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Converting Digital Capital in Five Key Life Realms

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Abstract

This article theorizes fresh connections between Bourdieusian social theory, and the digital divide in five key areas: political, economic, cultural, social, and personal digital advantage. In so doing it makes new arguments about how digital resources result in benefits that accrue from the combination of both access to and use of ICTs. In this way, the findings shed additional light on the third level of the digital divide by focusing on the role played by digital capital in influencing the uneven distribution of benefits that derive from the use of the Internet. Based on a structured sample of the UK population, the article adopts the model of digital capital developed by Ragnedda, Ruiu and Addeo (2019). Findings show that varied levels of digital capital are related to engagement in activities that have political, social, economic, cultural, and personal valence. Thus, the study offers compelling evidence of the increasing importance of digital capital in everyday life.

Keywords: Bourdieu, capital, digital divide, digital inequalities, digital capital.

1. Introduction

This paper makes a significant contribution by revealing how competencies and resources work synergistically to extend benefits in multiple life areas. To do this we use the theoretical framework introduced by Ragnedda (2018) and empirically tested by Ragnedda, Ruiu and Addeo (2019), known as digital

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capital. In Bourdieusian terms, digital capital is intended as "a set of internalized abilities and aptitude" (digital competencies) as well as "externalized resources" (digital technology) that can be "accumulated and transferred from one arena to another" (Ragnedda, 2018).

More specifically, this paper investigates the different outcomes in five key life realms (social-political-economic-personal-cultural) that might derive from uneven possessions of digital capital. The unequal distribution of tangible benefits that individuals can get from the use of ICTs, gives rise to what has been recently recognised as the third level of the digital divide (van Deursen, Helsper, 2015; Ragnedda, 2017). This new level of digital divide refers to specific types of inequalities that add to the two existing levels of the digital divide, namely inequalities in access to ICTs (the first level) and inequalities in using ICTs (the second level). While scholars have developed several approaches to study the first level of the digital divide – different qualities and types of access (Lenhart, 2000; Ono, Zavodny, 2003) – and the second level of the digital divide, e.g., different digital competence (Micheli, 2015; Blank, Groselj, 2014), the third level remains under-studied. This article fills this gap in the literature, by exploring the inequalities in tangible outcomes, contributing towards understanding the third level of the digital divide. By using digital capital as a holistic variable (Ragnedda, Ruiu, 2020) that encompasses both digital competencies (information, communication, safety, content creation, and problem solving) and digital technologies (quality and type of access), this article offers a more sophisticated examination of how access and use of the Internet impact on the offline realms. Specifically, this paper attempts to answer the following research question:

To what extent does digital capital influence the tangible outcomes that individuals achieve from accessing and using the Internet?

To answer this research question, we first provide the general theoretical background that underpins this research, by introducing the concept of digital capital, illustrating the development of digital inequalities, and then formulating five main hypotheses related to the main research question. The third section describes the methods used to collect and analyse the data, while the fourth section reports the results of our study. Finally, before drafting some conclusions and underlining some of the limits of our research, we will discuss and unpack the implications of the research.

2. Theoretical background

There has been considerable research into the different levels of digital inequality. We can distinguish three levels in research on the digital divide. The

first one focuses merely on the differences in users' access to the Internet by looking at the influence of gender (Hargittai, 2010; Ono, Zavodny, 2003, 2007), income (Witte, Mannon, 2010), level of education (Hale, Cotten, Drentea, Goldner, 2010) and ethnicity (Mesch, Talmud, 2011; Ono, Zavodny, 2008). This approach is essential for outlining a binary division between people who access the Internet and people who are excluded (Lazarus, Mora, 2000; Norris, 2001; Wilson et al., 2003). However, this approach is not sufficient to capture the multiplicity of situations that characterise a society with a high level of Internet penetration. To overcome these limits, at the second level researchers go beyond mere accessibility, by recognising differences in use of the Internet (van Dijk, 2005). Thus, an increasing number of studies have begun to explore, both theoretically and empirically, the different inequalities in Internet usage by analysing how existing socioeconomic and demographic patterns determine digital skills (Litt, 2013), digital literacy (Martín, Tyner, 2012) and influence how people use the Internet (Blank, Groselj, 2014; Haight, Quan-Haase and Corbett, 2014; Tondeur et al., 2010). These approaches, commonly known as the second level of the digital divide (Ragnedda, Muschert, 2013), have been at the centre of digital inequalities studies in the past decades.

However, even though this second dimension focuses on the types of Internet usage in addition to simple access to ICTs, it cannot exhaustively describe the heterogeneity of results that Internet usage can produce. In fact, given the same starting access conditions (first level of digital equality) and similar activities carried out online (second level of digital equality), users might still achieve different outcomes when using ICTs in terms of benefits and advantages. Despite these uneven distributions of tangible outcomes, only recently have some scholars started to debate the concept of the third level of the digital divide (Wei et al., 2011; van Deursen, Helsper, 2015; Ragnedda, 2017). The third level focuses on the different advantages and disadvantages that uses of the Internet may have on users, and the real impact that different types of access and uses may have in people's real lives. However, the introduction of a new concept related to disparities in outcomes does not mean that the inequalities determined by the first two levels have disappeared. Therefore, the review of these three levels of the digital divide (Ragnedda, 2017) highlights the need for a comprehensive concept that might help both policymakers and researchers in simplifying the identification of those factors that influence the intertwined relationship between social and digital inequalities (Ragnedda, Ruiu, Addeo, 2019). This paper moves in this direction by considering how digital capital, intended as a specific capital, may influence what individuals get from accessing and using ICTs. By using Ragnedda and Ruiu's (2020) theoretical and empirical construction of digital capital as a bridging capital, this paper aims to investigate how and to what extent this

capital enhances life chances (Weber, 1949) in economic, cultural, political, social, and personal terms.

Digital capital has been theorized and operationalised as a specific capital and, at the same time, intertwined with five other forms of capital, namely social (Bourdieu, 1983; Coleman, 1990; Putnam, 1995), political (Mouzelis, 1995; Syed, Whiteley, 1997), economic (Bourdieu, 1983), personal (Becker, 1996; Dei Ottati, 1994) and cultural capitals (Bourdieu, 1983). The concept of digital capital is intended in Bourdieusian terms, whereby he conceived of capital as any resource that might give an advantage and empower those who own it (Bourdieu, 1986). Differently from Tapscott, Lowy, and Ticoll (2000) and Roberts and Townsend (2015), the concept of digital capital is used beyond its economic terms, to analyse how digital technologies (externalized resources) and digital competencies (internalized resources) are used to foster individuals' life chances. Furthermore, in contrast to previous studies that refer to information technology as an attribution of cultural capital (Emmison and Frow, 1998; Paino and Renzulli, 2013), here we adopt digital capital as a specific capital. More importantly, for the sake of this research, we are embracing digital capital not only in conceptual terms, as several other researchers who introduced new capitals have done – e.g., technocultural capital (O'Keeffe, 2009), techno-capital (Rojas et al., 2012), information capital (Hamelink, 2000), and informational capital (Prieur, Savage, 2013) – but also because this concept has been already operationalised and empirically tested (Ragnedda, Ruiu, Addeo, 2019).

3. Hypotheses

Moving from this theoretical and empirical framework and exploring its role in determining the benefits users might obtain by using ICTs, we hypothesise that the level of digital capital each individual possesses positively contributes to the tangible outcomes they get from accessing and using the Internet. To dig deeper and shed light on this interaction, this article will test and discuss five hypotheses.

H1. Digital Capital positively contributes towards increasing tangible social outcomes.

Previous research found that the use of the Internet positively affects social outcomes (see Williams, 2004 for a review), such as, for example, opportunities for socialization (Ainin et al., 2015; Haddon, 2000) creation of weak ties (Hampton, 2003; 2011), and reinforcement of bonding ties (Meredyth et al., 2002). Following this path, we are suggesting that those with higher levels of digital capital are more likely to use the Internet to enlarge their social networks in both bonding and bridging terms.

H2. Digital Capital positively contributes towards increasing financial/income outcomes.

The literature shows a positive relationship between increasing technological penetration and financial inclusion, including access to micro-credit and insurance (Kauffman, Riggins, 2012), especially in developing countries (Andrianaivo, Kpodar, 2011; Diniz, Birochi, Marlei, 2012). Moreover, higher skills in ICTs are associated with comparative capabilities in online shopping (De Kervenoae, Hallsworth, Elms, 2014; Kuoppamäki, Taipale, Wilska, 2017) and higher possibilities of finding better jobs (Dillahunt et al 2016; Garg, Telang, 2017). However, those with fewer digital skills were also found to be disadvantaged in finding employment (Dillahunt et al., 2016; Jen et al., 2014) and accessing services online due to a higher perception of barriers and insecurity (Kwon, Noh, 2010; Lian, Yen, 2014). These findings suggest that both access and skills simultaneously play a role in increasing financial/economic benefits for users. Therefore, we are suggesting that a higher level of digital capital positively influences tangible outcomes in the economic field.

H3. Digital Capital positively contributes towards increasing political outcomes.

This hypothesis is based on previous studies that have analysed how the use of the Internet and social media influences political engagement, even though these studies show contrasting results. Some scholars suggest a negative association between the use of the Internet and political activities/engagement (Boulianne, 2009; Valenzuela, et al., 2009), while others, in contrast, highlight a positive association between the use of ICTs and political activities (DiMaggio et al., 2004; Hendriks et al., 2004). Following this last line of research and by using digital capital as a holistic concept that includes both technologies used to access and competencies in using the Internet, we are suggesting that increasing the first, will also increase political outcomes.

H4. Digital Capital positively contributes towards increasing personal outcomes.

Scholars have underlined how use of the Internet has a positive association with specific types of entertainment (Baric et al., 2016; Zacha, Lissitsa, 2016; Zhou, Fong, Tan, 2014). In referring to personal outcomes, we include all activities that are related to lifestyle, fitness, or health issues. In this vein, and by following previous studies that have outlined a trend in using the Internet for health information (Cole, Watkins, Kleine, 2016; Wartella et al., 2016) or daily physical activities (Edwards et al., 2016; Maher et al., 2016), we are suggesting a positive association between digital capital and personal outcomes obtained by using the Internet.

H5. Digital Capital positively contributes towards increasing cultural outcomes

We are moving along the lines of previous research that investigated the importance of digital media in reinforcing cultural activities (Nesta, 2017). We assume that digital capital is a specific capital and not an outset of cultural or social capital, and therefore we are investigating its influence on cultural outcomes. Therefore, while some studies have defined and intended digital experience as individual "techno-dispositions" (Rojas et al., 2004) and/or a mere indicator of cultural capital (Roscigno, Ainsworth-Darnell, 1999; Vryonides, 2007), here we hypothesise that digital capital contributes towards increasing cultural outcomes. This is despite, as per political engagement and use of ICTs, the results of previous analyses which are not univocal.

4. Research method

4.1 Data

The data used in this article were collected through an online survey of adults living in the United Kingdom (UK). The sample is representative of the UK population with reference to gender, age, income, and education. The sample size (868 respondents) was calculated with a 3.33% margin of error at a 95% confidence level. Toluna, a professional organization for market research created the sample by extracting respondents from its online panel members. The online survey was conducted from January 7 to February 6, 2019, with 868 completed. The survey focused on people's attitudes toward ICTs, whether they used the Internet, and what they did online. It also included information about the socioeconomic characteristics of respondents (income, age, educational attainment, and gender, etc.) and their offline activities.

The sample (see table 1) had the following composition:

TABLE 1. Sample demographics (n=868).

		Count	**%**
Gender	Male	434	50.0
	Female	434	50.0
Age	18-24	94	10.8
	25-34	151	17.4
	35-44	141	16.2
	45-55	157	18.2
	55+	325	37.4
Education	Some high school, no diploma	94	10.8
	High school graduate	222	25.6
	Some college credit, no degree	206	23.7
	Bachelor's degree	248	28.6
	Master's degree	68	7.8
	Doctorate degree	30	3.5

The online survey used software that checked for missing responses and then prompted users to respond. The survey was pilot tested with 20 Internet users over two rounds. Amendments were made based on the feedback provided.

4.2 Data analysis and measure

Following the operational definition provided by Ragnedda, Ruiu and Addeo (2019), digital capital was articulated into two components: digital access and digital competence. The first includes *digital equipment* (devices used to access the Internet), *connectivity* (quality and location of Internet access) the *time spent online*, and the availability of *support and training* in using the Internet (tab. 2).

TABLE 2. Digital Access: operational definition.

Sub-component	**Description**	**Items or modalities**	**Collection**	**Measure**
Digital equipment	Devices used to access the Internet	Mobile phone or smartphone; Laptop or netbook; Tablet computer; Desktop computer; Media or game players; Smart TV; Other devices (e.g., e-book reader, smartwatch)	Multiple response set	Nominal
Connectivity	Quality and place of access	In which of the following settings do you most frequently access the Internet?	Multiple response set	Nominal
Time spent online	First time using the Internet	How old were you when you used the Internet for the very first time?	Open question	Scale
Support and training	Request for help, formal training received, and help offered	Have you ever had any formal training in using Internet? If you needed help, would there be someone who could help you with using the Internet? Have you looked or asked for help to use the Internet in the past three months? Have you helped someone use the Internet in the past three months?	Closed question	Nominal

Following the DigComp 2.1 identified within the European Digital Competence Framework for Citizens (Carretero et al., 2017), the second component (tab. 3) refers to five individual abilities: *information and data literacy*, *communication and collaboration*, *digital content creation*, *safety,* and *problem solving.*

TABLE 3. Digital Competence: operational definition.

Sub-component	**Description**	**Items or modalities**	**Collection**	**Measure**
Information and data literacy Cronbach's Alpha =.713	Browsing, searching, filtering data, information, and digital content	I am confident in browsing, searching and filtering data, information and digital content	Likert Scale - Not at all true of me - Not very true of me - Neither true nor untrue - Mostly true of me - Very true of me	Scale
	Evaluating data, information and digital content	I regularly verify the sources of the information I find		
	Managing data, information and digital content	I regularly use cloud information storage services or external hard drives to save or store files or content		
Communication and collaboration Cronbach's Alpha =.778	Interacting through digital technologies	I actively use a wide range of communication tools (e-mail, chat, SMS, instant messaging, blogs, micro-blogs, social networks) for online communication	Likert Scale - Not at all true of me - Not very true of me - Neither true nor untrue - Mostly true of me - Very true of me	Scale
	Sharing through digital technologies	I know when and which information I should and should not share online		
	Engaging in citizenship through digital technologies	I actively participate in online spaces and use several online services (e.g., public services, e-banking, online shopping)		
	Managing digital identity	I have developed strategies to address cyberbullying and to identify inappropriate behaviours		
Digital content creation Cronbach's Alpha =.828	Developing digital content	I can produce complex digital content in different formats (e.g., images, audio files, text, tables)	Likert Scale - Not at all true of me - Not very true of me - Neither true nor untrue - Mostly true of me - Very true of me	Scale
	Integrating and re-elaborating digital content	I can apply advanced formatting functions of different tools (e.g., mail merge, merging documents of different formats) to the content I or others have produced		

	Copyright and licences	I respect copyright and licences rules and I know how to apply them to digital information and content		
	Programming	I can apply advanced settings to some software and programs		
Safety Cronbach's Alpha =.732	Protecting devices	I periodically check my privacy settings and update my security programmes (e.g., antivirus, firewall) on the device(s) that I use to access the Internet	Likert Scale - Not at all true of me - Not very true of me - Neither true nor untrue - Mostly true of me - Very true of me	Scale
	Protecting personal data and privacy	I use different passwords to access equipment, devices and digital services		
	Protecting health and well-being	I am able to select safe and suitable digital media, which are efficient and cost-effective in comparison to others		
Problem solving Cronbach's Alpha =.903	Solving technical problems	I am able to solve a technical problem or decide what to do when technology does not work	Likert Scale - Not at all true of me - Not very true of me - Neither true nor untrue - Mostly true of me - Very true of me	Scale
	Identifying needs and technological responses	I can use digital technologies (devices, applications, software or services) to solve (non-technical) problems		
	Creatively using digital technologies	I am able to use varied media to express myself creatively (text, images, audio and video)		
	Identifying digital competence gaps	I frequently update my knowledge on the availability of digital tools		

Following Ragnedda, Ruiu and Addeo's method (2019) we created a composite index of Digital Capital by performing three sequential steps. First, we created a Digital Access Index by combining the sets of questions[1] related to digital equipment, connectivity, time spent online, and support and training (Table 2); then a Digital Competence Index was developed through a two-stage

[1] The multiple response questions belonging to this set were treated as dummy variables and summarised into single variables. These four variables were then included in a factor analysis to test the operational definition of Digital Access and to develop an index to measure it.

Principal Component Analysis approach (Di Franco, Marradi, 2013)[2]; finally, the two indices were combined into a Digital Capital Index, measured on a scale from 0 to 100.

Once the Digital Capital Index (DCI) was created, the second step of our research aimed at measuring the tangible outcomes in each outcomes' domain: social, cultural, political, personal, and economic. The operational definition of the tangible outcomes relies on five different and separate sets of items (see table 4), measured with a 5-point Likert scale from "Strongly Disagree" to "Strongly Agree". To capture the role the Internet played in improving their life chances in all five life realms, respondents were asked to reply to the following question: *"Thinking about your online activities in the past 12 months, how much do you agree or disagree with the following statements? Internet has improved my capacities to..."*. We performed a FA to extract a single factor from each separate set of items.

TABLE 4. Tangible outcomes: operational definition.

Sub-component	**Items**	**Collection**	**Measure**
Political Cronbach's Alpha =.897	Look for information about national government services Look for information about an MP, local councillor, political party, or candidate Ask a representative of a public institution for advice on public services Organise a claim and/or protest Launch or sign a petition	Strongly disagree Disagree Neither agree or disagree Agree Strongly agree	Ordinal
Economic Cronbach's Alpha =.816	Sell something I own Expand my business activities Look for information on insurance policies Look for information on interest rates Look for a better job	Strongly disagree Disagree Neither agree or disagree Agree Strongly agree	Ordinal
Cultural Cronbach's Alpha =.899	Find a course or course provider Interact with and understand other cultures Check others' opinions about a course or place to study Learn or practice a new language Read new books or articles	Strongly disagree Disagree Neither agree or disagree Agree Strongly agree	Ordinal

[2] The two-stage Principal Component Analysis approach works in this way: in the first stage a whole set of indicators is analysed in order to highlight a meaningful set of variables. In the second stage, a new principal component analysis is carried out using only those variables with the highest factor loadings. The procedure ends when a single component is extracted because it synthesises the highest quota of total variance and the majority of variables with higher factor loadings (Di Franco, Marradi, 2003; Ragnedda, Ruiu, Addeo, 2019).

Social Cronbach's Alpha =.851	Keep in touch with family who live further away Keep in touch with friends who live further away Enlarge my network and meet new friends Look for information on clubs or societies Interact with people who share my personal interests and hobbies	Strongly disagree Disagree Neither agree or disagree Agree Strongly agree	Ordinal
Personal Cronbach's Alpha =.870	Improve and change my lifestyle Improve my fitness Ask others about a training program Improve my understanding about problems or issues that interest me Consult others' opinions on problems or issues that interest me	Strongly disagree Disagree Neither agree or disagree Agree Strongly agree	Ordinal

Table 5 sums up the results of the FA applied to each set of items; the five factorial solutions are condensed in a single table for the sake of conciseness.

The factorial results were first evaluated using the Kaiser criterion (1960) of extracting only those factors which have *eigen values* of one or more. The results showed that, per each set of items, the extraction of one factor was appropriate to represent every single factorial solution, with very good values of variance explained ranging from 57.8% (tangible economic outcome) to 71.5% (tangible cultural outcome). Moreover, all the factor loadings are over .700, and this is considered an excellent value (Comrey, Lee, 1992; Tabachnick, Fidell, 2007), suggesting that all the selected variables contribute to defining the related factor. Finally, the results of the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity assure that the factorial solutions are statistically significant, i.e., the sample is adequate and there is a strong relationship among the variables in each set of items. Moreover, all the Cronbach's Alpha coefficients are higher than 0.800, meaning all the items, in each set, have high internal consistency and that the measures are reliable.

After all the statistical tests the "regression method" function in SPSS was used, all the items that represented each factor were then combined into five indexes representing the different tangible outcomes: political, economic, cultural, social, and personal.

Finally, the third step was to evaluate the relationship between DCI and the five tangible outcomes. By using correlation analysis, we verified the presence, strength, and direction of a statistical association between the DCI and tangible outcomes. The results of the correlation analysis are summarized in table 6.

TABLE 5. Tangible outcomes: factor analysis of each set of questions.

Tangible outcomes	**Items**	**Factor Loadings**
Political Cronbach's Alpha =.897 Total Variance Explained: 71.2%	Look for information about national government services	.781
	Look for information about an MP, local councillor, political party, or candidate	.884
	Ask a representative of a public institution for advice on public services	.890
	Organise a claim and/or protest	.852
	Launch or sign a petition	.807
Economic Cronbach's Alpha =.816 Total Variance Explained: 57.5%	Sell something I own	.770
	Expand my business activities	.802
	Look for information on insurance policies	.711
	Look for information on interest rates	.779
	Look for a better job	.736
Cultural Cronbach's Alpha =.899 Total Variance Explained: 71.5%	Find a course or course provider	.890
	Interact with and understand other cultures	.861
	Check others' opinions about a course or place to study	.905
	Learn or practice a new language	.846
	Read new books or articles	.712
Social Cronbach's Alpha =.851 Total Variance Explained: 62.7%	Keep in touch with family who live further away	.741
	Keep in touch with friends who live further away	.772
	Enlarge my network and meet new friends	.830
	Look for information on clubs or societies	.781
	Interact with people who share my personal interests and hobbies	.831
Personal Cronbach's Alpha =.870 Total Variance Explained: 66.2%	Improve and change my lifestyle	.797
	Improve my fitness	.794
	Ask others about a training program	.795
	Improve my understanding about problems or issues that interest me	.835
	Consult others' opinions on problems or issues that interest me	.844

TABLE 6. Correlation Analysis between Digital Capital Index and the Tangible Outcomes.

Tangible Outcomes	Correlation with the Digital Capital Index
Political	.385**
Economic	.532**
Cultural	.566**
Social	.535**
Personal	.510**

** Correlation is significant at the 0.01 level (2tailed).

5. Results and discussion

This study aimed to examine the relationship between digital capital and inequalities in tangible outcomes, known as the third level of the digital divide. Based on the convertibility of capital, on which Bourdieu has extensively written, we aimed to test how digital capital might be "converted" into outcomes in five areas: economic, social, cultural, political, and personal. Following this theoretical approach, we assumed that as, for instance, economic capital may be converted into cultural or social outcomes (Swartz, 1997) and conversely social or cultural capital may be converted into economic outcomes, digital capital might follow the same path: those with a higher level of digital capital could convert it into economic capital, by, for instance, finding a new job, increasing salary or expanding their business through the use of the Internet. This applies to all five domains/outcomes we examined. Hence, it may be legitimate to hypothesise that high levels of digital capital may convert into other forms of capital, even though this hypothesis needs to be further tested through more predictive models.

Overall, the meta-hypothesis that digital capital contributes positively to life-enhancing activities is confirmed by our data. It is indeed clear that individuals with a higher level of digital capital, on average, tend to get the most out of the Internet. The correlation analysis shows that digital capital has strong and significant positive relationships with all tangible outcomes, showing that people who have higher levels of digital capital are more likely to benefit more from using the Internet in the five key life realms considered. This is particularly interesting if we consider the conceptualization of digital capital as a bridging capital that tends to transfer previous online capitals first, thus influencing inequalities in Internet use (Ruiu, Ragnedda, 2020), and then helps in reinforcing such capital through the use of the Internet. This process, known as the "double-loop process" (Ragnedda, Ruiu ,2020), shows the intertwined relationship between social and digital inequalities, by allowing previous inequalities to be first transferred into the digital realm (the first part of the bridge, from social to digital), and then further exacerbated through the use of ICTs (the second part of the bridge, from digital to social).

Our research makes a new contribution by looking at the second part of the bridge, namely how individuals tend to reinforce their offline capitals and resources by using the Internet. More specifically, in terms of the five hypotheses proposed, our first hypothesis, namely that digital capital positively contributes to social capital-enhancing activities, is confirmed. As Table 3 shows, those who have a higher level of digital capital tend, on average, to have higher social engagement: the Internet is used to reinforce offline relationships or maintain social relationships which otherwise would be lost and to enlarge

their social network by creating connections based on shared interests which overcome geographical boundaries. This is in line with and reinforces previous studies that have shown how social activities, such as developing social ties and larger social networks (Heo et al., 2014; Lennon, Rentfro, Curran, 2011; Smith, Brenner, 2012) and use of the Internet are interrelated and influence each other. In this sense, it may enable bonding and bridging social capital.

In the same way, the results show that digital capital contributes positively to economic capital-enhancing activities, thus confirming the second hypothesis. This data is not surprising since several studies have proven how access to and use of the Internet enhance, on average, economic capital (Nadkarni, Hofmann, 2012; Digital Economy and Society Index 2020). Our research moves on this path and confirms and reinforces these previous studies, stressing how those with higher digital capital tend to use the Internet to reinforce their market position by opening up to the transactional labour market, looking for career advancements, enhancing work efficiency, and business opportunities. Digital capital impacts economic capital by allowing new opportunities for people to engage in micro-business practices or enhancing existing business, as well as to use their information seeking to enhance their financial situations via job seeking or using digital literacy for economic information.

Our third hypothesis, namely that digital capital contributes positively to political capital-enhancing activities, is also confirmed. Previous results were not univocal on this point. As already mentioned, some scholars underlined a positive association between the use of the Internet and political engagement or activities (Krueger, 2002; Polat, 2005), while, at the same time, other researchers found a negative association (Baumgartner, Morris, 2010; Fenton, Barassi, 2011). By using digital capital as a holistic variable, we found a positive association between it and political enhancing activities. This result is particularly important since it shows that it is the combination of quality and types of access and digital competencies that positively influence political engagement. Here we see that while the Internet does not determine political behaviour, it affords individuals agency in terms of information seeking in two ways - services and political entities, it creates innovative change in public communication in the direction of participatory democracy, it allows networking among different actors in a public space, a more dialogic relationship with public and political actors, higher engagement in public discourse and activism, and resistance via protest or petition.

Furthermore, the results of our research also show how digital capital contributes positively to personal capital-enhancing activities. Indeed, on average those individuals with higher digital capital, said they had improved their lifestyles, fitness, and their understanding of problems or issues of interest

thanks to the use of the Internet. A higher digital capital has, therefore, a positive influence on quality of life. Again, the Internet expands individual agency by empowering individuals to improve their lifestyles, fitness, and training, as well as to improve understanding of social issues and communicate with others about them.

Finally, our last hypothesis on the influence of digital capital over cultural capital-enhancing activities is also confirmed. Our results show that on average those with higher digital capital tend, for instance, to learn or practice new languages or understand and interact with other cultures and find a course provider, compared to their counterparts. The role played by digital capital is therefore vital in enhancing cultural capital activities. Here, the different access to and uses of the Internet open the door to educational opportunities, seeking ratings of educational experiences, expanding cultural horizons and language abilities, and consuming new media products.

Overall, these results add to those of experimental research in the area (van Deursen, van Dijk, 2014; Ragnedda, 2020), by showing that individuals with a higher level of digital capital tend to maximize and capitalize from using ICTs, reinforcing and enhancing capitals by using the Internet. Therefore, we might argue that it is not enough to access and use the Internet to improve quality of life, but it is necessary to have a high level of digital capital to capitalize from the use of the Internet.

6. Conclusions and implications

By showing the range of outcomes across five different life realms we presented empirical evidence demonstrating how digital capital positively influences the outcomes individuals get from using the Internet in different ways and to different degrees. By exploring how digital capital interacts with different tangible outcomes, this investigation showed that the combination of both access and competence is positively associated with outcomes in political, social, economic, cultural, and personal arenas. In this way, we filled a gap in the literature, by empirically measuring the uneven distribution of tangible outcomes known as the third level of the digital divide. More specifically, this paper proved how the individual's level of digital capital positively determines the tangible outcomes users get from accessing and using ICTs, thus confirming the overall hypothesis that those with high levels of digital capital tend to use the Internet for capital-enhancing activities, more so than their counterparts.

We have also shown how digital capital, both in theoretical and empirical terms, is important in the studies that attempt to highlight both inequalities in using ICTs (Ruiu, Ragnedda, 2020) and inequalities in social benefits individuals

gain from accessing and using ICTs. In this vein, our data further reinforces the so-called double-loop process, thus empirically testing digital capital's conceptualization. Indeed, the bridging nature of digital capital is proven by the fact that those with higher offline capital tend to have a higher level of digital capital and at the same time those with higher digital capital tend to further reinforce the five capitals (political-social-cultural-personal-economic) by using the Internet for capital-enhancing activities. This is in line with previous research that has highlighted how socioeconomically advantaged individuals gain greater tangible benefits from digital technologies (van Deursen, Helsper, 2015; Davis, 2020).

This research has both theoretical and practical implications. Theoretically, the association between digital capital and tangible outcomes legitimizes it as a specific form of capital. Practically, this research offers a first step in unpacking open questions related to inequalities in tangible benefits individuals get from using the Internet, by not only describing the reciprocal influences between digital and social inequalities but also by identifying an element which policymakers interested in reducing both digital and social inequalities can work on. Indeed, digital inclusion projects can help in reducing the third level of the digital divide by enhancing digital capital and providing assistance in using ICTs to get some tangible results. Furthermore, by monitoring individuals' digital capital, policymakers, charities and foundations can identify which area needs intervention the most and, therefore, tailor their intervention to citizens' needs. By enhancing the level of digital capital that individuals possess, it would be possible to both reduce inequalities in Internet usage and in tangible outcomes, thus reducing the second and third levels of the digital divide. In this direction, the adoption of a Digital Capital Index might simplify policy monitoring, evaluation, and intervention to tackle both digital and social disparities.

However, this research is not without limitations. First, it is based on the United Kingdom, a country with a high level of digital penetration. Findings may be different in different contexts, particularly in developing countries. Thus, cross-country studies are needed to investigate the level of digital capital and its outcomes. Second, to explore the "double-loop" and the role of digital capital in bridging and reinforcing other capitals, a structural equation model may be implemented. Future research may also use more nuanced measures of capital-enhancing activities, by including other variables that might better capture the different outcomes and social benefits individuals get from using ICTs.

To conclude, the results of this study also highlight the need for future research to further explore the interdependencies between digital capital and the five capitals as manifested in usage and creation by traditionally underrepresented groups such as women (Lindner et al., 2015; Lindner,

Schulting, 2017). Additional important tasks for future inquiry would be to tease apart local, regional, national, and international trends, especially in terms of politics (Lindner, Houle, 2020) and sociality.

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