Measuring Types of Internet Use

From Digital Skills to Tangible Outcomes project report

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

Oxford Internet Institute
University of Oxford

UNIVERSITY OF TWENTE.

LSE THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

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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/

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1. BACKGROUND

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 of uses of the Internet alongside other factors such as motivation and skills 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 began a project with the main objective to develop theoretically informed measures that can be used to explain how people use the Internet, the skills they have to use the Internet and what the benefits might be; and how these three areas relate. The focus of this report is on the first of these three aspects, that is, measurement of Internet uses. A considerable body of research exists in this area but it is somewhat limited in the theoretical framing used to guide the development of the items. For reports and details of the measures used for the skills and outcomes components of the survey and how they relate please see the project website[1].

In this report, we propose a theoretically grounded survey instrument to measure varying types of Internet use, guided by the Corresponding Fields Model of digital inclusion (Heslper, 2012). We welcome other research teams to use these measures and to contribute to their continued refinement.

The information presented in this short report is based on:

- A systematic literature review of related studies to create an initial understanding of the types of Internet use.
- Testing and developing the 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.
  - Pilot testing the measures in an online survey in both the UK and the Netherlands.
  - Testing the measures in a full survey in the Netherlands.

In the following section, we provide an overview of the how the different Internet uses were conceptualised, then move on to discuss the development of the survey and suggest a measurement instrument that can be used in general population research.

[1] http://www.lse.ac.uk/media@lse/research/From-digital-skills-to-tangible-outcomes.aspx

1.1 Conceptualisation of Internet uses

There have been a plethora of studies that have measured different kinds of Internet use (e.g. Blank and Groselj, 2014; Brandzaeg, 2010; DiMaggo and Hargittai, 2001, Helsper, 2010; LaRose and Eastin; van Deursen & van Dijk, 2013; Zillien and Hargittai, 2009). However, many of these studies differ slightly in their conceptualisation of Internet use types, phrasing of questions, and response items.

In this study we wanted to conceptualise use as part of a wider conceptual framework that examined the tangible - or 'real' - outcomes that digital divide policies aim to achieve. We used Helsper's (2012) corresponding fields model as a starting point. This model hypothesizes how an individual's specific digital and offline resources are related to 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. Each field contains a collection of interlinked resources; each of these resources is operationalisable through specific indicators in research and useful to evaluate the effectiveness of interventions in improving people's lives in different ways. 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).

This report thus takes a theory driven classification of internet uses, operationalising different types of uses as reflecting different types of offline resources. This in contrast to other research which often employs an intuitively interesting series of items and performs exploratory factor analysis to see how they group together without having hypothesised a-priori what a valid classification would be. This has led to a proliferation of different classifications of internet use, detached from an understanding of digital skills or the benefits that people might obtain from Internet use (Van Deursen, Helsper & Eynon, 2014).

1.1.1 Uses in the economic field

Uses 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 using the Internet for financial services and banking or shopping online. It could also refer to selling something online, or indeed job seeking or looking for learning opportunities to improve your job prospects.

1.1.2 Uses in the cultural field

The cultural field in the corresponding fields framework is connected to the idea of socialisation and acculturation, and defines cultural resources as the shared norms which guide behaviour that give 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. Therefore, cultural resources encompass knowledge, education, understandings of value of entertainment and art and other social-cultural distinctions that make up social status and are related to belonging to certain socio-cultural groups. 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.

In this report, uses 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. While questions about uses in this field are more difficult to create, questions could be developed to ask about Internet use in relation to identity construction or affirmation (e.g. use of the Internet to explore feminism) and supporting a feeling of belonging to a particular group (e.g. using the Internet for religion or to support parenting).

1.1.3 Uses 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. While related to the cultural field, resources in the social field are more fluid and subject to change throughout a person's lifetime. Thus there are a range of Internet uses that could be part of this process, including connecting with family members and sharing photos or linking up with friends.

Here, 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). Many of these activities can be supported by Internet activities, such as looking for information about government services or identifying and perhaps interacting with an MP or local councillor. The social field also encompasses wider civic engagement, related to having one's voice heard within a wider community (e.g. special interest, sport and hobby club membership). This therefore includes items such as looking for online information about clubs and societies, participating in discussions that influence the local community, or interacting with people who share similar interests.

1.1.4 Uses in the personal field

Resources in the personal field reflect mental and physical well-being and aptitudes. 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. For example, using the Internet to exchange information with others about problems or issues of concern to the individual. Health is also a key aspect of this field, and using the Internet for health and fitness remains an important online activity.

The pursuit of common leisure activities, such as undertaking sports, watching television, going to events and other relaxing activities, is also included in resources in the personal field as another component of well-being. Indeed, there are many well established Internet use items that ask about

using the Internet to play games, listen to music etc. 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. SCALES AND MESURES FOR INTERNET USE

2.1 Item construction

This theoretical framework is reflected in the items constructed to measure different types of uses as summarised below. This is a short report and, therefore, by necessity excluded much of the rich detail of the full project. Please see the other reports and contact the authors for more information.

2.1.1 Types of uses

The individual items related to uses 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 uses onto the different resource fields. In the development of the items we moved between uses measures and outcome 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. The final short survey instrument for uses is provided in section 3.

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. Economic types of activity were categorised as income (savings and earnings), employment (productivity/promotions/jobs), finance (investments and contracts), and education (grades/degrees).

The uses 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 there are fewer, comprehensive survey items on types of Internet use related to this field. Cultural types of activity consisted of engagement with activities that might be considered ‘low’ and ‘high’ brow, items measuring belonging (i.e. how the Internet facilitates connections to communities of people) and identity (with uses focused specifically on activities related to issues of gender, ethnic, generational or religious identity).

The uses in the social field were based on extensive previous work on political and civic participation and research into strong and weak or bridging and bonding ties. Thus, developing items to measure uses of the Internet associated with bonding and informal networks (personal networks) and bridging (organised/civic networks/political networks) were relatively straightforward and based on a great deal of previous research.

In the personal uses field, the use of the Internet for health and leisure were quite well developed in previous studies. The items we used to measure self-actualisation (e.g. discuss a topic of personal

interest with others online) were measures that have been used in previous studies – but rarely used for this specific theoretical reason.

2.1.2 Information, Social and Creative uses

When designing the survey, we aimed to create measures that ask for different kinds of uses in each of the four fields discussed above. In the development of the items, we included information, social or creative elements for each use type (van Deursen, Helsper & Eynon, 2014). In other words, we conceptualised each use as having three aspects: information finding, engaging with others, and producing some kind of content.

Thus, for example, in the Economic field, when we were measuring income – we included the following three items: 1) Looking for information on the price of a product (e.g. books, holidays, clothes, cars) (informational); 2) Talking to others about the price of a product (e.g. on a forum or online chat) (social); 3) Making an offer on a product (e.g. on eBay, Amazon) (creative). Similarly, for Education, we asked the following three items: 1) Looking for information about a course or course provider (information); 2) Checking others' opinions about a course or place to study (social); 3) Uploading an assignment / piece of work for evaluation (creative).

These distinctions are important, particularly when trying to link types of uses of the Internet with skills to use it and the outcomes of this use (see the outcomes and skills reports).

In developing a set of questionnaire items to measure different types of Internet use we had to make a number of research choices besides classifications according to types of uses. Specifically: whether to use dichotomous or scale response items and where branching would be required in the survey, this is reviewed in the sections below.

2.2 Answer scales for uses: dichotomous versus scale

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 for respondents drop out before the end. 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 Internet uses. Thus, we asked respondents whether they had engaged in an activity using a frequency scale ranging from 1 “never” to 6 “several times per day” as is common in digital inclusion research for the scale items, and asked whether they had undertaken an activity “in the past year” for the dichotomous items. We confirmed through cognitive interviews and statistical testing that it is important to include Don’t Know options.

In general, respondents were more likely to answer the scale questions than the dichotomous questions; response rates for the scale questions were all higher. Thus, we propose that for research purposes the use of scale items is the best way forward particularly as the time to respond to frequency over dichotomous items was not found to be an issue in the cognitive interviews.

2.3 Branching

An important aspect of developing the survey is to ensure that the questions make sense to the respondents. Thus, once socio-demographic data is collected (e.g. about lifestage) the survey questions need to reflect recognition of the respondents current situation. Thus, in the pilot and the full online survey branching techniques were used, so that people were only asked about whether, for example, they used the internet for work if they were actually working.

2.4 Validating the measurement instrument

To test the validity of the measurement instrument a population survey was conducted in the Netherlands on a sample collected over a period of two weeks in July 2014 using an online survey. A representative sample of the Dutch population was obtained using the Dutch panel of PanelClix, a professional international organization for market research that consists of over 108,000 people. This panel consists of a 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%).

The question asked for each use item was: *"How often have you done the following things online in the last year?*". For each (sub)scale the scale score is created by averaging the scores (from 1 to 6) across the items. If someone answered 'don't know' this was recoded into a score of 1 (i.e. 'never').

Confirmatory factor analysis, a standard practice in scale testing and development, was used to test the validity of the proposed uses classification with the four use fields scores and twelve subscales (made up of 36 items). The fit for the pilot and the final questionnaire was good. For the population survey in the Netherlands , the 12-factor solution fit was excellent: $\chi^2(527)=1823.21$; $\chi 2/df=3.46$; SRMR=.04; TLI=.94; CFI=.95; RMSEA=.05 (90% confidence interval=.04, .06). The sub-scales had high internal consistency, a summary of the descriptives and reliabilities of the usage clusters is provided in table 3.1.

3. FINAL QUESTIONNAIRE USES

3.1 Short Version

Our proposal is that a comprehensive uses measurement instrument should have four general categories: Economic, Cultural Social and Individual and twelve subscales (see table 3.1). The items are detailed in the table below. See the full questionnaire for all items that were included in the pilot tests (http://www.lse.ac.uk/media@lse/research/From-digital-skills-to-tangible-outcomes.aspx).

Table 3.1 Descriptives and reliabilities of usage clusters (scale ranging from 1- never to 6-several times per day)

	M	SD
Economic Use – Property (α =.87)	*2.13*	*1.04*
Look for information on how to sell something you own	2.06	1.19
Respond to people's requests for information about a product or service you want to sell	2.14	1.19
Put a product up for sale	2.18	1.10
Economic Use – Finance (α =.86)[2]	*1.83*	*0.79*
Look for information on insurance policies	2.01	0.89
Purchase insurance online	1.71	0.83
Look for information on interest rates	1.77	0.97
Economic Use – Employment (α =.83)	*1.55*	*0.92*
Integrate tools or apps you have downloaded into the way you work	1.58	1.11
Look for a different job online	1.62	1.12
Talk to others online about job opportunities	1.45	0.96
Economic Use – Education (α =.93)	*1.27*	*0.69*
Look for information about a course or course provider	1.32	0.76
Check others' opinions about a course or place to study	1.24	0.69
Download course materials	1.26	0.74
Cultural Use – Identity (α =.67)	*1.81*	*1.05*
Come across information about differences between men and women	1.59	1.11
Come across 'adult' sites with sexual content	1.71	1.17
Interact with people who share your ethnicity	2.14	1.72
Cultural Use – Belonging (α =.71)	*1.53*	*0.79*
Read information on parenting	1.49	0.96
Arrange with other people to go out	1.79	1.14
Log in on a website with religious or spiritual content	1.31	0.87
Social Use - Personal networks (α =.81)	*2.81*	*1.33*
Comment on the updates friends or family put online	2.96	1.64
Talk to family or friends who live further away	2.88	1.61
Share pictures of you with your family or friends	2.57	1.43
Social Use – Formal networks (α =.76)	*1.82*	*0.98*
Look for information (online or offline) on clubs or societies	2.02	1.20
Interact with people who share your personal interests and hobbies	1.92	1.35
Comment about a political or societal issue	1.52	1.03
Social Use – Political networks (α =.83)	*1.83*	*0.78*
Look for information about national government services	2.20	0.90
Ask a representative of a public institution for advice on public services	1.81	0.88
Look for information about an MP, local councilor, political party or candidate	1.48	0.87
Personal Use – Health & Lifestyle (α =.83)	*1.69*	*0.91*
Talk to others about your lifestyle	1.49	1.02
Look up information on how to improve your fitness	1.93	1.03
Ask others about a training program	1.65	1.13
Personal Use – Self-actualization (α =.79)	*1.80*	*0.95*
Exchange information about events or concerts with others	1.65	1.04
Look up information to understand problems or issues that interest you	2.11	1.19
Consult others' opinions on problems or issues that interest you	1.64	1.14
Personal Use – Leisure (α =.68)	*2.88*	*1.29*
Play games	2.90	1.77
Listen to music	2.91	1.64
Watch videos/ TV programs	2.83	1.51

3.2 Shorter version

We suggest that future research at the bare minimum include at least two of the subscales from each of the four fields. However, precisely which fields could vary depending on the core questions of the specific research study. In work that looks at the link between uses and outcomes it is obviously advisable to select the sub-scales which are related to the outcomes measures. For these purposes we have already adapted the items for financial uses[2] to reflect a broader range of everyday uses (See the revised uses questionnaire: http://www.lse.ac.uk/media@lse/research/Research-Projects/DiSTO/Pdf/Uses-Questionnaire.pdf).

Other activities that are worth considering should be those which a large proportion of the population of interest is likely to undertake. This allows the researcher or evaluator to get a clear idea of the breadth or narrowness of engagement with the internet and to account for outcomes that might otherwise not have been considered in more narrow designs of research or interventions. For example, the Employment sub-scale would not be as relevant to groups of retired people. That said, measurement of these uses is relatively stable across different populations, thus the research question is ultimately the guiding factor.

In summary, we have presented here a carefully constructed Internet use survey, that has been tested via cognitive interviews and pilot studies, guided throughout by the Corresponding Fields Model (Helsper, 2012). It can be used independently, or alongside the skills and outcome measures that the research team have developed. We welcome other research teams to use these measures and to contribute to their continued refinement.

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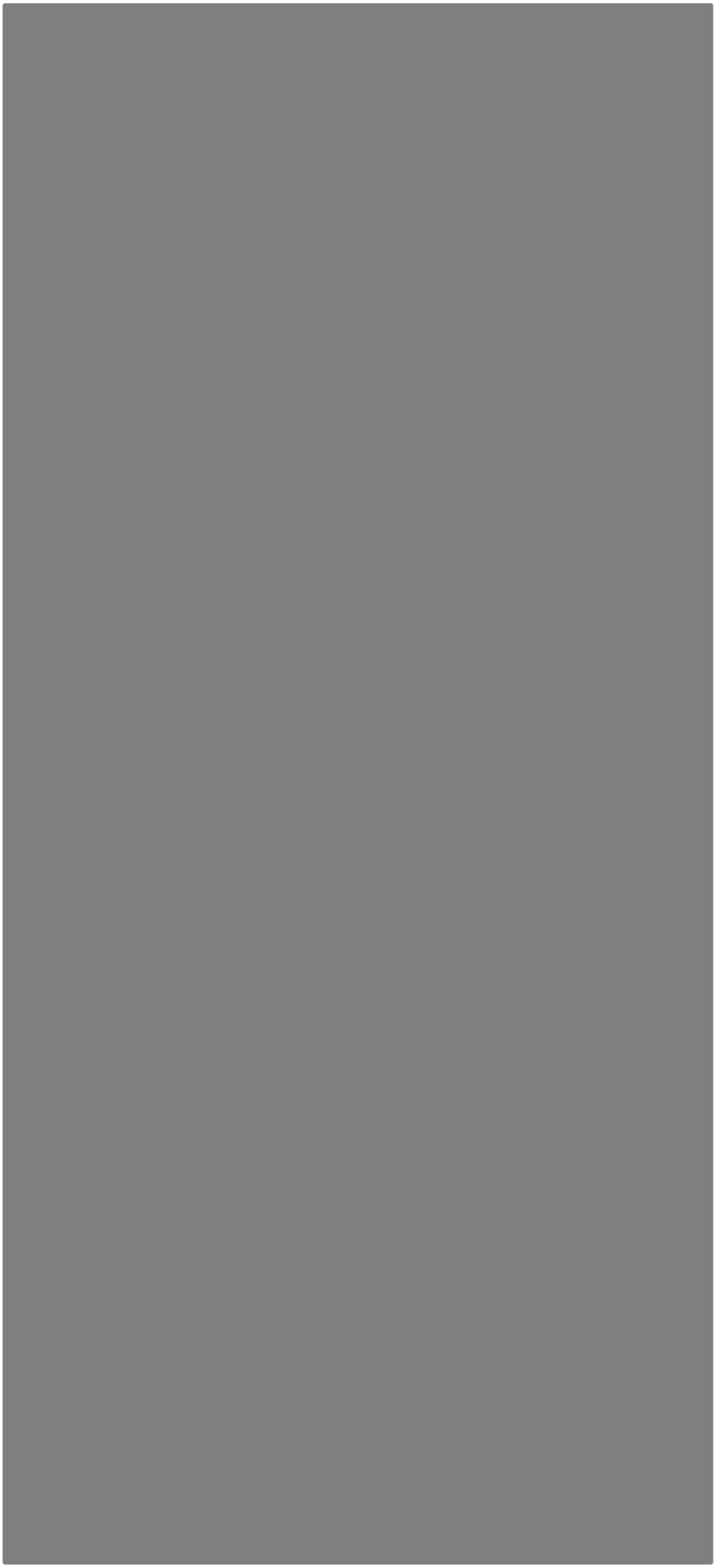
NOTES



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