomes from uses of the Internet, a trap that previous research and interventions have often fallen into. For example, previous research has often assumed that meeting new people online translated into more or even better friendships in everyday life, or that looking for a job online was the outcome instead of the actual finding of a job (i.e. a job better than a job that could have been found without the Internet).

We ask the reader to be aware that there has been almost no research that has aimed to systematically measure these outcomes based on a theoretical framework linked to the digital inclusion literature (Helsper & Eynon, 2013; Van Deursen, Van Dijk & Helsper, 2014). Therefore, the original items as presented in Tables 1.1 through 1.4 below represent the very first attempt and the rest of this report discusses how successful they are. The Oxford Internet Surveys (<http://oxis.oii.ox.ac.uk/>) and the work identified in Van Deursen, Van Dijk & Helsper (2014) has served as the main reference works in constructing these questions.

Table 2.1 Economic field initial outcome items

Achievement	Satisfaction
My knowledge increased because of the Internet (i.e. looking up information, talking to others)	The information you found online for the topic that interests you
I got a degree/certificate that I could not have got without the Internet	The price of the course you did online
	The quality of the course you did online
I save money by buying products online	The price of the last product that you bought online
I sell goods that I would not have sold otherwise	The quality of the last product that you bought online?
	The price you get for the product(s) you sell online
The things I found online influenced how I do my job	The way the Internet has influenced how you do your job
I found a job online that I could not have found offline	The job you got online
My financial situation improved because of the information and services I found online	The last financial service you used (e.g. banking)
I bought insurance online that I would not have bought offline.	The insurance or other financial product you bought online

The economic field is one of the areas of research that has received a reasonable amount of attention in policy making and digital inclusion interventions, especially in terms of thinking about which activities online are related to employment, ecommerce and other wealth and poverty related aspects. These items were therefore the easiest to design; there was a range of activity questions and the associated outcomes were concrete (e.g. finding a job, selling a product for a good price).

The outcome measures in the cultural field were the hardest to design. While there is quite a bit of theoretical and qualitative empirical work on this topic we could not identify any scalable, survey work on identity and belonging in relation to either digital engagement or benefits of ICT use. This is most likely because the tangible outcomes here are feelings of belonging and identification which are not observable by an outsider and, therefore, have to be inferred from answers to more in-depth qualitative explorations of people's experiences and attitudes. Here we tried to capture these elements of softer tangible outcomes that related to feelings but still tried to make them as concrete as possible.

Table 2.2 Cultural field initial outcome items

Achievement	Satisfaction
The things I found on the Internet made me think about the differences between men and women	Information you come across about gender differences
Through the Internet I learned new things about my ethnic group	The information you come across about your ethnic group online
Through the Internet I found people of a similar age that share my interests	Your interactions with people of your age online (as compared to offline interactions with people your age)
I would feel more connected to my religion due to the information I found and people I have met online	Your online interactions with people and organisations that share your religious beliefs (i.e. in comparison with the offline people you might encounter)
I have changed my religious or spiritual beliefs due to the information I found and people I have met online	

Table 2.3 Social field initial outcome items

Achievement	Satisfaction
I have a better relationship with my friends and family because I use the Internet	Your online communication with friends and family? (i.e. in comparison with the offline communication you might have)
I am in touch with my close friends more because I use the Internet	Your online communication with people online who are not close friends or family? (i.e. in comparison with the offline communication you might have)
I have more friends because I use the Internet	
People I meet online are more interesting than the people I meet offline	
I became a member of a hobby or leisure club or organization that I otherwise would not have found	The last club or organization you became a member of
I became a member, donor of a civic organisation (e.g. those involved in environmental or human rights campaigning) I would not have become a member of otherwise.	Your online involvement with the last organisation you joined/donated to
	Your last contribution to an online discussion
I have discovered online that I am entitled to a particular benefit, subsidy or tax advantage which I would not have found offline	The last online government service you accessed
I have better contact with my MP, local councillor, or political party	Your last interaction with an MP, local councillor or political party online

The outcomes in the social field were based on a great quantity of previous work on political and civic participation and research into strong and weak or bridging and bonding ties. Therefore, the

outcome measures in this field were relatively easier to construct. However, it was complicated to separate quantity and quality in these items.

In the personal outcomes field achievement of health outcomes, and to some extent leisure outcomes, had been quite well developed in previous studies. There were fewer instances of self-actualisation outcomes in previous work and so these were more difficult to construct. In all cases in the personal outcomes field satisfaction items were more challenging to create than achievement items.

Table 2.4 Personal field initial outcome items

Achievement	Satisfaction
Information I found online gave me more confidence in my lifestyle choices	The lifestyle choices you have made based on the information you found online
Online entertainment (games, listening to music, reading jokes) made me feel happier	How you feel after having spent time online
I am fitter as a result of the online information, advice or programs / apps I have used	The way in which the last bit of advice, program or app you used has influenced your level of fitness
I have made better decisions about my health or medical care as a result of the information / advice I found online	The last health information or advice you used online
	The way you changed your behaviour as a result of the health information you found online
I go to events and concerts I would never have otherwise considered	The last concert or event you went to as a result of after you found information about it/bought a ticket for it online?
Using the Internet helps me to form opinions about complex social issues I would not fully understand otherwise	The way in which the Internet helps you think about complex social issues
Information I found online gave me more confidence in my lifestyle choices	The lifestyle choices you have made based on the information you found online

2.4 Conclusions

There is very little generalizable, scalable research on measuring tangible outcomes of Internet use. Previous research often operationalises outcomes by looking at what people do online and assumes that the offline benefit follows automatically *or* it measures attitudes towards online engagement and its benefits rather than concrete outcomes that can be registered by an external observer.

We designed a series of items that measure tangible outcomes in the economic, cultural, social and personal fields of resources identified in the Corresponding Fields Model (Helsper, 2012). We hope that by taking a more structured, theory based approach we have overcome the conflation of outcomes and use. In thinking about the possible answer options for these types of survey items we separated *quantity* (achievement of an outcome) and *quality* (satisfaction with an outcome). We designed scale and dichotomous items to test whether a person had achieved (often) and whether they were satisfied with (to a smaller or larger extent) an outcome.

In the next section we describe the cognitive interviews that test this design. The cognitive interviews were used to design a survey that could be used for larger scale population research.

3. COGNITIVE INTERVIEWS

3.1 Sample and Procedure

As discussed in our previous report (van Deursen et al., 2014), the cognitive interviews were conducted in both the UK and in the Netherlands with 25 participants. The interviews took place in November 2013-January 2014. The group of 25 participants in both countries were of varying ages and levels of education, and both men and women. Originally, all questions were formulated in English. Two of the researchers are Dutch and independently translated the questionnaire for the Dutch pilot study.

The purpose of the interviews was to detect items that were not understood by respondents as intended by the survey developers. We also investigated whether respondents with different socio-demographic backgrounds understood the question, found the question relevant, and were able to formulate an answer using the provided scales. Finally, we used the interviews to make sure that all problems regarding understanding and answer formulation were corrected before the survey pilot tests (discussed in the next section) started.

As noted in the introduction few attempts have been made at developing items to measure tangible outcomes, thus the cognitive interviews were an important aspect of the study. In the discussion below we focus on the questions that participants found most problematic and why, and how we adjusted these. More minor errors discovered through this process (e.g. spelling and formatting) were also corrected but these are not reported here.

3.2 Results

In general, items that appeared difficult to interpret in the English version were also difficult in the Dutch version. From the analysis of the cognitive interviews, we found some important differences in the ways and ease with which participants could answer questions about the four different kinds of outcomes.

3.2.1 Economic outcomes

Economic questions, particularly those relating to income and property, were generally straightforward for interviewees to answer. This was because participants found the questions easy to apply to their own situations, and could also determine if they had achieved a certain outcome and if they were satisfied with the result having undertaken an activity online.

For example, Jean (not her real name) found it easy to distinguish whether or not she had achieved an improvement in her family's financial situation. She told us, "we look at car insurance again and that sort of thing (...) and that obviously would improve our financial situation if it was a better offer, but we've never gone with it, so (...) so it hasn't improved my financial situation." The questions around education were a little harder for participants to follow, because the questions were of a broader nature. However, they were still behaviours that interviewees could relate to. Of the four outcome types, economic outcome questions were the most straightforward to ask and respond to.

3.2.2 Personal outcomes

For personal outcomes, the findings are somewhat mixed. Many interviewees expressed a strong preference for the health / lifestyle questions, because, like the economic questions, they found them easy to apply to their own experience. As Louise told us, “I definitely prefer these questions, they’re much more about me and how it’s impacted my life.” The phrase “lifestyle choices” did cause some challenges (particularly in the Netherlands), as the term was considered to be “really broad (...) there’s so many aspect to my lifestyle (...) so probably it depends on the situation” (Mina). This type of question, related to broader, longer term outcomes, require further investigation in future work.

Questions about achieving certain outcomes around health, leisure and self-actualisation were found to be acceptable. However, satisfaction was found to be difficult to judge for some items, because sometimes people tended to focus on the process rather than the outcome itself. For example, when asked about the satisfaction obtained from the last concert or event they went to after finding information or buying the ticket for the event online, John told us, “I was satisfied, I bought the tickets, paid for them and they arrived.” Similarly, when responding to the question “The information you found online for the topic that interests you”, Simon told us, he was “completely satisfied, because if I’m interested in something I’m going to go online to look for it.” Finding ways to address this issue will be an important component of future work.

For some leisure and self-actualization questions we tried to obtain a general level of satisfaction about certain activities (spending time online and topics of interest). However, interviewees found this difficult as they wanted to contextualise the question. For example, in response to the item “How do you feel after having spent time online? John told us, “sometimes I am infuriated and sometimes I’m mildly satisfied.” Similarly Michael told us, “Well, it kind of depends what I’m doing (...) I mean it’s very circumstantial.” To try and address this we added the phrase “in general” and this appeared to assist later responses to this question. In survey research, these types of questions can be classified as vague quantifiers. Vague quantifiers have the advantage that they are able to capture more general patterns in behaviours that might otherwise be very context specific. The specific alternative, which we used for most outcomes, was asking about “the last time you undertook this activity online”. However, we wanted to keep at least some evaluations of impact on overall personal well-being as related to the Internet and therefore decided to keep this question with the subtle change in wording.

3.2.3 Cultural outcomes

Many people struggled with the cultural outcome items, and these issues were the most challenging to address in the development of the survey. This was firstly due to the fact that people found the items around age, gender and ethnicity difficult to answer in part because the questions were “vague” or “too broad”, leaving people to search for what was meant by the question. Because this also meant moving away from the general premise of tangible outcomes as defined for this study, we addressed this issue by providing more examples in the uses section to support the development of a response for the outcome items. With a more specific range of examples given for these earlier questions the meaning about outcomes became clearer to participants and they had fewer problems answering these questions.

Relatedly, people also encountered some difficulties in deciding if they had achieved certain cultural outcomes due to their Internet use (e.g. meeting people who share interests, feeling more connected to certain beliefs), because these kinds of information were very rarely sought directly online. From our analysis it appears that if the online behaviour was not intentional, then the outcome remains less easy for participants to define.

We tried to address this through rephrasing of the question from asking people about how they found information on these topics to asking them if they had come across this information. And this switch certainly assisted some people. For example, as James told us, “I think if you read the news you come across information that affects what you think about spirituality and things (...). I mean you’re bound to be affected, it’s bound to affect you.” Similarly, when Alan was talking about looking up information about differences between men and women, he told us: “I’ve never done that. But in terms of the Internet you will find, like, by proxy, you will find or you will be informed about the differences between men and women (...) I absorb that information.” This rephrasing to “come across” could have been useful for the belonging as well as the identity questions in the cultural outcome measures and this may have assisted understanding further. In this study we only adjusted the phrasing for those items that interviewees clearly indicated as problematic, i.e., the identity items. Future research should look at applying this phrasing for all questions related to more affective behaviour outcomes such as those related to feelings of belonging and a sense of identity.

People also struggled with thinking about satisfaction on cultural outcomes, because this was not information they specifically sought. As Jean told us, “I wouldn’t be looking for information about gender differences, so I don’t quite understand (...) if I’m not looking for information about gender differences, which I’m not particularly, then that’s not applicable really, is it?” Similarly, Anne, who had used a specific example about gender differences to assist her with the questions, found satisfaction very difficult to answer. She told us, “I mean, I just read it, digested it – And what am I supposed to say about that then? How satisfied was I with it? I just read it and thought [about it].”

As was the case for the social and personal outcomes, measures of satisfaction were challenging for participants to assess in terms of distinguishing between experience of Internet use and the actual outcomes achieved from that use. Sometimes participants expressed more satisfaction with getting the information online rather than the satisfaction obtained from achieving a certain outcome from that information.

3.2.4 Social outcomes

As we found for economic and personal outcomes, most social outcome items were easier to answer. Achieving certain outcomes could typically be answered. However, some of the satisfaction items again caused problems, particularly around items about personal networks and trying to distinguish the contribution made by the Internet. As Edward told us “It’s quite complex. I mean it’s just thinking about your online activities in the past year, how satisfied or unsatisfied you would find things [your online communication with friends and family], that’s simple and straightforward. But then it says, “In comparison with the offline communication I have,” which is a completely different

thing”. Edward argued, like others, that in these sorts of cases online and offline communication was not the same thing. It is “a different thing. (...) It’s a different sort of activity altogether.”

3.2.5 Relationships between uses and outcomes: Intentions

What is clear from the analysis and a key theme that emerges from the discussion above is that individuals find it a lot easier to analyse the extent to which outcomes have been achieved and the extent to which they are satisfied with these outcomes, when the outcomes were directly related to intentional uses of the Internet. As Mina told us, “I found it so much easier to go through the questions that were more on topic.” Similarly Jean said, “It’s just, the way [the questions] relates to me.” The examples throughout the text above highlight this, and thus the link between intention, use and outcomes does need further exploration in further item development.

3.2.6 The relationship between achievement and satisfaction of outcomes

The interview data clearly demonstrated that achievement and satisfaction measures are not straightforwardly related. Assumptions about the nature of outcomes cannot be made from achievement alone. For example, when answering questions about the Internet and relationships with friends and family, Louise told us, “I have a better relationship with my friends and family because I use the Internet [paraphrased question] – I probably disagree with that, really. (...)Thinking about your online activities in the past year, how satisfied or unsatisfied were you with the following things. Your online communication with friends and family, i.e. in comparison with the offline communication you might have - I’d probably say neither satisfied nor dissatisfied, really.” For Louise, in this case not achieving the outcome was not problematic – but if only achievement were measured it could be interpreted negatively. This is supported by Tom who told us, when asked an economic question about whether the Internet had influenced his job (agree / disagree), replied, “So it has influenced my job completely, but it’s not to improve my job. If anything, it’s made me and a lot of other people a bit lazier at work (...) It has influenced how I do my job, but it’s made me worse, if you know what I mean.” Thus, for him while the outcome had been achieved it had not been a positive experience. What both of these examples demonstrate is the importance of trying to measure both achievement and satisfaction – despite the challenges of doing so.

3.2.7 Individuals relationships to outcomes

A final theme that became apparent in the interviews is that people experience outcomes in a very complex way. They often link their views about outcomes (both whether they have been achieved and how satisfied they are with the outcome) to other people. So for many, outcomes were interpreted as occurring in collaboration or in comparison with other people. So for example, Jean told us “When it says “ask for advice on a medical condition” it doesn’t have to be my medical condition, does it?.....Because I’ve looked up for my dad but I haven’t necessarily looked up for me.” Anne told us “I have discovered that ‘I am entitled to a particular benefit’. But I’d say I discovered that particular benefit for my mum [not me].” Similarly, it would be good to capture how others’ use of and perceptions of the Internet benefit people (in)directly. While we were not able to include this in this particular study, we strongly recommend that the social contexts of outcomes become an important aspect to explore in further research.

3.3 Summary

From our analysis of the interview data there are three key issues we wish to highlight which had implications for the design of our items and will be of value to this area of work going forward. Firstly, people found it easier to define and report tangible outcomes in specific fields. Questions based on economic outcomes were found to be the easiest, followed by aspects of personal outcomes, and then social outcomes with cultural outcomes being the most difficult. They also seemed to see these areas as quite different from one another. Second, use and outcomes are not the same thing; people sometimes use the Internet without intending to achieve any kind of significant outcome, sometimes outcomes are not always achieved, and even when they are achieved they may vary in levels of satisfaction. The implications of this for everyday life varies significantly from context to context, thus all three aspects (use, achievement of outcome, and satisfaction) need to be measured and linked together. Individuals do find it difficult to report on outcomes, particularly satisfaction, when it is difficult to link a particular outcome with an intended use. We suggest that further item development may assist with this. Examples and guidance are a key part of this process.

4. SURVEY PILOT TEST RESULTS

4.1 Introduction

The second step in testing the developed measures consists of online survey pilot tests, both in the UK and in the Netherlands. These pilot tests were conducted in May 2014 with the specific aim of testing the reliability and other characteristics of the constructed scales. As noted in section 2, to try to reduce the amount of time it takes for people to complete the survey we wanted to explore the adequacy of using dichotomous vs scale response formats. Thus, both were tested in the pilots.

We describe sampling of the pilots in Section 4.2. The results of the comparison of responses to outcomes questions that were asked in dichotomous and scale versions are discussed in Section 4.3. In Section 4.4, after having concluded that the scale versions were more appropriate, we created scales based on our theoretical framework and test these for means and distribution properties. Finally in Section 4.5, we test for significant differences in skewness, kurtosis and variance between different countries to understand whether the characteristics of the scales were stable in different interpretative contexts.

4.2 Sampling

In the UK pilot survey, 324 respondents completed the online survey, and in the Dutch pilot 306 respondents. The fieldwork was done by Toluna, a market research organization who used an online sample panel recruited offline to represent the general population. The respondents represented a random sample of Internet users in both countries. Table 4.1 provides an overview of the sample.

Table 4.1 Demographic profile UK and NL Internet users pilot sample

	UK		NL	
	N	%	N	%
Gender				
Male	159	49	152	50
Female	159	49	153	50
Age				
16 to 30 yrs.	62	19	80	26
31 to 45 yrs.	90	28	76	25
46 to 60 yrs.	83	26	100	33
61 yrs. and older	69	21	48	16
Occupation				
FT employed	130	40	108	35
PT employed	48	15	47	15
Unemployed	17	5	31	10
Student	16	5	35	11
Caretaker	68	21	35	11
Retired	28	9	23	8
Not able to work	10	3	25	8

Base: Internet Users (UK N=324, NL N=306)

4.3 Dichotomous versus scale measures

Our first aim was to decide what scales could best be used to measure Internet outcomes. Three versions of the questionnaire were tested: one third of the sample in each country got a version that contained only scale items for the skills, uses and outcomes questions; one third of the sample in each country got a version that contained scale items for the skills and uses questions but dichotomous items for the outcomes questions; and one third of the sample in each country completed a questionnaire that had scale versions for the skills and outcomes measures and dichotomous items for the uses questions. This means that around two-thirds of the sample completed the scale version of the outcomes measures and one-third answered outcomes questions using a dichotomous scale.

To understand whether it is possible to use dichotomous items instead of scale-based items and economise in larger scale survey research, we conducted descriptive comparative tests to explore if similar numbers of respondents selected 'Don't know' and 'Not Applicable' to the satisfaction and achievement of the outcomes questions in both dichotomous and scale response versions of the survey. There were only 14 individuals in the scale and 19 individuals in the dichotomous version who had given an answer other than 'Don't Know' or 'Not Applicable' to all of the outcomes items.

In general, respondents were more likely to answer the scale questions than the dichotomous questions (see Appendix B); response rates for the scale questions were all higher. That is, there were more people who answered 'Not Applicable' and 'Don't know' when presented with the dichotomous items than when they were presented with the scale version of the questionnaire. The difference was particularly large for social, economic (income/ecommerce and employment) and personal (hobbies/interests) outcomes. Here, response rates differed by more than 50 percentage points between those who saw the dichotomous and those who saw the scale versions of the following items:

Social

- I have a better relationship with my friends and family because I use the Internet
- I am in touch with my close friends more because I use the Internet
- Your online communication with people online who are not close friends or family? (i.e. in comparison with the offline communication you might have)
- Your online communication with friends and family? (i.e. in comparison with the offline communication you might have)

Economic

- The last financial service you used (e.g. banking)
- I save money by buying products online
- The price of the last product that you bought online
- The quality of the last product that you bought online
- The way the Internet has influenced how you do your job
- The experience of buying products online

Personal

- In general, how do you feel about spending time online
- In general, the information you find online about topics that interest you
- My knowledge increased because of the Internet (i.e. looking up information, talking to others)

Thus, far fewer people answered the dichotomous version of the questions, with many more opting for Don't Know or Not Applicable. However, when we compared the average response between the dichotomous and scale versions of the items for those respondents who had answered the questions these were not significantly different. Similarly, when comparing the two different versions of the questionnaire that included the scale versions of the outcome items (see beginning of this section) the differences in average scores were not significantly different. Therefore, we are confident that the scale version of the items is answered more or less independent of the context in which they are asked and reflects the true answers to these questions.

Given the level of consistency in the difference between the dichotomous and scale versions of the response options, which favours the scale items, we propose that for research purposes the use of scale items is the best way forward. In the rest of this report we focus on the analysis of the scale versions of the outcome questions.

4.4 Creating composite measures of tangible outcomes

We anticipated that outcomes vary from individual to individual and that not everyone experiences all outcomes since not everyone engages with all aspects of the Internet. Indeed, many of the individual outcome items are not achieved by a large proportion of the respondents. For example, only 62% of respondents answered the achievement of becoming a 'member, donor of a civic organisation' (see Appendix B), 36% said this was not something they had done and only 2% did not understand the question (i.e. they answered Don't Know). For the satisfaction items this rate of people who had appreciated a benefit from engaging with ICTs was even lower.

For most of the questions, there were no more than 15 participants who claimed that they did not know what the question meant. The highest (20 Don't Knows) was for the following satisfaction item: 'The lifestyle choices you have made based on the information you found online' – which reflects some of the challenges of the term 'lifestyle' noted in the cognitive interviews. The distribution of 'Don't Knows' was relatively even across the different categories of items and should therefore not have influenced the analyses.

The fact that outcomes are logically unequally distributed, depending on the needs and engagement of the person with the Internet, means that there were a considerable number of missing values per individual. Therefore, an exploratory factor analysis, which is standard practice in scale creation, is not possible. Since this is the first time that this type of measurement has been attempted (as far as we are aware), we guided ourselves by theory following the classification based on the corresponding fields model (Helsper, 2012). Using this procedure we calculated the average on the

scale of the items that were answered (i.e. not including the Don't Know and Not Applicable answers) grouping them according to different categories of resources within the economic, cultural, social and personal fields. We could thus measure achievement of and satisfaction with outcomes within these broader categories independent of whether a person had engaged with a more specific activity that could have led to these outcomes. In the sections that follow we describe how we constructed these broader scales.

4.4.1 Economic outcomes

The following economic outcome items were considered for the analysis and grouped together. We combined the education and employment variables because people tended to be either in education or employment and therefore the number of participants answering both questions was very low. By combining the two scales we got a better idea of how outcomes were distributed in this field.

Table 4.2 Items used to create economic outcomes scales

	Achievement	Satisfaction
Income	The information and services I found online improved my financial situation ^a	The last financial service you used (e.g. banking)
	I bought insurance online that I would not have bought offline	The insurance or other financial product you bought online
Property	I save money by buying products online	The quality of the last product that you bought online
	I sell goods that I would not have sold otherwise	The price of the last product that you bought online
		The experience of buying products online ^b
		The price you get for the products you sell online
		The experience of selling products online ^b
Education and Employment	I got a certificate that I could not have gotten without the Internet ^a	The price of the course that you found online ^a
	The things I found online influenced how I do my job	The quality of the course that you found online ^a
		The job you got online
		The way the Internet has influenced how you do your job

^a Phrasing item changed based on cognitive interviews

^b Item added after cognitive interviews

Figure 4.1 shows the average scores for the achievement of and satisfaction with different economic outcomes. Achieving an outcome is most likely in relation to property; the least common is the achievement of outcomes in the education and employment categories. In relation to satisfaction, the pattern is slightly different; people are most satisfied with the income outcomes they achieve but are also least satisfied with the education and employment outcomes.

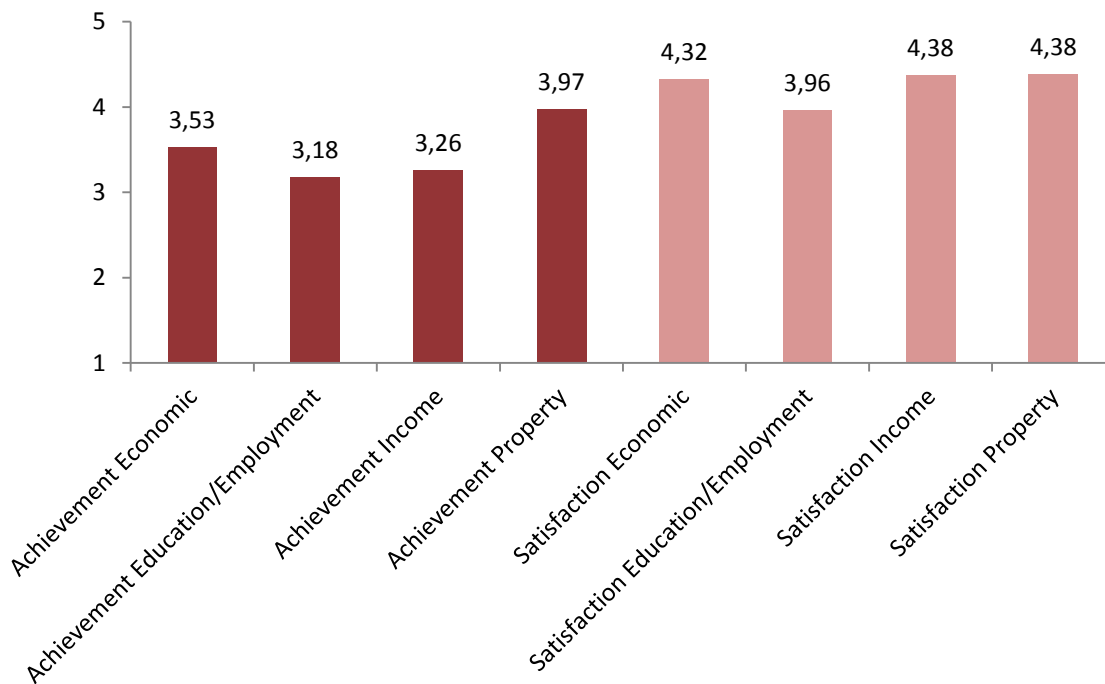


Figure 4.1 Average achievement and satisfaction with different economic outcomes

Bases: All people who gave a response to one of the items on the economic resources scales average Economic Outcomes Achievement: Overall N=396, SD=.87; Income N= 333, SD=1.15; Property N=383, SD=.93; Education and Employment N=222, SD=1.28. Economic Outcomes Satisfaction: Overall N=495, SD=.66; Income N= 365, SD=.87; Property N=494, SD=.68; Education and Employment N=218, SD=.96.³

So as not to overload the main report with data we decided to move the tables with the skewness and kurtosis tests which look at the distribution of the variables in the Netherlands and the UK to Appendix C.

Table C.1 shows that there were no problems with skew or kurtosis for the overall achievement of economic outcomes scale in either the Netherlands or the UK but the other scales showed considerable skew and kurtosis, which means that they are not normally distributed. Skew was similar in the UK and the Netherlands but kurtosis varied. Both the achievement and the satisfaction scales are rather negatively skewed, which means that participants' answers were concentrated around the higher outcomes on the scales. This was stronger in the case of the satisfaction than in the case of the achievement outcomes.

Considering the skewness and kurtosis of these scales, statistical significance testing needs to be done with caution. Therefore, we do not draw conclusions about the significance of the differences in means between the Dutch and the British respondents..

³ For some outcomes in the economic field there were more people who answered the satisfaction question than those who answered the achievement questions. This has two reasons: 1) the entirety of the Dutch sample had scale versions for these questions and therefore there were a 100 more respondents and 2) in a few minor instances respondents indicated not knowing how to evaluate the extent to which they had achieved an outcome but did answer how satisfied they were with the outcome.

4.4.2 Cultural outcomes

The cultural outcome items below were used for the analysis.

Table 4.3 Items used to create cultural outcomes scales

	Achieved	Satisfaction
Belonging	Through the Internet I found people of a similar age that share my interests	Your interactions with people of your age online (as compared to offline interactions with people your age)
	Due to the information I found and people I have met online I feel more connected with religion or spiritual beliefs ^a	Your online interactions with people and organisations that share your religious beliefs (i.e. in comparison with the offline people you might encounter)
Identity ^b	The things I came across on the Internet made me think about the differences between men and women ^a	Information you come across about gender differences
	Through the Internet I learned new things about my ethnic group ^a	The information you come across about your ethnic group

^aPhrasing item changed based on cognitive interviews

^b The item 'Due to the information I found and people I have met online I have changed my thinking about religion or spiritual beliefs' was dropped from the identity scales since in constructing the scale we found it in hindsight difficult to distinguish between the social, cultural or personal self-actualisation scales in terms of its placement. Since the scale already had two items we considered this the preferred solution.

Figure 4.2 shows that in the cultural outcomes field, participants were more likely to achieve belonging than identity outcomes. Satisfaction with the belonging outcomes was also higher than with the identity outcomes. While overall achievement of outcomes in this field was low, the satisfaction with these outcomes, when achieved, was higher. Here is important to note that the responses in terms of achievement were below the neutral score of 3, which means that on average respondents did not feel that they achieved an outcome through use of the Internet that they could not have achieved offline, or that when they had undertaken an activity online related to identity and belonging that they achieved the corresponding beneficial outcome.

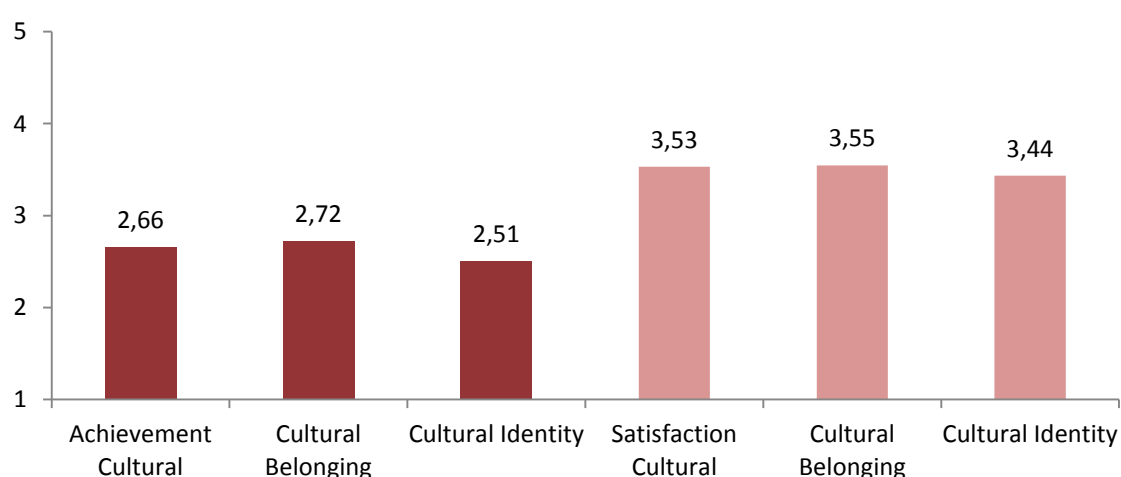


Figure 4.2 Average achievement and satisfaction with different cultural outcomes

Bases: All people who gave a response to one of the items on the cultural outcomes resources scales. Cultural Outcomes Achievement: Overall N=317, SD=1.27; Belonging N= 305, SD=1.35; Identity N=298, SD=1.32. Cultural Outcomes Satisfaction: Overall N=235, SD=.96; Belonging N= 216, SD=1.02; Identity N=200, SD=.1.00.

Table C.2 (Appendix C) shows that there were fewer problems with skew for the achievement or satisfaction of cultural outcomes scales; those that were found could be found in the Netherlands. Again the overall scale showed no problems. There were more problems with kurtosis, and these were similar in the Netherlands and the UK for the cultural belonging and identity achievement items. Due to the issues with kurtosis of some of these scales, statistical significance testing needs to be carried out with caution. Therefore, we do not draw conclusions about the significance of the differences in means between the Dutch and the British respondents.

4.4.3 Social outcomes

The social outcome items below were considered for the analysis.

Table 4.4 Items used to create social outcomes scales

	Achieved	Satisfaction
Personal networks	I have a better relationship with my friends and family because I use the Internet	Your online communication with friends and family? (i.e. in comparison with the offline communication you might have)
	I am in touch with my close friends more because I use the Internet	Your online communication with people online who are not close friends or family? (i.e. in comparison with the offline communication you might have)
	I have more friends because I use the Internet	
	People I meet online are more interesting than the people I meet offline	
Formal/civic networks ^a	I became a member of a hobby or leisure club or organization that I otherwise would not have found	The last club or organization you became a member of
	I became a member, donor of a civic organisation (e.g. those involved in environmental or human rights campaigning) I would not have become a member of otherwise	Your online involvement with the last organisation you joined/donated to
Political networks	I have discovered online that I am entitled to a particular benefit, subsidy or tax advantage which I would not have found offline	The last online government service you accessed
	Online, I have better contact with my -MP, local councillor, or political party	Your last interaction with an MP, local councillor or political party online

^aThe item '*Your last contribution to an online discussion*' was dropped from the formal/civic network category since it was unclear, when looking at how it related to other items, whether this was a social outcome under the civic participation header or whether it was more suited for the personal networks scale (both scales already had two items on the satisfaction aspect).

Achieving an outcome in the social field is most likely in relation to personal networks and the least likely in relation to more formalised social interactions (see Figure 4.2). People are likely to achieve the outcome of increased communication with friends and family, but are less clear about increased engagement with clubs or people with similar interests that they would not have had access to without being connected. Satisfaction with the social outcomes is also highest with personal interactions online. However, differences here are minimal as compared with political and formal networks.

In this field, as in the cultural field the average responses were below the neutral response for achievement of the outcomes. This means that even though people engaged in social activities of different natures online, they did not report achieving the associated beneficial outcomes.

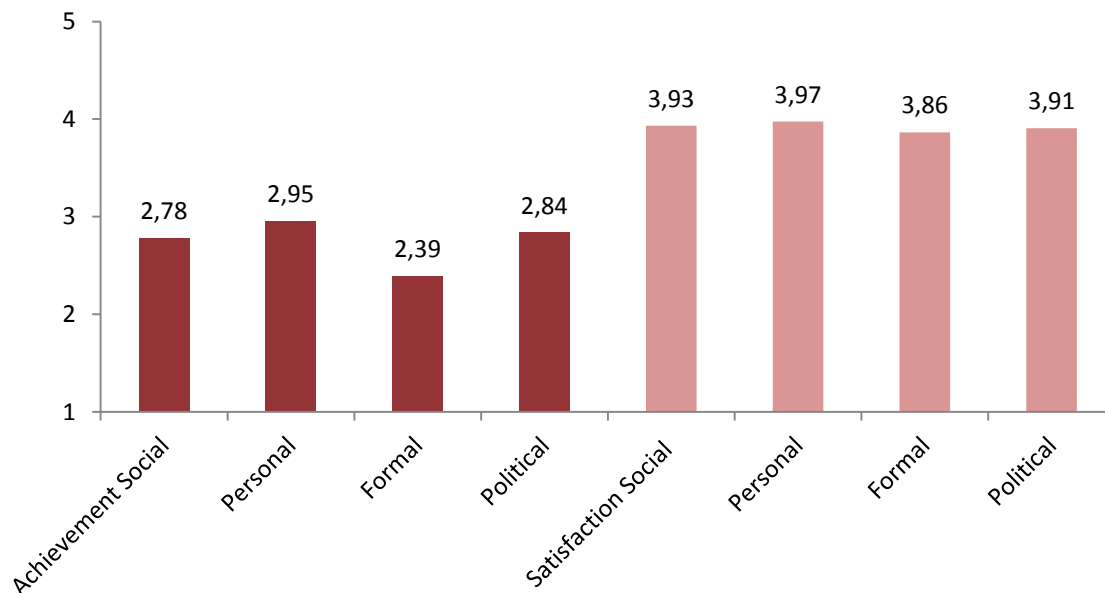


Figure 4.3 Average achievement and satisfaction with different social outcomes

Bases: All people who gave a response to one of the items on the social resources scales. Social Outcomes Achievement: Overall N=373, SD=1.06; Personal N= 360, SD=1.14; Formal N=265, SD=1.42; Political N=288, SD=1.36. Social Outcomes Satisfaction: Overall N=371, SD=.81; Personal N= 330, SD=.88; Formal N=177, SD=.1.01; Political N=300, SD=.98.

Table C.3 (Appendix C) shows that there were very few issues with kurtosis for the social outcomes scales, apart from the formal and political achievement scales, where the distributions were similar in the Netherlands and the UK. Similarly, for the achievement scales there were few issues, and those that were found were mostly found in the Netherlands except for the informal achievement scale which was similar in the UK and the Netherlands. All the satisfaction scales were skewed in the Netherlands and the UK.

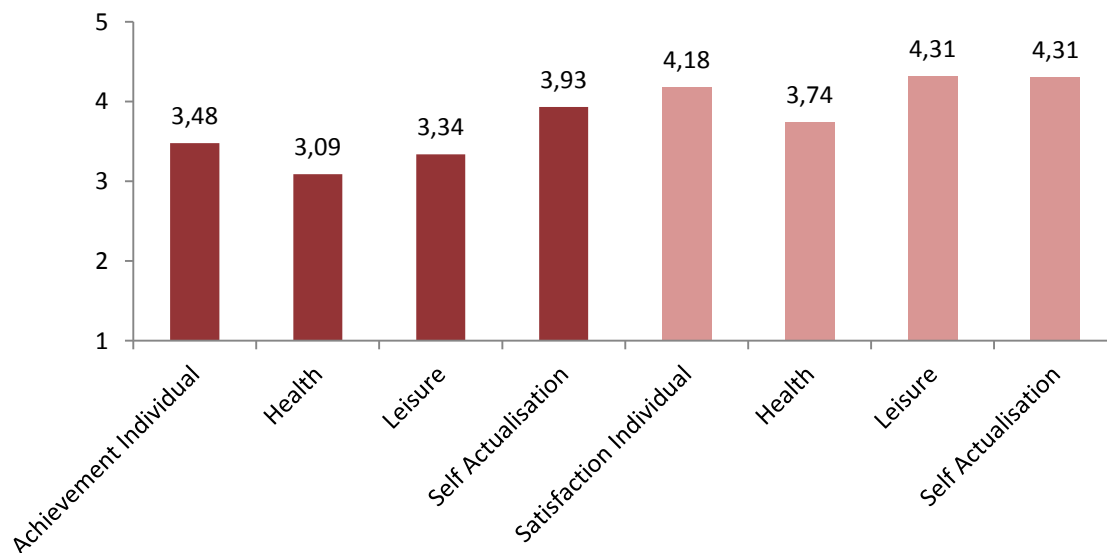
4.4.4 Individual personal outcomes

The individual personal outcome items listed in Table 4.5 were considered for the analysis.

Figure 4.4 shows that the most likely outcomes to be achieved are those related to self-actualisation. Health outcomes are achieved to a lesser extent. However, when the individual personal outcomes are achieved, then satisfaction with leisure and self-actualisation outcomes are at a similar level. The satisfaction scores related to health were the lowest. For the individual personal outcomes, the respondents report that when they had undertaken an activity online they were able to achieve the corresponding beneficial outcome.

Table 4.5 Items used to create individual personal outcomes scales

	Achieved	Satisfaction
Health/ Lifestyle	I am fitter as a result of the online information, advice or programs / apps I have used	The way in which the last bit of advice, program or app you used has influenced your level of fitness
	I have made better decisions about my health or medical care as a result of the information / advice I found online	The last health information or advice you found online
	Information I found online gave me more confidence in my lifestyle choices	The way you changed your behaviour as a result of the health information you found online The lifestyle choices you have made based on the information you found online
Leisure	Online entertainment (games, listening to music, reading jokes) made me feel happier	The last concert or event you went to after finding information or buying the ticket for the event online ^a
	I go to events and concerts I would never have otherwise considered	In general, how do you feel about spending time online ^a
Self-actualisation	My knowledge increased because of the Internet (i.e. looking up information, talking to others)	In general, the information you find online about topics that interest you ^b
	Using the Internet helps me to form opinions about complex social issues I would not fully understand otherwise	The way in which the Internet helps you think about social issues ^a

^a Phrasing item changed based on cognitive interviews^b Item added after cognitive interviews**Figure 4.4 Average achievement and satisfaction with different individual outcomes**

Bases: All people who gave a response to one of the items on the individual resources scales. Individual Personal Outcomes Achievement: Overall N=398, SD=0.88; Health N= 334, SD=1.10; Leisure N=354, SD=1.14; Self-Actualisation N=394, SD=0.84. Individual Personal Outcomes Satisfaction: Overall N=505, SD=.68; Health N= 289, SD=0.81; Leisure N=362, SD=0.79; Self-Actualisation N=502, SD=0.67.

The individual personal satisfaction with outcomes scales showed problems in terms of skew in both the Netherlands and the UK. The direction of these problems was similar (i.e. negative with most answers concentrated towards the upper end of the scale) but more severe in the Netherlands. In the UK there were very few problems with kurtosis with the exception of the self-actualisation subcategory, which was the only one which did not have kurtosis issues in the Netherlands.

4.4.5 Scale comparison

In this section, we examine whether some types of outcomes are easier to achieve and result in higher satisfaction once achieved than others. In the previous section there was a hint that engaging in certain activities online did not automatically lead to achieving the related tangible outcomes offline.

We made a distinction between those individuals with scores lower than 2.5 and those with scores higher than 3.5 on the (5-point) achievement and satisfaction scales. This allowed us to look at the distribution of those who indicate that the Internet provided tangible outcomes from their use that surpassed and were better than those they achieve offline. In all these comparisons it should be noted that these scores depend on the person having undertaken at least one of the activities in the particular field. Thus these are outcomes achieved after having engaged online in a related activity.

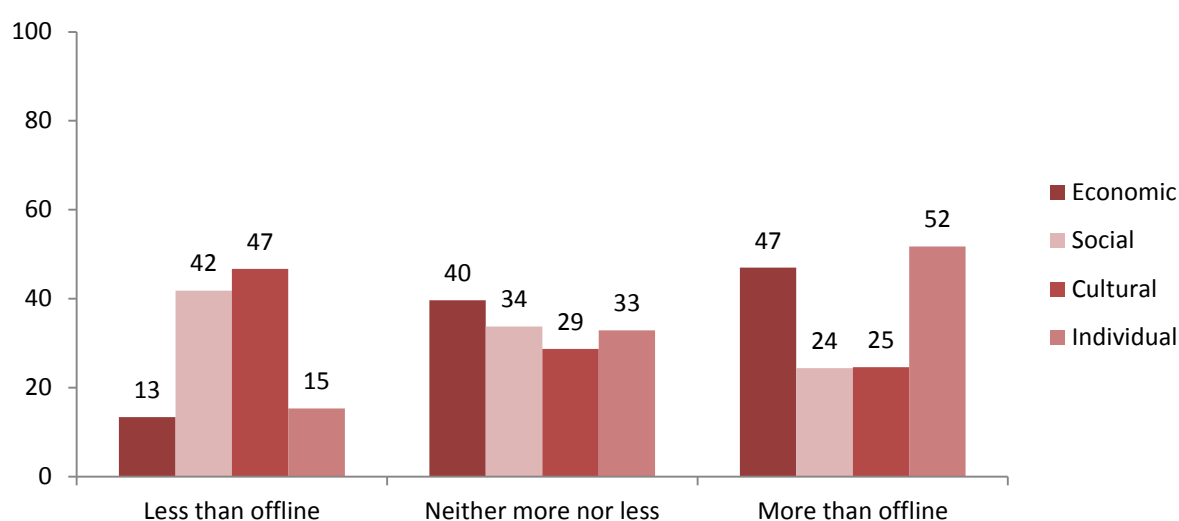


Figure 4.5 Percentage achievement of economic, social, cultural and individual outcomes

Base: All those who evaluated at least one outcome within each type of outcomes excluding those who answered DK). Economic N=369; Social N=373; Cultural N=317; Individual N=398.

The first and most important thing to note in Figure 4.5 is that undertaking an activity in the digital space does not automatically lead to achieving an outcome different from the outcome achieved when undertaking it offline. Depending on the outcome under investigation, around 50 to 75% of the respondents indicated that they did not achieve an outcome that they could not have achieved offline. It seems like this is easier for economic and individual outcomes than cultural and social outcomes.

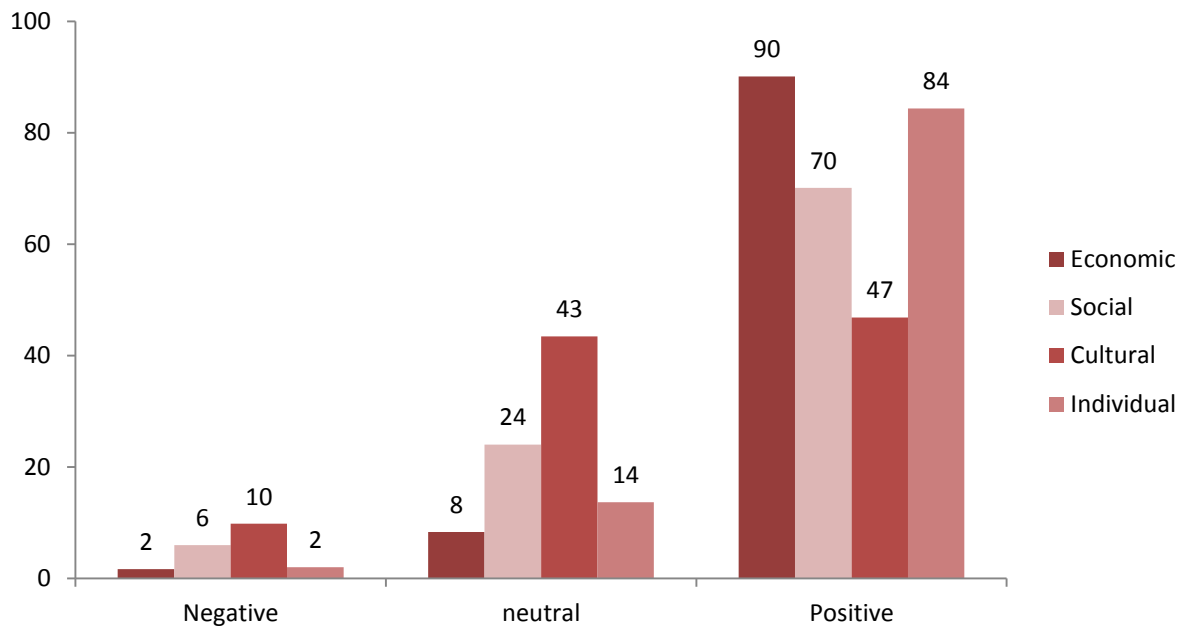


Figure 4.6 Satisfaction with economic, social, cultural and individual outcomes

Base: All those who evaluated at least one outcome within each type of outcomes excluding those who answered DK). Economic N=495; Social N=371; Cultural N=235; Individual N=505.

Figure 4.6 shows that in general, when outcomes are achieved, participants are satisfied with these outcomes. However, this is not the case for the cultural outcomes. Just under half of the respondents in the Netherlands and the UK were satisfied with how the Internet had provided a greater sense of belonging and identity. This also needs to be contextualised by the fact that the cultural outcomes were hardest to evaluate in terms of satisfaction (see section 3). The largest number of respondents said that they did not know or could not answer the question about how satisfied they were with this aspect of engagement. Figures 4.5 and 4.6 also suggest that the scales are not normally distributed.

We used kolmogorov-smirnov, skewness and kurtosis measures to look at how the data were distributed for the different outcome measures (see Appendix Table C.0 for information on the subscales). Table 4.6 shows that the distributions of the means and standard deviations were non-normal (K-S z) for the economic and cultural achievement and satisfaction scales and for the social and individual satisfaction with outcomes scales. There were problems of skewness for the economic and individual achievement scales and all satisfaction scales. Kurtosis was problematic for the cultural, social and individual achievement scales and for economic and individual satisfaction scales. This suggests that for analyses on a full population sample the outcome scales with high levels of skew need to be log or logarithmically transformed when averages are used as the basis for statistical calculations (e.g. means comparison and regressions). How this can be done is shown in section 5, which discusses the results of a national survey in the Netherlands.

Table 4.6 Skewness (G₁) and Kurtosis (G₂) outcomes scales in pilot survey

	Mean	SD	K-S z	G ₁	SE	G ₂	SE
Economic outcome achievement	3.53	0.87	1.89*	-0.26*	0.12	-0.30	0.24
Economic outcome satisfaction	4.32	0.66	3.36*	-1.44*	0.11	3.27*	0.22
Cultural outcomes achievement	2.66	1.27	2.38*	0.17	0.14	-1.07*	0.27
Cultural outcomes satisfaction	3.53	0.96	2.75*	-0.47*	0.16	0.44	0.32
Social outcomes achievement	2.78	1.06	1.10	0.03	0.13	-0.69*	0.25
Social outcomes satisfaction	3.93	0.81	2.70*	-0.60*	0.13	0.15	0.25
Individual outcomes achievement	3.48	0.88	1.35	-0.34*	0.12	-0.40*	0.24
Individual outcomes satisfaction	4.18	0.68	3.03*	-1.00*	0.11	1.84*	0.22

* The distribution of the answers is non-normal, negatively or positively skewed or has critical Kurtosis (Cramer, 1997; i.e. $-2 > G/SE > 2$)

4.4.6 Relationships between different types of outcomes

In the previous sections we have examined the different categories of outcomes separately because they correspond to different types of resources that some groups have access to while others do not, or do in a different way. The corresponding fields framework suggests that these are independent constructs and that to truly understand how different types of engagement lead to tangible outcomes we need to measure them separately. Nevertheless, this framework uses general capital and resources theories as its starting point, and, therefore, also argues that these different types of resources are often related and that those who are rich in certain types of resources are also more likely to be rich in other types of resources. In this section we look at how the different types of general resources are related to each other and whether these relationships are similar in the Netherlands and the UK.

Figure 4.7 shows that the achievements of all outcomes are correlated. If a person has achieved one outcome it is also likely that they have achieved other outcomes from their use of the Internet. The correlation between cultural and social outcomes is the strongest, followed by the correlations between individual and social and cultural resources. The weakest links exist between achieving economic outcomes and the other outcomes. This pattern is similar when we examine the Netherlands and the UK separately. While the relationships tend to be stronger in the Netherlands, the order of the strength of the relationships is the same. The strongest relationship in both cases is between cultural and social outcomes and the weakest link is between achieving economic and social outcomes.

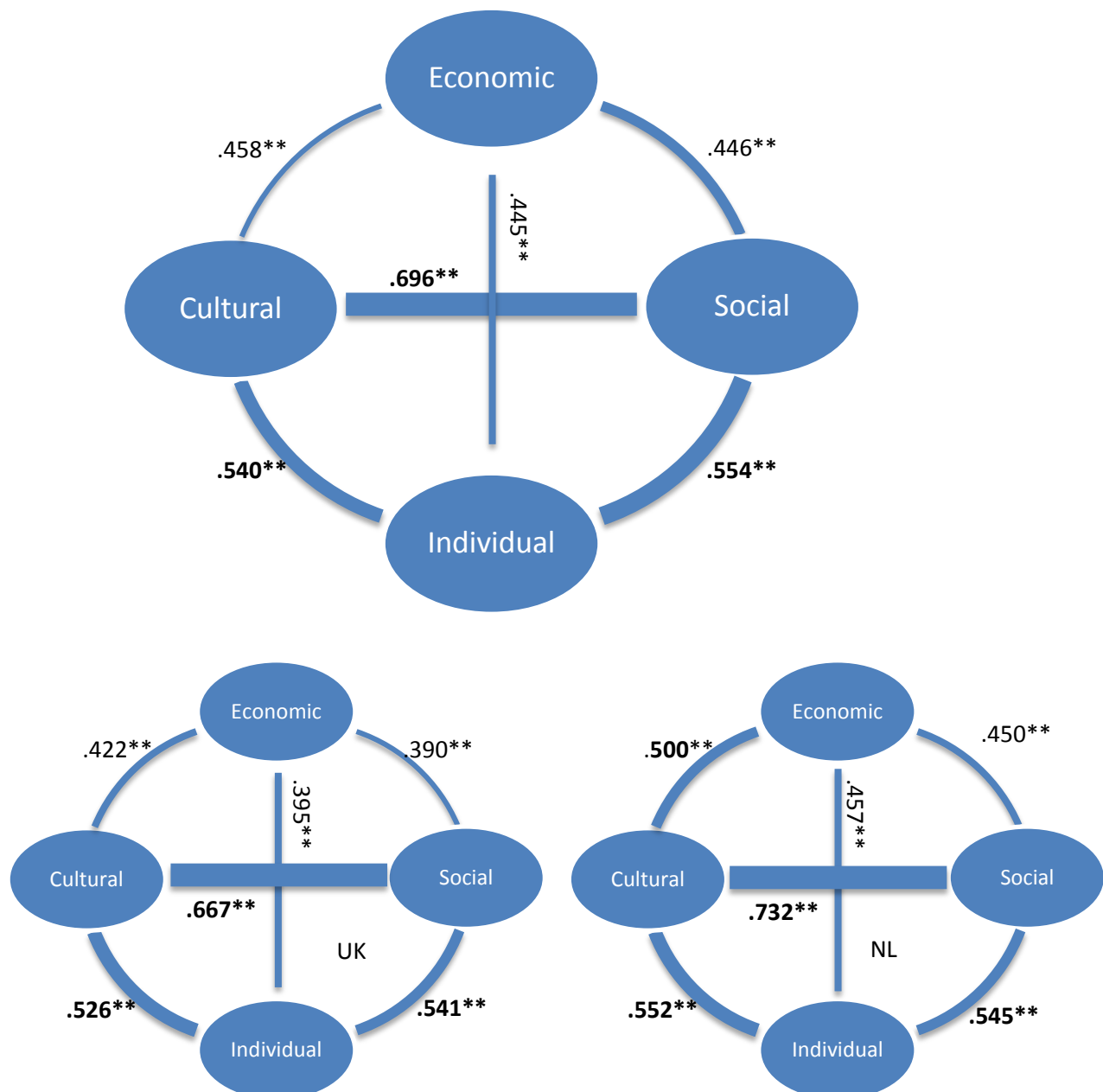


Figure 4.7 Correlations between the different achievement (outcome) scales

Figure 4.8 shows the same results for satisfaction with the outcomes. The results are slightly different. Although satisfaction with economic outcomes is again correlated more weakly with satisfaction with other outcomes, those individuals who are most satisfied with the quality of the social outcomes are also more satisfied with the quality of the achieved individual outcomes. Satisfaction with the quality of social and cultural outcomes are again strongly correlated but the effect size is not that different from the correlation between satisfaction with social and economic outcomes. The strongest difference with the pattern found for achievement of outcomes is the satisfaction with cultural and individual outcomes. While those who achieved cultural outcomes were also likely to achieve individual outcomes, those who were satisfied with the cultural outcomes were not as likely to be satisfied with the same individual outcomes.

For the satisfaction variables the results in the Netherlands and the UK differed considerably. While the strongest relationship in both countries was between the social and individual outcomes, the weakest relationship in the UK was between economic and cultural outcomes while in the Netherlands this was between the individual and the economic outcomes. In the Netherlands, there was a strong link between individual and cultural outcomes, while this relationship was considerably weaker in the UK.

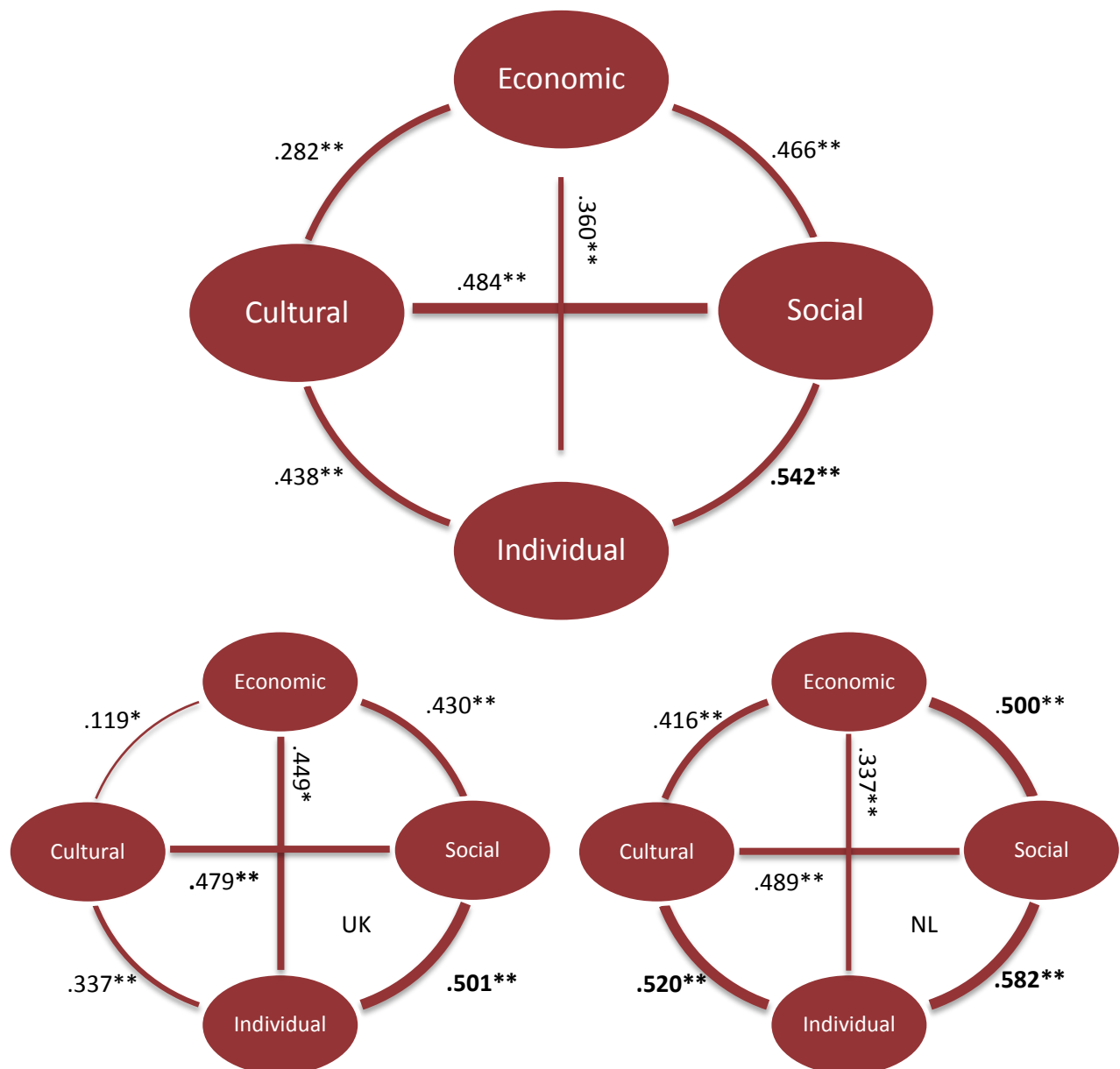


Figure 4.8 Correlations between the different satisfaction (outcome) scales

The findings on the relationships between the different outcome measures indicate that we can confidently assume that the achievement scales have the same properties in the UK and the Netherlands. The stronger correlations between social and cultural achievement make sense theoretically as does the finding that the economic outcomes are more weakly related to the other type of outcome fields.

Figures 4.7 and 4.8 also confirm previous results which suggest that the affective, satisfaction aspect of outcomes is harder to measure consistently than the more concrete cognitive, achievement aspect. This can be explained by the differences in subjective experience of what is satisfactory and what is not, which are likely to depend on personal circumstances.

Nevertheless, there is enough consistency in the relationships between these constructs and in their characteristics for us to be reasonably confident in arguing that the way in which we have operationalised and measured outcomes in the pilot survey is sufficiently stable and can serve as a solid basis for the development of future instruments for different populations.

4.5 Conclusions

The results of the pilot tests provided important insights in measuring outcomes of Internet use.

A first conclusion is that **it is important to differentiate between economic, social, cultural and individual outcome indicators** and thus create different scales. Not considering these outcomes as separate fields will result in overlooking large differences in the quality of and level to which outcomes from engaging with the Internet are achieved.

The second important point is that answers in survey research **should be formulated in a scale and not in a dichotomous format** (see section 4.3) for both the achievement and the satisfaction aspects of outcomes of Internet use.

In this report we, furthermore, considered subscales with specific items that can be adjusted for other research as long as the answer scales are replicated. Based on the scales created for this report, we consider **four general categories of outcomes** (i.e. resource fields): Economic, Cultural Social and Individual, **with ten subscales in total**: Income and Property; Education and Employment; Personal Network; Formal Network; Political Network; Cultural; Cultural Belonging; Cultural Identity; Self-Actualisation; Leisure; and Health. We suggest that future research at the bare minimum include **at least two achievement and two satisfaction items for each general field of resources** and that for those resources that are of particular interest the full battery of subscales is used, again with at least two achievement and two satisfaction items for each subcategory.

Measurement of the achievement variables is relatively stable across different populations. This is less clear for the satisfaction variables for which the characteristics vary across populations. The conclusion that the reader should take home from this particular section is that outcomes can be measured in survey research and that if the techniques are applied that we have applied here, the

scale characteristics are relatively consistent with the theory and across different populations. We are looking forward to future research that improves on the scale construction and adopts them for specific interventions and evaluations of digital inclusion and inequality.

While analysing the answers was not the purpose of the pilot, an interesting result was that engaging with online activities does not automatically lead to achieving the corresponding outcomes successfully. We observed that many respondents judged the achievement of cultural and social outcomes to be not as good or equal to what they might have achieved through other means. Thus we cannot assume that engaging with others online and encountering information about diversity or cultural background online automatically leads to lower levels of social isolation or higher levels of societal integration and feelings of belonging. When the outcomes are achieved, then the satisfaction with the achieved outcomes tends to be high, especially with the practical individual tangible outcomes, although not necessarily with the more affective moral or cultural items.

We will explore the differences in answers and characteristics of the scales at the population level in the next section, which examines outcomes in the Dutch population.

5. POPULATION SURVEY TEST RESULTS

5.1 Introduction

In this chapter, we discuss the results of a full survey conducted in the Netherlands . In Section 5.2, we detail the sample collected and used for the analysis. Then, in Section 5.3, we investigate whether the scales constructed during the pilot research show consistency in their characteristics across different subsamples of the population of Internet users. A second step in our analysis of the properties of scales was to compare the skew and kurtosis for the scales to understand how they were distributed (Section 5.4). Then, in Section 5.5, we discuss predictors for the achieved outcomes and satisfaction.

5.2 Sampling

The full survey study draws on a sample collected in the Netherlands over a period of two weeks in July 2014 using an online survey. To obtain a representative sample of the Dutch population, we made use of the Dutch panel of PanelClix, a professional international organization for market research that consists of over 108,000 people. This panel is believed to be a largely representative sample of the Dutch population. Members receive a very small incentive of a few cents for every survey question they answer. Invitations were sent out in three waves to ensure that the final sample represented the Dutch population, in terms of gender, age, and education. In total, we obtained complete responses from 1,107 individuals (response rate 27%).

Table 5.1 Demographic profile Dutch Internet user sample

	N	%
Gender		
Male	514	46.4
Female	593	53.6
Age		
16-30	145	13.1
31-45	281	25.4
46-60	362	32.7
60+	319	28.8
Education		
Primary (low)	309	27.9
Secondary (Medium)	498	45.0
Tertiary (High)	300	27.1
Occupation		
FT employed	383	34.6
PT employed	182	16.4
Unemployed	72	6.5
Student	55	5
Caretaker	98	8.9
Retired	222	20.1
Not able to work	95	8.6

Base: Dutch Internet Users (N= 1,107, Weighted N=1,337)

During the data collection, amendments were made to ensure that the Dutch population was represented in the final sample. We used external aggregate data (i.e., the national population census) to estimate calibration weights based on age, gender, and education. The time required to answer the survey questions was approximately 25 minutes (as the survey also asked for types of usage and Internet outcomes – see Van Deursen, Van Dijk & Helsper, 2014). Table 5.1 summarizes the demographic characteristics of the respondents.

5.3 Scale characteristics

To explore how the different types of outcomes were distributed in the wider population, we started the analyses of the full survey data by comparing the averages for the Dutch population on the achievement and satisfaction scales.

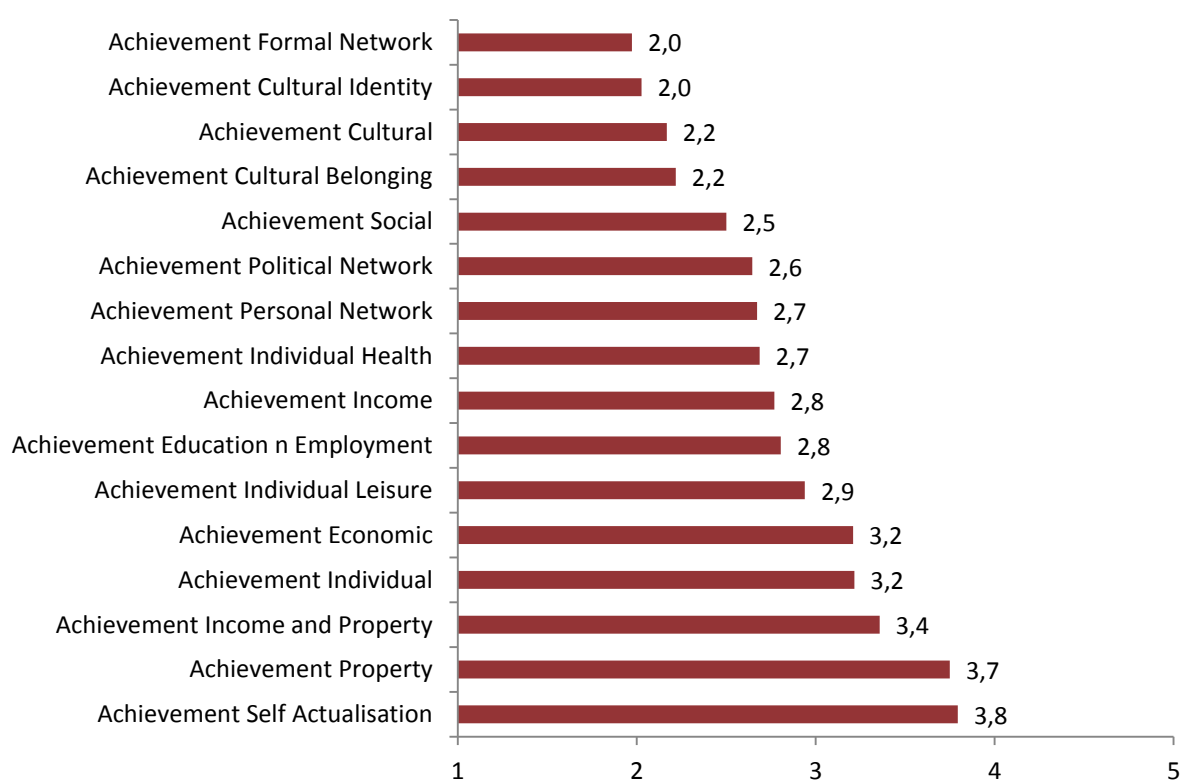


Figure 5.1 Average achievement of different outcomes in Dutch population

Base: All those who answered the achievement questions (not including Don't Know and Not applicable answers)

In the Dutch population, the personal outcomes related to self-actualisation and the economic outcomes related to property are achieved to the largest extent (see Figure 5.2). The least achieved are outcomes related to formal networks and cultural identity. All the cultural resource related outcomes are within the bottom five, followed by the social resource related outcomes. It seems that people still achieve these more in the offline than in the online environment or that, considering what we found in the cognitive interviews, they find it hard to separate the offline from the online in their evaluation of the contributions to the outcomes that they perceive in everyday life. Whether they evaluate the achievement of outcomes as a net benefit in part depends on the quality and the type of relationship or cultural identity they have offline.

This again confirms that separating out the subscales of achievement is important; it indicates that the effectiveness of the Internet in helping people achieve different outcomes is not uniform. That people do not necessarily achieve all outcomes can also be explored by looking at the relationship between achieving different types of outcomes.

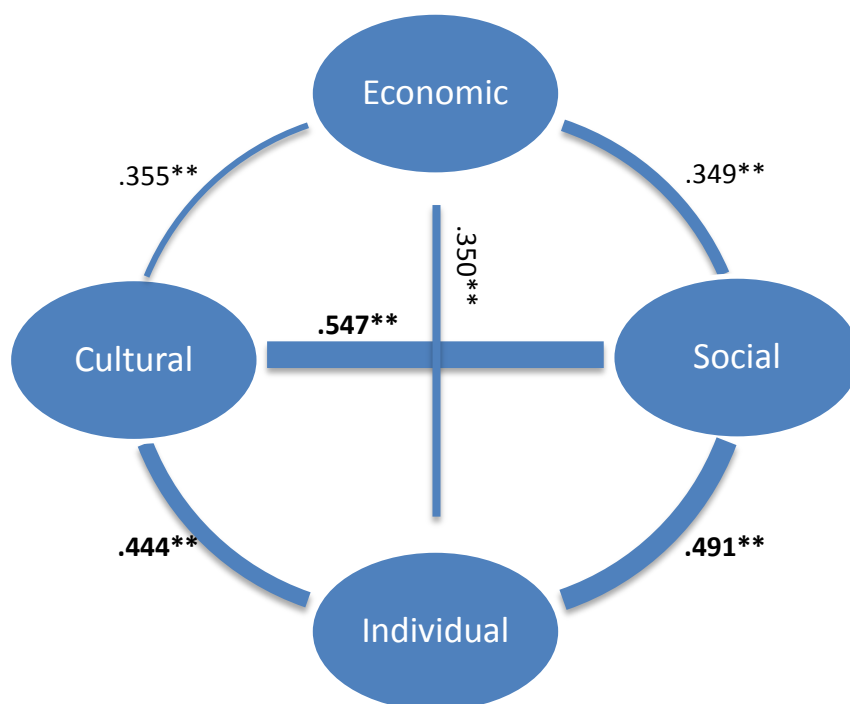


Figure 5.2 Correlations (r^2) between different achievement scales in the Dutch population

Figure 5.2 shows that the way in which the achievement of different outcomes are related when measured in the full population survey are very similar to the ways in which they were related in the pilot survey (see Section 4.4.6). The strongest link again exists between social and cultural outcomes and the weakest correlations were found between the achievements of economic outcomes with the other outcomes. This means that those who achieve economic outcomes are not necessarily achieving social, cultural or individual outcomes.

Figure 5.3 shows that the Dutch participants are the least satisfied with the cultural outcomes they achieved, followed by the social outcomes. The most satisfaction was received from the income and property related outcomes, as well as from the individual leisure related outcomes. While self-actualisation outcomes were amongst the most likely to be achieved, they were not amongst the outcomes with which the participants were most satisfied.

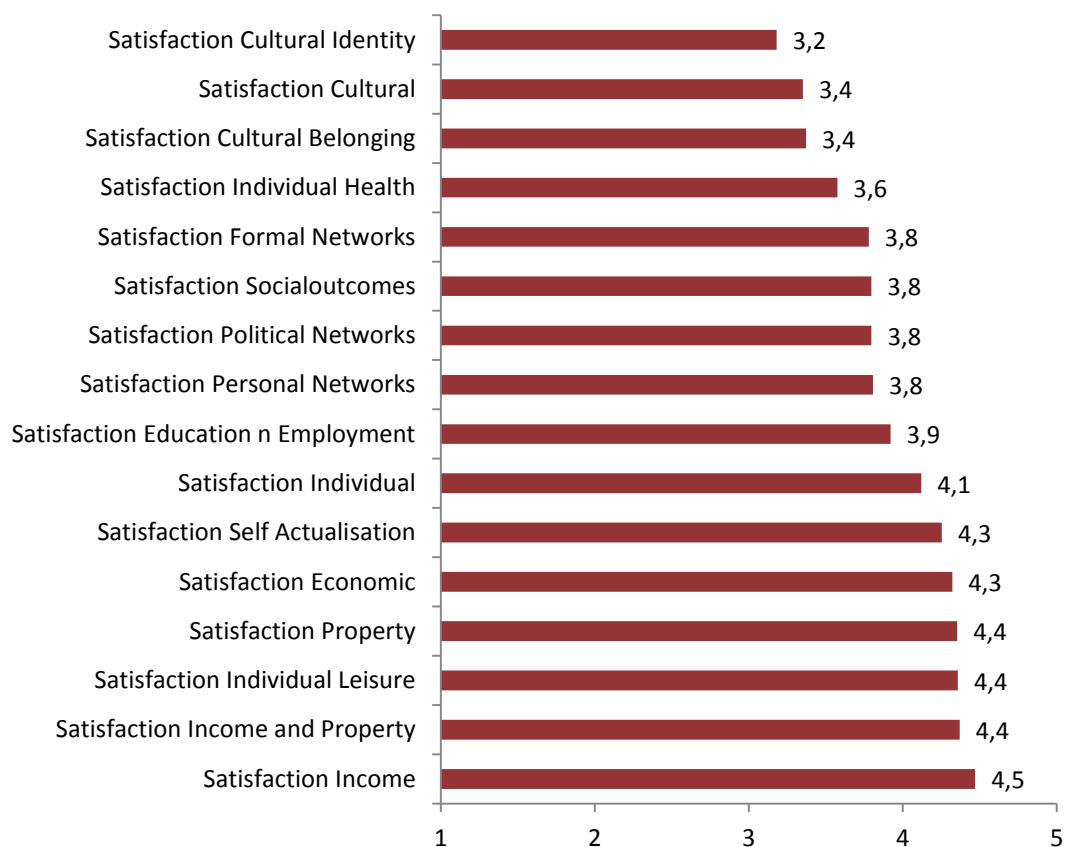


Figure 5.3 Average satisfaction with different outcomes in Dutch population

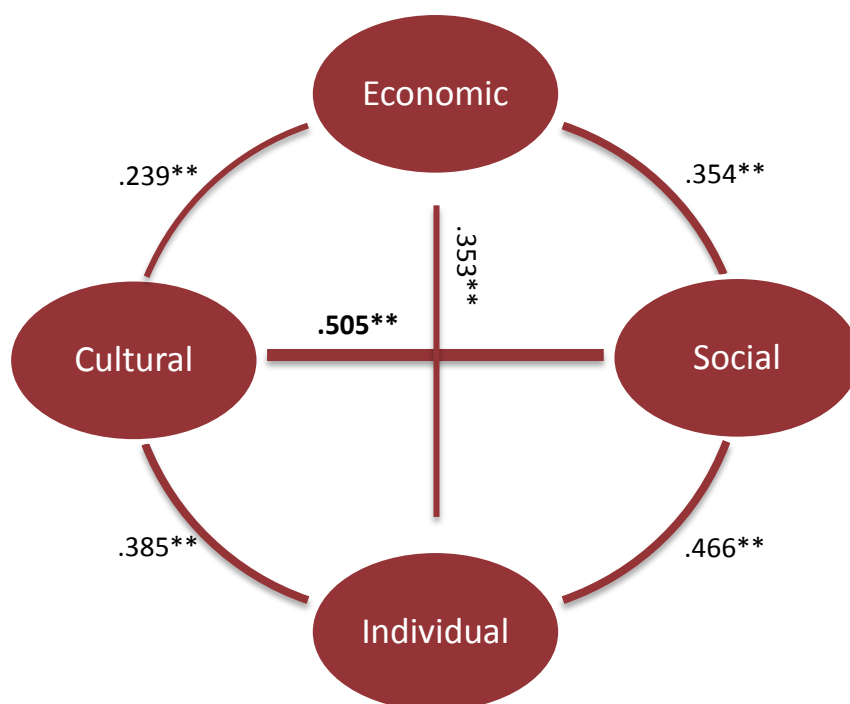


Figure 5.4 Correlations (r^2) between different satisfaction with outcomes scales for the Dutch population

The correlations shown in Figure 5.4 and the averages of the different scales show that while there are some commonalities in the level of satisfaction with the different outcomes, there are also differences between the scales. These relationships are less similar to those that were found for the Dutch sample in the pilot study but, reassuringly, correspond with the overall pattern for Dutch and British respondents in the pilot. The two main differences with the Dutch participants in the pilot study are that the satisfaction with social outcomes is less strongly related to economic outcomes and that, similarly, the link between individual and cultural outcomes is weaker. The pattern follows that of achievement outcomes and the overall pilot sample more closely. The strongest link is again between the social and cultural outcomes and the weakest relationships are found between the economic and other outcomes, the cultural outcomes in particular.

5.4 Comparing skew and kurtosis

The second step in our analysis of the properties of scales was to compare the skew and kurtosis for the scales to understand how they were distributed. We again used kolmogorov-smirnov measurements to compare the equality of distributions between populations and skewness and kurtosis measures (see Appendix D). The kolmogorov-smirnov test showed that means and Standard Deviations were distributed non-normally, and the skewness tests show that most of the scales for achieving a range of outcomes are skewed. The Income, Education and Employment, Personal Network, Political Network, Individual outcomes and Individual Health outcomes achieved were, however, not significantly skewed. Kurtosis was an issue for all variables, with the exception of property, all the cultural outcomes satisfaction scales and the social outcomes subscales. This means that comparing averages on the scales is problematic and that if these scales are used for comparison of different social groups a logarithmic (negative skew) or log (positive skew) transformation should be applied.

5.5 Predicting achieved and satisfaction with outcomes

In this section, we focus on factors that explain the level to which someone achieves outcomes, and explain the level of satisfaction received from this achievement. To identify these factors, we conducted regression analyses.

The dependent variables are the scales for achievement and satisfaction, calculated as described in section 4.4 and transformed depending on their type of skewness. Independent variables accounted for are gender (dichotomous M/F), age (categorised into four categories; 16 to 30, 31 to 45, 46 to 60, and 61+ years), education (collected by degree as one of 10 categories following the Dutch education system classification, and subsequently divided into groups of low, secondary and higher educational level), income (total family income over the last 12 months, assessed on an 8-point scale, subsequently divided in two categories of low and high income), employment status (coded as dummy variables: employed, retired, disabled, househusbands or housewives, unemployed, and students), marital status (coded into dummy variables: single, married or living together in a relationship, divorced, and widow), frequency of Internet use (measured by asking respondents how often they use the Internet; monthly, weekly, few times a week, daily, or multiple times each day), years of Internet use (captured by the number of years that people had been using the Internet), and

the four main skill types identified in the Skills report as part of this project (See Van Deursen, Helsper & Eynon, 2014).

5.5.1 Explaining achievement of outcomes

Table 5.2 shows predictors for the achievement scales. Here, logarithmic transformations are used for the negatively skewed economic and individual scales, and log transformations for the positively skewed social and cultural scales. We first did an analysis that included only the traditional social exclusion, socio-demographic variables (Appendix E, Table E.1) and then added the Internet use and skill variables to see whether differences in outcomes achieved between the different groups could be explained by differences in Internet experience and skill levels. Appendix F, Table F.1 contains the results for each achievement subcategory for those interested.

Table 5.2 Regression analysis of achievement of the outcome categories

	Economic		Cultural		Social		Personal	
	b	β	b	β	b	β	b	β
Constant	0.59		0.48		0.27		2.88	
Age	-0.02 ^a	-0.07	-0.05**	-0.23	-0.04**	-0.17	-0.08*	-0.09
Gender	-0.02 ^a	-0.02	-0.03 ^a	-0.07	-0.01 ^a	-0.02	-0.14*	-0.07
Secondary Education	0.03	0.04	0.00	-0.01	0.00	-0.01	0.05	0.03
Higher Education	0.09**	0.11	0.01	0.01	-0.02	-0.05	0.14 ^a	0.07
Average Income	0.03	0.03	0.00	0.00	0.02	0.04	-0.01	-0.01
Higher Income	0.01	0.01	-0.02	-0.04	-0.03	-0.06	-0.12	-0.06
Employed PT	0.00	0.00	-0.03	-0.04	0.02	0.03	0.06	0.02
Retired	0.00	0.00	0.05	0.08	0.04	0.07	-0.03	-0.01
Unemployed	-0.03	-0.02	0.02	0.03	0.01	0.01	-0.03	-0.01
Disabled	-0.01	-0.01	0.07*	0.09	0.07**	0.10	-0.12	-0.04
Student	0.05	0.03	0.01	0.01	0.03	0.03	0.14	0.03
Caretaker	0.09	0.07	0.04	0.05	0.02	0.03	-0.13	-0.04
Cohabit	0.04	0.05	-0.04 ^a	-0.08	-0.03	-0.07	-0.06	-0.03
Divorced	0.00	0.00	-0.03	-0.03	-0.01	-0.02	0.07	0.02
Widow	-0.03	-0.02	-0.02	-0.02	0.02	0.02	-0.16	-0.03
Frequency use	0.05	0.08	-0.01	-0.02	0.05**	0.14	0.03	0.02
Years of use	0.00*	0.02	0.00	-0.07	0.00	0.03	-0.01	-0.04
Operational skills	0.00	0.00	0.00	0.00	0.00	0.01	0.11	0.08
Info navigation skills	-0.02	-0.05	-0.03**	-0.13	-0.04**	-0.20	-0.09**	-0.10
Social skills	0.02	0.04	-0.01	-0.04	-0.01	-0.04	0.01	0.01
Creative skills	0.09**	0.25	0.07**	0.29	0.05**	0.23	0.17**	0.19
R²	.14		.18		.15		.13	

*Coefficient (b) significant at p<.05 ** b significant at p<.01

a. Coefficients become insignificant after Internet use and skill variables are entered (See Appendix C for coefficients regressions with just the socio-demographic variables).

Table 5.2 shows that only a few of the socio-demographic variables are useful in explaining the achievement of outcomes once digital skills have been controlled for. The variance explained by these models, including Internet use and digital skills (R^2), is acceptable, varying between 13% and 18% of the variance. However, this can be improved; future research should include other social, psychological and cultural variables to explain the achievement of outcomes.

People who are older achieve fewer outcomes from engagement with the Internet than younger people across cultural, social and personal outcomes but there is no difference for economic outcomes. That is, younger people indicate that the outcomes they achieve from engaging with online content are similar or better than the outcomes they achieve offline. Before controlling for Internet skills, age was also a significant factor in explaining the achievement of economic outcomes, but this is apparently due to differences in creative skill levels between older and younger generations.

Women achieve significantly fewer personal well-being outcomes than men but are similar to men in achieving economic, cultural and social outcomes after controlling for skills. The differences observed between men and women can be explained by women's lower creative and higher information navigation skill levels.

Interestingly those with higher education achieve more economic outcomes than those with lower levels of education. The differences between different education levels in achieving personal outcomes can be explained by differences in Internet use and skills variables. There were no differences between income groups.

A positive finding is that those who are disabled achieve more cultural and social outcomes from engaging with ICTs, which suggests that they can overcome some of their barriers to social inclusion once they have managed to get access and engage with technologies in a skilled and engaged way. This is not explained by differences in skill levels of the disabled as compared to the non-disabled group.

Internet use is not as important as one might think. Having been online for longer is related to more economic outcomes, and using the Internet more frequently to more cultural outcomes, but that is the extent of the explanatory value of these variables. It is clear that creative skills are important to achieve outcomes from engagement with online activities; harder to explain at this point is that having more information navigation skills is related to lower achievement levels of cultural, social and personal outcomes. Further research will need to explain why this is.

5.5.2 Explaining satisfaction with outcomes

Table 5.3 shows the results for the satisfaction scales. Since prior analysis showed that the satisfaction scales were all negatively skewed (see Appendix D), we logarithmically converted all the scales before conducting linear regressions. We first did an analysis that included only the traditional social exclusion, socio-demographic variables (see Appendix E) and then added the Internet use and skill variables to see whether differences in satisfaction outcomes between the different groups

could be explained by differences in Internet experience and skill levels. Appendix F, Table F.2 contains the linear regression results for each satisfaction subcategory.

Table 5.3 Regression analysis of satisfaction with the main outcome categories

	Economic		Cultural		Social		Personal	
	b	β	b	β	b	β	b	β
Constant	0.96	0.00	0.82	0.00	0.77	0.00	0.80	0.00
Age	0.03**	0.16	-0.08**	-0.20	0.00	-0.02	0.01	0.04
Gender	-0.01	-0.02	0.02	0.02	0.01	0.01	0.01	0.03
Secondary Education	0.02 ^a	0.06	-0.13*	-0.16	0.00	0.00	0.00	0.00
Higher Education	0.02 ^a	0.04	-0.07	-0.08	0.01	0.01	0.02 ^a	0.04
Average Income	-0.02	-0.04	-0.01	-0.02	0.05*	0.09	-0.01	-0.02
Higher Income	0.00	0.01	0.01	0.01	0.06*	0.09	0.00	0.00
Employed_PT	0.01	0.01	0.01	0.01	0.01	0.01	-0.02	-0.03
Retired	0.00	0.00	-0.05	-0.03	0.05	0.07	0.01	0.03
Unemployed	-0.03	-0.04	0.15*	0.11	0.01	0.01	0.01	0.01
Disabled	-0.02	-0.02	0.16	0.11	0.03	0.03	-0.01	-0.01
Student	0.02	0.02	0.00	0.00	0.03	0.02	-0.02	-0.02
Caretaker	0.01	0.02	0.02	0.01	0.04	0.03	0.00	0.00
Cohabit	-0.01	-0.02	-0.01	-0.01	-0.03	-0.04	0.01	0.02
Divorced	-0.03	-0.04	0.02	0.01	0.05	0.05	0.05	0.06
Widow	0.02	0.02	0.08	0.03	-0.02	-0.01	-0.01	-0.01
Frequency use	0.01	0.04	0.04	0.06	0.00	0.00	0.02	0.05
Years of use	0.00	-0.05	0.00	0.00	0.00	0.01	0.00**	-0.11
Operational skills	0.02	0.08	-0.04	-0.07	0.03	0.06	0.04**	0.15
Info navigation skills	0.03**	0.17	-0.01	-0.01	0.00	0.01	0.02**	0.10
Social skills	0.05**	0.19	0.13**	0.23	0.08**	0.22	0.08**	0.28
Creative skills	-0.01	-0.03	0.01	0.02	0.00	-0.01	-0.02*	-0.10
R ²		.12		.12		.08		.15

*Coefficient (b) significant at p<.05 ** b significant at p<.01

a. Coefficients become insignificant after Internet use and skill variables are entered (See Appendix C for coefficients regressions with just the socio-demographic variables).

The results for the analysis of satisfaction with outcomes is quite different from that for the achievement of these outcomes (see Table 5.3). However, similarly, the socio-demographic variables that are commonly used to explain digital exclusion are not as good at explaining the outcomes people get from digital engagement once digital skills have been accounted for. The variance explained by these models, including Internet use and digital skills (R²), is acceptable for the satisfaction with economic, cultural and personal outcomes varying between 12% and 15%. However, this can be improved especially for satisfaction with social outcomes (R²=0.08); future research should include other social, psychological and cultural variables to explain the achievement of outcomes.

People who are older are more satisfied with the economic outcomes and less satisfied with the cultural outcomes they achieve than younger people. There was no difference in satisfaction with social and personal outcomes. Gender did not significantly relate to satisfaction with outcomes.

Interestingly those with higher education were more satisfied with economic and personal outcomes than those with lower levels of education, but this could be explained through their differences in creative and social skill levels. Those with secondary education were less satisfied with the cultural outcomes they achieved than those with lower education. Those with higher and average income levels were more satisfied with the social outcomes they achieved.

Counterintuitively, the unemployed were more satisfied with the cultural outcomes they achieved than those with full time employment. There were no other occupational categories related to satisfaction with outcomes

Internet use and experience did not relate to satisfaction with most outcomes, the exception being that those with more years of experience were more satisfied with the personal outcomes they achieved. Skills play a major role in explaining satisfaction with outcomes achieved, while for the achievement of outcomes it was mostly creative and information navigation skills, for satisfaction with outcomes social skills were consistently positively related to satisfaction with outcomes. Higher information navigation skill levels also positively related to economic and personal outcomes. Operational skills were useful in explaining satisfaction with personal outcomes.

5.6 Conclusions

The findings related to the population study in the Netherlands confirm the preliminary findings based on the pilot study. First, **achieving or being satisfied with one type of outcome does not necessarily mean that an individual also achieves or is satisfied with other outcomes**. This confirms that **it is important to separate economic, cultural, social and individual outcomes when studying the impact of digital engagement**.

While there is a correlation between the different outcomes, there seem to still be silos when it comes to outcomes and there is no direct transfer between engaging with one type of activity and achieving an outcome, and picking up additional benefits in other areas of resources. Economic outcomes in particular, which are considered so important by policy makers and stakeholders since they relate to education and employment are not as strongly linked to other outcomes relating to a sense of integration with wider cultural identities, strong social, community and civic ties or with individual well-being outcomes. This also means that **those who engage successfully with the cultural and social aspects of the Internet do not automatically accrue economic or individual outcomes** (such as health and self-actualisation). Thus, there is some but no guaranteed transferability of outcomes into spheres that are in different areas of engagement.

Another point that was confirmed in the population study was that satisfaction with outcomes is harder to measure than achievement outcomes, and that outcome measures need to be adapted to account for their non-normal distributions. The **outcome scales can be highly skewed and therefore need to be transformed** before being used for more complex analysis, such as for example trying to determine which factors are associated with translating engagement with an activity into a tangible offline outcome.

The representative population data allowed us to do more in depth analysis of the kind that we hope future research will develop further. One finding that is clear is that **engaging with a certain activity**

online does not mean that a person achieves the online benefits or is satisfied with the outcome that they have achieved from this engagement. Thus, digital engagement does not necessarily lead to tangible outcomes in offline resources that are useful or important in everyday life. The elderly were less likely to achieve these outcomes after having engaged in a certain activity, and the disabled were somewhat better in turning digital resources into tangible offline capital especially when it comes to the more abstract experiential outcomes related to cultural belonging and identity and social interactions. However, most important was that the population survey showed that **having a variety of different skills influences whether a tangible outcome is achieved** after having engaged with an online activity. The differences found between socio-cultural and socio-economic groups in the achievement and satisfaction with outcomes could often be explained by differences in skill levels. This is a positive message for stakeholders and policy makers, since skills are acquirable and might be learned through informal and formal learning which is something that external parties can provide.

6. EXECUTIVE SUMMARY/CONCLUSIONS

This report aims to address the lack of conceptualisation and the absence of good measurements for outcomes of Internet use. Up until now uses or different ways of engaging with the Internet have often been used as proxy measures for outcomes. This is unsatisfactory because it is by no means clear that engaging with an activity online brings tangible offline benefits to all those involved. In addition, when outcomes are measured they are often not tangible (that is concrete, specific and observable by an external evaluator) but measure attitudes or opinions towards the digital activity rather than the offline outcome itself.

6.1 Measurement

The first issue we had to tackle was how to measure outcomes in general. We settled on and tested the validity of scales and dichotomous items and concluded that **scale items that measured quantity (achievement of the outcome) and quality (i.e. satisfaction with the outcome)** are the best way to measure tangible outcomes of Internet use.

This is the proposed answer format for the achievement and satisfaction items:

Achievement	Satisfaction
Thinking about your online activities in the past year, how much do you agree or disagree with the following statement? If you did not undertake the activity the question is about, just select Not Applicable (NA)	Thinking about your online activities in the past year, how satisfied or unsatisfied were you with the following? If you did not undertake the activity the question is about, just select Not Applicable (NA)
Disagree strongly (1)	Very dissatisfied (1)
Somewhat disagree (2)	Somewhat dissatisfied (2)
Neither agree nor disagree (3)	Neither dissatisfied nor satisfied (3)
Somewhat agree (4)	Somewhat satisfied (4)
Agree strongly (5)	Very satisfied (5)
Not applicable (NA) (6)	Not applicable (NA) (6)
Don't know (7)	Don't know (7)

In this report we developed an instrument that tested a series of questions designed on the bases of the corresponding fields framework which **conceptualises outcomes in four fields of resources: economic, cultural, social and individual well-being**. The report showed that this framework was very helpful in organising and developing lower level indicators. The most difficult to design were measures related to cultural and social resources.

We suggest that any research that tries to measure outcomes and wants to understand not just very specific outcomes that relate directly to the object of study or the goals of an intervention should include the following categories of items (and use the answer scales described above).

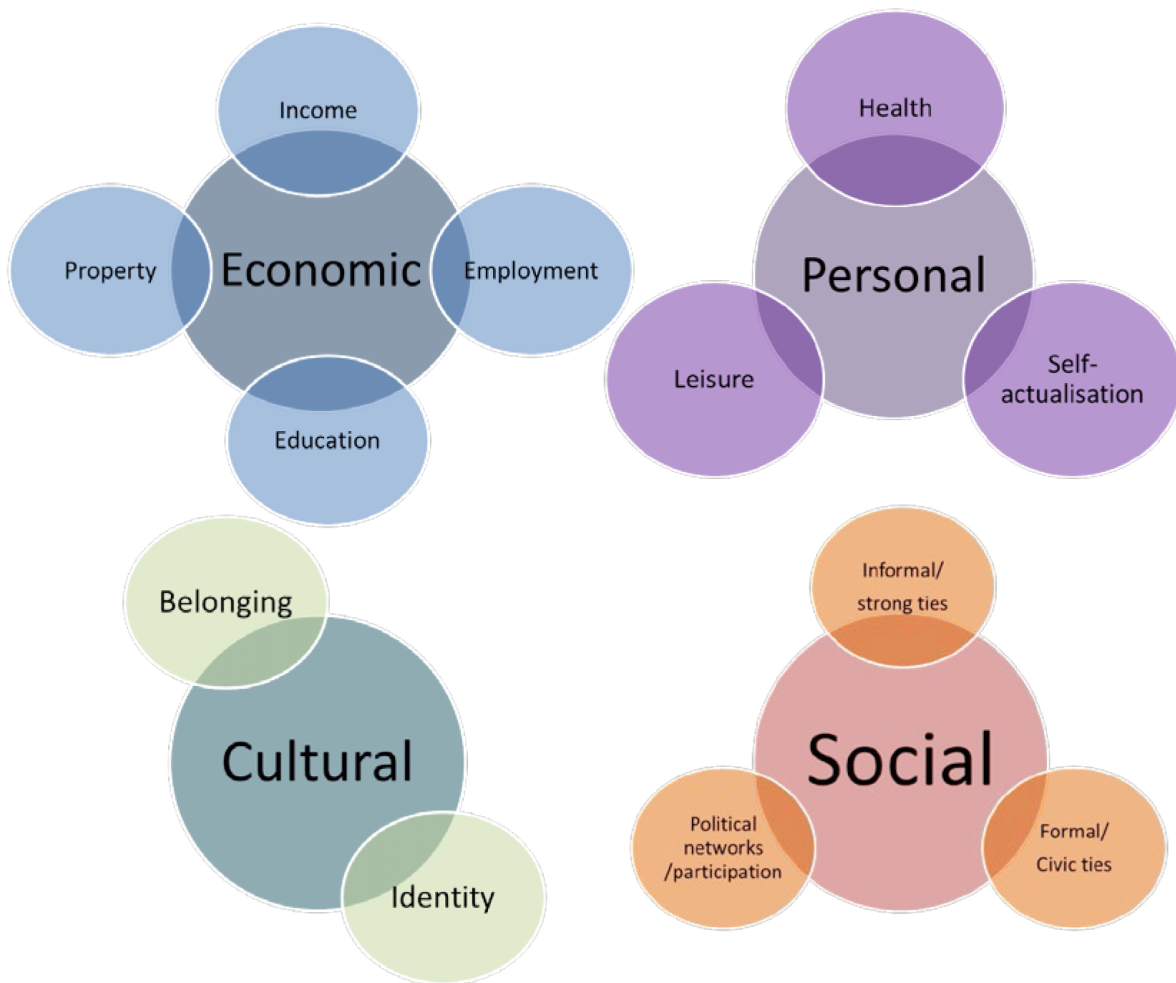


Figure 6.1 The four proposed categories of outcomes and their sub-fields of resources

Note: At least two items are needed for each subcategory for both the achievement and the satisfaction scales.

This model with the inclusion of this range of outcome aspects allows the researcher or evaluator to understand the “unintended benefits” of engagement with ICTs as well as whether outcomes related to specific online activities are achieved. For example, an intervention aiming to help people engage with learning might have the secondary outcome of improving health or increasing self-actualisation.

6.2 Explanations for differences in outcomes

When it comes to explaining achievement of and satisfaction with outcomes from Internet use, there are three important preliminary conclusions that can be drawn based on the material presented in this report.

1. **Engagement with a specific online activity does not necessarily lead to tangible offline outcomes.** However, once an outcome is achieved the satisfaction with these outcomes tends to be high. This is the case for most outcomes apart from the cultural ones.
2. **Those who are able to achieve an outcome in one area are not necessarily able to achieve an outcome in another area.** So while there might be transfer between one type of digital

engagement and another it is by no means the case that once a person is online and reaping the benefits in one way they are digitally included in all other ways as well. Being able to achieve benefits at a personal level does not mean that the person is able to achieve benefits at the social or economic level.

3. To translate engagement with an online activity into a tangible outcome **digital skills are essential**. Differences in digital skills between different socio-economic and socio-cultural groups lead to lower levels of achievement of and satisfaction with outcomes of Internet use.

The study presented in this report is a first attempt at measuring and explaining outcomes of digital engagement. There will be future publications based on this study that explore the pathways from social exclusion to tangible outcomes of Internet use through means of digital access, literacy, motivation and engagement. More population-based research is needed to understand what explains differences in outcomes in different socio-cultural contexts. Further, qualitative work is vital to understand how satisfaction and achievement of outcomes are culturally and socially constructed and to explore the cognitive, quantitative aspects of outcomes as well as the affective, qualitative aspects of how digital engagement translates into real benefits in everyday life.

REFERENCES

- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.) *Handbook of Theory and Research for the Sociology of Education* (New York, Greenwood), 241-258.
- Caplan, S. (2003) Preference for Online Social Interaction A Theory of Problematic Internet Use and Psychosocial Well-Being. *Communication Research* 30(6), 625-648.
- Davis, F.D., Bagozzi, R.P. & Warshaw, P.R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982-1003.
doi: 10.1287/mnsc.35.8.982
- DiMaggio, P., Hargittai, E., Celeste, C. & Shafer, S. (2004). From Unequal Access to Differentiated Use: A Literature Review and Agenda for Research on Digital Inequality. In K. Neckerman (ed.) *Social Inequality* (pp. 355-400). New York: Russell Sage Foundation.
- Eynon, R. & Helsper, E.J. (2015). Family dynamics and Internet use in Britain: What role do children play in adults' engagement with the Internet? *Information, Communication & Society* 8(2), 156-171.
doi: 10.1080/1369118X.2014.942344
- Eynon, R. & Helsper, E.J. (2011). Adults learning online: Digital choice and/or digital exclusion? *New Media & Society*, 13(4), 534-551.
- Helsper, E.J. (2012). A corresponding fields model of digital inclusion. *Communication Theory*, 22(4), 403-426. doi: 10.1111/j.1468-2885.2012.01416.x
- Helsper, E.J. & Eynon, R. (2013) Pathways to digital literacy and engagement. *European Journal of Communication*, 28(6), 696-713 doi:10.1177/0267323113499113.
- Katz, J. & Rice, R. (2002). *Social Consequences of Internet Use: Access, Involvement, and Interaction*. Cambridge, MA: MIT Press.
- Kavetsos, G.s & Koutroumpis, P. (2010). *Technological Affluence and Subjective Well-Being*. Available at <http://ssrn.com/abstract=1552404>
- Papacharissi, Z. and Rubin, A. (2000). Predictors of Internet use. *Journal of Broadcasting & Electronic Media* 44(2), 175-196.
- Selwyn, N. (2006). Digital division or digital decision? A study of non-users and low-users of computers. *Poetics*, 34(4-5), 273-292.

van Deursen, A.J.A.M. & van Dijk, J.A.G.M. (2012). *Trendrapport Internetgebruik*. Universiteit Twente.

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. doi: 10.1177/0267323115578059

van Deursen, A.J.A.M., Courtois, C. & van Dijk, J.A.G.M. (2014). Internet Skills, Sources Of Support and Benefiting From Internet Use. *International Journal of Human-Computer Interaction*, 30(4), 278-290. doi: 10.1080/10447318.2013.858458

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 Deursen, A.J.A.M., Helsper, E.J. & Eynon, R. (2014). *Measuring Digital Skills*. From Digital Skills to Tangible Outcomes project report. Available at: www.oii.ox.ac.uk/research/projects/?id=112

van Dijk, J.A.G.M. (2012). The Evolution of the Digital Divide. The Digital Divide turns to Inequality of Skills and Usage. In J. Bus, M. Crompton, M. Hildebrandt, & G. Metakides (Eds) *Digital Enlightenment Yearbook 2012*, Delft (NL). pp. 57 - 75. IOS Press, doi:10.3233/978-1-61499-057-4-57

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

Zillien, N. & Hargittai, E. (2009). Digital Distinction: Status-Specific Types of Internet Usage. *Social Science Quarterly*, 90(2), 274-291.

Appendix A. Types of engagement question per field of resources

The distribution of the different online engagement items over the different fields of resources is clearly not neat and some can be easily seen as pertaining to more than one field. The below was an initial classification, for future research and publications exploratory and confirmatory factor analysis will be performed to determine the best possible allocation of items to resource fields and the most efficient way of measuring different activities (i.e. some items will be dropped and others moved).

Economic types of activity were categorised as income (savings and earnings), employment (productive/promotion/job), finance (investments and contracts), and education (grades/degrees). The following specific items were included in the pilot study:

Income	Look for information on the price of a product (e.g. books, holidays, clothes, cars)
	Talk to others about the price of a product (e.g. on a forum or online chat)
	Make an offer on a product (e.g. on eBay, Amazon)
	Look for information on how to sell something you own
	Respond to people's requests for information about a product or service you want to sell
Employment	Look for something (e.g. software, devices, apps, instruments, kit etc) that would help you do your job better
	Talk to others online about how to solve a job related problem (e.g. via email, social networking site, or forum)
	Integrate tools or apps you have downloaded into the way you work
	Look for a different job online
	Talk to others online about job opportunities (e.g. email, social networking site, or forum)
Finance	Create or share a CV on a professional and work related site (e.g. LinkedIn, Monsterboard)
	Look for information on insurance policies (e.g. car/health/life or other insurance)
	Compare reviews of insurance policies (e.g. car/health/life or other insurance)
	Purchase insurance online (e.g. car/health/life or other)
	Look for information on interest rates
Education	Ask others online about investment opportunities (e.g. savings accounts, stocks, bonds, property)
	Set up a direct debit payment
	Look for information about a course or course provider (1)
	Check others' opinions about a course or place to study (2)
	Download course materials (3)
	Upload an assignment / piece of work for evaluation (4)

Cultural types of activity consisted of engagement with activities that might considered 'low' and 'high' brow, items measuring belonging (stronger sense of being part of a community of people) and identity (stronger sense of gender, ethnic, generational or religious identity). The following specific items were included in the pilot study:

Norms and identity related information	Look for the latest news on current affairs
	Look for the latest sports news
	Look for the latest celebrity news
	Come across 'adult' sites with sexual content

Belonging	Chat about relationships and friendships (e.g. via email a social networking site, etc)
	Trace your family history
	Look up information on where to go out (e.g. exhibitions, cinema, parties)
	Read information on relationships (e.g. about managing relationships or dating)
	Read information on parenting
	Look up information on transport (e.g. bus or train timetables)
	Arrange with other people to go out
Identity	Upload pictures of yourself
	Come across information about your ethnic group
	Come across information about differences between men and women (e.g. in their lives, behaviour or attitudes)
	Interact with people who share your ethnicity (e.g. via email, whatsapp, forum or social networking site)
	Interact with people who are from a different ethnic group (e.g. via email, whatsapp, forum or social networking site)
	Look for websites with religious or spiritual information
	Contact people who share religious or spiritual beliefs
	Log in on a website with religious or spiritual content

Social kinds of activities entail bonding (personal networks) and bridging (organised/civic networks/political networks). The following specific items were included in the pilot study:

Bonding and informal networks	Look for updates from friends or family (e.g. email, status / photos on social networking sites)
	Comment on the updates friends or family put online (e.g. email, status / photos on social networking sites)
	Talk to family or friends who live further away (e.g. via skype, whatsapp, or email)
	Share pictures of you with your family or friends (e.g. through a social networking site, photo sharing site)
	Look for websites online that help you to meet new people (e.g. online dating, social networking sites, hobby or crafts clubs)
	Make new friends /meet new people
	Like or promote content that other people post
Formal civic participation	Look for information on (online or offline) clubs or societies
	Interact with people who share your personal interests and hobbies
	Contribute ideas or upload items such as photos to websites with similar interests and hobbies
	Come across information which helps you form your opinion on a public issue
	Contact a civic organization or association (e.g. those involved with environmental or human rights campaigning)
	Sign an online petition
	Comment about a political or societal issue (e.g. through twitter, on blogs, websites)
Political formal participation	Look for information about national government services (e.g. benefits, taxes, a driving licence or passport)
	Ask a representative of a public institution for advice on public services (e.g. your local council / municipality)
	Complete an online form for a national government service
	Look for information about an MP, local councillor, political party or candidate
	Follow or contact a politician (or political organization)
	Join or start a group that discusses politics or political issues

Personal types of engagement included personal well-being (confidence/well-being and happiness), physical health (fitness/health), leisure and personality (preferences/attitudes) and self-actualisation:

Personal well-being	Come across online lifestyle magazines / features / articles
	Talk to others about your lifestyle
	Blog or maintain a website about your personal life
	Look for jokes, cartoons or other entertaining content
	Play games
	Listen to music
Physical Health	Watch videos/ TV programmes
	Look up information on how to improve your fitness
	Ask others about a training program
	Use exercise or nutrition programs / apps
	Look up information about health or medical care
	Ask for advice on a medical condition
Leisure and personality	Fill out a questionnaire related to your health
	Search for information about events, concerts etc.
	Exchange information about events or concerts with others
	Write comments about or rate videos, music, books, TV shows etc.
	Look up information to understand problems or issues that interest you
	Consult others' opinions on problems or issues that interest you (e.g. using YouTube, Facebook, Twitter, email)
Self-actualisation	Write a blog or maintain a website on issues or problems of interest to you
	Check a fact
	Discuss a topic of personal interest with others online (e.g. via email, twitter, Facebook, or online forum)
	Share something you created about a topic that interests you (e.g. a piece of creative writing, a video, a photo)

Appendix B. Responses to dichotomous and scale version

	Scale			Dich			Δ
	Total N	# not NA/DK	% NA/DK	Total N	# not NA/DK	% NA/DK	
Your last interaction with an MP, local councillor or political party online	401	143	36%	216	36	30%	6%
I became a member, donor of a civic organisation (e.g. those involved in environmental or human rights campaigning) I would not have become a member of otherwise	401	247	62%	217	160	52%	10%
Your online interactions with people and organisations that share your religious beliefs (i.e. in comparison with the offline people you might encounter)	403	161	40%	215	39	29%	11%
Online, I have better contact with my MP, local councillor, or political party	399	230	58%	218	155	46%	11%
The information you come across about your ethnic group	402	167	42%	218	47	30%	12%
Due to the information I found and people I have met online I feel more connected with religion or spiritual beliefs	404	259	64%	216	134	51%	13%
I became a member of a hobby or leisure club or organization that I otherwise would not have found	398	257	65%	218	173	52%	13%
Due to the information I found and people I have met online I have changed my thinking about religion or spiritual beliefs	404	261	65%	217	138	51%	13%
The last club or organization you became a member of	403	163	40%	217	45	25%	16%
Your online involvement with the last organisation you joined/donated to	401	168	42%	217	42	26%	16%
Through the Internet I learned new things about my ethnic group	404	277	69%	218	151	50%	19%
Information you come across about gender differences	404	194	48%	218	197	29%	19%
I am fitter as a result of the online information, advice or programs / apps I have used	401	253	63%	217	175	42%	21%
Your last contribution to an online discussion	403	186	46%	216	64	24%	22%
I have discovered online that I am entitled to a particular benefit, subsidy or tax advantage which I would not have found offline	399	272	68%	218	164	46%	22%
The things I came across on the internet made me think about the differences between men and women	404	286	71%	216	155	46%	25%
Your interactions with people of your age online (as compared to offline interactions with people your age)	403	213	53%	218	75	28%	25%
The way in which the last bit of advice, program or app you used has influenced your level of fitness	401	199	50%	217	72	24%	26%
The price of the course that you found online	169	100	59%	39	20	32%	27%
Through the internet I found people of a similar age that share my interests	403	287	71%	218	149	43%	29%
The job you got online	218	118	54%	115	47	25%	29%
I bought insurance online that I would not have bought offline	398	289	73%	218	160	42%	30%
The lifestyle choices you have made based on the information you found online	402	220	55%	218	80	23%	31%
I have made better decisions about my health or medical care as a result of the information / advice I found online	401	279	70%	214	149	38%	32%
I found a job online that I could not have found offline	217	165	76%	216	140	44%	32%
The way you changed your behaviour as a result of the health information you found online	401	224	56%	215	78	24%	32%
People I meet online are more interesting than the people I meet offline	401	329	82%	111	97	49%	33%
I got a certificate that I could not have gotten without the internet	134	104	78%	214	143	44%	34%
I go to events and concerts I would never have otherwise considered	401	303	76%	115	82	41%	34%

Appendix B contnd. Responses to dichotomous and scale version

	Scale			Dich			Δ
	Total N	# not NA/DK	% NA/DK	Total N	# not NA/DK	% NA/DK	
Information I found online gave me more confidence in my lifestyle choices	401	286	71%	216	126	34%	37%
Using the Internet helps me to form opinions about complex social issues I would not fully understand otherwise	399	303	76%	214	132	37%	39%
The last health information or advice you found online	403	254	63%	218	109	22%	41%
I have more friends because I use the internet	402	345	86%	217	139	44%	41%
The last concert or event you went to after finding information or buying the ticket for the event online	403	245	61%	216	102	19%	41%
The quality of the course that you found online	169	110	65%	39	20	20%	45%
The insurance or other financial product you bought online	404	263	65%	218	120	19%	46%
I sell goods that I would not have sold otherwise	398	312	78%	214	188	32%	46%
The things I found online influenced how I do my job	218	184	84%	115	96	38%	47%
The experience of selling products online	510	347	68%	216	144	21%	47%
The price you get for the products you sell online	510	344	67%	111	58	21%	47%
The information and services I found online improved my financial situation	398	320	80%	218	55	34%	47%
Online entertainment (games, listening to music, reading jokes) made me feel happier	402	308	77%	215	123	29%	48%
The way in which the Internet helps you think about social issues	401	270	67%	218	109	19%	48%
The last online government service you accessed	403	297	74%	217	144	25%	49%
I have a better relationship with my friends and family because I use the internet	402	355	88%	75	45	38%	51%
I am in touch with my close friends more because I use the internet	401	349	87%	218	117	36%	51%
The way the Internet has influenced how you do your job	218	160	73%	113	67	21%	52%
Your online communication with people online who are not close friends or family? (i.e. in comparison with the offline communication you might have)	403	303	75%	218	133	22%	54%
Your online communication with friends and family? (i.e. in comparison with the offline communication you might have)	404	323	80%	218	155	20%	60%
In general, how do you feel about spending time online	403	350	87%	214	143	16%	71%
The last financial service you used (e.g. banking)	401	355	89%	218	190	18%	71%
I save money by buying products online	400	376	94%	217	169	18%	76%
The price of the last product that you bought online	511	476	93%	111	102	14%	79%
The quality of the last product that you bought online	511	480	94%	111	102	15%	79%
My knowledge increased because of the Internet (i.e. looking up information, talking to others)	405	387	96%	216	144	14%	82%
The experience of buying products online	509	480	94%	110	56	12%	82%
In general, the information you find online about topics that interest you	510	496	97%	111	97	12%	86%

Light grey: items for which the difference between dichotomous and scale versions of the questionnaire in DK and NA answers was between 50% and 75%.

Dark grey: items for which the difference between dichotomous and scale versions of the questionnaire in DK and NA answers was more than 75%. From Digital Skills to Tangible Outcomes project report | 63

Appendix C. Skewness and kurtosis scales in the Netherlands and the UK

Table C.0 Skewness (G_1) and Kurtosis (G_2)⁴ outcomes scales in pilot survey sample

		Mean	SD	K-S z	G_1	SE	G_2	SE
Achievement	Economic	3.53	0.87	1.89*	-0.26*	0.12	-0.30	0.24
	Income	3.26	1.15	2.51*	-0.27*	0.13	-0.73*	0.27
	Property	3.97	0.93	3.65*	-0.94*	0.12	0.84*	0.25
	Education /Employment	3.18	1.28	1.96*	-0.24	0.16	-1.01*	0.33
Satisfaction	Economic	4.32	0.66	3.36*	-1.44*	0.11	3.27*	0.22
	Income	4.38	0.87	5.34*	-1.76*	0.13	3.29*	0.25
	Property	4.38	0.68	4.03*	-1.63*	0.11	3.84*	0.22
	Education/Employment	3.96	0.96	2.39*	-0.83*	0.16	0.49	0.33
Achievement	Cultural	2.66	1.27	2.38*	0.17	0.14	-1.07*	0.27
	Cultural Belonging	2.72	1.35	2.65*	0.13	0.14	-1.22*	0.28
	Cultural Identity	2.51	1.32	3.42*	0.31*	0.14	-1.12*	0.28
	Cultural	3.53	0.96	2.75*	-0.47*	0.16	0.44	0.32
Satisfaction	Cultural Belonging	3.55	1.02	2.71*	-0.53*	0.17	0.26	0.33
	Cultural Identity	3.44	1.00	2.78*	-0.33	0.17	0.19	0.34
Achievement	Social	2.78	1.06	1.10	0.03	0.13	-0.69*	0.25
	Personal Network	2.95	1.14	1.94*	-0.25	0.13	-0.83*	0.26
	Formal Network	2.39	1.42	4.11*	0.48*	0.15	-1.19*	0.30
	Political Network	2.84	1.36	2.50*	0.04	0.14	-1.21*	0.29
Satisfaction	Social	3.93	0.81	2.70*	-0.60*	0.13	0.15	0.25
	Personal Networks	3.97	0.88	3.24*	-0.62*	0.13	0.17	0.27
	Formal Networks	3.86	1.01	2.55*	-0.85*	0.18	0.48	0.36
	Political Networks	3.91	0.98	4.42*	-0.91*	0.14	0.49	0.28
Achievement	Individual	3.48	0.88	1.35	-0.34*	0.12	-0.40*	0.24
	Individual Health	3.09	1.10	3.13*	-0.33*	0.13	-0.52*	0.27
	Individual Leisure	3.34	1.14	2.91*	-0.48*	0.13	-0.50*	0.26
	Self-Actualisation	3.93	0.84	4.01*	-0.70*	0.12	0.20*	0.25
Satisfaction	Individual	4.18	0.68	3.03*	-1.00*	0.11	1.84*	0.22
	Individual Health	3.74	0.81	2.70*	-0.72*	0.14	1.29*	0.29
	Individual Leisure	4.31	0.79	4.64*	-1.23*	0.13	1.65*	0.26
	Self-Actualisation	4.31	0.67	4.61*	-1.09*	0.11	2.17*	0.22

* The distribution of the answers is non-normal , negatively or positively skewed or has critical Kurtosis (Cramer, 1997; i.e. $-2 > G/SE > 2$)

⁴ Skewness is a measure of the lack of symmetry. A distribution is symmetric if it looks the same to the left and right of the centre point. The skewness for a normal distribution is zero, and any symmetric data should have a skewness near zero. Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. That is, data sets with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy tails. A kurtosis of 3 is the expected value.

Table C.1 Country comparison skewness and kurtosis economic outcomes scales

		UK					
		Mean	SD	Skew	SE	Kurtosis	SE
Achievement	Economic	3.73	0.80	-0.25	0.17	-0.31	0.34
	Income	3.53	1.05	-0.41*	0.18	-0.41	0.37
	Property	4.03	0.93	-0.99*	0.17	0.85*	0.34
	Education /Employment	3.51	1.29	-0.53*	0.26	-0.75	0.51
Satisfaction	Economic	4.38	0.56	-0.91*	0.17	0.83*	0.34
	Income	4.37	0.85	-1.68*	0.18	2.87*	0.36
	Property	4.46	0.54	-1.18*	0.17	2.16*	0.34
	Education/Employment	3.98	1.03	-1.07*	0.26	0.90	0.52
		NL					
		Mean	SD	Skew	SE	Kurtosis	SE
Achievement	Economic	3.31	0.89	-0.16	0.17	-0.35	0.35
	Income	2.97	1.18	-0.04	0.19	-0.90*	0.38
	Property	3.90	0.93	-0.91*	0.18	0.93*	0.36
	Education /Employment	2.95	1.23	-0.11	0.21	-1.03*	0.42
Satisfaction	Economic	4.28	0.72	-1.52*	0.14	3.30*	0.28
	Income	4.38	0.89	-1.85*	0.18	3.75*	0.36
	Property	4.33	0.75	-1.61*	0.14	3.30*	0.28
	Education/Employment	3.96	0.91	-0.62*	0.21	0.11	0.42

*The distribution of the answers is negatively or positively skewed or has critical Kurtosis (Cramer, 1997; i.e. $-2 > G1/SE > 2$)

Table C.2 Country comparison skewness and kurtosis cultural outcomes scales

		UK					
		Mean	SD	Skew	SE	Kurtosis	SE
Achievement	Cultural	2.72	1.26	0.08	0.19	-1.08*	0.37
	Cultural Belonging	2.77	1.32	0.12	0.19	-1.15*	0.37
	Cultural Identity	2.57	1.30	0.18	0.19	-1.15*	0.38
	Cultural	3.53	0.91	-0.21	0.22	0.40	0.43
	Cultural Belonging	3.56	0.99	-0.35	0.22	0.20	0.45
Satisfaction	Cultural Identity	3.45	0.94	-0.20	0.23	0.50	0.45
		NL					
		Mean	SD	Skew	SE	Kurtosis	SE
Achievement	Cultural	2.59	1.29	0.28	0.20	-1.02*	0.40
	Cultural Belonging	2.67	1.39	0.17	0.21	-1.31*	0.41
	Cultural Identity	2.44	1.35	0.45*	0.21	-1.04*	0.41
	Cultural	3.53	1.02	-0.69*	0.23	0.45	0.46
	Cultural Belonging	3.53	1.05	-0.70*	0.24	0.33	0.48
Satisfaction	Cultural Identity	3.42	1.07	-0.43	0.26	-0.09	0.51

*The distribution of the answers is negatively or positively skewed or has critical Kurtosis (Cramer, 1997; i.e. $-2 > G1/SE > 2$)

Table C.3 Country comparison skewness and kurtosis social outcomes scales

		UK					
		Mean	SD	Skewness	SE	Kurtosis	SE
Achievement	Social	2.96	1.04	-0.17	0.17	-0.54	0.35
	Personal Network	3.18	1.06	-0.40*	0.18	-0.40	0.35
	Formal Network	2.57	1.38	0.27	0.20	-1.21*	0.41
	Political Network	2.84	1.33	0.06	0.20	-1.07*	0.39
	Social	3.93	0.79	-0.49*	0.17	0.01	0.35
	Personal Networks	4.03	0.86	-0.55*	0.18	-0.18	0.37
	Formal Networks	3.84	1.05	-0.89*	0.24	0.64	0.47
Satisfaction	Political Networks	3.85	0.92	-0.73*	0.20	0.23	0.39
		NL					
		Mean	SD	Skewness	SE	Kurtosis	SE
Achievement	Social	2.57	1.05	0.25	0.18	-0.61	0.36
	Personal Network	2.70	1.18	-0.03	0.19	-1.08*	0.37
	Formal Network	2.19	1.43	0.74*	0.22	-0.99*	0.43
	Political Network	2.83	1.40	0.02	0.21	-1.34*	0.41
	Social	3.93	0.83	-0.70*	0.18	0.28	0.36
	Personal Networks	3.92	0.89	-0.67*	0.19	0.48	0.39
	Formal Networks	3.90	0.97	-0.77*	0.28	0.19	0.55
Satisfaction	Political Networks	3.96	1.04	-1.08*	0.20	0.75	0.40

Table C.4 Country comparison skewness and kurtosis personal outcomes scales

		UK					
		Mean	SD	Skewness	SE	Kurtosis	SE
Achievement	Individual	3.59	0.80	-0.30	0.17	-0.10	0.34
	Individual Health	3.21	1.04	-0.34	0.19	-0.16	0.37
	Individual Leisure	3.51	1.07	-0.66*	0.18	0.12	0.36
	Self Actualisation	3.97	0.76	-0.82*	0.17	1.19*	0.34
	Individual	4.11	0.59	-0.36*	0.17	0.12	0.34
	Individual Health	3.77	0.73	-0.25	0.19	0.34	0.38
	Individual Leisure	4.26	0.72	-0.63*	0.18	-0.53	0.36
Satisfaction	Self Actualisation	4.31	0.57	-0.43*	0.17	-0.39	0.34
		NL					
		Mean	SD	Skewness	SE	Kurtosis	SE
Achievement	Individual	3.35	0.94	-0.27	0.17	-0.72*	0.35
	Individual Health	2.96	1.16	-0.27	0.19	-0.83*	0.38
	Individual Leisure	3.15	1.19	-0.28	0.18	-0.86*	0.37
	Self Actualisation	3.89	0.92	-0.58*	0.18	-0.45	0.35
	Individual	4.23	0.74	-1.28*	0.14	2.36*	0.28
	Individual Health	3.71	0.90	-0.98*	0.21	1.49*	0.42
	Individual Leisure	4.36	0.86	-1.66*	0.18	3.01*	0.36
Satisfaction	Self Actualisation	4.31	0.74	-1.26*	0.14	2.46*	0.28

Appendix D. Normality, Skew and Kurtosis in Dutch population

Table D.1 Normality, Skewness (G_1) and Kurtosis (G_2)⁵ outcomes in the Dutch population

		N	Mean	SD	K-S z	G_1	SE	G_2	SE
Achievement	Economic	1058	3.21	0.97	2.94*	-0.28*	0.08	-0.44*	0.15
	Income	781	2.77	1.26	4.19*	-0.02	0.09	-1.11*	0.17
	Property	1023	3.75	1.04	6.57*	-0.82*	0.08	0.23	0.15
	Education/Employment	571	2.81	1.32	3.51*	0.00	0.10	-1.21*	0.20
Satisfaction	Economic	1076	4.32	0.68	5.19*	-1.47*	0.07	3.31*	0.15
	Income	1000	4.47	0.86	10.89*	-2.01*	0.08	4.27*	0.15
	Property	1009	4.35	0.68	5.39*	-1.18*	0.08	1.55*	0.15
	Education/Employment	474	3.92	0.95	4.30*	-0.93*	0.11	0.91*	0.22
Achievement	Cultural	759	2.17	1.20	4.95*	0.73*	0.09	-0.62*	0.18
	Belonging	719	2.22	1.29	6.61*	0.65*	0.09	-0.82*	0.18
	Identity	707	2.03	1.24	7.85*	0.86*	0.09	-0.52*	0.18
	Cultural	412	3.35	1.03	4.67*	-0.58*	0.12	0.31	0.24
Satisfaction	Belonging	364	3.37	1.11	4.42*	-0.51*	0.13	-0.03	0.26
	Identity	327	3.18	1.04	4.75*	-0.49*	0.13	0.13	0.27
Achievement	Social	1007	2.50	1.06	2.48*	0.32*	0.08	-0.66*	0.15
	Personal Network	948	2.67	1.14	3.59*	0.04	0.08	-0.85*	0.16
	Formal Network	588	1.97	1.35	8.92*	1.00*	0.10	-0.47*	0.20
	Political Network	640	2.65	1.32	4.09*	0.18	0.10	-1.18*	0.19
Satisfaction	Social	969	3.80	0.90	3.33*	-0.63*	0.08	0.50*	0.16
	Personal Networks	815	3.81	0.94	5.41*	-0.38*	0.09	-0.16	0.17
	Formal Networks	343	3.78	1.21	3.47*	-0.92*	0.13	0.06	0.26
	Political Networks	728	3.80	1.07	5.43*	-0.73*	0.09	0.03	0.18
Achievement	Individual	1082	3.22	0.95	2.02*	-0.12	0.07	-0.52*	0.15
	Individual Health	814	2.69	1.21	4.45*	0.01	0.09	-1.06*	0.17
	Individual Leisure	922	2.94	1.15	4.66*	-0.21*	0.08	-0.80*	0.16
	Self-Actualisation	1071	3.79	0.93	6.55*	-0.73*	0.07	0.31*	0.15
Satisfaction	Individual	1096	4.12	0.74	3.98*	-1.02*	0.07	1.47*	0.15
	Individual Health	623	3.58	0.95	4.28*	-0.70*	0.10	0.75*	0.20
	Individual Leisure	998	4.36	0.85	9.01*	-1.52*	0.08	2.45*	0.15
	Self-Actualisation	1088	4.26	0.72	6.78*	-0.91*	0.07	0.99*	0.15

* The distribution of the answers is non-normal , negatively or positively skewed or has critical Kurtosis (Cramer, 1997; i.e. $-2 > G/SE > 2$)

⁵ Skewness is a measure of the lack of symmetry. A distribution is symmetric if it looks the same to the left and right of the centre point. The skewness for a normal distribution is zero, and any symmetric data should have a skewness near zero. Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. That is, data sets with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy tails. A kurtosis of 3 is the expected value.

Appendix E. Regressions main scales with only socio-demographic variables

Table E.1 Achievement main scale regressions (Dutch population sample)

	Economic		Cultural		Social		Personal	
	b	β	b	β	b	β	b	β
Constant	1.23	0.00	0.56	0.00	0.53	0.00	3.95	0.00
Gender	-0.06	-0.08	-0.06	-0.12	-0.03	-0.08	-0.22	-0.12
Age	-0.04	-0.11	-0.07	-0.28	-0.04	-0.20	-0.12	-0.13
Secondary Educ	0.05	0.07	-0.01	-0.02	0.00	0.01	0.09	0.05
Higher Educ	0.13	0.16	0.00	0.00	-0.01	-0.03	0.19	0.09
Average Income	0.02	0.03	0.00	0.00	0.01	0.03	0.00	0.00
Higher Income	0.02	0.02	-0.02	-0.04	-0.03	-0.06	-0.12	-0.06
Employed PT	-0.02	-0.02	-0.04	-0.06	0.00	0.00	0.00	0.00
Retired	-0.02	-0.02	0.05	0.07	0.03	0.05	-0.06	-0.03
Unemployed	-0.03	-0.02	0.03	0.04	0.01	0.02	-0.04	-0.01
Disabled	-0.01	-0.01	0.07	0.08	0.07	0.09	-0.12	-0.04
Student	0.07	0.05	0.02	0.02	0.04	0.04	0.21	0.05
Caretaker	0.07	0.06	0.03	0.04	0.01	0.02	-0.17	-0.05
Cohabit	0.03	0.03	-0.04	-0.09	-0.03	-0.07	-0.10	-0.05
Divorced	-0.03	-0.02	-0.04	-0.05	-0.02	-0.03	-0.01	0.00
Widow	-0.09	-0.05	-0.06	-0.05	0.01	0.01	-0.31	-0.06

Table E.2 Satisfaction main scale regressions (Dutch population sample)

	Economic		Cultural		Social		Personal	
	b	β	b	β	b	β	b	β
Constant	1.39		1.36		1.27		1.35	
Gender	-0.01	-0.02	0.02	0.02	0.00	0.00	0.02	0.03
Age	0.02	0.13	-0.08	-0.19	-0.01	-0.02	0.00	0.00
Secondary Educ	0.04	0.10	-0.12	-0.14	0.02	0.03	0.02	0.05
Higher Educ	0.05	0.11	-0.04	-0.05	0.04	0.06	0.05	0.11
Average Income	-0.01	-0.03	0.00	0.00	0.06	0.10	0.00	0.00
Higher Income	0.01	0.03	0.01	0.01	0.07	0.10	0.01	0.03
Employed PT	0.00	0.00	0.00	0.00	0.00	-0.01	-0.03	-0.05
Retired	-0.01	-0.02	-0.09	-0.07	0.02	0.03	0.00	-0.01
Unemployed	-0.04	-0.05	0.16	0.11	0.00	0.00	0.00	0.00
Disabled	-0.01	-0.02	0.14	0.09	0.03	0.03	-0.01	-0.01
Student	0.03	0.04	0.01	0.01	0.04	0.03	0.00	0.00
Caretaker	0.00	0.00	-0.01	0.00	0.01	0.01	-0.01	-0.02
Cohabit	-0.02	-0.04	-0.01	-0.02	-0.03	-0.05	0.00	-0.01
Divorced	-0.04	-0.06	0.02	0.01	0.03	0.03	0.02	0.03
Widow	-0.01	-0.01	0.02	0.01	-0.06	-0.04	-0.04	-0.04

Appendix F. Regressions subscales achievement and satisfaction

Table F.1 Regression analysis of achievement of the outcome categories (Dutch population survey)

	Income /property β	Education Employment β	Personal β	Formal β	Political β	Belonging β	Identity β	Health β	Leisure β	Self- Actualisation β
Gender	-.030	.026	-.008	.013	-.018	-.079	-.050	-.055	-.032	-.029
Age	-.039	-.197	-.180	-.254	-.114	-.236	-.197	-.128	-.109	-.023
Secondary Education	.061	.056	-.042	.112	-.054	-.025	.010	-.008	.071	.009
Higher Education	.101	.197	-.073	.040	-.099	-.024	.058	.099	.052	.027
Average Income	.028	.012	.044	.042	.047	-.009	.008	.010	-.022	.005
Higher Income	.022	-.051	-.054	-.023	.018	-.062	-.030	-.108	-.047	.040
Employed PT	.038	-.004	.033	-.028	.030	-.032	-.075	.053	.051	-.015
Retired	-.068	.023	.075	.007	.052	.046	.046	.046	-.076	-.046
Unemployed	-.062	.026	.031	.025	.075	.010	.029	.000	.026	-.004
Disabled	-.031	.016	.048	.095	.084	.091	.034	-.051	.005	-.007
Student	.012	-.026	.065	-.043	-.006	.007	.013	.031	.038	-.002
Caretaker	.027	-.013	.042	.013	-.009	.061	-.024	-.040	-.035	-.036
Cohabit	.038	.014	-.048	.011	-.039	-.077	-.054	-.010	-.025	-.040
Divorced	-.045	.041	.005	.029	.014	-.027	-.014	.012	.002	.001
Widow	-.012	.007	.006	.037	.025	-.010	-.011	-.049	-.056	.039
Frequency use	.072	.051	.125	.032	.050	.014	-.028	.046	.054	.022
Years of use	.000	.091	-.011	.044	.047	-.017	-.096	-.062	.002	-.065
Operational skills	.001	.033	.007	-.095	-.080	-.017	-.005	-.016	.032	.138
Info navigation skills	-.046	-.105	-.182	-.215	-.153	-.093	-.182	-.154	-.096	-.009
Social skills	.069	-.104	-.050	-.085	.035	-.032	-.082	-.064	-.052	.136
Creative skill	.229	.323	.269	.313	.229	.316	.263	.267	.200	.041

Note: Coefficients in bold are significant at $p < .05$

Table F.2 Regression analysis of satisfaction with the main outcome categories

	Income /property β	Education /Employment β	Personal β	Formal β	Political β	Belonging β	Identity β	Health β	Leisure β	Self-Actualisation β
Gender	-.030	.091	.042	.004	-.037	.042	.043	.025	.020	.053
Age	.162	-.056	-.070	-.094	.052	-.196	-.254	-.065	.048	.056
Secondary Education	.054	.095	.013	.053	-.079	-.164	-.156	.025	-.033	.005
Higher Education	.002	.279	.030	.050	-.078	-.085	-.067	.075	.024	.012
Average Income	-.024	-.118	.075	.027	.092	-.022	-.005	-.059	-.045	.014
Higher Income	.040	-.166	.069	.019	.106	.005	-.022	-.013	-.033	.031
Employed PT	.000	-.038	.025	-.018	.040	-.003	-.016	.021	.026	-.026
Retired	-.038	.044	.058	.051	.032	-.053	-.056	.034	.052	.014
Unemployed	-.035	-.064	.038	.029	.018	.101	.106	.013	-.014	.024
Disabled	-.040	-.012	.031	.105	-.034	.112	.092	.010	.009	-.013
Student	.020	-.017	.047	-.047	.006	.003	-.018	-.012	-.008	-.053
Caretaker	-.004	-.001	.066	.003	-.053	.009	-.051	-.014	.032	-.023
Cohabit	-.034	.074	-.010	-.056	-.014	-.053	.021	-.016	.047	-.001
Divorced	-.044	.069	.067	.068	.050	-.022	.057	-.009	.069	.048
Widow	.014	-.021	-.001	.014	.005	.029	.027	-.007	-.062	-.016
Frequency use	.040	.025	.034	-.031	-.030	.051	.065	.093	.076	.050
Years of use	-.044	.028	.018	.064	-.058	.031	-.024	-.116	-.081	-.079
Operational skills	.089	.005	.016	.005	.032	-.087	-.119	.057	.087	.110
Info navigation skills	.166	.008	.019	.021	.035	-.012	-.058	-.091	.177	.099
Social skills	.177	.095	.194	.209	.207	.211	.202	.138	.201	.331
Creative skills	-.050	.154	.057	-.049	-.009	.078	.053	.002	-.085	-.046

Note: Coefficients in bold are significant at $p < .05$



Oxford Internet Institute
University of Oxford

**UNIVERSITY
OF TWENTE.**

LSE

THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■