

# A CONCEPTUAL STUDY OF THE FACTORS INFLUENCING E-INCLUSION

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## Abstract

*With the advancement of the Internet and supporting Information and Communication Technologies, e-inclusion has emerged as an effective means to create opportunities for all and to further individual autonomy and capability in terms of using online services offered by public agencies. The aim of this paper is to offer a critical discussion on the role of e-inclusion from the user perspective, which goes beyond the demographic factors when adopting e-government services. Further, this paper explains the fundamental differences between digital divide and e-inclusion and examines why research focus is now shifting towards studying e-inclusion rather than digital divide in Europe. Through a conceptual analysis the authors examine the relationship between social inclusion and e-inclusion and how they contribute towards promoting the use of ICT to overcome exclusion and improve economic performance, employment opportunities, quality of life, social participation and cohesion.*

**Keywords:** E-Government, e-Inclusion, Social Inclusion, Digital Divide

## 1 INTRODUCTION

While commercial enterprises have been exploiting the business opportunities offered by the Internet for some time by engaging in e-business activities, public sector organizations have until recently failed to capitalize on the potential benefits of e-enabling their services. However, this notion is now beginning to change with many governments initiating e-government projects with a view of offering better and more accessible services to citizens (Al-Busaidy and Weerakkody, 2009; Al-shafi and Weerakkody, 2010). This shift has been facilitated largely as a result of the availability of innovative and cost effective ICT solutions and the evolution of the Internet. One of the major rationales behind the ICT revolution and government efforts towards e-government implementations is to help overcome the gap between the ICT presence in capital cities and the limited use of ICT particularly among indigenous people in rural areas (Wilhelm, 2004).

Achieving a more inclusive information society is one of the key ambitions in information society policy and this is why inclusion and its related themes are of global concern. The information society should be open, inclusive and accessible to all citizens (Wright and Wadhawa, 2009). Digital divide has been a major topic in information society and e-government research for over a decade (Carter and Bélanger, 2005). As information technology, the Internet and e-government become more and more important, governments cannot ignore the fact that there are segments of the population excluded from getting the benefits of using the Internet and associated e-government services. In addition, citizens' adoption of e-government services has been less than satisfactory in most countries (Al-Shafi and Weerakkody, 2010). Consequently, progress in e-Inclusion is still lacking and in some cases even widening in many countries (Bentivegna and Guerrieri, 2010). Helsper (2008) argues that Technological forms of exclusion are a reality for significant segments of the population, and for some

people; they reinforce and deepen existing disadvantages. However, there has been little research to examine these disadvantages and as such few sources of published normative literature exist that identifies the various issues influencing e-Inclusion. Although previous studies have been done to examine digital divide in the context of e-government, we found no evidence of studies that have effectively conceptualised e-Inclusion beyond the various funded research projects and reports published by the European Commission. These projects and reports have been influenced by the fact that in the European context the emphasis has recently moved from digital divide to e-Inclusion to guarantee equal access and effective participation in the various electronic services offered by government agencies in the information society. In this respect, many arguments are presented particularly by European researchers and the European Commissions to move the research focus from digital divide to e-Inclusion. In particular, the limitations of the term 'digital divide' have been criticized because it is essentially centred on the element of access neglecting the advantage of other equally important factors. Covering these factors therefore will help in designing and developing better e-government services that meet the needs of all citizens irrespective of age, gender or other demographic variable. It is argued that such a focus will enhance e-Inclusion and consequently result in social inclusion in European countries. Given this context, the aim of this paper is to formulate a conceptual taxonomy to capture the key factors that need to be considered from an individual citizen's perspective to ensure e-Inclusion in the context of e-government adoption and diffusion.

To explore the above arguments, this paper is structured as follows. The next section discussed the contextual aspects of e-Inclusion as published in the literature in addition to European policies and strategies supporting e-inclusion. This is followed by a brief discussion of how e-Inclusion influences e-government. Next, various theories and models in e-Inclusion are presented. In section six, a conceptual taxonomy of the factors influencing e-Inclusion is offered. The paper then concludes by discussing the most salient issues currently influencing e-government implementation.

## **2 LITERATURE: FROM DIGITAL DIVIDE TO E-INCLUSION**

In previous studies, digital divide was merely considered as a problem of lack of access or lack of usage. This view has recently changed; it has become clear that such a dual approach no longer reflects the complexity and multileveled character of digital divide. Researchers have argued that there is no longer one digital divide but many digital divides that often coincide (Barzilia-Nahon, 2006; Brotcorne and Valenduc, 2008; DiMaggio et al., 2001; Hargittai, 2004; Livingstone and Helsper, 2007; Selwyn, 2004; Van Dijk, 2005; Warschauer, 2003). Consequently, several questions arise. What has effectively changed and how should today's digital divide be conceptualized. There are many reasons behind the call for changing the terminology from digital divide to e-inclusion. First, the word divide brings the idea that *digital divide* is a static phenomenon that hardly changes in time, which in reality is clearly not the case. It is a dynamic phenomenon that changes whenever technology changes and it is obvious that the technology is changing rapidly. In addition, access, usage and skills related to ICT are changing continuously (Frissen, 2000; Van Dijk, 1999, 2005). It has also been argued that digital divide is only about focusing on access to online services by the 'have' or 'have not'. However, as more people are now online, it becomes more likely that the disparities between access to online services caused by material factors have decreased significantly. For instance, prices for computers and other ICT resources have dropped significantly in recent years and for most households the material access barrier no longer exists (Marien, 2007; Marien and Audenhove, 2010; Van Dijk, 2005). Consequently, the remaining fraction of non-adopters of online services are either hard to convince, under skilled, lacks the financial resources or simply have other barriers. Another reason is the policies that were successful in increasing Internet penetration in the early days may no longer be appropriate especially in countries where the majority of people are already connected to the Internet. The last reason is aging; societies around the world tend to age and senior citizens are often excluded from access to modern information technology (Anderson and Hussey, 2000). Different researchers therefore call for change in terminology and bring forward the notion of digital inequality or e-inclusion which is a more positive connotation (Brotcorne et al., 2010; DiMaggio et al., 2004; Hargittai, 2003, 2004; Selwyn, 2004; van Dijk, 2005).

E-Inclusion has been defined in different ways. The eEurope advisory group defines e-inclusion as the effective participation of individuals and communities in all dimensions of the knowledge-based society and economy through their access to ICT, made possible by the removal of access and accessibility barriers, and effectively enabled by the willingness and ability to reap social benefits from such access. Other researcher such as Kaplan (2005) focuses on the policies that enhance participation in society by means of ICT. But essentially it refers to the inclusion of the citizens within the information society at all levels (social relationships, work, culture and political). Table 1 outlines various strategies that have been proposed in the last decade by the European Commission to promote ‘e-Inclusion’ in the European region.

**Table 1.0 Strategies to Promote e-inclusion**

YEAR	SOURCE	STRATEGIES
1999	European policy documents	<ul style="list-style-type: none"> <li>• “The objective of the eEurope initiative is...to bring everyone in Europe—every citizen, every school, and every company— online as quickly as possible”.</li> </ul>
2000	The European Council meeting Lisbon	<ul style="list-style-type: none"> <li>• Set the goal of the European Union's becoming" the most competitive and dynamic knowledge based economy in the world, capable of the sustainable economic growth with more and better jobs and great social cohesion"</li> <li>• The council agreed to make a decisive impact on the eradication of poverty and social exclusion by 2010.</li> </ul>
2001	The European Council meeting Nice	<ul style="list-style-type: none"> <li>• Specific criteria were set out together with a requirement that each Member State produce a biennial national action plan on social inclusion.</li> </ul>
2002	eEurope	eEurope sets a number of targets on e-accessibility <ul style="list-style-type: none"> <li>• Investment in cheaper, faster, and safer Internet access</li> <li>• Investment in people and skills</li> <li>• Stimulate Internet uptake and use</li> </ul>
2003	Symposium on e-inclusion	<ul style="list-style-type: none"> <li>• Ministerial symposium on e-inclusion was organized</li> <li>• Ministers discussed ways to make the Information Society open, inclusive and accessible to all European citizens.</li> <li>• The Ministerial declaration, which concluded the symposium, emphasised a commitment to promote networking and exchange of experience (which in itself is a good practice).</li> </ul>
2005	eEurope	<ul style="list-style-type: none"> <li>• E-inclusion was one of the key priorities of the eEurope action plan</li> <li>• It was regarded of particular importance for the development and take-up of electronic public services</li> <li>• eEurope action plan gave emphasis to integrating accessibility criteria into mainstream goods, services and information flows</li> </ul>
2005	European Commission	EC lunched its i2010 strategy, their objectives were: <ul style="list-style-type: none"> <li>• Creating a single information space.</li> <li>• Increasing EU investment in ICT research.</li> <li>• Promoting an inclusive European information society.</li> </ul>
2006	European Commission	<ul style="list-style-type: none"> <li>• Member States co-ordinate their policies for combating poverty and social exclusion on the basis of a process of policy exchanges and mutual learning known as the open method of coordination (OMC)</li> <li>• Their National Action Plans against poverty and social exclusion set out concrete steps to improve access to ICT and the opportunities new technologies can provide</li> </ul>
2007	European Commission	<ul style="list-style-type: none"> <li>• the European Commission launched its i2010</li> <li>• E-Inclusion Initiative to raise political awareness on e-inclusion, encourages replication of e-inclusion success stories throughout the EU, and paves the way for future actions.</li> </ul>
2010	European Commission	EC lunched a new Europe 2020 strategy with the baseline ‘A strategy for smart, sustainable and inclusive growth’ These three mutually

		reinforcing priorities should help the EU and the Member States deliver high levels of employment, productivity and social cohesion. Concretely, the Union has set five ambitious objectives - on employment, innovation, education, social inclusion and climate/energy.
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It is clear that the above strategies are very much focused on the public sector and policies that impact citizens' inclusion of the services that are offered by the public sector. In particular, since the implementation of the eEurope program, the baseline of the policy discourse is focused on '*an information society for all*' (Verdegem, 2011). Drawing from the above strategies in table 1 and previous literature, it can be seen that it is important to study the influence that e-inclusion has on citizens' adoption of e-government services.

### 3 E-INCLUSION AND E-GOVERNMENT

The early stage of e-government – launched in the mid-1990s- focused on ICT infrastructure to build technical capabilities and train human resources to organize and automate traditional government practice (Sorrentino & Niehaves, 2010). The second stage adopted a wider perspective, for example, it involves a transformation of the presentation and the delivery of services (ibid). But according to the literature, future e-government initiatives must follow a multi-channel approach (see for example Vassilakis et al, 2006; Janssen and Wagenaar, 2003; Millard and Jonas, 2004). These approaches may involve service delivery using mobile technologies, television as well as public private partnerships involving intermediaries (Sorrentino and Niehaves, 2010; Burt and Taylor, 2008; Josefsson and Ranerup, 2003; Al-Sobhi et al., 2010). Such approaches are significant as e-government policies are increasingly interwoven with diversity-related issues, such as social inclusion and population ageing, or quality of life (Sorrentino & Niehaves, 2010), which is expected to provide better accessibility to citizens.

Access to digital resources can promote social inclusion and therefore it is important for governments at all levels to support initiatives that promote e-inclusion (Helsper, 2008). E-inclusion for all is tasked to create opportunities for all and to further individual autonomy and capability. The main objective is to remove obstacles in the widest sense for equitable participation in society. For some groups, these obstacles are higher than for others. Specific attention should be focused on those who are most disadvantaged and at risk of exclusion such as elderly people, people with physical or mental disabilities, people with poor education and people with low income (EC, 2001). In this respect, the UN e-government survey in 2010 stated that, "*in order for e-government to be inclusive, it must reach out to all segments of population with e-services that meet the needs of the digitally disadvantaged* (UN, 2010). In addition, a recent report entitled "Power in people's hand" released by the UK government in 2009 looks at government service delivery and focuses on empowering citizens by creating personalized services shaped around individual's needs (Cabinet Office website, 2009). The report goes on to suggest that disadvantaged groups as citizens need to be effectively engaged in the e-government in order to achieve engaged, enabled and empowered citizen (ibid).

Governments are spending large sums of money on various initiatives in e-government. However, citizens adoption of e-government services has been less than satisfactory in most countries (Al-shafi and Weerakkody, 2010; EC, 2010). For example in the UK, the government faces a tough challenge in getting citizens online. Recent reports suggest that more than 10 million adults (approximately fifth of the population) have never used the Internet (race online 2012). Four million of those are among the most disadvantaged, 39% are over 65, 38% are unemployed and 19% are families with children (Manifesto for a network nation, 2010). Moreover, according to the European commission's report on Europe's digital competitiveness in 2010, the UK has reached a rate of 100% of online supply of public services to citizens, this ranking place the UK first among all 27 European countries (EC, 2010). Despite this, service take up has not been as high, as only around 35% of the population use e-government services, and this ranking places the UK in 10th position among 27 European countries (ibid). Therefore, it is important to understand reasons behind this low adoption of online public

services. The authors posit that lack of analysis of cultural and social conditions that impact technology adoption and diffusion could be one reason for such low adoption rates.

#### **4 INVESTIGATING VARIOUS THEORIES AND MODEL IN E-INCLUSION**

A Review of literature indicates that there are a few relevant frameworks that are focused on e-inclusion (Digital Inclusion Team, 2007). Whilst they are useful for evaluating the impact of electronic services on general populations, they tend to be less applicable for evaluating the needs of disadvantaged people with more complex needs (ibid). The models and theories that have been utilised in various e-Inclusion frameworks are summarised in table 2.

In order to examine the impact of e-government on e-inclusion, it is imperative to identify appropriate assessment and indicative measures. At present, most existing indicators are still centred on broad measurements such as access to ICTs and Internet connection, availability and level of digital literacy skills and ICT usage rates. Although such indicators on e-Access, e-Skills and e-Usage are useful for national benchmarks and trans-national comparisons, they fail to present an integrated view of the real “life worlds” of citizens (Advisory Government and Public Sector, 2009). However, it has become increasingly evident that such indicators are less able to shed light on the necessary contingency approach to social and e-inclusion (Cullen et al., 2007). Further, greater elaboration and refinement of variables is needed in the assessment of e-Inclusion. First, as regards structural variables one should systematically include: income levels, data on ethnic background, country of origin and migration status. Therefore, there is a need for higher data granularity or general health conditions and social needs. One should also measure key competences such as language skills since their lack can hinder user engagement. Crucially, there is a need for strengthening the compound indexing on multiple deprivations, since e-inclusion is multi-dimensional (ibid).

The theoretical framework proposed in this of this paper is based on a variety of digital divide and e-inclusion studies. Bradbrook and Fisher (2004) advocate the ‘5 Cs’ of e-inclusion. It emphasises the complexity of e-inclusion and could also be termed “continuity”, which is one of the ‘5 Cs’. This framework represents key issues of e-inclusion: Connection, Capability, Content, Confidence and Continuity. On the other hand, Van Dijk (1999) was one of the first academics to point out the multidimensional aspect of digital divide. He conceptualized access to a fourfold unit that comprises four barriers; motivational access, material access, skills access and usage access. The first, motivational access refers to the mental barriers that prevent people from using ICT. The second, material access, refers to the traditional notion of access and is about the actual possession of ICT. The third, usage access, points out the differences that occur at the level of using ICT and the exclusion mechanisms that accompany this usage. The fourth, skills access, refers to the lack of digital skills as a main barrier for usage. Van Dijk’s (1999) categorization is still valid today and facilitates identifying and clarifying the complexity of today’s digital and social exclusion mechanisms (Mariën and Van Audenhove, 2009). Another framework for digital resources was developed by Helsper (2008) focusing on digital resources that are grouped into four broad categories; ICT access, skills, attitudes and extent of engagement with technologies. Moreover, Verdegem and Verhoest (2008) framework explains the relation between the socio-demographic and socio-economic characteristics of non-users or disadvantage group. The advantage of this method is that groups of individuals with relatively homogeneous Access, Skills and Attitudes (ASA)-profile can easily be identified and reached by policy makers. Homogeneity, in this context, means that people share the same characteristics in terms of the most important resources that determine the use of ICT: access, skills and attitudes (ASA). A specific combination of conditions in terms of access to ICT, skills to master the devices and attitudes towards the technology is then called an “ASA-profile” (Verdegem and Verhoest, 2008). Finally, Bentivegna and Guerrieri (2010) presented an e-inclusion Index which is a multi-focus approach. The main objectives of this index is to track progress in the development of ICTs and to monitor and capture the level of advancement of e-inclusion.



**Table 2.0: Various Theories and Models Adopted in E-inclusion**

	Theories & models	Description	Reference
1	The '5 Cs' of e-inclusion	Referred to as the ladder model, this framework emphasises the complexity of e-inclusion by identifying five criteria that influence e-inclusion: <ul style="list-style-type: none"> <li>• Connectivity(access)</li> <li>• Capability(skills)</li> <li>• Content</li> <li>• Confidence (self-efficacy)</li> <li>• Continuity</li> </ul>	Bradbrook and Fisher (2004)
2	A cumulative and recursive model of successive kinds of access to digital technologies	Van Dijk (1999) was one of the first researchers to point out the multifaceted aspect of the digital divide. He conceptualized access to a fourfold unit that comprises 4 barriers: <ul style="list-style-type: none"> <li>• Motivational Access: limited take up of ICT, lack of interest and negative attitude.</li> <li>• Material Access: Lack of actual ICT material</li> <li>• Skills Access: Lack of digital skills, low user friendliness of ICT, lack of education &amp; social support networks</li> <li>• Usage Access: Lack of usage opportunities &amp; the uneven spread of this opportunities across societies</li> </ul>	Van Dijk (1999; 2005)
3	Framework of digital resources	This frameworks look s at digital disengagement as determined by either exclusion, factors and barriers that are not easy for an individual to overcome quickly themselves (for example, low income and poor infrastructure availability) or by digital choice (that is if the person chooses not to use technologies even though they have the capabilities to do so). Digital resources are grouped into four broad categories: <ul style="list-style-type: none"> <li>• ICT Access</li> <li>• Skills</li> <li>• Attitudes</li> <li>• Extent of engagement with technologies</li> </ul>	Helsper (2008)
4	The 'ASA-profile' & relative utility theory	This approach is articulated around the concept of 'relative utility'. It attempts to set up effective e-inclusion measures. The advantage of this method is that groups of individuals with relatively homogeneous ASA-profile can easily be identified and reached by policy makers. A specific offering can then be proposed to these groups, taking into account the specificities of their ASA-profile and socio-economic background. ASA refers to: <ul style="list-style-type: none"> <li>• Access: access to ICT</li> <li>• Skills: skills to master the devices</li> <li>• Attitude: attitude toward to technology</li> </ul>	Verdegem and Verhoest, (2008)
5	E-inclusion Index - multi focus approach	The main objectives of the index are to track progress in the development of ICTs and to monitor and capture the level of advancement of e-inclusion. The analytical framework underlying the construction of the e-inclusion index is structured into three components (dimensions of the general concept: access, usage, impact on quality of life) and into twelve sub-indexes: <ul style="list-style-type: none"> <li>• Internet access: network, affordability, availability and quality.</li> <li>• Internet usage: Autonomy, intensity, skills.</li> <li>• Internet impact: eEducation, eHealth, eLabour, eGovernment, eEconomic, eCulture and communication.</li> </ul>	Bentivegna and Guerrieri (2010)

## 5 CONCEPTUALISING E-INCLUSION

The aim of this paper is to offer a conceptual synopsis of e-inclusion. The paper is a research in progress study and as such it is only an initial effort to collate some of the significant factors that are currently impeding the progress of e-inclusion in the context e-government adoption and diffusion. Therefore, the data collection strategy used for this paper relied primarily on reviewing published

normative literature and other relevant publications. This research draws on multi-disciplinary literature to conceptualise e-inclusion.

Research on the links between the diffusion of ICTs and social and economic development has been undertaken for decades. Evidence of links between social and e-inclusion, particularly with respect to the Internet, has been the focus of many studies conducted by academic as well as government institutions (Helsper, 2008). These studies have shown consistently that individuals who have access to ICTs tend to have more schooling, higher incomes, and higher status occupations than those who do not have access. In addition, those who are on the wrong side of digital divide are disadvantaged in a variety of ways, from access to information in everyday life to their success in the workplace (Dutton and Helsper, 2009). However, despite the evidence, there are many who are digitally disengaged but socially advantaged through choice (Helsper, 2008).

Other issues have been identified as for example the role of lifestyles and life changes or the influence of social network on the adoption and domestication of ICT (Anderson & Tracey, 2001; Bakardjieva & Smith, 2001; Brotcorne et al., 2009; ; Haddon, 2004; Mariën, 2007; Moreas, 2007; Selwyn, 2004; Selwyn et al., 2005; Ribak, 2001; van Dijk et al., 2000; van Dijk, 2005; Helsper, 2008; Verdegem, 2011). Given new developments and emerging societal trends (e.g. the success of social media but also the rise of mobile applications, the overlap between public and private life, etc), it is clear that there is a need for a new theoretical framework to better understand e-inclusion (Verdegem, 2011). Table 3 catalogues different factors that are related to the four main themes which determined the relations and links between e-inclusion and social characteristics.

Based on the literature and the theories presented in table 2 the authors formulate taxonomy for conceptualising e-Inclusion in e-government in table 3. This taxonomy is based on four themes; demographic, economic, social and cultural. For demographic, age, marital status and ethnicity/background are the factors of this theme. The economic theme comprises employment, income and urbanisation factors. The social theme comprises education, health and lifestyle factors. Finally, the cultural theme includes language, knowledge and traditions factors.

**Table 3.0: Conceptual Taxonomy of Factors Influencing E-inclusion**

	FACTORS	Key from table 2	DESCRIPTION	KEY FINDING – UK	REFERENCES
DEMOGRAPHIC	Age	Usage Continuity	<b>Grouped from young people aged 15-24 to senior citizens over 65</b> In this factor a generational divide is identified between older and younger Internet users, where the older users are often found to lag behind, both in usage and access. Senior citizens are often excluded from modern technology. Children and young people who have been online for longer, and who use the internet more often, take up more online opportunities. Similarly, they have greater online skills and self-efficacy.	<ul style="list-style-type: none"> <li>1 million people in UK aged 15-24 do not have access to computers and Internet for schoolwork.</li> <li>62% of the adults who had never accessed the Internet (6.4 million) were over the age of 65.</li> <li>It is estimated that in 2025, 10% of young people in the 65 and over age group will still not be using the Internet.</li> </ul>	The digital Economy Research Hub-UK; Eastin & LaRose (2000); Karahasanovic' et al. (2009)
	Marital Status	Access Usage Connectivity	<b>Grouped as single, married, cohabiting, divorced, widowed and with/without children</b> It is a common opinion that having children in the household increases the probability that the household will acquire computers and Internet access. Many lone parents accessing advice have complicated cases and situations and for that reason prefer to receive information and advice face-to-face rather than a website.	<ul style="list-style-type: none"> <li>80 percent of lone parent families have access to the internet at home compared to 97 percent of two parent families.</li> <li>Many lone parents do not have access to the internet.</li> </ul>	Technical report-European Commission (2006); Helsper (2008); Heim et al., (2007)
	Race & Ethnicity	Confidence Attitude	<b>Grouped into asian, african, caribbean, white, other</b> This factor explains that there is a relationship between poverty, race and immigration status. So, this group suffer from multiple deprivation. 21.5% of Black and Minority Ethnic (BME) people live in deprived areas compared to 8.8% of the white population. On average 39% of the people in these areas experience income deprivation compared to a national average of 14 per cent.	<ul style="list-style-type: none"> <li>29% of households in deprived areas are surviving on incomes below £10,000.</li> <li>12% of all children live in deprived areas and just over half of these live in households that are income deprived.</li> </ul>	Stewart (2010)
ECONOMIC	Employment	Access Usage Continuity Connectivity	<b>Grouped into employed, unemployed, retired, home caretaker, student and other.</b> This factor explains how e-inclusion improves employment outcomes: as individuals enhance their qualifications this improve their earnings and/or heir probability of finding employment.	<ul style="list-style-type: none"> <li>People with ICT skills earn between 3% and 10% more than people without such skills.</li> <li>If the currently digitally excluded employed people got online, each of them would increase their earnings by an average of over £8,300 in their lifetime and deliver between £560 million and £1,680 million of overall economic benefit.</li> </ul>	Technical report-European Commission (2006)
	Income	Access Continuity Connectivity	<b>Grouped into up to 12,000;12,500 to 25,000; 25,000to 30,000; 30,000to 50,000; over 50,000</b> Research shows that economic wealth, represented by income per capita, is the biggest single factor explaining the disparities in computer and Internet penetration rates.	<ul style="list-style-type: none"> <li>People living in 3.6 million low income households which are digitally excluded are missing out on annual savings of over £1 billion a year from shopping and paying bills online.</li> <li>People earning over £40,000 per annum, were more than twice as likely to be digitally included as those earning less than £12,500 per annum.</li> </ul>	OxIS The Internet in Britain (2009); Chinn and Fairlie (2007; 2010)



	Urbanization	Access Connectivity	<b>Grouped into rural or urban areas, isolation, remote areas.</b> Rural areas present a more difficult set of challenges compared to city centres in term of access to ICTs. This is because greater distances and lower population densities stress the limits of communications technologies. In this respect, e-inclusion can facilitate peoples' lives in rural area.	<ul style="list-style-type: none"> <li>There are approximately 4.9m people living in the 10% most deprived places in England.</li> </ul>	E-inclusion Team (2007)
SOCIAL	Education	Skills Capabilities Continuity	<b>Grouped into un-educated, primary, secondary, sixth form, technocal college, further education, undergraduate, graduate, postgraduate, other</b> Access to digital technologies improves educational performance. For example, as individuals enhance their qualifications, this improves their earnings and/or their probability of finding employment.	<ul style="list-style-type: none"> <li>If the 1.6 million children who live in families (with no Internet access) got online at home, it could boost their total lifetime earnings by over £10 billion.</li> </ul>	Office for national satatics (ONS) (2009); OxIS The Internet in Britain (2009); Helsper (2009)
	Health	Access Connectivity	<b>Grouped into physical disability and/or mental disability</b> Greater e-inclusion has the potential to improve health and well being outcomes through access to improved health information and health services.	<ul style="list-style-type: none"> <li>It is estimated that there are over 10 million disabled individuals in Britain alone.</li> <li>Among the disabled population, 59% do not have home access, compared with just 29% of the general population.</li> </ul>	The digital economy research hub – UK; Helsper (2008)
	Lifestyle	Confidence Attitude Usage	<b>Grouped into social status of using the Internet</b> Online social networks, email and other online communications tools offer opportunities for interactions with families, friends, and communities of interest. To ensure effective adoption, innitiatives need to relate to people's daily reality and should therefore be integrated in the existing social and cultural life of people.	<ul style="list-style-type: none"> <li>Advanced or Networking uses of the Internet are conducted by 8% of the population (11% of Internet users).</li> <li>Social networking sites alone were attracting an average of 165 million unique visitors a month</li> </ul>	Mariën and Van Audenhove (2009); Helsper (2008); Verdegem (2011)
CULTURAL	Language	Skills Capabilities	<b>Grouped into language proficiency, immigration and ethnic status</b> Language barriers experienced by immigrants and refugees, discrimination. Language barriers can often prevent communities from accessing the relevant information they need to be involved and included in the local community.	<ul style="list-style-type: none"> <li>Over 8 million people have literacy problems/learning difficulties</li> </ul>	Technical report- European Commission (2006)
	Knowledge	Skills Capabilities Confidence	<b>Grouped into levels of knowledge in using ICT</b> Corruption and a lack of knowledge of technologies are often problems. The Internet and digital technology create new possibilities for the development of cultures, education, communities and knowledge.	<ul style="list-style-type: none"> <li>More than 1 million photos and 40 million user-created video have been uploaded onto photo and video-sharing sites.</li> </ul>	Meinrath (2008); Verdegem (2011)
	Traditions	Confidence Attitude	<b>Grouped into types of change experienced by society</b> Tradition is another powerful driver (change is hard) The impact of social media may be understood as a first sign of re-engineering by society, as it marks a fundamental shift from technology driven innovation toward user and society driven innovation.	<ul style="list-style-type: none"> <li>Social networking applications like Facebook, allow individuals to interact with people beyond their immediate networks.</li> </ul>	Verdegem (2011); Helsper (2008)

## 6 CONCLUDING REMARKS

This research attempted to highlight the growing interest in engagement with social, cultural, political and economic factors that influence ICT adoption in the information society. It looks at e-inclusion from a European context and reflects on how research and policies can help in the development of a sustainable participatory information society for all. The main attention is on e-government services and how the increase in these services poses new challenges with regards to digital and social inclusion. Moreover, this paper focused on identifying and conceptualising reasons beyond demographic factors that influence adoption of e-government by examining the link between digital and social inclusion. The various factors identified in the conceptual taxonomy presented in the paper shows that e-inclusion is multi-dimensional and affects socially, materially and physically handicapped societies more than others. This indicates that researchers have an ethical responsibility to consider the impacts of innovations on the least powerful in society. In addition, the following factors outline the significance of this research:

- Progress in studies of ICT e-inclusion is still lacking and in some cases even widening (Bentivegna & Guerrieri, 2010).
- Research has shown that e-Inclusion has a significant impact at the individual level as much as the social level; and at the micro level as much as macro level.
- Recent research in Europe has shown that access to digital resources can promote social inclusion
- There is a lack of theoretical frameworks for e-inclusion. In digital divide research, the notion of inequality mostly refers to inequality of technological opportunities (Van Dijk, 2006).

While the above provided rationale for undertaking this study, this paper is also motivated by the lack of conceptual definitions for explaining e-inclusion. In order to address these gaps in the literature and current e-inclusion research, the authors of this paper have followed a systematic approach to synthesis normative and secondary studies in the area of digital divide, e-inclusion and e-government. First, the authors have examined and presented a list of various strategies that have characterised the term e-Inclusion in the European context within the last decade. Then, e-inclusion theories and models were presented. The paper has also argued that there is a need for proper assessment and indicators as most of the existing indicators for evaluating e-inclusion are too broad. Consequently, the author formulated a taxonomy of factors that influence e-inclusion and offered greater elaboration and refinement of the variables that can be used to assess e-Inclusion. The main findings in this study show that age, marital status and race/ethnicity will determine the demographic theme affecting e-inclusion. Then, employment, income and urbanization will determine the economic theme. This is followed by, education, health and lifestyle that make up the social theme that affect e-inclusion. Finally, language, knowledge and traditions will impact the cultural theme. One of the main limitations of this study is that it was based on literature reviews and secondary research of European policy documents and no empirical data was used. The next steps in the study will involve further elaborating on the factors identified in the conceptual taxonomy and empirically evaluating the impact of these factors.

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