The Digital Divide and Internet Adoption: A Case Study of Social Housing Tenants in Newcastle upon Tyne

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The Digital Divide and Internet Adoption: A Case Study of Social Housing Tenants in Newcastle upon Tyne

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Dedication

In loving memory of my Parents, Pamela Ann Spoors and John Edward Spoors,

they both would have been so very proud

Abstract

The research presented explores the digital divide barriers faced by social housing tenants in the City of Newcastle upon Tyne. The study pays particular focus on the impact of the socio-demographic factors that impact the digital divide, digital skill training and the influence of Government Policy on the Digital Divide. The study proposes a theoretical framework to examine the Digital Divide to synthesise a wide array of literature on the topic. This research is of importance as there are many individuals that are digitally excluded and unable to go online. With the transition to a digital economy those without internet access will be left behind.

This research study adopted a case study mixed methods design that used a survey instrument to gather related digital divide data from 714 social housing tenants from the City of Newcastle upon Tyne. The case study also uses 14 semi-structured interviews from local authority and housing company stakeholders to add validity to the research design.

The research found that digital skills training forms an important part of social housing tenant's decision to go online – helping them gain not only technical skills but self-efficacy online and confidence. The traditional determinants of digital exclusion are apparent in some instances however they do not behave in the manner expected with this financially excluded group of individuals. The UK Government negatively impacts social housing tenants decision to go online by way of a poor digital strategy and the compounding austerity policy that has a knock on effect to Newcastle City Council and Your Homes Newcastle.

These insights are important as they are a unique view into the digital divide and how it impacts social housing tenants in Newcastle upon Tyne. These findings construct a narrative that offers decision makers options in how best to close the digital divide in this very socially and economically deprived group of individuals.

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This research project has tested me to my very limits, and I have faced a number of personal and academic challenges along the way. I could not have faced these challenges alone, and by my side, each step of the way has been my very loving and understanding partner Michael O'Connor. Without whom, I would not have made it as far as I have in my academic endeavours. My gratitude to my Father and Brother, who have listened and given advice when times have been hard.

And all of the interesting people I have met and the friends I've made along the way,

"Hope is the last thing ever lost."

Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas, and contributions from the work of others. The work was done in collaboration with Your Homes Newcastle Ltd and Newcastle City Council.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the Faculty Ethics Committee on 26th September 2016

I declare that the Word Count of this Thesis is 83687 words, plus corrections.

Name: David John Spoors

Signature:

Date: 11th July 2021

Chapter 1 - Introduction

1.0 Introduction

The Internet is an array of computer and communications network services and technologies that have revolutionised the world like nothing that has come before it. The invention of the telegraph, the telephone, the radio and the computer set the stage for this unprecedented integration of technological capabilities (Internet Society, 1997). The Internet started life in the basement of ARPANET laboratories in the United States of America. In the decades that have followed, it has made its way into our hands and the smartphones we hold dear (Navarria, 2016). This, however, would have been impossible were it not for the suite of technologies that makes the World Wide Web. These technologies were developed at CERN by Professor Sir Tim Berners Lee and make it possible for the information to appear in a web browser when desired (The Web Foundation, 2021). The World Wide Web, or as it is referred to most commonly "The Internet", is now a global information infrastructure, an essential of society with its own language terms (in almost all modern languages), its own economy and its own online society (Internet Society, 1997; Navarria, 2016; The Web Foundation, 2021).

The benefits to individuals being part of this connected or online Internet Society are vast and well documented. The benefits to literacy and numeracy because of the Internet being identified by educators as early as 1996 (Mike, 1996). Those in the UK that are connected and Internet users are estimated to have collectively saved £21bn. This is by looking for better deals on consumer shopping online, working from home (saving on travel costs), online banking, and looking for cheaper online-only energy deals (O'Grady, 2019). Online individuals can also access the latest online local and national Government Services, this being more convenient and saving time and money. The best example of these Government services is applying for a UK Passport. If you urgently need a passport and go online, the turnaround time is two days for an appointment, and if you use the paper method, there is only the *1-week fast track service* (HM Government, 2021c). This places an immediate disadvantage to the individual who does not use the online service in time and cost. The social benefits of being online are using prolific social media platforms such as Facebook to share your thoughts, photographs, and video with your "friends" while viewing anything posted on Facebook by the same group of friends in your Facebook timeline. Social media platforms such as Facebook promote social cohesion between friends and families by reducing the geographical distance require for communication and contact.

These benefits, however, are not universally accessible across the world for a multitude of different and complex reasons. Indeed, Professor Sir Tim Berners Lee, creator of the World Wide Web technologies, wants the Internet to be universally available. He promoted this with a short communication (or tweet) from the Twitter social media platform at the London 2012 Olympic Games launch. This tweet is shown in Figure 1.1 and outlines his passionate wish that the Internet is available to everyone.

Figure 1.1 Tweet by Professor Sir Tim Berners-Lee

The reality of Berners-Lee's desire for universal access to the Internet is far from achievable. An estimated 52% of the world's population are digitally excluded. The majority of these users are from the continent of Asia. The United Nations Broadband Commission (2017) describing the reason for this as the large gaps in regional connectivity and infrastructure, and affordability. This, however, is just one facet of a far more significant phenomenon known as the Digital Divide. The Digital Divide as a concept is discussed in more detail in the chapter that follows. In the United Kingdom, at the inception of this study in 2015, approximately 13.6% or 7m adults in the United Kingdom. They were subject to the factors influencing the digital divide (ONS, 2015). In 2015 there were fewer authoritative or reliable data sources for digital exclusion in the City of Newcastle upon Tyne. The only regional analysis applicable to the North East of England (not the City of Newcastle upon Tyne) of the digital divide was the Go ON UK Report (2015). The Go ON UK (2015) Report stated that around 23% of North East England population lacked Internet Access and Basic Digital Skills. This report was one of many factors that prompted the PhD Sponsor – Your Homes Newcastle (YHN) to examine if their tenants had internet access or the digital skills to get online.

The rationale for the study is discussed in the next section. This is followed by a description of the value and scope of the research and several sections that provide introductory

contextual information that helps provide additional understanding during later elements of the thesis.

1.1 Rationale of the Research

Your Homes Newcastle (YHN) is an Arm's Length Management Organisation (ALMO) and the Social Housing Provider for Newcastle City Council. Details relating to the makeup and structure of YHN are provided later in this chapter, where additional context is provided for several topics.

The YHN (2010) IT Strategy 2010-2014 made examples of how YHN tenants might interact with YHN and Council Services. Figure 1.2 is an example of how YHN Management anticipates their tenants interacting with them.

> Anya drops into her local Housing Office on her way to take her children to school on Monday morning. She goes to a YHN kiosk and touches the "Pay my Rent" button. After scanning her rent card and entering a PIN, Anya is able to see a copy of her rent statement on the screen, and to print out a copy.
>
> She then pays this week's rent with a debit card before going onto the Job Centre pages to look for newly posted jobs.

Figure 1.2 Example interaction by YHN Tenant from the YHN (2010) IT Strategy

YHN did not take any account of the factors involved in the digital divide until 2014. The YHN (2010) IT Strategy identified through approximation that around 55% of YHN Tenants were not internet users. Still, there was no identification of this being a problem or any mitigation proposed as part of the strategy document. In 2014 YHN instructed a private research enterprise to conduct the YHN Survey of Tenants and Residents (YHN STAR, 2014). One of the outputs from this survey instrument was that if tenants had internet access, many did not know how to use the Internet or did not feel comfortable using it without assistance. The Survey of Tenants and Residents introduced dimensions of the digital divide not previously considered by YHN. At this time, there was little peer-reviewed research related to the digital divide in social housing tenants in England, which informed one of the needs for this research.

In 2015 Your Homes Newcastle began a digital transformation to migrate access to traditional face to face or telephone services to online offerings. This was due to the HM

Government running an austerity policy that cut funding to local government (and associated) services (Cantrell, 2016). The digital transformation was an informed decision by YHN when they had few other alternatives as Newcastle City Council had informed YHN they would restructure the organisation, make redundancies, and implement a recruitment freeze. In late-2016, YHN was forced to close all their face-to-face cashier desks and introduced three alternative online options for tenants (YHN, 2016). These services would allow tenants to go online to pay their rent or pay their rent using their internet banking. When the Welfare Reform Act 2012 was passed by HM Government (2012), the City of Newcastle upon Tyne was identified as one of the first cities in the UK that would pilot the new welfare benefit offer. The arrival of Universal Credit in the City of Newcastle upon Tyne saw claimants forced to use internet-based services to make their claim for Universal Credit and administrate said claim (for example, logging how much activity they had completed seeking work) (HM Government, 2015b; 2012). Housing Benefit and Council Tax Benefit are paid with the Universal Credit claim in a single monthly payment to the claimant (HM Government, 2015b). The monthly payment was introduced to place welfare benefit claimants in the same financial routine as those who work – getting a monthly payment that claimants had to learn to budget. The aim of this was to help claimants learn money management skills. This was found to be very challenging for both Universal Credit claimants and YHN. Historically, housing benefit was paid directly to landlords, and with the introduction of Universal Credit, the claimant became responsible for making this payment (HM Government, 2017).

What happened was that claimants received their monthly Universal Credit payment and saw they had a large amount of money available in their bank accounts. Many claimants did not pay YHN (and their private landlords). This was compounded by some claimants being unable to administrate Universal Credit claims to the standard expected. This inability to engage resulted in the claimants monthly Universal Credit payment being withheld when they could not engage online.

This was later investigated by the Parliamentary Work and Pensions Committee (2017). At the hearing at Westminster, YHN and other social housing providers gave evidence to the committee. YHN told the HM Parliamentary Work and Pensions Committee (2017) that in Newcastle upon Tyne, there are £1.1m in rent arrears that are payable to YHN and by extension Newcastle City Council. The Parliamentary Work and Pensions Committee was told these arrears are due to the waiting time involved for citizens to receive their Universal

Credit payment and are due to individual claimants being unable to make and administrate claims correctly due to lack of digital literacy, digital skills, and access to appropriate technology. The £1.1m in rent arrears placed great strain on YHN until HM Government agreed to support the individuals concerned to ensure this money was paid to YHN.

Before the roll-out of Universal Credit, YHN had completed a short report to try and identify digital exclusion trends in their tenant base. This report had limited success but determined that the YHN tenant base might have been more digitally excluded than the YHN team had initially expected. The factors impacting YHN tenants were not considered, and the initial approach to resolving digital exclusion by YHN was the promotion of digital skills training by charitable organisations that were external to YHN. Once it was identified that this had minimal impact on digital inclusion within the YHN tenant body, there was a need for further research and study identified.

The difficulties in engaging YHN tenants online would become more of a problem as the technology strategy from the organisation was to reduce staff headcount and migrate traditional services into an online format. If tenants did not have the Internet, a suitable device or the digital skills to go online, they would face a problem. Knowledge of the factors involves and the scale of the digital divide at YHN was also lacking, with different statistics being proposed by other areas of the YHN business.

From an academic perspective: the identification previously in this section of the lack of specific peer-reviewed research and reliable data relating to the digital divide is one of the reasons for this study. The ONS (2015) was the most reliable source of data at this time and only examined the problem at a national level. The ONS (2014) data indicated that there was significant digital exclusion in the United Kingdom and the North East of England. This allowed an inference that this was likely the case in Newcastle upon Tyne. It was not until later did the ONS begin to report robust regional statistics relating to the digital divide. The only study of relevance that links to this was Ruiu (2016) that considered the use of the public library in the City of Newcastle upon Tyne to promote digital inclusion and social equality. This was published following the commencement of this study.

From the sponsors perspective: this research is necessary as YHN need a credible, reliable, and single understanding of the depth of the digital divide in their tenant base and those digital divide factors that impact the digitally excluded individuals within their tenant body. There is a significant ongoing financial risk to YHN and Newcastle City Council if the digital

divide in their tenant body remains unaddressed. These risks, combined with the YHN and Newcastle City Council push to online services, would see digitally excluded individuals unable to interact online and request YHN and Newcastle City Council services if their digital divide barriers are not remedied.

1.2 Research Value and Scope

The research aims to investigate the drivers and barriers for the YHN social housing tenant body in Newcastle upon Tyne that are subject to the digital divide. The importance of gaining a reliable measurement of the number of tenants impacted by the digital divide and understanding the specific barriers they face, and understanding the drivers that prompt them to use the Internet. Identifying these barriers and drivers will allow the development of a set of suitable recommendations that long term, will make financial savings for HM Government, Newcastle City Council and YHN. Putting these recommendations in place will also help drive internet adoption, close the digital divide, thus improving the quality of life of the YHN tenant body and other citizens of the City of Newcastle upon Tyne.

The scope of this research is limited to:

- YHN Social Housing Tenants
- YHN Employee's and Volunteers
- Newcastle City Council Employee's and Elected Officials

1.3 Collaborative Research Study - Your Homes Newcastle

This PhD study is a collaborative research study funded by Northumbria University, and Your Homes Newcastle Ltd. Collaborative doctoral training is a generic term to cover doctoral degrees that involve research projects in collaboration or partnership with non-higher education organisations, governmental organisations, and businesses (Vitae, 2021). The collaborative research study was agreed by partnership agreement and regulated by the Northumbria University Academic Regulations for Research Awards (2020).

At the conception of the study prior to the appointment of the researcher, YHN outlined several requirements and expectations from the research study. These requirements include:

- Consultation with YHN in the design of the research instruments is required.

- Creation and use of a survey instrument to gather data related to the research topic.

- Provision of an executive report with a concise narrative of the core findings with recommendations following submission of the thesis.

- One copy of the thesis and all data gathered as part of the research study to be provided to the Head of IT Services, Your Homes Newcastle.

- The use of the data gathered from this study is limited to research purposes only and should not be used for any commercial purpose.

1.4 Background - The City of Newcastle upon Tyne

The City of Newcastle upon Tyne is a metropolitan district of Tyne and Wear located in northeast England. It has an estimated population of approximately 292,000 citizens, with 1,581,000 citizens that live in the wider metropolitan area, of which about 1,041,000 are of working age (ONS, 2016; Invest Newcastle, 2018). In the City of Newcastle upon Tyne, in 2016 unemployment rate is 5.7% (ONS, 2020). The median annual salary in Newcastle upon Tyne is £23145, and property prices are around 37% less than the United Kingdom average (ONS, 2016 from Invest Newcastle, 2018, Invest Newcastle, 2018). HM Government (2015) index of multiple deprivations has 36 of 175 ward areas of Newcastle upon Tyne listed as being in the top 10% of the most deprived areas in the United Kingdom. This is split over nine different domains (Income, Employment, Education Skills and Training, Health and Disability, Crime, Barriers to Housing, Living Environment, Income Deprivation affecting Children and Income Deprivation affecting Older People).

Figure 1.3 The City of Newcastle upon Tyne and the local authority boundary
(Generated by Ordnance Survey)

1.5 Background - Newcastle City Council

Newcastle City Council is the local government authority for Newcastle upon Tyne and operates in the Leader and Cabinet form from the Local Government and Public Involvement in Health Act 2007 (HM Government, 2007; Newcastle City Council, 2016b). Newcastle City Council is composed of 78 councillors with one-third elected three years in four; some of these councillors have a specific responsibility (e.g. Housing) for an area of the Council's activities (a portfolio), and these councillors come together and meet as the Cabinet (Newcastle City Council, 2016). Newcastle City Council's current political composition is 52 Labour seats, 20 Liberal Democrat seats and 6 Independent (Newcastle City Council, 2018e). This means that the Labour Party presently controls Newcastle City Council; the Labour Party is a social-democratic, socialist and trade-unionist centre-left political party (Worley, 2009). The controlling Labour group of councillors elects the Leader of the Council, who then selects his cabinet members.

Newcastle City Council has employees that work for it (commonly called officers) to give advice, implement decisions, and manage the day-to-day delivery of its services. The Head of Service is the Chief Executive of Newcastle City Council; other senior officers are employed to ensure that the City Council acts within the law and uses its resources wisely. There are four Directorates at Newcastle City Council: Wellbeing, Care and Learning, Communities, Resources and Investment and Development with the Deputy Chief Executive providing cross-service support and managing external relationships such as the North East Combined Authority (Newcastle City Council, 2016; Newcastle City Council, 2018).

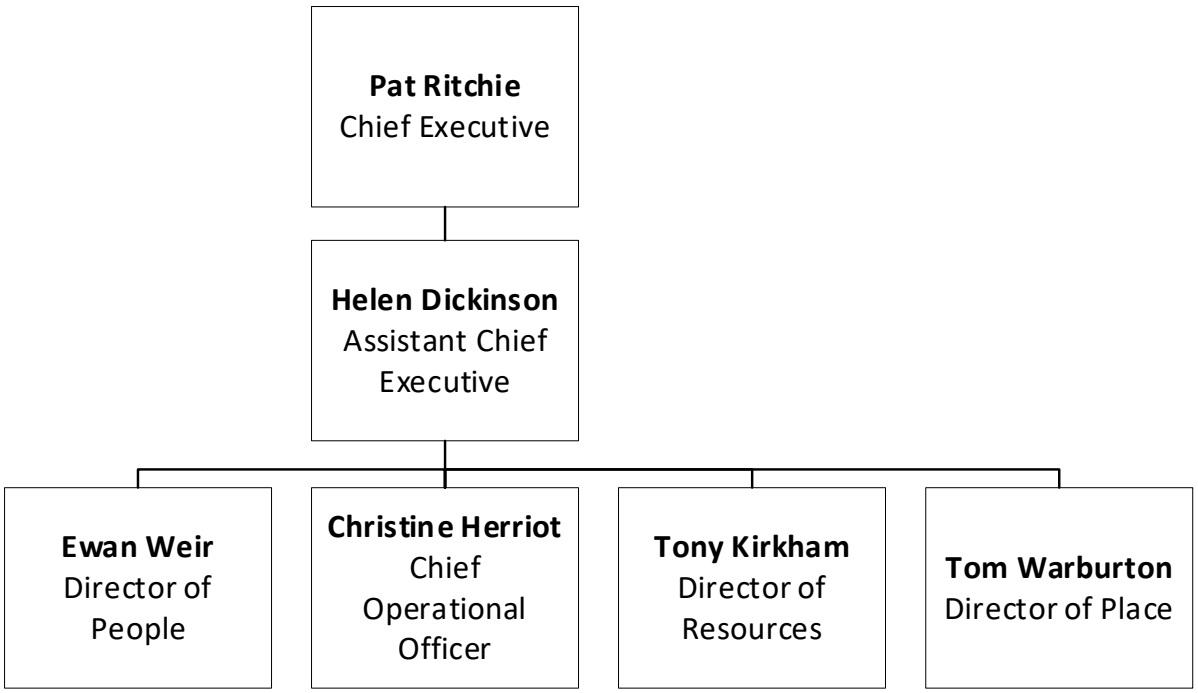


Figure 1.4 Newcastle City Council Senior Officer Structure (Newcastle City Council, 2018)

The officers of Newcastle City Council implement the decisions made by the democratically elected Leader of the Council, their cabinet and the councillors of the City of Newcastle (Newcastle City Council, 2016). Newcastle City Council employs approximately 10000 people and has a projected budget for 2018 of £472m (Newcastle City Council, 2017b; 2018d). Newcastle City Council has wider involvement in some other areas [described in figure 1.5 on the next page] that require some governance or control from the Leader and Cabinet. Not all of these areas are relevant to the research but are helpful to add context. Your Homes Newcastle Ltd (YHN) is the social housing provider in Newcastle upon Tyne and is responsible for managing Newcastle City Council-owned properties (Newcastle City Council, 2016). YHN is accountable for all management areas for these properties; however, the repairs and out of hours assistance service are contracted back to Newcastle City Council and their respective private contractors (Newcastle City Council, 2018c).

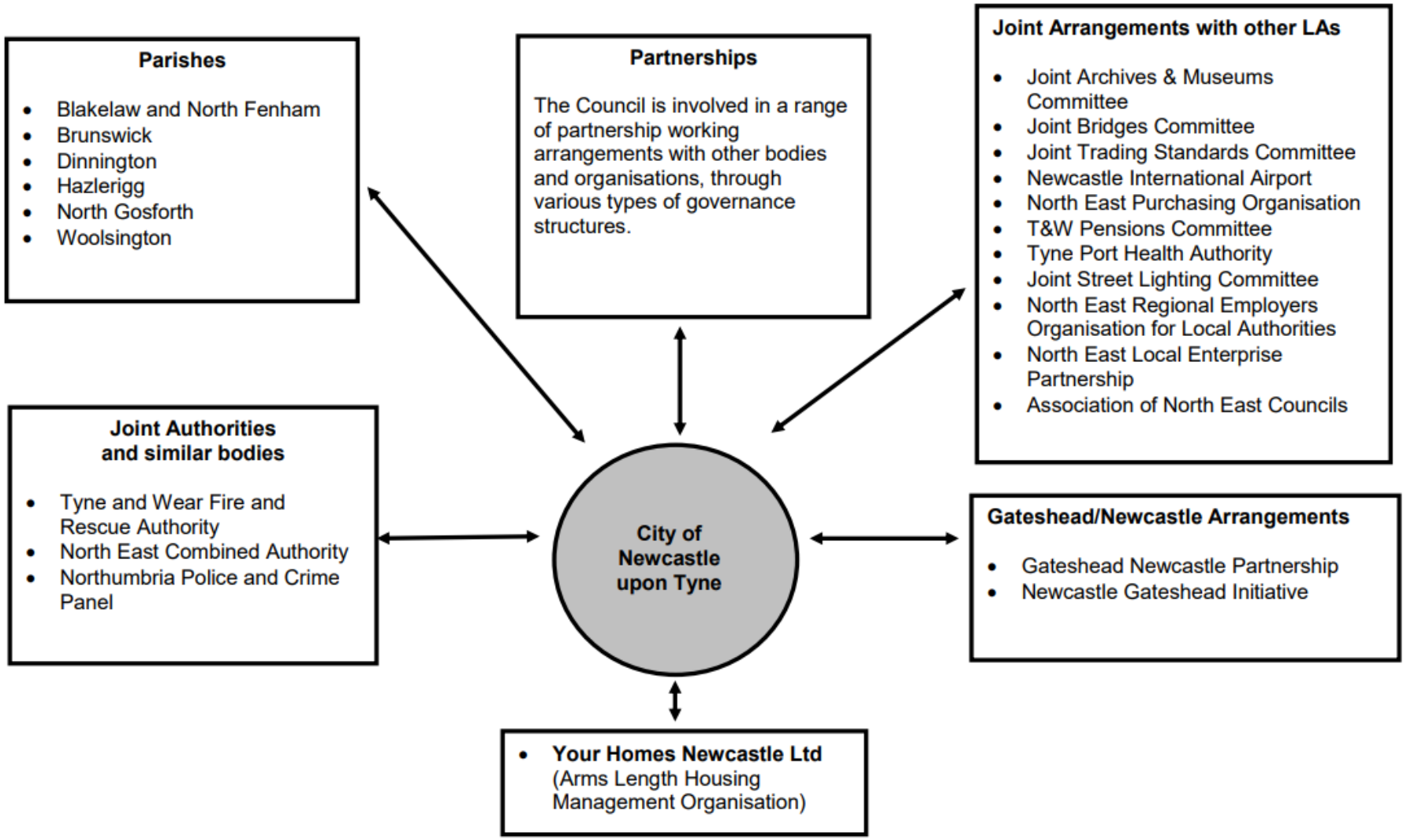


Figure 1.5 The Wider Context of the Governance of the City of Newcastle upon Tyne (Newcastle City Council, 2016)

1.6 Background - Your Homes Newcastle

Your Homes Newcastle (YHN) is a social housing provider and an Arms Length Management Organisation (ALMO) of Newcastle City Council and is located in Newcastle upon Tyne in the United Kingdom. YHN is the financial sponsor of this PhD Project. YHN currently has an estimated 690 employees and is responsible for managing 26,700 council homes on behalf of Newcastle City Council (YHN, 2016c; Evening Chronicle, 2017; YHN, 2017). Arm's Length Management Organisations (ALMOs) was introduced in 2002 at the will of the then UK Labour Government. There were to provide housing services on behalf of local authorities to meet HM Government's Decent Homes Standard (Fletcher, 2015; YHN, 2016). Cantrell (2016) feels that the HM Government austerity agenda is putting the existence of current ALMO's at risk by forcing cost-cutting measures and reducing the value of ALMO's to local authorities.

YHN is strategically managed by a board consisting of twelve non-executive directors, four nominees of Newcastle City Council and eight independent board members (YHN, 2018). The composition and size of YHN's board were reviewed in September 2017, and the number of board members was reduced from 19 members to 12 members; this saw the removal of all but one of the tenant board members and the appointment of several industry-relevant specialists into other vacant board posts (LABM, 2017). YHN's only political alignment is by representing the Newcastle City Council on the YHN board of directors. Operationally YHN has a management structure headed by a Chief Executive that has been in post since 2016 and three directorates managed by three newly appointed directors [See figure 1.6] (YHN, 2018b).

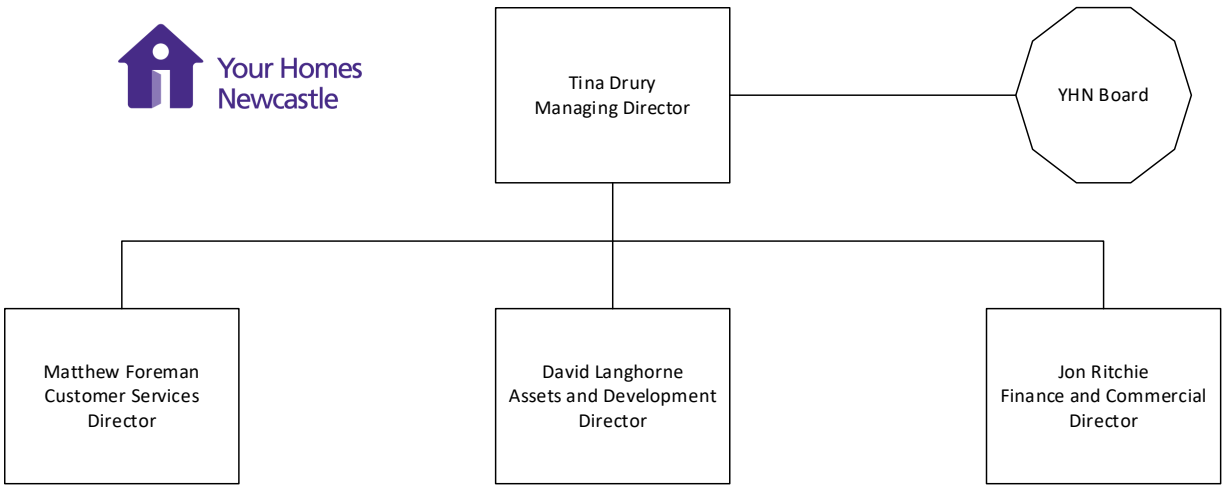


Figure 1.6 The YHN Executive Team (YHN, 2018b)

YHN has undergone significant restructure and political change since the appointment of the current Chief Executive: Tina Drury, in 2016, following the voluntary redundancy of John Lee, who had held the role of Chief Executive at YHN since 2004 (Apps, 2015; YHN, 2016b; 2017b; LABM, 2017). Following this, in 2017, YHN appointed a new Chair of the Board: Jo Boaden citing the previous Chair's transformational work during her three-year tenure as Chair of YHN (NCC, 2017c).

1.7 Summary of the Introduction Chapter

In summarising this chapter, the PhD project and topic of the digital divide was introduced and placed in context. The rationale of the research was discussed, providing robust justification for the study. The research aims and objectives are discussed later in the methodology chapter, following the literature review. There is a narrative of the value of the research and identifies the scope of the study. There is also some contextual information provided that relates to the main actors in the study to aid the reader's understanding of the research landscape.

Chapter 2 – Literature Review

2.1 Introduction

This chapter seeks to conduct a review of relevant and contemporary literature. This chapter aims to examine the body of knowledge that relates to the Digital Divide, Digital Exclusion, and Internet Adoption. Since 1989 internet technologies have been the most rapidly diffusing innovation in the history of humankind, there is a view that this is because the Internet and ICT, in general, are not the same as previous communication media (Rogers, 2001; Mason and Hacker 2003). While this record-breaking technology has been finding its way into people's homes and businesses, there are still those who do not or cannot use this scintillating and engaging digital media platform.

The first section discusses how the digital divide was having or not having access to ICT or the Internet (Compaine, 2001). What followed was an evolution of the digital divide discourse into the three levels of the digital divide. The first level digital divide relating to material and motivational discourse. The second-level digital divide relating to usability, digital skills, digital training and digital literacy. The third level digital divide is linked to empowerment of use and realising real-world outcomes that make a difference to an individual's life (van Dijk, 2020).

The second and third sections move from the contextual narrative of the digital divide into the sociodemographic factors and sociodemographic attributes that influence the digital divide. The sociodemographic factors being connected to the resources required to go online, and the sociodemographic attributes being those that relate to the individual or group and how these might impact or drive those sociodemographic to go online. These sociodemographic characteristics are typically complex, and individuals can be members of more than one sociodemographic group. Having a low income can be particularly problematic and is broken down further with it connecting to the next section that relates to the current UK Government policy in this area.

The final section is an examination of theories of technology acceptance and linked discourse. The discussion begins with Rogers (1995) Diffusion of Innovation Theory and Uses and Gratification Theory. This leads to an examination of Technology Acceptance Models and the Bass Model. The review of this theory leads to consideration of the emerging theoretical framework that follows.

2.2 The Digital Divide

Gaining an understanding of the Digital Divide and exploring its dimensions is key to this study. It is widely accepted that the 1995 publication of the National Telecommunications and Information Administration (NTIA) research report on Internet diffusion among American citizens was one of the first publications that relate to the contemporary digital divide as we know it today (Lynch, 2002; van Dijk, 2020). The NTIA (1995) report cites many of the sociodemographic inequalities found today that feature in the contemporary digital divide: with Black, Asian and minority ethnic groups, and older, less affluent people that live in rural areas that may have lower educational attainment being explicitly excluded from Internet services. Van Dijk (2020) considers the digital divide a worldwide phenomenon – revealing the importance of placing the digital divide in context when considering its unique properties. The worldwide social, political, and economic factors evolve depending on the country or area of the world being examined (Warf, 2018). It has also been disputed that it is just another facet of social exclusion (Rafferty & Steyaert, 2007). Other scholars go into more depth, citing that it is split into access to technology and capacity to use technology (Epstien, Nisbet & Tarleton, 2011).

Subsequently, at the arrival of the millennium, the idea and the problem of the digital divide were firmly established on the scholarly agenda. The prolific scholarly activity that followed produced so many definitions that several academic authors were in favour of discarding the definition entirely (Compaine, 2001; Gunkel, 2003 from van Dijk, 2020). One of the most common academic definitions in use today is as follows: *"a division between people who have access and use of digital media and those who do not."* (van Dijk, 2020). A commonly used term relating to the digital divide is digital exclusion. If digital exclusion, is one being subject to a digital divide, then digital inclusion means the increase of structural and individual opportunities to access the digital media space (Manzuch and Macevicilute, 2019). An alternate academic definition for Digital Inclusion is defined as having the skills, motivation, and access to go online (Dutton and Helsper, 2007; White and Selwyn, 2013).

Prior to this concept of a digital divide, several other terms were used; these terms primarily relate to the concepts of the information society and inequality, motivation, and outcomes (Schiller 1981, 1996; Lyon, 1988; Mossberger et al., 2003). Historically the digital divide was conceptualised as a gap between the have and have not's (van Dijk, 2020). This discourse is a less sophisticated ideology of the sociodemographic factors and attributes

discussed in more detail in sections 2.4 and 2.5 of this chapter. The historical misconception that the digital divide is a simple division between two separate social categories could not be further from the current contemporary narrative. Van Dijk (2020) outlines the danger of how the metaphor of *"how the digital divide indicates a social split between people in a divided society"* (van Dijk, 2020, p. 3) leads to the position where an individual may feel the digital divide is a simple split between two clearly separated social categories. Park (2017) expands on these social categories that feature individual attributes and demographics, such as income, age, gender, education and disability. Park (2017) later also introduces ideas such as attitude and motivation towards internet use which link to these attributes and demographics, helping individuals form a digitally excluded or digitally included identity around attitudes, beliefs, and motivations (van Dijk, 2020; Helsper, 2020). This idea of the self being subject to the digital divide allows the introduction that social peer groups, families, and those individuals with access to similarly minded individuals may help to bridge the digital divide (Park, 2017; Norris, 2001). There are also socio-economic factors that impact those subject to the digital divide, factors such as poverty, financial inequality and social and political isolation that impact an individual's motivation and attitude to internet use (Weiner & Puniello, 2014; Mai, 2017). Ubiquity is also a factor that forms attitudes, motivation, and belief in internet use – how much of a common presence is the Internet in an individual's life? With van Dijk (2020) making an example of how male children are given engineering and technical toys to play with and female children are given dolls and more creative toys to play with. Males going on to appropriate strategically important jobs in industry – thus effectively keeping women out of these roles (van Dijk, 2005). Van Dijk (2005) proposing this is due to the ubiquity of the problem solving and technical toys males are given as children.

With the growing internal inequalities in the world, understanding the breadth and complexity of the digital divide requires an understanding of the varied shape and form of an individual's digital ecosystem (United Nations, 2020). To develop an understanding of the individual digital ecosystem requires an acknowledgement that the sociodemographic and other factors that impact the digital divide are intricately intertwined, resulting in messy, complex and interacting reasons for digital exclusion (Bach and Wolfson, 2011). Helsper (2017) assumes that these digital ecosystems offer stability to these socio-economic circumstances when considered in context with the digital divide. In reality, "*people's everyday lives are socially contextual and fluid rather than individual, societal and static.*"

(Howarth, Campbell, Cornish, Franks, Garcia-Lorenzo, Gillespie, Gleibs, Goncalves-Portelinha, Jovchelovitch, Lahlou, Mannel, Reader & Tennant, 2013). The identification of these digital ecosystems enables more effective strategies to be developed to challenge this digital exclusion. The articulation of these ecosystems in research studies is a challenge, with different viewpoints being taken as to how they each relate. (Helsper, 2017; Howarth et al., 2013).

2.3 The 3 Stages or Levels of the Digital Divide

As discussed in the previous section, the digital divide is linked to several attributes, dispositions, digital environmental factors, and social and environmental factors (Park, 2017 p.30; Norris, 2001; Weiner et al., 2014; Mai, 2017). Again, Bach and Wolfson (2011) also cite how these factors interact with each other in a complex and messy manner. These three levels of the digital divide will help develop an understanding of the data later in the discussion by allowing the different factors discussed and identified to be appropriately categorised by which of the three levels they later become part of.

Nielsen (2006) proposed the three stages of the digital divide to articulate these factors more clearly. These stages are:

- The Economic Divide (First-Level)
- The Usability Divide (Second-Level)
- The Empowerment Divide (Third-Level)

Since Nielsen (2006), several other authors have written about the different stages/levels of the digital divide. The new discourse has seen the three stages of the digital divide (referred to as first-level, second-level, third-level) evolve to include new factors and ideas that were not previously considered. Whilst the third-level digital divide is outlined as empowerment, it links to the realisation of real-world outcomes (van Dijk, 2020).

2.3.1 The First-Level Digital Divide

Nielsen (2006) describes the first-level digital divide as an economic divide, manifested in its purest form as the fact that some individuals are unable to afford to buy a computer. Nielsen (2006) states that computer cost should no longer be an issue in the worlds most advanced economies. There was also speculation from Nielsen (2006) that computer prices would reduce by 25% over five years. The prediction from Nielsen (2006) that cost not being a

future issue in the advanced world economies is found to be unsupported. Richter & Naicker's (2021) study of how young families affected by the digital divide could be engaged online found that device costs and data costs were high, and there is little support available to mitigate this to allow these families to get online (Richter & Naicker, 2021). With a new basic laptop for internet use costing around £200, a basic home broadband package costing an average of £16 to £70 per month, a new mid-range Apple iPhone SE costing £449 and a smartphone data package a further cost that is dependent upon the requirements of the smartphone user (Apple, 2021; Brant, 2021; Ofcom, 2019). When these costs are compared against the monthly payments from welfare benefits in section 2.5.6.4 it is understandable why these costs may prove prohibitive for individuals with a low income.

The contemporary discourse has evolved, and the first-level digital divide has developed in terms of motivation and economic affordability. Van Deursen and van Dijk (2019) discuss how the first-level digital divide is now more closely linked to material access to the Internet and maintenance of this over time. This new material divides result from rapidly advancing technology and the associated myriad of different devices available (van Deursen & van Dijk, 2019; Sylvester et al., 2017). The cost of internet service provision and devices is also considered part of the first-level digital divide. Earlier in this chapter Nielson (2006) cited the low cost of devices and speculated how affordable they would become. Two studies authored by Horrigan (2010, 2015) found that from a sample of those who did not have internet access, 36% and 59% of respondents cited that cost of devices and internet service was a primary reason for non-adoption of the Internet.

Similarly, Reisdorf et al. (2018) also supported this, which was a housing study of 525 private residents in 3 neighbourhoods in Detroit in the USA. They found that low-income households were aware of the benefits of broadband access but were unable to afford it. There is further support of this from Levine (2020), whose study of digital divide information-based outreach programme showed that individuals were provided with information about how to get low-cost broadband they were still unwilling to adopt. The first-level digital divide links to sociodemographic factors and links these to basic use of the technology, but many of these studies are older and mainly descriptive (Hargittai, 2002; de Haan, 2004). The sociodemographic factors are discussed later in this chapter. The research at this time was considered technical and deterministic; this led policymakers to take the view that once market forces were enacted, diffusion was inevitable (van Dijk, 2020). Van Dijk

(2020) cites the work of Norris (2001) as a catalyst for this thinking from policymakers, with Norris (2001) prompting the reader to consider theories such as Rogers (1962) advancement on the earlier work of Gabriel Tarde (Kinnunen, 1996). There is a short examination of diffusion theories later in this chapter.

Motivation is also an established factor of the first-level digital divide discourse (van Dijk, 2005). Those who remain on the excluded side of the digital divide because of motivational reasons are referred to as 'want-nots' in the case of this study; many of those with motivational issues are '*don't-want-tos'* and may take the position of seeing the internet as irrelevant to their lives (Crump, 2003; van Deursen & Andrade, 2018). Negative attitudes toward technology are known to contribute to the digital divide, and phenomenon such as computer anxiety contributing to this (van Dijk, 2005; DiMaggio, 2001; Eynon, 2009; Verdegem & Verhoest, 2009). They also are shown to prevent minorities accessing the internet and negatively impact pattern of internet use (Meuter, Olstrom, Bitner & Roundtree, 2003; Rojas 2004 from van Deursen & Andrade, 2018).

2.3.2 The Second-Level Digital Divide

More problematic than the economics of the first-level digital divide is the second-level digital divide. The usability divide is an issue for those with lower educational attainment and literacy skills. To the uninitiated, *"Technology remains so complicated that many people couldn't use a computer even if they got one for free"* (Nielsen, 2006). Nielsen (2006) believes that making web access more manageable for the older demographic and those with lower literacy is the web's most significant problem that remains unchallenged. An issue for Nielsen (2006) is the lack of nuance when they discuss literacy – the meaning is unclear to the contemporary academic. Nielsen (2006) may mean the ability to read and write or could be referring to digital literacy, which might be considered the ability to use a device to get online. The narrative of the second-level digital divide has advanced beyond simple physical access.

Attewell (2001) coined the terms first-level and second-level digital divide. These terms were made popular by Hargittai (2002), who mainly examined this second-level digital divide in terms of unequal online or digital skills. However, the second-level digital divide is now considered a more multi-faceted concept of access that involves cognitive access, motivation, social inequalities, and differentiated uses of the web and focuses on the sociodemographic of

internet adoption; this incorporates relevant skill predictors (Hargittai, 2002; van Dijk, 2020). These differences drive new inequalities caused by these factors (Gui and Argentin, 2011).

The accent into scholarly view of the second-level digital divide resulted in a rash of research that moved the conversation onto a new field of thought. One avenue taken was social scientists using social cognitive theory (SCT) to examine the second-level digital divide (Bandura, 2005). This resulted in several studies that examined the second-level digital divide with SCT considering self-efficacy of use of the Internet (for example, Fox & Connolly, 2018; Rockmann, Gewald & Haus, 2018; Krueger & Stone, 2018; Partridge, 2007). Another way that social inequality is tied to the digital divide concept and is examined by many sociological studies (van Dijk, 2020; Helsper, 2021; Reisdorf, 2018; Whitacre & Rhinesmith, 2016). These studies typically examine the digital divide from a social status view: the effect that the inequalities in the socio-demographics discussed later in this chapter cause (Norris, 2004, Ragnedda & Muschert, 2013).

Digital skills, training and literacy are also considered an area of the second-level digital divide (Hargittai, 2002; van Dijk, 2020). Digital skills training is a particular topic of interest, with several different United Kingdom charities, private businesses and national and local government agencies providing this training in several formats (ET Foundation, 2021; Good Things Foundation, 2021; Pearson, 2021; HM Government, 2021a). The governmental and charitable funding that has gone into the provision of digital training has seen several research studies produced in this area. These studies typically find that experiential learning, typically in the public library scenario, is significant in stimulating digital inclusion (Manzuch & Maceviclute, 2019; Settle, 2016). Cohron (2015) stating that:

"It is so important for libraries and training centres to take charge in narrowing these digital divides."

Relevant to the sponsors of this study, Manzuch & Maceviclute (2019) claim that libraries can use collaboration networks, volunteering, and effective cost management to make this possible. It may be that library services are one of the best hopes for the provision of digital training to those who can afford it least when relying on the Government, who are reluctant to appropriately fund digital inclusion. When considering skills and knowledge, it becomes clear that not everyone has the same levels and are not able to apply them, in the same way, there are several studies showing this difference (van Dijk, 2006; Scheerder et al., 2017 from

Ferreira, Vale, Carmo, Encalada-Abarca & Marcolin, 2021). The outcomes and real-world consequences of this use form part of the discussion in the next section relating to the third-level digital divide.

2.3.3 The Third-Level Digital Divide

Nielsen (2006) outlines how empowerment is the third stage of this new understanding of the digital divide. This is linked to how digital technology is used for individuals to empower themselves. Nielsen (2006) observes that many individuals do not appreciate or know the true power of their computers, and because of this, they limit themselves to the basic task and default settings available to them. Nielsen's early concept of his third stage does not link so succinctly to the third-level of the digital divide as some of the ideas from the previous two stages. The third level of the digital divide focuses on the real-world consequences that stem from the different levels of access and the usage of digital resources (Scheerder et al., 2017; van Dijk, 2020; Ferreira et al., 2021; Selwyn, 2004). This focus is required because studies of the first and second levels of the digital divide often fail to frame and explain the social, cultural, economic, political and territorial outcomes produced by the digital divide (DiMaggio et al., 2004; van Dijk, 2005; Stern et al., 2009 from Ferreira et al., 2021). Third-level divides, therefore, translate into an individuals capacity to translate their internet access (or lack thereof) into favourable offline outcomes. The outcomes listed are all real-world outcomes and not online outcomes. So this means that the social or economic outcome would not be an individual using online banking. It would be an individual using online banking to apply for a credit card or loan. The classic reputation example is made by Ferrerira et al. (2021); the third-level digital divide does not refer to the reputation gain possible by online review, only the economic or urban consequences of that reputation gain such as additional footfall to a business or other sales. The depth of research into the third-level digital divide is open to discussion, with van Deursen and Helsper (2015) proposing an operational framework that might be used to chart the range of the third-level digital divide in a society where internet access is almost universal. One of the key questions being asked by research conducted in the third-level digital divide is

"What are the returns on internet use for particular sociodemographic groups identified by digital divide research and how are these returns linked to particular usage patterns?" (van Deursen and Helsper, 2015; van Dijk 2020).

The question again outlines the use and necessity of sociodemographic in digital divide research, illustrating the need to categorise and identify individuals and cohorts of those who may be subject to the digital divide.

2.3.4 Summary of the 3 Levels of the Digital Divide

The digital divide has been a visible issue on the scholarly agenda since around 1995, with the release of the NTIA report examining Internet diffusion among American citizens. Sociodemographic characteristics and their associated resources feature to differing degrees at all levels of the digital divide. These have slightly different contexts and meanings at each level, and how they interact with the digital divide also changes depending upon the context. Evolution of the ideas of Nielsen (2006) saw the digital divide discourse broken down into three levels:

- The First-Level – Motivation and Material access to the Internet
- The Second-Level – A multi-faceted concept: Skills, Access and Use
- The Third-Level – The real-world consequences that stem from inequality of access
  The offline outcomes of online activities

These three levels and how they may interact are illustrated in figure 2.1. The model used from Gomez (2018) argues that there is a recurring cycle between social and digital inequalities and that social inequalities are the root of these digital inequalities (Gomes, 2018). These digital inequalities increase and reinforce social inequalities already present in a stratified social sphere (Gomez, 2018; Ragnedda, 2017). Essentially these digital inequalities are increased by social stratification and cyclically re-occur.

The aim of this section was to step back from the digital divide being too complex to clearly articulate and attempt to articulate these issues from the literature in a way that helps bring order to the chaos of the digital divide.

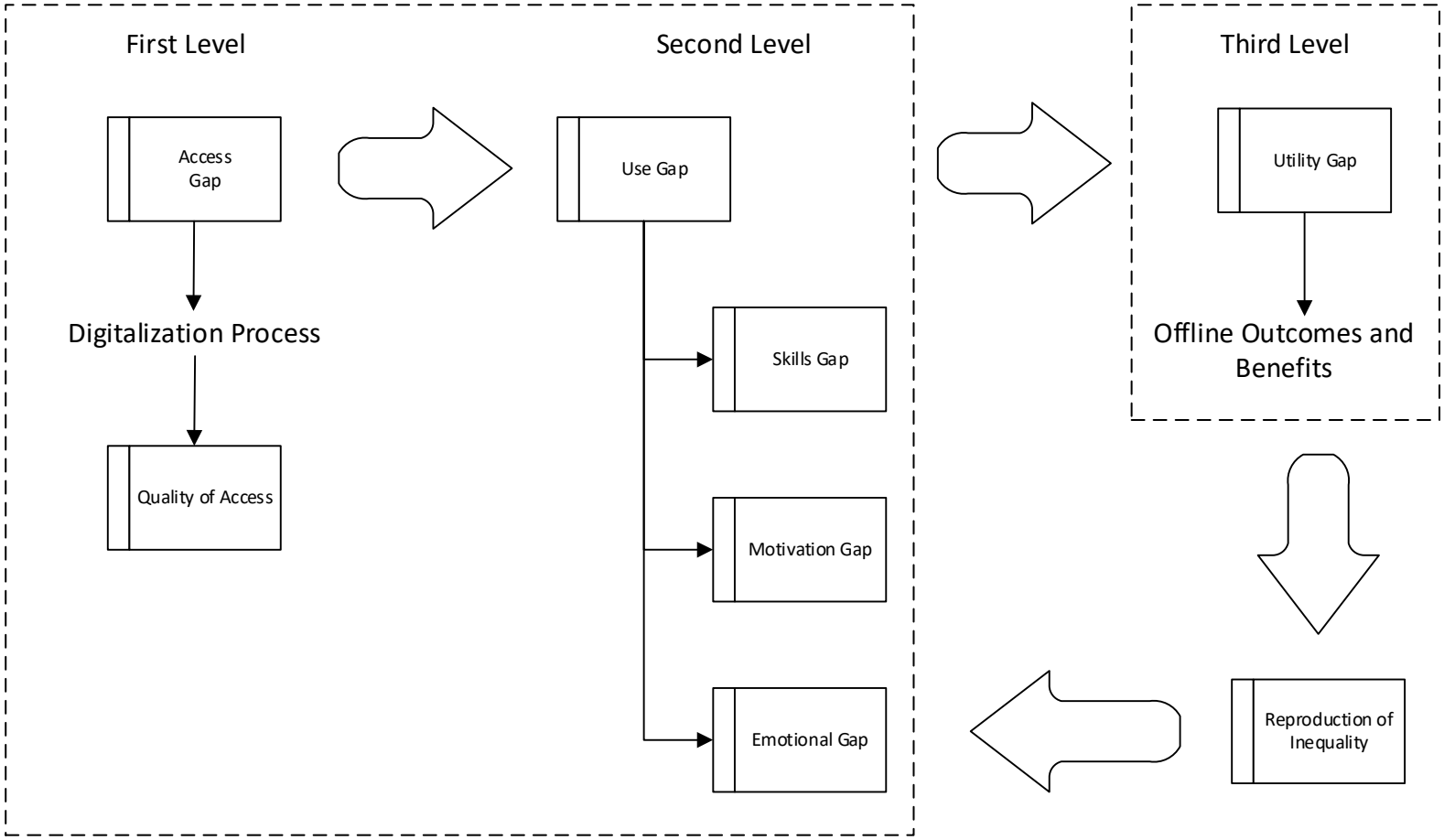


Figure 2.1 Three Levels of digital divide. Circle of social-digital inequality
Adapted by (Gomez, 2018 from Ragnedda, 2017)

2.4 Sociodemographic Factors

Van Dijk (2020) refers to how individuals' personal and positional categories impact their motivation and attitude to digital media and internet adoption (p.39). The main sociodemographic categories identified here relate to resources and personal and positional sociodemographic characteristics. The position of these socio-demographics was outlined earlier in the discussion of the three levels of the digital divide. This section is intended to supplement that discussion.

2.4.1 – The Resources required to go online

Rogers (2005) considers it essential that the material pre-requisites needed to go online are fulfilled as individuals with more resources will adopt earlier than those with fewer resources. This needs to be taken into consideration prior to any examination of other personal or individual factors. Van Dijk (2020) posits that these material pre-requisites are:

- Temporal – Having time to go online
- Material – Having the material resources to go online
- Mental – Having the intelligence, technical ability and literacy
- Social – Social Networks – Relationships with others
- Cultural – Having a supportive culture that helps to promote digital inclusion

2.4.1.1 The Temporal (Having the time)

To be motivated to go online, individuals must have the time to do so. Favourable conditions to do this may be that you work full time or you are engaged on a course of University Study (van Dijk, 2020). Van Deursen and van Dijk (2014b) found in their 2011 survey of internet users that the unemployed and those unable to work were the most frequent internet users who were online simply to pass the time for entertainment or to find a job.

2.4.1.2 Material Resources

De Haan (2003) identifies resource theory as a possible cause for unequal access to ICT. Resource theory is where consumers are motivated by preferences and constraints in decision making. In the instance of the technology, De Haan (2003) suggests that being constrained *in the possession of their resources* (having limited financial resources) pushes the consumer to make a decision against adoption of said technology. Van Dijk (2020) frames material resources concisely as the driver to adoption as having the income, property and appliances

for the household, work or study. When individuals do not have these resources, they are less likely to adopt. This is viewed by van Dijk (2020) as a major barrier in poorer countries.

2.4.1.3 Mental Resources

More complex than the previous two pre-requisite categories, mental resources are capacities such as intelligence, technical ability, and literacy (van Dijk, 2020). Individuals with superior mental resources will be much more inclined to use digital technologies (van Dijk, 2020). Literacy (the ability to read, write and be numerate) is also considered a vital skill in the digitally driven world (Brown & Czerniewicz, 2010). The new opportunities are not accessible to those who lack the knowledge, skills and competencies to access the digital world hence they end up being marginalised (Akintolu & Uleanya, 2021). Digital skills (skills and competencies to access the digital world) can be broken down into the more contemporary core digital skills and contextual digital skills that are considered for the 21st century (van Laar, van Deursen, van Dijk & de Haan., 2017). These are considered 21st century skills because they are more relative to the current social and economic environment (van Laar et al., 2017). The skill dimensions in table 2.1 and table 2.2 outline the core 21st century digital skills and are not about simple Internet use. They are viewed as necessary for employment and participation in society (van Laar et al., 2017). The notion of participation in society is particularly relevant to this study, with the project sponsor seeking to engage their digitally excluded social housing tenants with the online world and improve their prosperity. Social housing tenants are examined in section 2.5.6.4 of this chapter. Lewin & McNicol (2015) consider globalisation and the knowledge society as two primary drivers for the need for these 21st century digital skills and that they are essential when seeking work and then being successful and effective in the workplace. It is worthwhile to note that the skills from table 2.1 and 2.2 are not static; they would be subject to review and change as ICTs are in a state of constant change, and these digital skill dimensions could become outdated whilst other areas become more important or relevant (Hargittai & Hsieh, 2012).

Digital skills dimension	Definition
Technical	The skills to use (mobile) devices and applications to accomplish practical tasks and recognise specific online environments to navigate and maintain orientation (van Laar et al., 2017; Ng, 2012; van Deursen et al., 2016).
Information Management	The skills to use ICT to efficiently search, select, organise information to make informed decisions about the most suitable sources of information for a given task (Ahmad et al., 2016; Snow & Katz, 2009).
Communication	The skills to use ICT to transmit information to others, ensuring that the meaning is expressed effectively (Claro et al., 2012; Siddiq, Scherer & Tondeur, 2016).
Collaboration	The skills to use ICT to develop a social network and work in a team to exchange information, negotiate agreements and make key decisions with mutual respect for each other towards achieving a common goal (Choy, Deng, Chai, Koh & Tsai, 2016; Helsper & Eynon, 2013).
Creativity	The skills to use ICT to generate new or previously unknown ideas, or treat familiar ideas in a new way and transform such ideas into a product, service or process that is recognised as novel in a particular domain (Hinrichsen & Coombs, 2013; Mengual-Andres, Roig-Vila & Mira, 2016).
Critical Thinking	The skills to use ICT to make informed judgements and choices about obtained information and communication using reflective reasoning and sufficient evidence to support the claims. (Greene, Yu & Copeland, 2014; Lee et al., 2016).

Problem Solving	The skills to use ICT to cognitively process and understand a problem situation in combination with the active use of knowledge to find a solution to the problem (Greiff, Wustenberg, Holt, Goldhammer & Funke, 2013; Scherer & Gustafsson, 2015).

Table 2.1 Core 21st century digital skills (from van Laar et al., 2017)

The core skills in table 2.1 are viewed by van Laar et al. (2017) as fundamental for the performance of a broad range of tasks. The contextual skills in table 2.2 are those skills required to fully exploit the core skills and are therefore connected to the core skills in table 2.1 (van Laar et al., 2017).

Digital skills dimension	**Definition**
Ethical Awareness	The skills to behave in a socially responsible way, demonstrating awareness and knowledge of legal and ethical aspects when using ICT (Claro et al., 2012; Janssen et al., 2013).
Cultural Awareness	The skills to show cultural understanding and respect other cultures when using ICT (Yang, Huiju, Cen & Huang, 2014; Young, 2015).
Flexibility	The skills to adapt one's thinking, attitude or behaviour to changing ICT environments (Anderman, Sinatra & Gray, 2012; Osman, Hamid & Hassan, 2009).
Self-direction	The skills to set goals for yourself and manage progression toward reaching those goals in order to assess your own progress when using ICT (Holt & Brockett, 2012; Quieng, Lim & Lucas, 2015).
Lifelong Learning	The skills to constantly explore new opportunities when using ICT that can be integrated into an environment to continually improve one's capabilities (Chai, Deng, Tsai, Koh & Tsai, 2015; Uzunboylu & Hursen, 2011).

Table 2.2 Contextual 21st century digital skills (from van Laar et al., 2017)

This framework is useful for exploring the definition of digital skills that was first examined at the start of this section. Van Laar et al. (2017) originally proposed the 21st century digital

skills framework to measure digital skills in the workforce of the Netherlands. This was done by way of a systematic literature review ensuring that all relevant studies were considered when building the framework. However, van Laar, van Deursen, van Dijk and de Haan, (2018) completed a further study that developed the concept and was subject to empirical testing. Van Laar et al. (2018) found that the digital skill dimensions in table 2.1 were empirically validated by their research instruments. However, this study was completed on only one industry (creative) and for it to be more credible it would require further examination making use of other industry sectors. With creative industries having high levels of skills, education and knowledge it would be interesting to establish if these 21st century digital skills applied to those vulnerable and much less affluent social housing tenants (van Laar et al., 2018). There are other definitions of digital skills that are frequently used in conjunction with the digital divide. These other definitions and classifications are not dissimilar to the 21st century digital skills discussed. These other definitions are not however empirically tested or presented in as much detail (ECORYS UK, 2016; OECD, 2016; UNESCO, 2017).

Confidence as a Mental Resource

Connected to digital skill is the notion of confidence. Individuals that lack confidence may demonstrate computer anxiety and possibly technophobia if individuals have been subjected to a particularly traumatic experience or hold a particular negative attitude or view (Brosnan, 1998; Chua et al. 1999; van Dijk, 2005; van Dijk 2020). Bandura (1986) develops a theory of self-efficacy as a form of self-evaluations that influences individual decision making around what they may do with any given digital skill. Eastin and LaRose (2000) proposed a scale to measure this self-efficacy when individuals go online. Broos and Roe (2006) found self-efficacy is a stronger predictor of the frequency of internet usage amongst 13–18-year-olds. There are a number of more contemporary studies that use the work of Eastin and LaRose (2000) to examine the digital divide. These more recent studies tend to consider this from a particular demographic or perspective – Age / Generation (Rosales & Blanche, 2021), Literacy (Njuguna, 2021; Oliver, 2020). Kim & Hwang (2020) refer to self-efficacy being a driver in online smartphone activity that moderates the impact of disability (Eastin & LaRose, 2000). Whilst this research is interested in confidence, computer anxiety and self-efficacy, technophobia has been identified as a limitation to this study due to their complex nature and straying into other fields of study.

2.4.1.4 Social Resources

Social resources are individuals relationships with others. Social networks are crucial in learning and to support, motivate people to use digital media and to continue to develop a positive attitude in the use of digital media (van Dijk, 2020). People with wide social networks and strong peer groups are more likely to look for access to digital media and the Internet than those without (van Deursen et al., 2014; Courtois & Verdegem, 2016). This research suggests that peer group identity is important when delivering digital training to those who may be digitally excluded.

2.4.1.5 Cultural Resources

Cultural capital is viewed as a secondary material that comes to the fore later in the digital inclusion journey. In developed countries, people live in a material environment of computerised workplaces and homes that contain many devices (van Dijk, 2020). Individuals generally have a positive attitude towards using digital media. In developing countries, such technology is often limited to public buildings such as libraries, universities, schools and hospitals – this means that individuals do not routinely come into contact with it (van Dijk, 2020). This phenomenon is should not impact the research due to the research sample being located in a single city in the United Kingdom which is generally considered a developed and modern economic country.

2.5 Sociodemographic Attributes

Rogers (2003) claims that there may be a number of different social demographics that affect individuals that are digitally excluded and that there are a number of factors and drivers at work that cause this exclusion (p.468). This is supported by the earlier narrative around the three levels of the digital divide, and similarly, the discourse from Bach and Wolfson (2011) that states the sociodemographic and other factors described here are intricately intertwined, resulting in messy, complex and interacting reasons for digital exclusion.

2.5.1 The Age or Generational Demographic

Research in this area suggests that most young people are more motivated and positively orientated towards internet use and digital media than the older age demographic (van Dijk, 2020; Pew Research, 2019). There are several studies that highlight the scale of the digital exclusion issue with the older demographic of individuals (often referred to as the silver digital divide – Park, 2017). White and Selwyn (2013) collected 47000 survey responses that relate to internet use habits in an annual survey between 2002 and 2010. One of the main annual findings from this research was that respondents over the age of 65 years were five times more likely to be digitally excluded, and the same group also placed the least importance on going online. These findings are typical, with a few other studies showing that 58%-75% of those over 65 years of age had never been online (Tu and Ginnis, 2012; Lindsay et al., 2008; Wagner et al., 2010; Charness & Boot, 2010). A comparison between Ofcom (2018) and Ofcom (2021b) shows that the digital divide in this area is closing, with 18% of 65+-year-olds not having internet access in their homes. This is in comparison to the 2% of those aged 16-25 years and the 3% of those aged 26-34 years (Ofcom, 2018c).

It is also important to note there are exceptions to the silver digital divide. Yoon & Kim (2020) found that young-old (those aged 65-74) are increasingly likely to be online, citing the important role in older adult's sociodemographic characteristics being able to predict internet use (Werner et al., 2011; Yoon et al., 2020). Ofcom (2021b) finds that 46% of all respondents stated that they found the Internet was too complicated for them. This complexity can only be challenged by the provision of digital skills training to challenge the issues which individuals of any age face with this complexity. This links to the age-related narrative from Prensky (2001) where the terms "Digital Immigrant" and "Digital Native" originate, the latter being someone born into a world where computer games, video games

and the Internet are already strongly established; the former is typically where an individual was educated in a classroom that did not have a computer of any kind (Prensky, 2001).

An important factor that impacts on age-related digital exclusion is digital literacy. Digital literacy is a language; the more digital skills you have, the better you can speak it (Burton, 2011). To the uninitiated, learning digital skills can make a person feel like they are entering a new country full of new customs (Prensky, 2001). Computers were introduced in classrooms in the 1980's and their use was expanded to teach essential business skills in the 1990's, and this is how digital skills are acquired by almost all young people in the United Kingdom as part of their primary and secondary education (Passey, 2014). Passey (2014) helps to bring clarity as to why those educated pre-1990 may face challenges in going online and may consider themselves in the digital immigrant subset. This, however is not true of all digital immigrants; many seniors adopt the internet and use technology to fit in or in the course of their employment (Wu, Damnee, Kerherve, Ware & Rigaud, 2015). Third-level use would be a result of the use of this technology when used in the course of the employment, as the individual would earn a salary (a real-world outcome).

Several government agencies, local authorities, charities, universities, and social housing providers are attempting to address lack of digital skills or digital literacy in the elderly demographic by offering digital skills training and introductory sessions. (Good Things Foundation, 2021; ET Foundation, 2021; Age UK, 2016; Barclays, 2016; Northern Learning Trust, 2016). This is shown to benefit those from the older demographic that are digitally excluded however poorly socialised individuals from this demographic may remain excluded (Ofcom, 2018c; Firth & Mellor, 2005). Those from the older demographic who are building confidence from training also need to be aware of their limitations when going online, as individuals may consider themselves to be more skilled and capable online than they actually are (ECDL Foundation, 2016).

2.5.2 Literacy (Reading, Writing and Numeracy)

United Nations Sustainable Development Goal 4 relates to Education, Literacy and Numeracy. Item 4.6 of this Sustainable Development Goal reads, "By 2030, ensure that all youth and a substantial proportion of adults, both men and women achieve literacy and numeracy" (UNESCO, 2021). There are 773m illiterate adults around the world, many of whom are women. With around 75% of the offline population in the world is concentrated in 20 countries of this offline population 28% is illiterate (UNESCO, 2017b). In the United

Kingdom, the literacy rate is 99% this means one in every hundred people struggle to read and write (UNA, 2021). The National Literacy Trust (2017) estimated that 7.1m people in the United Kingdom would be described as having very poor literacy skills. Being illiterate comes with significant social costs; the biggest cost to individuals (and society) is those with poor literacy are not able to fully participate in society (The World Bank, 2019). 95% of employment in the United Kingdom requires that you are able to read (UNA, 2021). The ONS (2019) find that 90% of employment in the UK requires you to use a digital device at least once per day. Whilst this may seem obvious if an individual cannot read or write, they are likely to struggle to use any digital device to access the Internet. This is due to the need of having to meet the standard of literacy required to know what words are appearing onscreen. Zarcadoolas et al., (2002) study of low-literacy adults from a variety of sociodemographic found that respondents had difficulty navigating basic internet browsers with many respondents being unable to type website addresses into the address bar or search terms into a search engine. In addition, almost all respondents had problems with incorrect spelling (Zarcadoolas et al., 2002 from Rogers, 2001).

Information literacy, defined as *"the ability to think critically and make balanced judgements about any information that is found and used."* is linked to issues with traditional literacy (CILIP, 2018). The issues outlined by Zarcadoolas et al. (2002) compound the problems that individuals face attempting to find information online (that may relate to welfare benefits, health, consumer goods etc.). Birru et al. (2004) found that individuals with low literacy were unable to tell the difference between a sponsored website, an advert and appropriate health advice. This is clearly a problem in the contemporary internet age, where digital marketing techniques are becoming increasingly sophisticated. Digital citizenship requires regular and effective internet access, the skills to use the technology and an appropriate level of critical thinking skills to enable evaluation and use of information online (DiMaggio et al., 2004; Hargittai, 2002; Mossberger, Tolbert & Stansbury, 2003; van Dijk, 2009; Warschauer, 2003).

2.5.3 Levels of Educational Attainment

Linking to literacy, educational attainment is widely acknowledged as an important variable when considering the digital divide (Dwivedi & Lal, 2007; Helsper 2008; 2021; Eynon, 2009). Educational attainment links to the material resources required to go online outlined earlier. Acquiring cultural capital is viewed as important to breaching the digital divide.

Learning knowledge, language and gaining diplomas and qualifications are viewed as methods of gaining this cultural capital (van Dijk, 2020). Several studies also support the view that those who are better educated are more likely to be online. Van Deursen and van Dijk (2018) online survey of a sample of the Dutch population found that the 'majorities' – the employed, well-educated and married individuals benefit most in terms of material (income) and physical (device) access to the Internet. These findings are supported by Clayton and Macdonald (2013), who state that "*those who are more highly educated and who are employed are more digitally engaged and benefit more from technology in their everyday lives*". Similarly, Choudrie and Dwivedi (2006), in their examination of determinants of adoption in the United Kingdom (346 participants), found that education level is as important as age, gender and social status when considering adoption characteristics in the digital divide. In terms of being able to provide support to others, Howick & Whalley (2007) found that educational attainment plays a role in being able to support friends and family with their learning of digital media, services and products.

A Pew (2017) survey (data shown in Figure 2.2) that examined home broadband adoption by education level in the United States between 2002 and 2017 found a positive general correlation between education level and broadband adoption – with broadband adoption rising in each of the education level categories year on year.

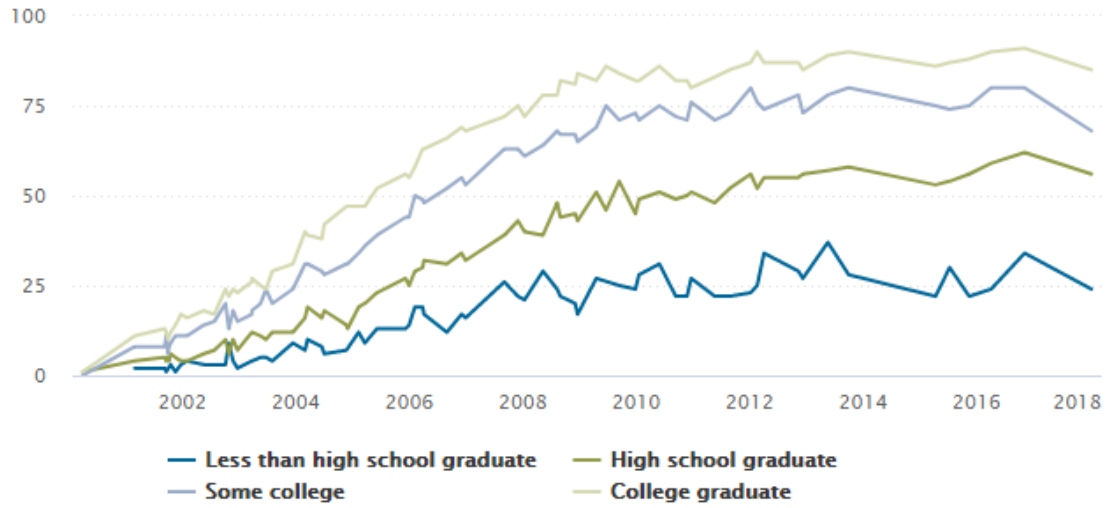


Figure 2.2 % of US adults who are home broadband users by education level (Pew, 2017).

An Ofcom (2014) study also presented findings in support of the link to educational attainment. Their analysis examined six major cities in the United Kingdom and considered

socio-economic factors related to broadband adoption in these cities. The analysis shows that in each sampled area that the lower the education attainment was in a sampled area, the lower the broadband adoption penetration rate would be.

2.5.4 Gender Inequalities

The gender differences that relate to the connection with technology start very early in life. As children, boys are encouraged to pick up technical toys and devices, by-passing the girls. This is an early and formative period where boys improve at technical ideas, and girls may be traditionally left behind. This continues into adulthood, where the great majority of males hold technical and strategically important jobs (van Dijk, 2005, p. 11-12). In terms of the gendered digital divide, this is supported by the World Economic Forum, where a report examining digital inequality worldwide found that significantly more men have access to the Internet than women, especially in developing countries where women take traditional roles in the home (Moore, 2016; United Nations, 2015). This gendered digital divide has a higher presence in sub-Saharan Africa this may be due to the society's traditional cultural factors and the relative position of women in some African and middle eastern societies (Castellano, 2015). In a study of data sets collected between 2005 and 2008 from 12 Latin American and 13 African countries, Hilbert (2011) found that fewer women access and use ICT as a direct result of their unfavourable conditions concerning employment, education, and income. In the United Kingdom, the situation is similar, with between 11% and 20% of female respondents in two Ofcom (2012; 2017b) surveys indicating that then never go online themselves. Of the male participants (n=1827) answering the same survey, only 10% and 14% of participants stated that they never go online.

The main actors in the gender digital divide are economic dependence, isolation, lack of equality, lack of relevant content and social isolation (Kiran, 2018; Mariscal et al., 2019). The study from Mariscal et al. (2019) contains some particularly interesting findings with some (non-specific to geography) cultures reinforcing isolation and lack of equality in male-dominated cultures, with these issues discouraging girls and women from interacting with technology.

2.5.5 Disability

Sir Tim Berners-Lee (2002) states an essential consideration for disabled people is that access to the Internet should be universally available to everyone regardless of disability and that

this should form a cornerstone in digital inclusion policy. However, the complexities of being disabled are not always defined in precise ways that are quickly addressed online.

Disability is defined in United Kingdom law by the Equality Act 2010 as "*A person is considered to have a disability if they report a long-standing illness, disability or impairment which causes substantial difficulty with day-to-day activities*.". The nature of disabilities varies from medical – with conditions such as diabetes, asthma, chronic fatigue syndrome, to those that may have a learning disability such as dyslexia or attention deficit disorder. This also includes the most disabled that may be wheelchair-bound or have limited motor functions (Wu et al., 2014; Hopkins, 2016). Those individuals with disabilities may be subject to multiple barriers to internet adoption as being disabled does not exclude them from the other barriers faced by individuals in this study, and indeed they are more likely to be subject to additional barriers. These barriers are also likely to vary based on the nature of the disability in question. With Johansson, Gulliksen & Gustavsson (2020) finding that there are differences in digital inclusion between different groups and subgroups of diagnoses and impairments and that disability should not be viewed by the digital divide discourse as one homogeneous group. Disabled people may be subject to many of the dimensions and phenomena that low-income families are subject to, in addition to a number of unique dimensions that will be discussed here that will only be relevant to disabled people.

It might be thought that disabled people would be highly motivated to use digital media to compensate for their handicap, especially if they have a mobility issue (van Dijk, 2020). This misconception of inclusion by motivation could not be more inaccurate in developing countries 80%-90% of persons with disabilities of working age are unemployed with this a little better in industrialised nations where this figure is between 50%-70% unemployment (United Nations, 2021). Employment prospects are also an issue ONS (2021) found that 15.1% of disabled people had no qualifications compared with 5.4% of non-disabled people. This makes it harder again for those individuals who are disabled to find work.

In the United Kingdom, there are an estimated 13.9m individuals with a disability (HM Government, 2018c). Relevant to the survey sample, in the North East of England, it is estimated that there are 335,900 disabled individuals of working age, of which 146,600 are in employment [43.7%] (HM Government, 2015a; 2018c). This represents a lower number of disabled people in the North East of England in comparison to other regions in England. In terms of engagement with digital media and the Ofcom (2017b), Internet use and attitudes

bulletin found that 37% of 251 disabled participants aged over 16 years said that they never go online themselves. This is supported by Ofcom (2015, 2017b) where 61% of 719 disabled participants said they have broadband internet technology in their homes.

There are several different reasons purported for this digital exclusion of disabled people, with this element of the review lending itself to the narrative of the second-level digital divide where the reasons for digital exclusion may be multi-faceted, and the sociodemographic attributes may interact with each other in a messy and complex manner. It is accepted discourse that having a disability often results in poverty, and conversely; living in poverty increases the likelihood of acquiring a disability (Vincente and Lopez, 2010; Shanahan, 2016). It is also commonly accepted that life costs more for disabled people and their families, spending more on essential goods and services like heating, insurance, equipment, care and therapies. These extra costs mean disabled people have less money in their pocket than non-disabled people, or they simply go without (Scope, 2021). The extra expense of being disabled may be mitigated somewhat by the income received from welfare benefits. There are approximately 3.5m disabled individuals claiming a selection of means-tested and non-means-tested welfare benefits from the public purse (DWP, 2017). The Department of Work and Pensions (DWP) record the medical reasons for any claim, with a great many claimants suffering from more than one health problem or disability (Kemp & Davidson, 2010). Universal Credit claim management is undertaken by the claimant and is an online-only process (HM Government, 2012; 2015b). In addition, Universal Credit payments are made monthly instead of weekly; the view of Government was this would help benefit claimants learn how to budget their money better. Universal Credit is a means tested benefit which means only the poorest disabled individuals can apply and receive this. This creates several issues for those individuals who are disabled and not online. The main issue is that DWP will impose punitive sanctions on any claimant who does not interact with the online system to state they are fulfilling their Universal Credit agreement. This may cause further financial issues, poverty and hardship for those disabled individuals concerned.

Vincente and Lopez (2010) found the higher a disabled persons income was, the more likely they were to go online. Also, Vincente and Lopez (2010) found those individuals without disabilities have their internet use habits impacted less when subject to poverty. This also indicates that even in the same economic circumstances, disabled people are less likely to have internet access than their non-disabled counterparts. As explained earlier in this section,

the nature of disability can vary significantly. Depending upon the nature of a disability the access to devices and technology may be an issue for disabled people, who are often forced to choose between expensive specialist assistive technology and inaccessible mainstream gadgets such as tablets or laptops (Scope, 2013). Historically businesses have not addressed the requirements for disabled people for fear it would increase cost of service for all customers and affect the ability to complete and develop new technologies (Bowe, 1993; 2007, Lang, 2000; Jaegar, 2006; van Dijk, 2020). Van Dijk (2020) also cites the difficulties with businesses not adhering to web accessibility standards for various types of disabled people, making it more difficult again for those affected individuals to get online. Brodwin (2014) lists the specialist assistive technologies, equipment and software as: computer components and applications, alternative input aids, adaptions and alternate input devices and alternate output devices. Cost of these assistive technology applications, services and devices can vary based on the disabled users' requirements which will be based on the nature of their disability (Scope, 2021). There is also the issue with these assistive technologies becoming outdated, which takes the smaller companies that produce this technology a relatively longer time to catch up with the mainstream (House of Commons Work and Pension Committee, 2019). The time taken to catch up with the mainstream technology may place the disabled internet user at a disadvantage until their relevant assistive technology has caught up with the mainstream technology. This clearly sets out the case that digital equipment and the associated adaptions increase the cost of being disabled and wanting to get online (as mentioned earlier by Scope, 2021).

One of the major benefits of internet adoption for disabled people is that they do not face discrimination or socio-physical barriers while online (Guo, Bricout, and Huang, 2005). This means they can participate in the same online activities and as their non-disabled peers, which in turn would allow them to realise the same benefits leaving them less socially excluded. This goes some way to illustrate the complex nature of the digital exclusion that disabled people face when considering internet adoption. There are many established and emerging dimensions to the disability digital divide that create further difficulties to bridging this divide. The perfect storm of lack of employment and associated financial reward, poverty, low income, receipt of disability benefits and the high cost of technologies may constitute a quintuple threat barrier to broadband adoption for disabled people that may be very challenging to overcome (Guo, Bricout, and Huang, 2005; Vincente and Lopez, 2010; Scope, 2021).

2.5.6 Having a Low Income (The Rich and Poor Divide)

Generally, the definitions of poor and poverty show similarities. Being (financially) poor may be defined as lacking sufficient money to live at a standard consistent with being comfortable in a society (Arifuzzaman, Rafee and Islam. 2021). Poverty is discussed in section 2.5.6.2. Martin and Robinson (2014) suggest diminishing gaps in internet access between the rich and poor. However, Internet use spreads more slowly in poorer households than in richer households. If trends continue, there will be a catch-up effect; that being said – this catch-up effect could take decades (Helsper, 2020). The assumption of a catch-up surmises that technology will not evolve further, and the type of access technology will not change. Since the Martin and Robson (2014) study, there have already been advances in digital technology which will inevitably impact on this catch-up effect. Helsper (2020) and Van Dijk (2020) both note that access (first-level digital divide) does not equal competent use of the Internet (second-level digital divide) or real-world outcomes (third-level digital divide).

Pew (2016) discusses smartphone ownership and internet usage and proposes that the greater a household's income is, the greater the likelihood of internet adoption (p.9). The Ofcom (2018) access and inclusion report finds that 37% of those of the NRS "DE" Classification are not internet users and did not have fixed-line broadband in their home. Greater digital exclusion is found in similar surveys that support digital exclusion in the most poor (Ofcom, 2016; Good Things Foundation, 2017). This supports the earlier discussed ideas that the lower-income digital divide is closing. The reasons found for the lack of adoption are threefold. Financial, skill-based and technical issues. Cost is viewed a primary factor for non-adoption for low-income households when it comes to the decision of internet adoption (Rhinesmith, Reisdorf & Bishop, 2019). Whitacre & Rhinesmith (2016) found that low-income households are most likely to suggest the reason for non-adoption is cost against the material need for it to be in their home. Low-income broadband adopters are likely to cancel or cut back their internet service if they are faced with other overlapping challenges to financial arrangements – they may not have a bank account or even a permanent home address. Digital literacy and skills, reading, writing and language skills and being unable to repair or to afford a repair on broken equipment are also cited as common internet access barriers in this sociodemographic (Ofcom, 2011; Dailey et al., 2010; Good Things Foundation, 2017).

The cost of equipment needed to connect to the Internet and the monthly subscription costs impact those with low incomes. Without internet service and a device to access the Internet, individuals are unable to use their digital skills to leverage real-world outcomes (the first, second and third-level digital divides) (van Dijk, 2020). Being unable to realise the real-world outcomes prevents individuals from accessing the cheapest rail tickets and goods online, meaning poorer people suffer twice over and is an example of the double disadvantage (Armstrong & Johnson, 2015). Affordable access to different ICT's is also essential for people and enterprises to take active part in the evolving digital economy and reap the development gains from it (UNCTAD, 2017). These developmental gains link to the non-monetised advantages of internet use. So not just the financial and economic but those that benefit society more widely, such as health, welfare, or educational benefits (European Commission, 2015).

Those less privileged households without access to the Internet are at a clear disadvantage as information [and services] are moving more frequently online. These households are unable to share equally in the benefits of being online (Ragnedda and Muschert, 2015; Ofcom, 2018b). The missed opportunities that lack of adoption brings to the lower-income group illustrate some of the social inequalities this group are subject to, such as barriers to searching for employment or promotion opportunities in their current career, access to skills, training and education programmes, making economic and household savings of around £780 per year from shopping, paying bills online and improve their health by being engaged and socially active (Lloyds, 2017; Maude, 2014; Rhinesmith, 2012; Bates et al., 2012; Ragnedda, 2015). A further disadvantage to those with a low income that are digitally excluded is the establishment of mainstream online banking. With the consumer digital index finding that individuals that use online banking to manage their money, 67% of participants use the facilities available to avoid paying overdraft fee's and may manage their money better than those that are non-adopters of internet banking or those who are not online (Lloyds, 2017).

2.5.6.1 Banking and Financial Credit

An area that attracts attention related to the digital divide is that of online banking. There are, however, a number of tasks related to banking and financial credit that are often forgotten when you consider the digital divide. Online access to financial records is the first more simplistic area with nuanced activities such as checking credit scores, applying for loans and credit cards, and claiming welfare benefits and grants (Walden, 2020). These activities are

taken for granted by many already digitally included individuals. Lack of internet access as a barrier to financial inclusion should not be forgotten. When an individual considers installing internet access in their homes, they need to consider how creditworthy they may be. Ofcom & Pruvost (2014) affordability report found that 14% of all respondents faced issues paying for digital communication services. Several difficulties were identified relating to these communication services, and one of these was that 2% of respondents claiming that they had debt relating to digital communication services.

2.5.6.2 The Poverty Premium

Arifuzzaman, Rafee and Islam (2021) define poverty as:

"Without safety nets, an individual may not be capable of meeting his or her needs for a healthy and happy life, not only based on income, but also political, social and other legal actions and policies".

Notionally, the poverty premium is described as how those suffering from poverty pay more for essential goods and services compared to those not in poverty (Evans, 2018). Some examples of goods and services are energy, credit and insurance. Malik (2019) makes an example of being on the most competitive energy tariff. If you are digitally excluded and are unable to go online to sign up for this tariff, then you have to remain with your less competitive tariff and pay the poverty premium (Malik, 2019; Evans 2018). Malik (2019) finds that 73% of those in poverty pay a premium for not being on the best value energy tariff. The average cost of the poverty premium is £490 per household, per year and this is made up of premiums relating to fuel tariff, car insurance, prepayment meters, preference for non-standard billing methods and paper billing (Davies, Finney and Hartfree, 2016). Bridging the digital divide for those in poverty is a tangible example of the third-level digital divide in helping reduce the financial pressures for those families (Helsper, 2008; Chartered Institute of Taxation, 2013).

2.5.6.3 In receipt of Welfare Benefits

The UK welfare benefits system is a complex and evolving system of social security payments to certain eligible members of the population of the United Kingdom. The UK benefits system exists to provide practical help and financial support for those who are unemployed and looking for work. The UK benefits system also provides assistance to those who are on a low income, they have a disability (with different benefits and rates available

based on severity), are bringing up children, are retired, care for someone or are ill (CABA, 2021).

The UK Government 2010 set out plans to reduce the UK Government financial deficit by cutting public spending and reforming welfare benefits and working tax credits (HM Government, 2010a). The introduction into law of the Welfare Reform Act 2012 saw stronger penalties for fraud and error and reformed several welfare benefits. The UK Government at this time claimed that they wished to promote closer monitoring of the economically inactive and attempt to address the causes of welfare benefit dependency and the routes to poverty. Whilst these reforms enabled closer monitoring, there was a benefit rate freeze and several changes to claim and award rules, which made the individual claimant poorer economically (Duncan-Smith, 2006; HM Government, 2012; 2015b; Shelter, 2016; Fenton, 2010). The umbrella benefit that emerged from these reforms is known today as Universal Credit (HM Government, 2012; 2017). One of the outcomes of the Welfare Reform Act 2012 was that the benefit claim and administration process was moved online as part of the Digital by Default strategy (HM Government, 2017b). Digital by Default is the UK Government strategy for digital services, which are so straightforward and convenient that all those who can use digital services will opt to use those services, whilst those who are unable to do so are not excluded (HM Government, 2012b).

The government minister for welfare reform in 2013 was Lord David Freud – a former investment banker at UBS made an assertion that demonstrated that the UK Government of the day were wildly out of touch with the digital divide:

"*most people claiming Universal Credit will be able to navigate the internet"* (Freud, 2013).

A Tu and Ginnis (2012) study at that time found that around 12% of welfare benefit claimants were digitally excluded. With two subsequent studies finding those numbers to be higher that first thought, with an estimate of 18%-20% of welfare benefit claimants being digitally excluded (DWP, 2017, Lloyds, 2017). In addition, these studies found that the environment required to foster digital inclusion is absent from the Universal Credit reforms.

In the United Kingdom, there are an estimated 20m welfare benefit claimants, this figure includes around 13m individuals claiming their state pension (DWP, 2021). Of these claimants, there are approximately 4.3m who claim Universal Credit as they are either unemployed and seeking work, have a low income, are disabled or are unwell and unable to

work (DWP, 2021b). These individuals claiming welfare benefits are impacted by the digital divide in the same manner as those individuals with a low income but with the added issue of facing the expectation from the UK Government that they are able to go online somehow to make and administrate their welfare benefit claims (Katz and Gonzalez, 2015; HM Government, 2017b). The level of low income provided by Universal Credit is based on your relationship status (Single, Married, Co-habiting), if you have children if you are disabled – attracting an extra amount if you are considered severely disabled. The amounts of income are shown in table 2.3

Circumstance (only one applicable per claim)	**Monthly Allowance Payable**
Single and under 25	£344.00
Single and over 25	£411.51
A couple and both under 25	£490.60
A couple and both are 25 or over	£596.58
Has Children	
First Child	+£237.08
Second Child and other eligible children	+£237.08 per child
If a Child is Disabled	+£128.89 per disabled child
If a Child is Severely Disabled	+£402.41 per disabled child
If you care for an elderly or disabled person	+£162.73

Table 2.3 showing Universal Credit claim amounts by circumstance
(DWP, 2021c)

Individuals are also able to apply for money to assist with housing costs. How much you get depends on your age and circumstances, and this element of Universal Credit replaced the

now reformed housing benefit claim. The monthly allowances identified in table 2.3 are reduced proportionally by any earnings from work up to a pre-defined limit (DWP, 2021c).

2.5.6.4 Social Housing Tenants

Social housing tenants are individuals or households with a tenancy agreement with a social landlord, such as a housing association or council. The key idea of social housing is that it's more affordable than private renting and usually provides a more secure and long-term tenancy (Shelter, 2021). There are approximately 23.5m dwellings in England, with about 17% (3,995,000) of all dwellings being rented to housing tenants (National Audit Office, 2017). In Newcastle upon Tyne, there are a total of 117,153 dwellings that are rented housing stock with 29.7% (approximately 34,500) of these being social housing stock that is owned and operated by Your Homes Newcastle on behalf of Newcastle City Council (Newcastle City Council, 2017; YHN, 2017). In the Newcastle upon Tyne area, 11333 housing benefit claimants were YHN tenants (Newcastle City Council, 2019). This links to the previous section and adds support to the fact that many social housing tenants are also welfare benefit claimants. As discussed in earlier sections, social housing tenants typically suffer the same detriments as low-income adopters and benefit claimants. There are few empirical studies of social housing tenants and how the determinants of the digital divide relate to that cohort group – this is part of the rationale for this study.

2.5.7 Race and Ethnicity

van Dijk (2020) considers race and ethnicity a sensitive category. Finding a difference in motivation and attitude among specific ethnic, migrant, native and minority ethnic groups is more related to economic deprivation, discrimination, and cultural preferences than directly to race and ethnicity. Migrant groups typically use digital media to communicate within their home communities and seek support in challenging situations (van Dijk, 2020; Gonzales, 2015). Ethnic minorities are among the most disempowered groups in society. They suffer oppression, underrepresentation, and worse education (Helsper, 2020). Digital inequalities behave differently when considering ethnic minorities and impact on the third-level digital divide in terms of individuals interacting with civic engagement tasks, such as reducing absentee ballots in elections with the introduction on online voting (Helsper, 2020). The Ofcom (2017b) Internet use and attitudes bulletin for ethnic minority participants were considered too low to analyse. Still, the reasons cited for non-adoption were "*It's just not for people like me / I don't see the need*", "*It's too complicated*", and "*It's too expensive*". They were loosely supporting the earlier comments of van Dijk (2020) that outlined the anticipated

differences in motivation and attitude. With the Internet being a melting pot of cultural identities, it is possible that some ethnic groups may avoid the Internet as it may be a perceived threat that they do not trust their own and their communities' cultural identity (Ulslaner and Conley, 2003; Philips 2006; Awaworyl Churchill et al., 2016).

The ONS (2021a) Exploration of the Digital Divide in figure 2.3 shows that the ethnicity digital divide is closing slowly year on year. The latest data available shows that an average of 3% of all ethnic categories are digitally excluded. The Bangladeshi community in the UK is one of the more digitally excluded and the community that has made the most progress in becoming digitally included. In 2011 31.4% of the Bangladeshi ethnicities were digitally excluded, which has reduced to 8.1% in the most recently available data (2018).

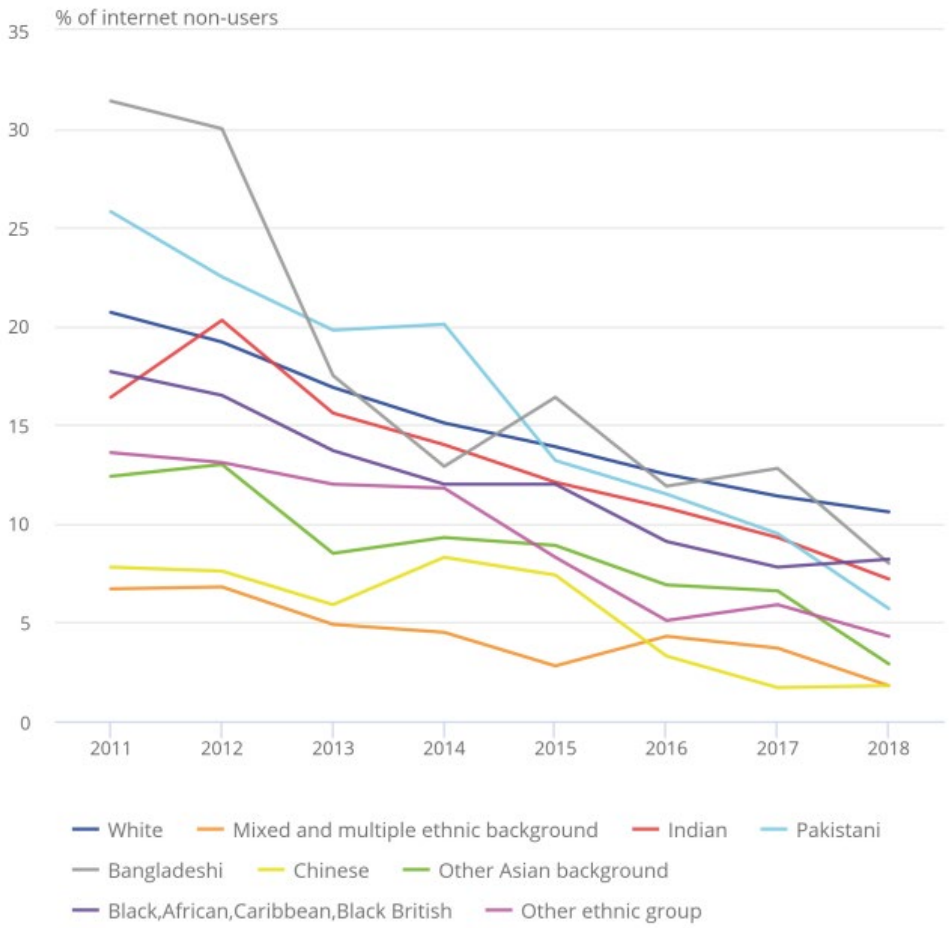


Figure 2.3 The ethnicity gap in internet use in the UK between 2011 and 2018 by the most effected ethnicities (ONS, 2021b).

2.5.8 The Influence of Children

The presence of children in a household might be expected to drive second-level digital divide outcomes, with children being a motivator to get home access (Helsper, 2020). Beyond this motivator to get home access, children are seen to improve the general computer use skills in households (Ames, 2019, Cristia, Ibarraran, Cueto, Santiago & Severin, 2017; Meza-Cordero, 2017 from Helsper, 2020). However, the inequalities in digital skills are not always overcome by removing the first-level material access barrier to laptop ownership in these children. Recent changes to the delivery of education (despite widespread penetration of technology in schools) have forced school teachers to rethink the lack of technology adoption in the delivery of formal education (OECD, 2015). This may indicate a lack of digital skills in some less digitally able school teachers.

Broadband in the home (first-level digital divide) is considered particularly important for families with school-age children (Communications Consumer Panel, 2009). As outlined earlier in this section, if school teachers were to provide learning materials to pupils at home to develop second-level digital divide competencies (digital skills). This could eventually lead to meaningful third-level digital divide real-world outcomes later in the child's online career. This also may lead to those parents without the Internet generally recognising its potential benefits and the associated advantages it could bring to their children (Ofcom, 2011). If there are children in a household, the level of ICT competence is raised with the consequence that adopting broadband is not as great a hurdle as would otherwise be the case (Robertson et al., 2004). In other words, the complexity of adopting broadband is decreased (Howick & Whalley, 2007); however, barriers continue to exist relating to broadband adoption in this demographic.

One in eight parents frequently expresses concern with their children using the Internet unsupervised (Ofcom, 2011; Riazi, Brussoni, Vertinsky and Faulkner, 2021). This concern manifests itself in several ways, with one of the most common being the moral panic around children [intentionally or unintentionally] accessing internet pornography (Cree, Clapton & Smith, 2015). The nature of online hazards change as the Internet continues to mature, and parental mediation is vital in protecting them online (Livingstone et al., 2014). Traditionally there is also the fear of the dynamic in the household changing by children being able to access the Internet in the house is an issue as parents will desire to remain in control of their children and to be able to assert their authority in the household (Ofcom, 2011). The concern

of parents for their children is a natural behaviour. Still, it may represent a barrier to Internet adoption in households where parents perhaps lack the digital skills or confidence to go online with their children. Provision of digital skills to parents via their children's school is a possible mitigating action that would allow this (Helsper, 2020). However, this is not always practical, with funding in schools very tight under the UK Government. Children in a household also positively influence the purchase of ICT's . Parents are still the decision-maker for financial spend in a household, but children's desire for the latest PC, gaming console or smartphone acts as a driver (Barrie, Bartowski & Haverda, 2019). Once the new ICT enters the household, it can also act as a driver for the parent to skill up and understand its use (Barrie et al., 2019).

Overcoming parental lack of digital skills, fear of the internet and confidence barriers may enable the presence of children in a household further to drive adoption of these digital and Internet technologies.

2.6 Government Policy relating to the Digital Divide

The UK Government has several departments and organs related to digital as a theme of business and life. The Department for Digital Culture Media and Sport (DCMS) is a ministerial department with around 900 employees supported by 43 public bodies (DCMS, 2021). The DCMS has identified seven strategic objectives to deliver as part of its day-to-day activities. These include:

1. Global: Drive international trade, attract investment and promote shared values around the world – promoting the UK as a great place to live, work and visit

2. Growth: Grow an economy that is creative, innovative and works for everyone

3. Digital Connectivity: Drive the UK's connectivity, telecommunications, and digital sectors.

4. Participation: Maximise social action, cultural, sporting and physical activity participation

5. Society: Make our society safe, fair, and informed

6. EU Exit: Help deliver a successful outcome to Brexit

7. Agile & Efficient: Ensure DCMS is fit for the future with the right skills, culture and connections to realise our vision and live our values as "One DCMS"

(DCMS, 2021b)

Following an examination of the DCMS (2021b) departmental plan (initially written in 2019 but updates in 2021), the only item that stands out as an item that may fit in with the perspectives identified earlier by van Dijk (2020) is item 3.1 which is to drive the UK's connectivity, telecommunications, and digital sectors. This is a first-level digital divide challenge based on the outline of the levels of the digital divide discussed. An argument could be made that market forces would drive the delivery of faster broadband connectivity to citizens without the aid of the DCMS (2021b). The leads the research to the position that the DCMS have a very limited strategic focus on challenging the digital divide.

The DCMS is responsible for the delivery (along with other organisations and departments reporting to them) to deliver the UK Digital Strategy (HM Government, 2017c). The three objectives identified in this strategy are:

1. ensuring that we continue to tackle the root causes of digital exclusion and that everyone can increase their digital capability to make the most of the digital world.

2. Developing the full range of digital skills that individuals and companies across the country need in an increasingly digital economy and supporting people to up-skill and re-skill throughout their working lives.

3. Strong collaboration between the public, private and third sectors to tackle the digital skills gap in a co-ordinated and coherent way, so the sum is greater than the parts, and everyone everywhere has better access to the training they want.

(HM Government, 2017b).

The main area of interest from the UK Government Digital Strategy (2017c) is where policy directly relates to assisting the most digitally excluded and vulnerable in society and helping them break down the digital divide to get online. The UK Government Digital Strategy (2017b) discusses taking a more targeted approach to digital inclusion and has a section specific to the development of the role of libraries in improving digital inclusion. The wish to make libraries the "*go-to provider of digital access, training and support for local communicates"* is ambitious. Flood (2019) reports that 800 libraries closed between 2010 and 2018 due to the UK Government Austerity Policy. A further 84 are estimated to have closed between 2018 – 2020 (Reading Agency, 2020). These closures signal that the agenda

outlined in the UK Government Digital strategy may not be funded appropriately or that the authorities who operate local libraries are forced to close them to provide services elsewhere (Flood, 2019). The UK Government Digital strategy also claims how library services will deliver on improved digital access and digital literacy. None of these comments from the digital strategy document outline how these claims will be paid for and by whom. Libraries are the responsibility of local authorities, and in the UK, these local government authorities have faced a real term cut of 38% in funding between 2010 and 2019 (Institute for Government, 2020).

The current state of the UK Government Policy to deal with the digital divide is quite limited. Much of the available policy documentation discusses skilling up and learning new online digital skills. Only a short section exists about how library services will be able to aid the most digitally excluded and provide services to those who may be economically disadvantaged (HM Government, 2017b; 2017c).

2.6.1 The European Union

The United Kingdom faces a changing landscape in a post-Brexit world; however the UK was a formerly member of the European Union between January 1973 and January and it should be noted that the European Union has helped form policy in the UK for a number of years (EU, 2023). Reggi and Gil-Garcia (2021) took a view on individual strategic approaches over the territorial digital divide in the European Union, with a focus on how funding was allocated to support digital divide interventions. The European Union allocated 21.4bn euros to help fund member nations ICT policies in the 2014-2020 EU programming period. With the majority of this fund being targeted at the less developed areas of Europe (Reggi and Schiccitano, 2021). Reggi and Gil-Garcia (2021) found that EU Member states allocated this funding based on policy goal needs and this was widely aligned with the EU 2014-2020 programme strategies – provision of digital skills to those in need, overcoming socio-economic conditions and supporting better institutional arrangements and digital government infrastructure. It is interesting that provision of broadband infrastructure and use of ICT's in the public sector to provide services to citizens were prioritised by EU member state national governments with digital training and digital inclusion strategies taking less priority. Reggi and Gil-Garcia (2021) identified that interplay between EU policies, existing national, federal, and regional policies need to be taken into account when considering the wider application of EU policy as not all EU member states were found to deliver the wider

policy objectives in the same manner (if at all!). In addition to this it is useful to note that the European Investment Bank provided finance to EU Member States to provide additional funding for digital infrastructure projects (EIB, 2017). This additional funding complicates the application of this EU policy as not all member states may be eligible for funding at any given point in time. It is interesting that many EU Member States prioritise investment in broadband infrastructure and upgrades in the same way that the UK Government has continued to invest in this technology as a way to overcome the digital divide but also prompt economic growth with infrastructure projects (DCMS, 2021; Reggi and Gil-Garcia, 2021;EIB, 2017).

2.6.2 The United Nations

The United Nations considers ICT's a powerful tool to address the UN Sustainable Development Goals (Janowski, 2016; Tjoa and Tjoa, 2016). The International Telecommunication Union (ITU) is an agency of the United Nations that has responsibility for ICT contributions to the Sustainable Development Goals. The ITU identified many of the benefits of going online that discussed earlier in section 2.2 of this chapter but are currently pushing an agenda around broadband availability, digital transformation of public services and highlighting the need to address the digital divide to ensure there is sufficient capacity in case of a further health crisis – such as the COVID-19 pandemic (Moon, 2020). The UN Sustainable Development Goals places responsibility to achieve these goals on individual nations, governments, cities and civil society and the various UN agencies help to support these more widely. With Goal 9 of the SDG's being industry, innovation and infrastructure, this highlights the strategic importance of broadband delivery in countries, however in bridging the digital divide many of the other SDG's should also be considered, (UN, 2023). The International Telecommunications Union (2020) report measuring digital development identified that only 33% of the population of the African continent was using the internet – this places an estimated 871 million individuals offline and not being able to access the benefits of the internet and internet access. Munga (2022) highlights the challenges of the provision of typical internet access and discusses the coverage gap and the usage gap. The coverage gap they define as:

"Unconnected populations living in an area not covered by broadband"

And the usage gap as:

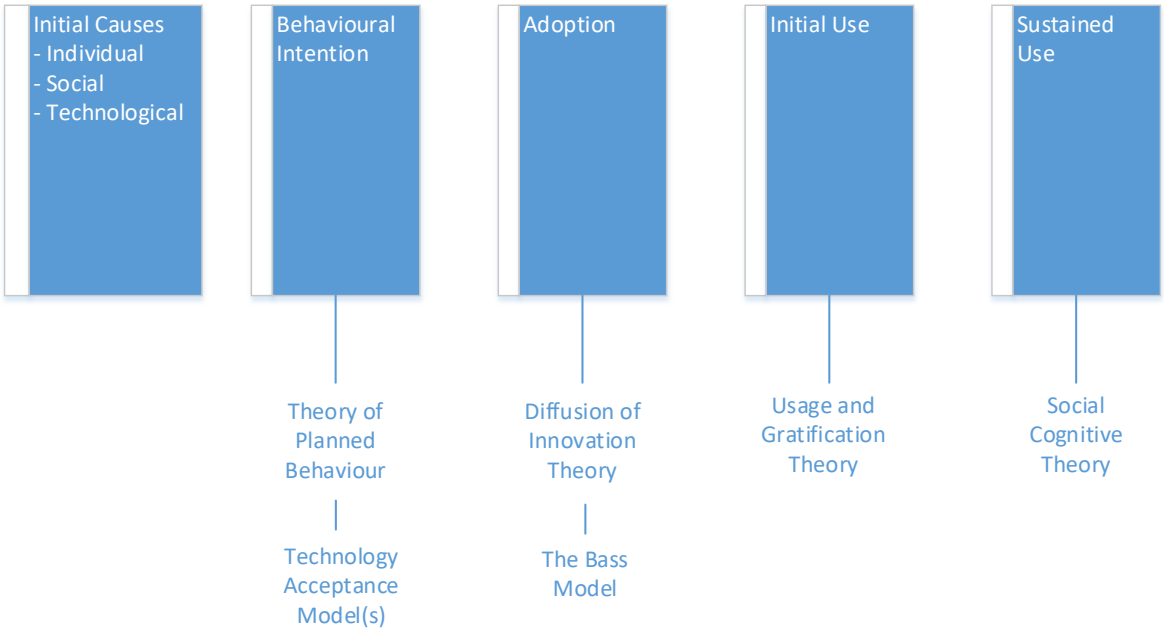
"Living within the footprint of internet access but not using internet services"

The ITU (2020) and Munga (2022) points to the successful investments being made in some African countries to overcome these gaps. Rwanda for example partnered with Korea Telecom (KT) to achieve over 97% 4G mobile coverage in 2020. It is viewed that replication of these efforts in other counties would be helpful in overcoming the coverage and usage gaps described above. The ITU report (2020) signals that a policy shift is needed to enable Africa to prosper and overcome the digital divide – with socio-economic factors around affordability needing to be overcome first. Munga (2022) concludes that integration of policy goals and international investment will be essential in overcoming the digital divide for Africa as a continent.

2.7 Theories of Technology Acceptance (Product Diffusion Theory)

With a view to the inclusion of an emerging theoretical model through which the digital divide may be studied, this section discusses various other theories, models and frameworks of technology acceptance. The study of diffusion and acceptance of innovation is one of the most mature research areas in the Information Systems discipline (Benbasat and Zmud, 1999; Hu et al., 1999; Venkatesh et al.; 2003). Several different theories and models have been embraced from diverse academic disciplines such as social psychology, sociology, and marketing. These have been modified, developed, adapted and extended by researchers to understand better and predict technology adoption and diffusion (Benbasat and Zmud, 1999; Venkatesh et al., 2003). There are four dominant frameworks and models used when investigating digital inequalities: Uses and Gratification (UG), Technology Acceptance Models (TAM), Diffusion of Innovation and the Bass Model (Helsper, 2020; van Dijk, 2020). These are shown in Figure 2.4 by phase of acceptance.

Figure 2.4 – Acceptance of Technology theories by phase of acceptance (van Dijk, 2020)



2.7.1 The Diffusion of Innovation Theory

The Diffusion of Innovations theory describes adoption patterns, illustrates the process, and assists in understanding these patterns of adoption and if innovation is likely to be successful (Rogers, 1995). Adoption is considered by Rogers (1995) as a conscious decision to use an innovation fully. Rogers (1995) defines diffusion as the process of innovation is communicated through specific channels over time among the members of the social system. These four main elements that are expressed in these definitions are the key components of this theory.

- Innovation
- Communication Channels
- Time
- Social System

The Diffusion of Innovation theory is foundational in diffusion research, and Rogers (1995) recognises this in his 1962 work with "Diffusion research is thus emerging as a single, integrated body of concepts and generalisations, even though the investigations are conducted by researchers in several scientific disciplines". These simple metaphor generalisations trade-off accuracy in studies and found that studies from Downs & Mohr (1976) and Markus

& Robey (1988) were more accurate with their own process-based, contextual and deterministic approaches (Lyytinen & Damsgard, 2001).

The Diffusion of Innovation theory finds its roots in sociology. It has been used as inspiration for some of the most influential works around diffusion and adoption since its inception in the 1960s (Venkatesh et al., 2012, Boyne, Gould-Williams, Law & Walker, 2005; Deffuant et al., 2005; Pennington, 2004; Venkatesh, 2003). In the context of the digital divide, the diffusion of innovation model was popular with first-level digital divide researchers (Helsper, 2020). It is used to outline the logical uptake in ICT's within society – with pioneers adopting early and others following. The adopter classification is illustrated in figure 2.5

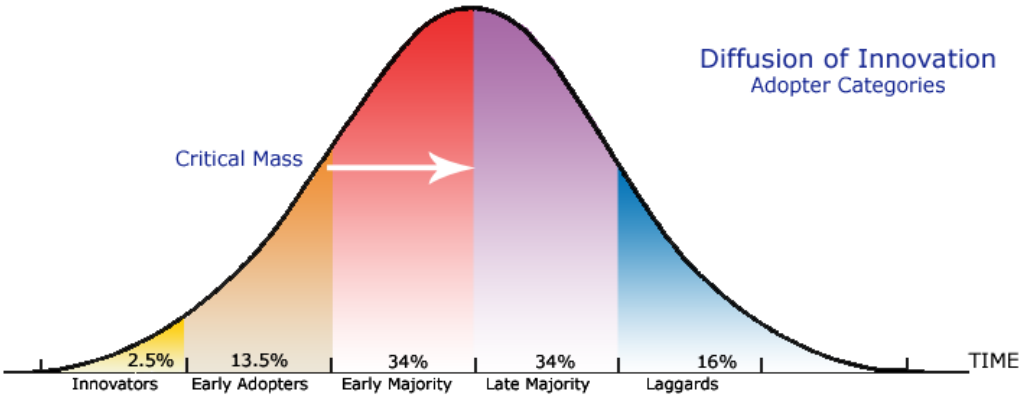


Figure 2.5 Adopter Classification based on innovativeness [shown as a normal distribution (Rogers, 2003).

Rogers (1995) has been empirically tested time and time again, showing how others influence the adoption of innovations amongst various sociodemographic and other types of individuals (Park, 2017). It is a limitation of Rogers (2003) work that non-adopters and the incomplete adopter are not considered in this adopter classification. Another limitation is that Rogers (2003) ignores the social demographic of an adopter (second-level of the digital divide); some adopters may have the features of innovators or early adopters but may not quickly adopt an innovation. Ethical concerns may also drive non-adoption in a similar manner where a section of society could view an innovation as unacceptable or morally questionable – this would cause all classifications of the adopter to ignore a new innovation (Wooliscroft, 2016). Rogers (2003) Diffusion of Innovation theory is also widely acknowledged to be

operationally applied better where it examines the adoption of new behaviours and innovation, rather than cessation, prevention or change of behaviours (LaMorte, 2016).

2.7.2 Uses and Gratification

The Uses and Gratification (UG) framework's central premise is that individuals use (digital) media – including ICT's to fulfil intrinsic needs (Helsper, 2020). The UG framework forms part of the second-level digital divide discourse. The UG framework does not explicitly refer to inequalities and assumes an equal future (Helsper, 2020, p. 36; Ruggiero, 2000). Katz, Blumler & Gurevitch (1974) proposed the UG framework in their book The Use of Mass Communication and introduced five basic assumptions.

1. The audience is conceived as active
2. Need, Gratification, and media choice lies with the audience member
3. The media competes with other sources of need satisfaction
4. Many of the goals media use can be derived from data supplied by the individual audience members themselves
5. Value judgements about the cultural significance of mass communication should be suspended while audience operations are explored on their own terms

These assumptions are the basis of the UG framework that explores the exact correlation between the media and its consumers or viewers (Katz, Blumer & Gruevitch, 1974). These assumptions support van Dijk's (2020) contemporary narrative discussed earlier in this chapter (Section 2.4.1). In terms of the first assumption that the audience is conceived as active, this may relate to the audience having the temporal and material resources to get online. In terms of the digital divide, the audience cannot be viewed as active without the time or materials required to get online. The second and third assumption relating to need, Gratification and media choice may relate to the mental and social resources required to go online – considering the ability, intelligence and support motivational constructs described by van Dijk (2020). UG framework is a generalist older theory that traditionally examined television media but has been used recently to examine other technologies such as social media adoption, adoption of food delivery apps on smartphones, Facebook addiction, use of social media apps in different age socio-demographics and many more (Ragnedda & Muschert, 2019, p.202; Sheldon, Antony & Ware, 2021; Ray, Dhir, Bala & Kaur, 2019; Yin, Lee & Giang, 2016). Several studies that are less contemporary that considers the holistic

digital divide through the lens of the UG framework (Cho, Gil de Zuniga, Rojas & Shah, 2003; Papacharissi & Rubin, 2000).

2.7.3 Technology Acceptance Models

The Theory of Reasoned Action is a broad generalist nature diffusion theory (Ajzen and Fishbein, 1980; Davis, Bagozzi & Warshaw, 1989). It is considered widely applicable to most usage scenarios, and these scenarios may not have any technology orientation. The reason for its inclusion here is that it forms the basis of the Technology Acceptance Model that is often used to examine digital divides (Davis, 1986). The Theory of Reasoned Action saw evolution because it was not designed for specific technology behaviour (Momani & Jamous, 2017). Davis (1986), in his Doctoral Thesis, proposed the Technology Acceptance Model (TAM). The basis of this proposal was developed from elements of the Theory of Reasoned Action and Theory of Planned Behaviour due to their shortcomings in considering technology adoption – introducing two technology-related constructs – perceived usefulness and perceived ease of use (Ajzen and Fishbein, 1980; Ajzen, 1985; Davis, 1986; Marangunic and Granic, 2015). Davis (1986) proposed that system use is a response that can be explained or predicted by user motivation, which in turn is directly influenced by an external stimulus consisting of the actual features and capabilities of said system (or technology). This is illustrated in figure 2.6.

Figure 2.6 Conceptual model for technology acceptance (Davis, 1986; Chuttur, 2009)

In figure 2.7, Davis (1986) further refined their conceptual model to propose the Technology Acceptance Model (TAM), suggesting that three main drivers can interpret the user's motivation: perceived ease of use, perceived usefulness, and attitude toward using.

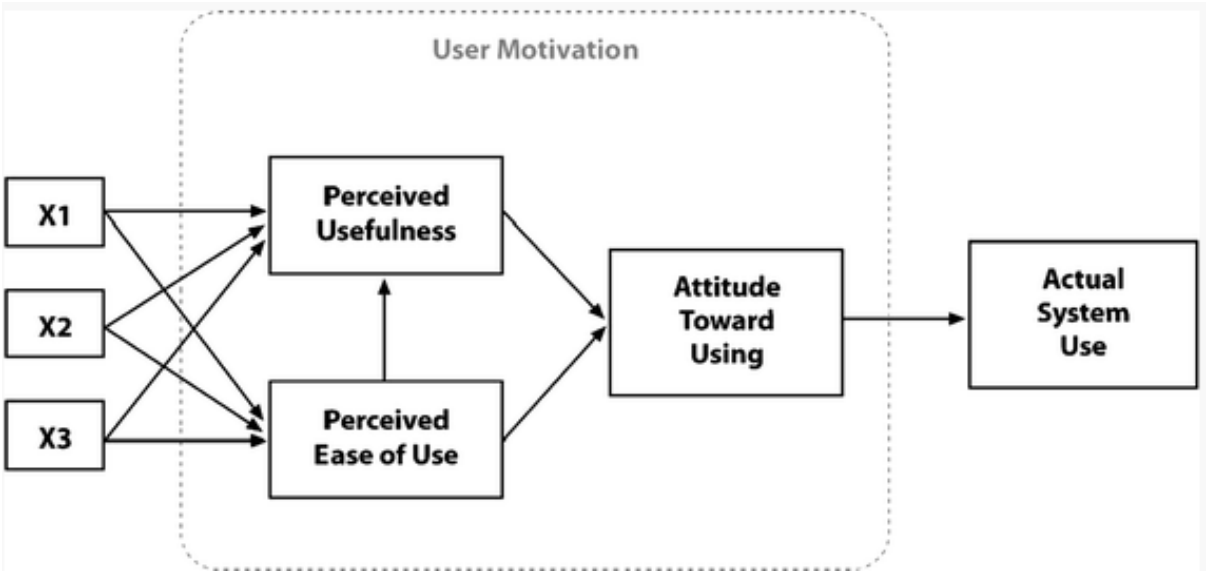


Figure 2.7 Technology Acceptance Model (Davis, 1986)

Davis (1986) view on technology acceptance is an attitude based one, which places it in the second-level digital divide category linking it to the motivation of a potential adopter of innovation or system. There is no concern here of the third-level digital divide; the research of Davis (1986) takes no account of the real-world outcomes of adoption or *actual system use.* The attitude and motivation of users are key in TAM models as little else is considered in their modelling. X1, X2 and X3 in the table above relate to system design characteristics that are posited to influence the perceived usefulness and perceived ease of use.

There are several extensions and variations to the Technology Acceptance Model, each having its successes and limitations. These extensions all follow the same basic premise when modified. That is, there are three additional factors and variables that may be added to augment the existing model. Group 1 relates to factors from related models: factors from related models have been introduced into the TAM. Factors such as subjective norm perceived behavioural control and self-efficacy (Barki & Hardwick, 1994, Taylor & Todd, 1995, Mathieson, Peacock & Chinn, 2001). Group 2 relate to additional belief factors: some factors from the diffusion of innovation literature and an additional belief construct has been introduced (Rogers, 2003). Items such as trialability visibility, result demonstrability and content richness fall into this group (Agarwal & Prasad, 1997; Karahanna, Straub and Chervany, 1999; Plouffe, Hulland and Vandenbosch, 2001; Lee & Lehto, 2013). With group 3 relating to external variables: various external variables or moderating factors to the two belief constructs [perceived usefulness and perceived ease of use] have been introduced as

well, such as personality traits and demographic characteristics or computer self-efficacy construct (Gefen & Straub, 1997; Venkatesh & Davis, 2000; Venkatesh & Morris, 2000; Chow, Herold, Choo and Chan, 2012). Maranguic & Granic (2015) claim that the augmentation of the two belief constructs, perceived usefulness and perceived ease of use in these extended models, support the structure and the main assumptions of the Technology Acceptance Model. Figure 2.8 illustrates how the Extended Technology Acceptance Models are typically structured.

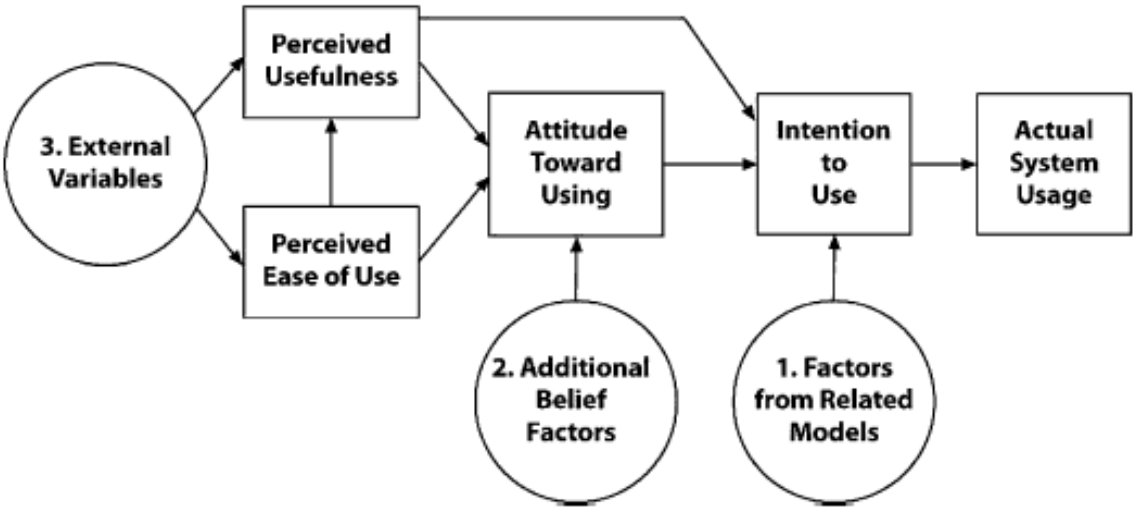


Figure 2.8 Extended Technology Acceptance Model Schema (Wixom & Todd, 2005; Maranguic & Granic, 2015)

The Technology Acceptance Model's have a number of inherent weaknesses. These are included here where relevant to the study. The first weaknesses identified is the data collection approach for TAM's. This often solely relies upon surveying as the data collection approach. Surveys rely upon subjective measures of self-reported usage, or they ignore usage altogether (Legris, Ingham & Collerette, 2003; Fletcher et al., 2014). Self-reported usage differs from observational or technology having logged use and maybe a potential source of error in the data collected (Straub, Limayem and Karahanna-Evaristo, 1995). Another data-related weakness is that TAMs are more reliable with longitudinal studies as this gives a better indication of a population's intent and decision-making process. To gain this knowledge requires that the population are sampled at multiple points in time. The need for these longitudinal studies is repeated in TAM research (Benbasat and Barki, 2007).

Similarly, further weakness is the limited collection of populations to which existing models have been applied. This impacts on TAM model validity and how generalised the TAM model may be. It is acknowledged in the work of Williams & He (2006) that there are hundreds of studies that apply models like TAM. However, many of these examine a variation of population sample groups such as education, healthcare and government employee populations (Legris et al., 2003). Venkatesh et al. (2003) observe that TAM models are typically applied to a subset of the population or commercially available technologies. This restricts the applicability and significance of TAM studies. When the TAM/TAM2/Extended TAM models have been extended, this has been to take into account of substitute or extended constructs (Legris et al., 2003; Fletcher et al., 2014; Momani & Jamous, 2018).

2.7.4 The Bass Model

The final framework under discussion here is the Bass Model. One of the most successful and cited empirical generalisations in modern marketing theory is the Bass Model. Written by Bass (1969) is one of the most cited empirical generalisations in modern marketing theory today, with an approximate 8000 citations recorded by Google Scholar. It was also cited by the Journal of Management Science in the top 10 most frequently cited papers in the 50-year history of the Journal. Bass (2004) considers the model influential because of its relative ease of use to explore diffusion phenomenon using an elegant mathematical model – this is discussed further later in this section. Since its introduction, the Bass Model has been extended and adapted from its original form (Mahajan, Muller & Bass, 1995; Parker 1994; Gentry and Calantone, 2007; Abedi, 2019). The General Bass Model and General Bass Model Variant were developed to consider the impact of pricing and advertising in forecasts; with the Simple Logistic and Gompertz models being early mathematical regression variants that are commonly used for the modelling and forecasting the behaviour of many diffusion processes such as the adoption rate of technology-based products (Gregg, Hossell and Richardson, 1964; Bass, Krishnan and Jain, 1994; Gentry and Calantone, 2007; Chu et al., 2009; Nguimkeu, 2014).

The success of the Bass model is the number of different variations used in industry (Gentry and Calantone, 2007). Bass (2004) also acknowledges that technology may have generational updates [such as mobile telephones - moving from 3G to 4G] and has developed a further variation of the model that uses the focus of repeat purchase as an influence. The

Bass model is widely relevant to many areas of new technological innovation diffusion and is suitable for the examination of broadband adoption because of its close relationship to it as a research area (Kim and Kim, 2004; Oughton, Frias, van der Gaast and van der Berg, 2019).

In figure 2.9, the coefficients of innovation and imitation represent the probabilities of a potential adopter deciding to make an innovative or imitative purchase. Tookey et al. (2006) described the coefficient of innovation is determined by external sources of awareness, usually interpreted as the effect of advertising. On the other hand, the coefficient of imitation depends on the contact rate – the frequency with which the adopters and potential adopters encounter each other and the adoption fraction (Tookey et al., 2006; Bass 1969).

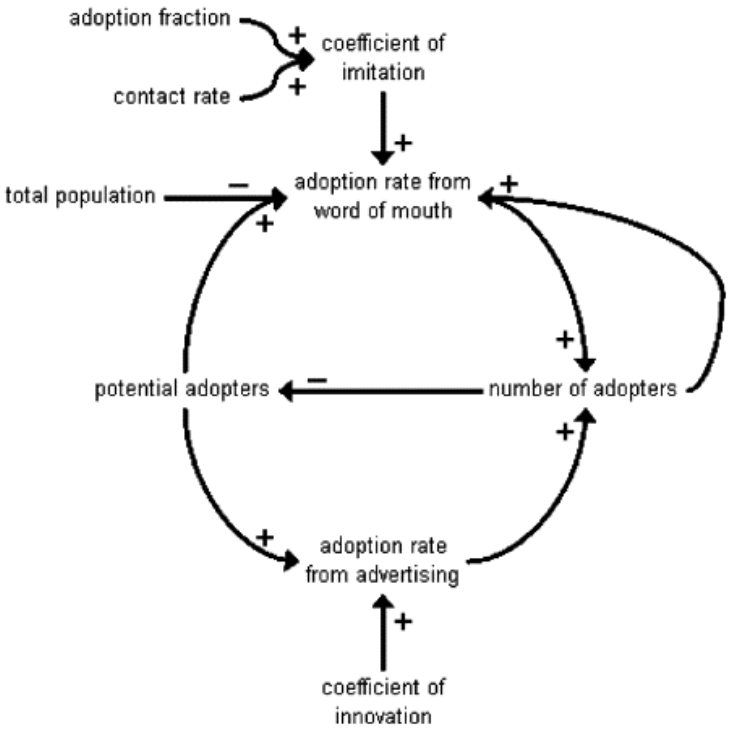


Figure 2.9 The Bass General diffusion model (Sterman, 2000; Tookey et al., 2006).

Jackson (2016), in his review and breakdown of the Bass Model, considers it to be a benchmark model with no explicit social structure that only considers two actions/states/behaviours – 0 and 1 (adopter/purchaser and non-adopter/non-purchaser)

"*You either are an adopter and are infected, or you are not*".

If drawn on a graph, the Bass (1969) model should give an S-Shape curve when q becomes greater than p and when the limit of adopters is fulfilled (or reaches 1 in the limit). Bass

(1969) professes that initially, only p – the rate of spontaneous innovation or adoption matters and then q – the rate of imitation of adoption takes over in driving the S-Shape curve. When the F(t) or Fraction of Individuals having adopted over time reaches one, or the number of new adopters will slow down. Figure 2.9 shows an example Bass S-shape curve as a visual representation of the earlier Bass model equation. At the start of the S-Shape curve p [rate of spontaneous adoption] is greater than q [rate of imitation] because there are a low number of adopters. Then adoption starts to take place as (t) time passes, p becomes equal to q, and then q becomes greater than p, the higher value that the F(t) [percentage of potential adopters] variable has.

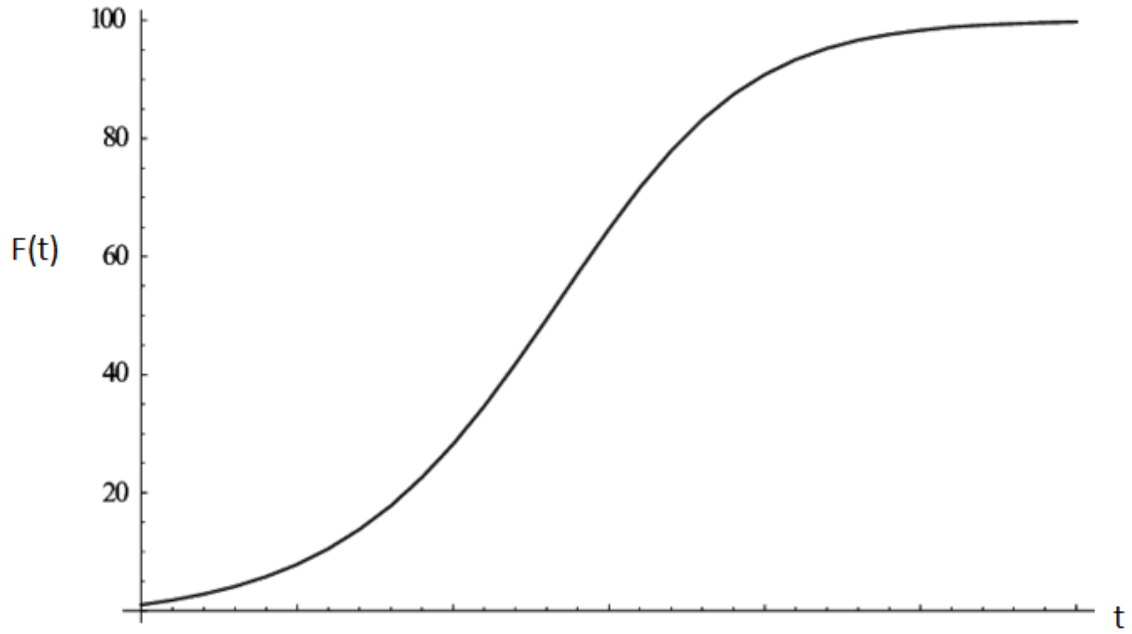


Figure 2.*10* an example Bass (1969) S-Shape Curve

Historically as an empirical generalisation, the Bass model has been hugely successful at predicting technology diffusion in the modern marketplace (Mahajan et al., 1995; Bass, 2004). This was due to Bass (1966) made a forecast using the Bass model of the projected sale [adoption] of new colour television sets in the USA. Those working in the television industry and Wall Street analysts were critical of the forecast and said the forecast sales were too low with their view being more optimistic; what actually happened here was that Bass forecast was the most accurate, and sales did peak in 1968 of the new colour television sets (Bass, 2004). Gentry and Calantone (2007) supported this, who completed a study of

appropriate diffusion models for products and services before launch. Gentry and Calantone (2007) examined similar radical technical innovations (Camcorders, Projection TVs, Cordless Telephones, Telephone Answering Devices [answer phones] and Video Cassette Recorders), their respective price level (either high or low) at launch and which forecasting method or theory should be used for forecasting consumer adoption of the above products. Gentry and Calantone (2007) found the Bass model supported these products most appropriately. This comparison is relevant as Bass (1966) completed the initial study and applied it to consumer technology – something that Gentry and Calantone (2007) replicate much later with similar innovation. Broadband is widely considered a consumer technology. The model has been proven with a reasonable degree of accuracy with good success in the analysis of the European OECD data in regard to broadband adoption in 2012, with this study cited in future studies examining the potency of the prediction (Turk & Trkman, 2012). A similar study where 3G and 4G mobile broadband diffusion in India is reviewed with the Bass Model also yields some valuable findings, supporting the efficacy of the model for Internet Adoption and measuring the digital divide (Jha & Saha, 2019).

The Bass Model is only concerned with first-level digital divide discourse with the aim of the theory to model how quickly a product will be adopted by society. The other second-level and third-level digital divide issues are not considered. Limitations of the Bass model are considered to be that it takes no account of environmental variables or breaks down diffusion into demographics, environmental variables, business operations and other explanatory model parameters (Sokele and Moutinho, 2018).

2.7.5 Relative and Absolute Digital Exclusion

Helsper (2017) claims that any good conceptualisation of digital inequalities should include absolute and relative digital inclusion and an examination of objective and subjective inequalities. The risk of being absolutely digitally excluded becomes a problem increasingly as the Internet becomes regarded as the default communication medium, the minority becoming progressively disadvantaged first with relative exclusion and then in absolute terms (Warren, 2007). Relative exclusion considers what is counted towards inclusion in the society a person is in at any given moment in time (Helsper, 2017; Atkinson, Cantillon, Marlier & Nolan, 2002; Bossert, D'Ambrosio & Peragine, 2007; Chakravarty & D'Ambrosio, 2006). Piketty (2014) compares relative exclusion to the Gini coefficient and how it considers how rich someone is based on how rich the others are in a country, and this is

compared to GDP and how it is a decontextualised measure of wealth based on the absolute income of a nation (Helsper, 2017).

The Relative Digital Deprivation Theory (RDDT) is beginning to emerge in the examination of digital exclusion. RDDT may fill a gap in the examination of digital exclusion research as it allows the complex issue of digital inclusion to be examined from a multi-dimensional view of disadvantage (Helsper, 2017; Atkinson et al., 2002; Burchardt, 2005; Fahey, 2007; Li, Savage and Pickles, 2003). Helsper (2017) states that the emphasis on

"*Subjective, relative deprivation because research shows that for people to take action against inequality there has to be a difference (objective relative deprivation) but, more importantly, this difference has to be seen as problematic by an individual (i.e. subjective relative deprivation)*" (Crosby, 1976; Smith and Pettigrew, 2015 from Helsper, 2017).

The RDDT hypothesises that there are five elements that need to be in a place where objective inequalities lead to subjective, relative exclusion, these are:

1. an objectively excluded individual is aware of a relevant other in their everyday life with a different level of digital engagement;

2. the opinions or behaviour of this other show that there is clear value in connecting;

3. the other (an individual or a social group they belong to) is similar enough (a proxy), indicating that the excluded person herself could also gain from connecting.

4. the digitally excluded individual feels that they are able to acquire the resources to connect in ways that are valuable to them;

and, for collective action to occur,

5. The digitally excluded individual feels that the inequality they suffer is illegitimately bound to a social group to which they belong (points 1-5 from Helsper, 2017).

Whilst RDDT is found to be useful to examine individual digital divide circumstances in depth (Smeaton, 2017). It is viewed as useful for examining inequalities and identifying if these inequalities are problematic (Helsper, 2020). However, those with a wider world view consider the view over who decides what inequalities are problematic through a different lens. Robeyns (2005) observing that depending upon the political alignment of a Government (those in power) rights, resources, economic or social opportunities may only be deemed worthy to individuals with certain status or desirable pre-requisite attributes. As an example of this the relevant other identified in point 1 of the RDDT hypothesis may have significantly more disposable income or digital skills than the digitally excluded individual. If the digitally excluded individual is already in receipt of welfare benefits because they lack paid work, it becomes subjective as to how the digitally excluded individual operationalises point 4 of the RDDT hypothesis. The earlier observations from Robeyns (2005) links to this with most national governments seeking individuals to improve their own circumstances. This would make it problematic for welfare benefit claimants to ever satisfy item 4 of the RDDT hypothesis. This would be one example of what Helsper (2020) refers to as compound disadvantage, were being disadvantaged in one sphere of influence is likely to cause disadvantage in another sphere and ultimately cause disadvantage in bridging the digital divide.

2.7.5 Theory Summary

Calantone and Gentry (2007) conclude that there is no single forecasting method that is best for every situation and that care should be taken to select a suitable model for any given research problem. The study of diffusion and innovation are mature areas of research with many models and frameworks. The ones outlined in this section are just a few of the most successful and prolific. The father of these models is the Diffusion of Innovation model. This has been used as the basis for some of the most inspirational studies of the digital divde. The Uses and Gratifications (UG) framework being part of the second-level digital divide discourse that considers the motivations and attitudes of potential adopters with the assumption that the first-level digital divide material needs are fully satisfied. UG framework is more widely used to examine components of the Internet such as services and apps. Technology acceptance models (TAM) broad generalist nature have seen TAM used for many different studies. They are a framework used to examine second-level digital divides and considers motivational characteristics based on the system design characteristics. Weaknesses of TAM models are when data sets are smaller, and data collection is undertaken

in data collection methods that result in smaller samples. The Bass model is one of the more successful models with industry and academia making use of the model to examine many radical technological innovations (Gentry & Calantone, 2007). The Turk and Trkman (2012) study of the OECD diffusion data being one of the more relevant examples to the research. All of the frameworks and theories outlined are older and less contemporary than some of the theories discussed earlier; all of the frameworks and theories have been relatively successful in their own right and are included here on their own merit to provide a clearer picture of the possibilities.

2.8 Understanding Digital Divides

As discussed in Section 2.2 the Digital Divide is considered a world-wide phenomenon. Van Dijk (2020) professes the importance of context in the examination of the digital divide. This context is increasingly relevant when considering the factors described in the section that follows (development of the contextual framework). The variable dimensions of the digital divide discussed earlier should also be considered closely: the worldwide social, political and economic factors, sociodemographic factors, social exclusion and access to and affordability of the technology (van Dijk, 2020; Ward, 2018; Epstien, Nisbet & Tarleton, 2011; Rafferty & Stevaert, 2007; Lynch 2002). The Digital Divide does not stand alone as a phenomenon. It would be appropriate for the purpose of this study to consider the Digital Divide with Digital Exclusion and Digital Transformation.

Digital Transformation defined as "transformation concerned with the changes digital technologies can bring about in a company's business model, products or organizational structures" (Nadkarni and Prugl, 2020). Other definitions of digital transformation emerge in the literature however this one is more relevant for this research due to its wide-ranging consideration of other organisational and structural influences – such as those impacting YHN due to HM Government's digital by default strategy (HM Government, 2017; 2015b, 2012). YHN and Newcastle City Council adopting a digital transformation strategy to move face to face services online makes digital transformation increasingly relevant in this study (YHN, 2010). When considering the research sponsor and subjects of the study it is particularly relevant to note that digital exclusion is considered particularly challenging in the context of digital government [digital transformation] (Ranchordas, 2022, p. 126;YHN, 2010) – something that is highlighted by the rationale in section 1.1 – primarily that the purpose of this research is to attempt to establish why some individuals remain subject to the digital

divide and remain digitally excluded from the digitally transformed services being provided by the sponsor.

The first and second levels of the digital divide described earlier in section 2.2 and section 2.3 play a role in the digital exclusion of individuals and their inability to get online (Richter & Naicker, 2021; Brant, 2021; Nielsen, 2006). The first and second levels of the digital divide compound the third level – the need to exploit the services being provided online (van Dijk, 2020). Where individuals are not empowered at the third level of the digital divide to access services this leaves them increasingly digitally excluded. This digital exclusion includes a lack of private or secure internet access. The KPMG (2021) widening digital divide report states that execution of digital transformation has become a matter of either prospering or struggling to survive as a business. As a comparator, studies have shown the digital transformation leads to socioeconomic change (Geels and Schot, 2007; Breslin ,2011). Dabrowska et al., (2022) claim that digital transformation does not always lead to positive outcomes. These outcomes include the connected impact on the 2nd level factors of the digital divide – this is especially relevant to digital transformation increasing the complexities of technology over time and the need for the digitally excluded to further update digital skills and those skills to a higher level (Vasilescu,et al., 2020).. This phenomenon is illustrated in figure 2.10b below.

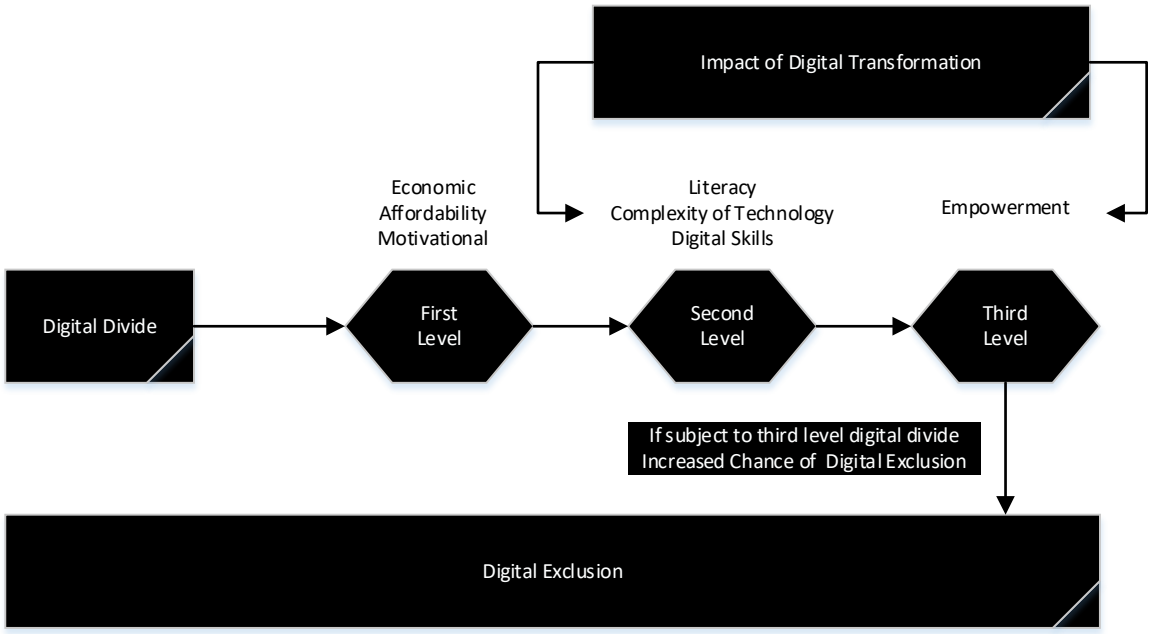


Figure 2.10b Diagram showing the impact of Digital Transformation and its relationship to Digital Divide and Digital Exclusion

Digital exclusion may be defined as one being subject to a digital divide, the increase of structural and individual digital divides and to limit access the digital media space (Manzuch and Macevicilute, 2019). Alternatively, an older definition could be considered as not having the skills, motivation, and access to go online (Dutton and Helsper, 2007; White and Selwyn, 2013). The historical definition of the *have's and have not's* is frequently used as a proxy to either of these definitions but primarily refers to the lack of material resources to get online and is not particularly helpful in breaking down the construct of digital exclusion (van Dijk, 2020; Mossberger et al., 2003; Lyon 1988).

2.9 Developing a Theoretical and Conceptual Framework

For the purpose of this study a theoretical framework was introduced in figure 2.11 this was to help bring structure and a frame of reference into the study (Merriam, 2009). This is necessary due to the myriad of other works that relate to the digital divide and the messy and complex way that these theories interact with each other (Anfara and Mertz, 2015; van Dijk, 2020). Providing structure and helping define relationships between constructs is key. There is also no clear or

ideal framework for the analysis of the digital divide and its associated constructs. Existing insights into the Digital Divide are also typically incomplete and may conflict with other viewpoints. With Holmes and Burgess (2022) articulated this incomplete and conflict in their study; when attempting to frame the digital divide it is discussed in terms of what it largely maybe and what it may include rather than a definitive statement. Providing focus and organization to the study in the face of a chaotic planning phase links well to Anfara and Mertz (2015) desire to link the study to existing scholarship and disciplinary terms. The theoretical framework could be used as a lens to examine data gathered or that of concepts that link with each other. This was essential given the sponsors early attempts to influence and control the outcome of the study. Merriam (2009) discusses the use of concepts and terms with definitions and models to help support the ideas under examination. Earlier in this chapter saw a critical evaluation of the relevant theories relating to the Digital Divide and Digital Exclusion which is viewed as a key step in establishing and operationalizing a theoretical framework (Merriam, 2009; Anfara and Mertz, 2015). Chapter 3 discusses the methodology and methods to be used in the data collection and subsequent analysis. The early provision of a framework helps to build a tool to aid the comprehensive analysis of the significant data expected from the study data collection phase. Figure 2.11 (shown later in this section) proposes an exploratory framework (working towards the pattern of use decision) and lens for the examination of the digital divide and digital exclusion.

A study by Reisdorf, Hampton, Fernandez & Dutton (2018) establishes a similar framework to measure broadband adoption in set geographical areas of Detroit, USA. The framework from Reisdorf et al, (2018) used six key sets of explanatory factors:

- Demographics
- Neighbourhood Attributes
- Participant Attitudes and Beliefs
- Social Networks
- Broadband and access issues
- Patterns of Internet use (or non-use)

In the emergence of a theoretical framework for this study, the attributes suggested from the work of Reisdorf et al. (2018) were refined to take definition and meaning from this literature review and to more directly relate to this research study. Neighbourhood attributes were

discounted for the purpose of this research as there is no set geographical definition of this category that is suitable for this study. Attitudes and Beliefs were built into the Mental Resources construct, Social Networks were built into the social resources construct and broadband, and access issues are built into the material resources construct.

Earlier in this chapter the key concepts identified by leading scholars writing about the digital divide are viewed as:

- Sociodemographic Characteristics
- Digital Skills
- The Resources required to go online.
    - Temporal
    - Material
    - Mental
    - Social
    - Cultural

The establishment of Sociodemographic Characteristics as a key factor in the digital divide has it play a key role in the emerging theoretical framework. Its connection to and relationship with the Mental Resources construct and Social and Cultural Resources construct is identified earlier but outlined again here. Rogers (2003, p.468) identifies that the number of these sociodemographic characteristics plays a role in lack of internet adoption. Bach and Wolfson's (2011) work identifies how these sociodemographic factors (in Section 2.5) are intertwined resulting in a messy, complex and bring interacting reasons for digital exclusion. The framework seeks to provide a tool to measure and connect these reasons in a more organized and disciplined way. An example that might be drawn from the model could be that of age and educational attainment – if you are younger (say in the 16-25 age demographic) you are more likely to be a digital native, have received education and training relating to the internet and going online and have a higher educational attainment than someone older (say in the 70+ age demographic) (Prensky, 2000; Norris, 2004, Ragnedda & Muschert, 2013; van Dijk, 2020; Rosales & Blanche, 2021). Earlier in section 2.5.1 where the age demographic is discussed, the terms digital immigrant and digital native may serve as a proxy for a younger and older demographic of potential internet adopter. Educational attainment may link to the mental resources construct, whilst it might be argued that age itself links to the Social and Cultural construct – engaging in activities such as proxy use or

non-use due to lack of self-efficacy with no digital native able to support an older individual with internet use. The use of Prensky (2001) as an age proxy to the emerging theoretical framework is an interesting example, moving towards the Digital Training construct from the emerging theoretical framework it may see the older individual (the digital immigrant) negatively impacting this construct. Again, possibly due to the digital immigrants age and not having received any formal training in the classroom about internet use, and not having experienced this in the workplace (whilst of working age) and having been unable to or unwilling to attend any Digital Training sessions provided locally. Again, this Digital Training construct will either positively or negatively impact the Mental Resources [could also be referred to as cognitive resources] construct and the Social and Cultural construct from the emerging theoretical framework. Attendance at digital training sessions may aid a digitally excluded individual make contacts with other digitally excluded individuals who are looking to increase their digital literacy. As discussed earlier in this chapter these two constructs impact the Mental Resources and Social and Cultural resources constructs either negatively or positively. Section 2.4.1.3 begins to define this relationship between the digital training construct and mental resources construct. Van Dijk (2020) identifies that individuals with superior mental resources are likely to be much more inclined to use digital technologies and go online. Successful digital training provides individuals with the technical ability and digital literacy skills that are required to go online. A by-product of equipping an individual with better digital skills and improved digital literacy is that they are more likely to engage online and be provided with better life opportunities – a third level element of the digital divide discourse (Rogers, 2003; van Dijk, 2005; DiMaggio, 2001; Eynon, 2009; Verdegem & Verhoest, 2009). The digital skills dimensions found in table 2.1 and table 2.2 in this chapter identify and break down the ideas behind digital skills training and detail some of the influences over the mental resources and social and cultural resources constructs. For example, the collaboration dimension of digital skills training helps individuals develop technical skills and social and cultural resources by working with others generating mutual respect whilst having the secondary effect of improving skills from the technical dimension (van Laar et al., 2017; van Deursen et al., 2016; Choi, Deng, Chai, Koh & Tsai, 2016; Helsper & Eynon, 2013; Ng, 2012).

The mental resources construct from the emerging theoretical framework features the dimensions of digital skills cited earlier in this section and additional ideas such as the ability to read, write and be numerate (Brown & Czerniewicz, 2010). One of the key drivers for the study is to help improve YHN tenants' ability to seek work. Lewin &McNicol (2015) links the ideas of van Dijk's (2020) mental resources to that of globalisation and the knowledge society where having

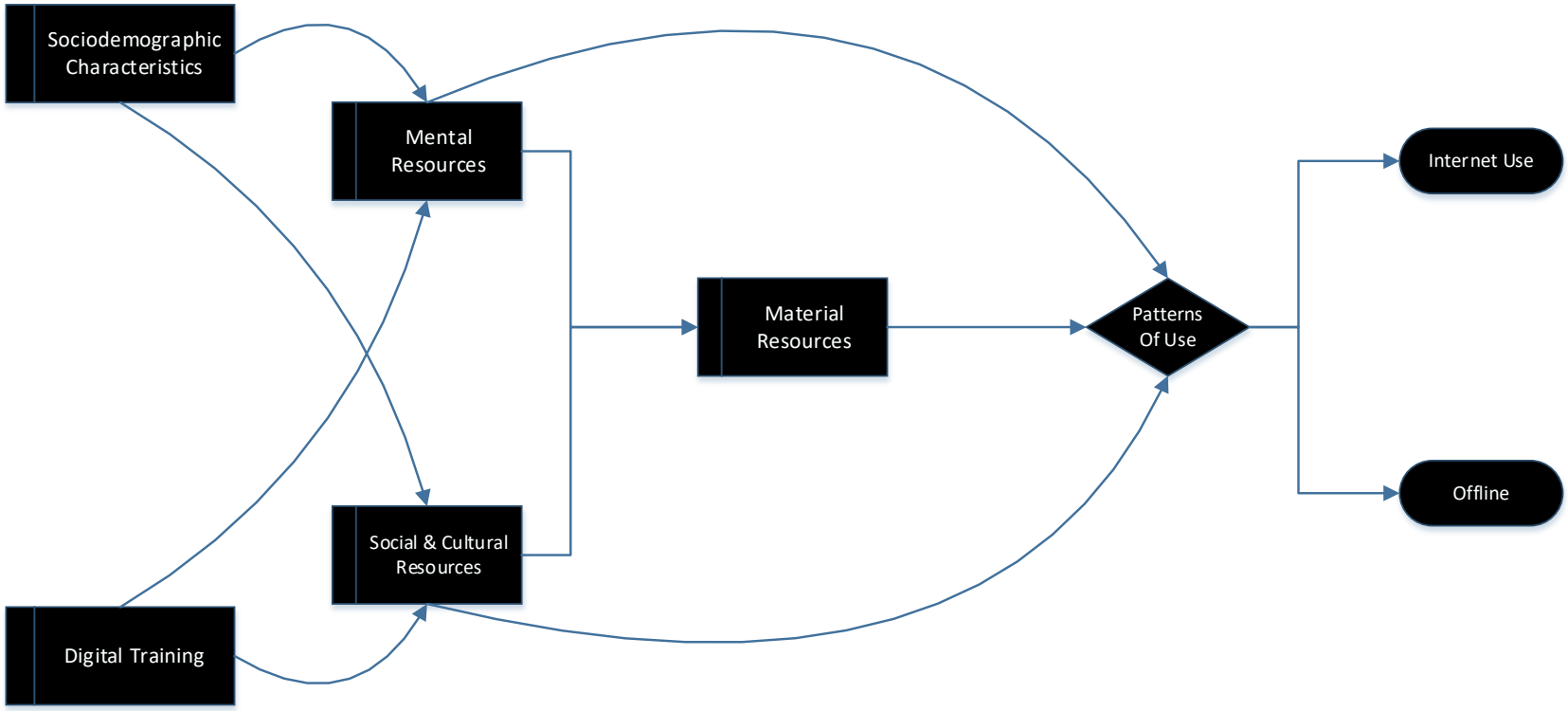
the ability to seek and apply for work online and then be successful and effective in the workplace a key requirement in society. An individual having the appropriate mental resources (some resources provided by digital training described earlier in this chapter) should positively impact the Patterns of Use decision being encountered by an individual later in the model. The social and cultural resources construct focuses on the need for digitally excluded individuals require a social network that provides crucial support, learning and advice around digital media and internet use (van Dijk, 2020). Those with strong peer groups are more likely to look for access to digital media and the Internet than those without (van Deursen et al., 2014; Courtois & Verdegem, 2016). In terms of the emerging theoretical construct this may mean those with these strong social networks are more likely to positively impact the Patterns of Use decision being faced later in the model. This construct also links to the ideas relating to digital training and the collaboration dimension discussed earlier – individuals working together supporting one another is viewed as an excellent source of this social and cultural resource (van Laar et al., 2017; van Deursen et al., 2016; Choi, Deng, Chai, Koh & Tsai, 2016; Helsper & Eynon, 2013; Ng, 2012).

Much has been discussed in this literature review chapter that relates to the material resources construct. De Haan (2003) identifies lack of material resources as a possible cause for unequal access to ICT's. Nielsen (2006) reduces the first-level digital divide to an economic divide that manifests itself as some individuals being able to buy a computer and some individuals being excluded from this and being unable to afford to buy a computer. For the theoretical framework, A computer may be any internet capable divide and a suitable data plan to be able to get online. However, this is much more than a case of the have's and have-not's (van Dijk, 2020). Studies have shown that this material resources construct is a critical barrier to internet adoption (Richter & Naicker, 2021). With van Dijk and Van Deursen (2019) discussing the first-level digital divide as something more closely linked with an individual's economic circumstances. Studies that are typically older and more technologically deterministic typically relate to individuals having the material resources to go online – however these studies take this factor into account in isolation, rather than in conjunction with other related constructs and research ideas (Hargittai, 2002; de Haan, 2004; van Dijk, 2020 citing Norris 2001). The Mental Resources construct linking to Material resources links back to the example made earlier in this section that discusses the importance of an individual being able to seek and apply for work and be effective in the role once appointed. With the ONS (2019) indicating that 90% of employment requires an individual to use a digital device at least once a day this becomes a key skill. Without work an individual is much less likely to have the material resources required to be able to go online. This identifies a potential vicious cycle that needs to be broken down, there is an indication here that to get money

an individual needs work, to apply for work an individual needs to get online, to get online an individual needs money. Lack of material resources negatively impacting the patterns of use decision. This section makes it clearer that negative influence coming from the Mental Resources construct and the Social and Cultural construct also negatively impact the Material Resources construct. Social and cultural resources are linked to material resources by the way of proxy-use of the internet – where an online individual acts as a broker for an excluded individual to help them use the online service required. In this instance it could be to help someone get the work they need to break the vicious cycle and positively impact the material resources construct.

To summarise, the proposed emerging theoretical framework posits that Sociodemographic Characteristics and Digital Skills influence Mental Resources and Social and Cultural Resources as described earlier in this section. These resource constructs in turn impact Patterns of Use which in the emerging theoretical framework results in the decision to adopt the Internet or to remain offline. The theoretical and conceptual framework described here and illustrated in figure 2.11 will help form the basis of understanding the data collected and facilitating examination of the research objectives with a view to potentially examining the digital divide in a unique and contemporary manner that fits into the existing research (Merriam, 2009). The theoretical framework itself may also be open to review should any new constructs that are evidenced to impact the digital divide come to light during the later analysis.

Figure 2.11 – Emerging Theoretical Framework (Adapted from Reisdorf (2018)



2.10 Chapter Summary

This chapter has reviewed the literature that underpins the evolving concept that is the digital divide to enable the author to understand the contribution and limitations of contemporary research in this area. This led to the emergence of a theoretical framework to guide the study that follows.

Prior to conducting the literature review, it was necessary to explore the detail of the context in which the research is placed. Newcastle City Council and YHN are subject to several internal and external factors and influences, and many of these are not helpful in bridging the issue of the digital divide for YHN tenants. These were explored by reading Government documents, publicly available policies and meeting minutes from Newcastle City Council and Your Homes Newcastle.

In this chapter, it becomes clear that there is no simple definition of the digital divide – indeed the sponsor organisation has not adopted its own definition of the digital divide and its related terms. It is a worldwide phenomenon that involves several social, economic and political factors (van Dijk, 2020; Warf, 2018). The digital divide is considered to have three levels of discourse associated with it that provide a frame around the different studies that have been conducted about the phenomenon over the past thirty years (Nielsen, 2006; van Dijk, 2020). These three levels of the digital divide are much like the sociodemographic characteristics of the digital divide in that they interact in a multi-faceted, messy, and complex manner (Bach & Wolfson, 2011). At the political level, the UK Government agency, the DCMS, has a very limited focus on challenging the digital divide, which limits the possible progress on its closure (DCMS, 2021b).

Through the use of models and frameworks, scholars have begun to unpick the complexities of the digital divide. Whilst these models and theories are useful in articulating different phenomenon that relate to the digital divide, it is clear that there is no *ideal* framework. For this reason, an emerging theoretical framework has been proposed that utilises many of the concepts and constructs from this chapter.

To conclude, there have been a great number of studies in the past thirty years about the digital divide. Many different sections and sociodemographic of society have been studied in the context of the digital divide. However, these studies lean towards a more detailed

examination of the requirements of the more general digital adopter being online rather than an empirical examination of the complex barriers faced by this more socially isolated cohort of social housing tenants (Winchester, 2009; Broadbent & Papadopoulos, 2013; Rose, Seton & Tucker, 2014).

With this gap in the current contemporary understanding, the following research question is proposed:

RQ – What are the most significant digital divide barriers for YHN social housing tenants that live in the City of Newcastle upon Tyne?

Chapter 3 – Methodology

3.1 Introduction

The previous chapter provides critical discourse and an examination of the relevant literature related to the drivers and barriers of internet adoption and the digital divide (in the social housing context where practical). The vastness of the digital divide discourse with its associated and overlapping components and extremities becomes apparent in potentially not addressing every desirable area of the topic in the literature review. It also becomes clear that there is a gap in the literature when addressing the digital divide in social housing tenants in England. There have been peripheral studies of the digital divide (such as Gijon, Whalley & Anderson, 2016). However, since they examined Broadband Speeds in Glasgow and the subsequent impact on the digital divide, there has not been a holistic study of the different barriers, drivers, and other factors that impact the digital divide for social housing tenants in England.

Three essential parts of this chapter include the philosophical position, methodology and research design—the first aims to address and defend the researcher's position relating to the philosophical position of the study. The second is where the methodology will be considered, and the remainder of the chapter will discuss the practical completion of the study. Particularly data collection, semi-structured interview, survey design, reporting of findings and analysis methods.

During the project scoping with the YHN Sponsor, YHN indicated that they were particularly interested in the age sociodemographic because this is their ordinary method for allocating homes. An applicant is allowed to bid on a vacant property based on their age and personal circumstances. In addition, YHN harbours a desire to offer interventions to digital divide barriers and feel that age may also be a factor in how those interventions are offered but are unsure why this is the case.

3.2 The Research Questions and Objectives

The earlier literature review in Chapter 2 illustrates many different dimensions of the digital divide regionally, nationally, and internationally. These affect individuals in these geographic contexts in several different messy, complex, and intertwining ways and to different extents. The importance of the resources required for citizens to go online is discussed, and several related themes are also examined. With many individuals being members of multiple sociodemographic groups, this can make an examination of this phenomenon extremely complex. To access members of these sociodemographic groups, the research will engage with those identified in Chapter 1.2 where the scope is limited to the following:

- YHN Social Housing Tenants
- YHN Employee's and Volunteers
- Newcastle City Council Employee's and Elected Officials
- Elected Officials of the UK Parliament

This links to the study's rationale in chapter 1.1 and to social housing tenants being members of multiple sociodemographic groups. YHN is the research project's financial sponsor. In addition to providing funding, they have provided access to their social housing tenants and access to several YHN staff and officers in roles related to the project that Newcastle City Council employs. As explained in Chapter 1 there is little academic research relating to the digital divide in social housing tenants in England, which helps identify a research gap that remains unaddressed. This research gap leads to the critical research question followed by three research objectives:

RQ – What are the most significant digital divide barriers for YHN social housing tenants that live in Newcastle upon Tyne?

RO1 – Evaluate the digital divide gap in YHN social housing tenants and critically compare this to a typical sample of the general population in England.

RO2 – Identify, develop, and understand the reasons (drivers and barriers) for this digital divide in YHN social housing tenants that live in Newcastle upon Tyne.

RO3 – Identify and critically evaluate the impact of political and policy influences on the digital divide that impacts YHN social housing tenants that live in Newcastle upon Tyne.

By meeting these objectives, the research will build a robust understanding of how the digital divide impacts social housing tenants in the City of Newcastle upon Tyne.

3.2.1 What knowledge could be gained?

Given the research question, it is key to discuss what knowledge could be gained to fulfil this question. While this work may appear to have similarities linked to previous digital divide studies, it has several distinctions that make it unique in digital divide discourse. The first of these distinctions relate to the three levels of the digital divide. Typically, digital divide research examines one of the three levels of the digital divide rather than all three levels together. Furthermore, these studies are mainly focusing on the physical of access to the internet and not taking into consideration any of the second or third level digital divide discourse (Katz & Rice, 2002; Hersberger, 2003; Benitez, 2006; Gilbert, Massucci, Homko & Bove, 2008; van Deursen & Andrade, 2018).

Similarly, studies of the second-level digital divide focus on this level of the digital divide and, on occasion, link the first and second level digital divides together in later analysis (Hargittai, 2002; Gorski, 2005; Bandura, 2005; Fox & Connolly, 2018; Rockmann, Gewald & Haus, 2018). Studies of the third-level digital divide also focus on that particular level of the digital divide, often with very specific outcomes being targeted (Ragnedda & Kreitem, 2018; Calderon-Gomez, 2020). The weakness in only addressing one level of the digital divide leaves the possibility of the other levels of the digital divide impacting the sample being examined unchallenged. As described earlier, the digital divide is messy, complex, and intertwined, so it would not be unreasonable to infer that each level of the digital divide may interact in this manner also. This work will address factors across all three levels of the digital divide. It is anticipated that better and more informed conclusions would be reached at the end of the study. The study has gathered significant data samples using the methods outlined in this chapter that may be reused later to facilitate future research in line with the appropriate consent agreements.

The studies identified earlier in this section related to the three levels of the digital divide are quantitative and qualitative. Each type of study is equal in scientific terms, but each of the research types is unique. The elements required for this study are to develop an understanding of the reasons for the digital divide in social housing tenants and consider the significance of those barriers. That said, the research seeks to describe phenomena in context, seek understanding and interpret processes or meanings, and use theoretically based

concepts. Silverman (2020, p.7) discusses how qualitative research uses words, is concerned with meanings, and induces hypotheses from data and may use case studies. The weaknesses here for a quantitative study would be the lack of pertinent statistical data and that the study seeks to establish *why* rather than the correlative *what*. The study does not seek to identify instances where A leads to B, which results in C using probabilistic operators (Hammersley, 2012). This makes this study a suitable candidate for a qualitative research study

3.2.2 Pragmatism

Burrell and Morgan (1979) identify epistemology and ontology as philosophical assumptions. The first of these philosophical assumptions frame the research design and address '**what**' knowledge is possible. Within the field of research, what knowledge is acceptable or what can I know? (Crotty, 1998, p. 8; Bryman & Bell, 2011, p. 13; Ozumba et al., 2017). The second, ontology, or the nature and structure of reality – the study of being (Crotty,1998, p. 10). The focus of ontology considers '**how**' is it possible if it is indeed possible to gain knowledge in the world (Hughes and Sharrock, 1997, p. 5).

Holden and Lynch (2004) discuss the two major epistemological traditions: Positivist and Anti-positivist. Anti-positivism (also social constructionism, interpretivism and negativism) are the more useful positions for this research. The reason for this is that they propose that the social realm cannot be studied with the scientific method of investigation applied to the natural world, and this requires a different epistemology (Crotty, 1998; Macionis and Gerber, 2017). Understanding and examining the realities of the population outlined in the RQ begins to investigate the problem in a beneficial manner to the study. Social constructionism proposes a reality that is constructed through social interaction in which the actors create partially shared meanings and realities – this pays particular attention to socio-cultural contexts to understand what is happening (Saunders, Thornhill & Lewis, 2016). Pragmatism extends this use of social constructionism, which allows the stance taken to be post-positivist, interpretive or [social] constructionist (Guba & Lincoln, 1994). Morgan (2014) proposes that pragmatism is a suitable philosophy for social research where research design and later analysis may face challenges when being considered under a less practical philosophical position. There are more than one sound means to conceptualise the world, and pragmatism allows a problem-focused view that encourages the entertainment of multiple epistemological approaches that fit the issues raised by the research questions, context, and complexity of the analysis rather than the type of data available (Bazely, 1999). These multiple epistemological approaches may have had more value to the research had the original scope

of the study not been regularly adapted due to the factors explored later in this section. The Pragmatist position has added significant value to the study as the approach to answering the research question required individual experiences and truths from participants. This places the study within a *subjective* view of knowledge creation, with knowledge being formed based upon the perception and actions of social actors (Crotty, 1998; de Gialdino, 2006). For the reasons outlined in this section, pragmatism was the chosen philosophy for this study.

3.2.3 Pragmatic Practice and the Insider Researcher

The philosophical position taken makes a useful contribution considering the nature of the study. Due to the insider researcher perspective that needs to be taken the practical application of pragmatism was also required throughout the study due to the collaborative nature of the research project. Figure 3.1 later in this section shows a flowchart of the methodological structure of the study to aid the reader. As identified in the previous section, shown in figure 3.1 are the two points of the study where there was obstruction by YHN Officers (those with responsibility for specific areas) attempting to implement their own approval process regarding elements of the study. Following the agreement of the terms of reference with the project sponsor, resistance was encountered towards the research design by YHN Officers.

There were major barriers faced when attempting to methodologically plan and execute the research study. Lack of timely access to pilot study data resulted in this methodology chapter having to be reviewed. However, other issues were linked to the promotion of the survey instrument and participation in the interview process. During the life of the study, several YHN staff left the organisation and were not replaced, this included the project sponsor. As these organisational changes progressed, fewer YHN Officers were interested in the research and approached it with the view that it may be a risk to the organisation. This lowered co-operation by YHN with the study and made it more challenging to complete the research.

An inside researcher may be defined as "*an individual who has a lived familiarity with the research group. In comparison to an outsider who has little, or no knowledge of the group being researched prior to the research commencing*" (Griffith, 1998).

Some of the barriers and issues faced by the insider researcher are Rapport, based on if a good rapport is created or not with other organisational insiders this can influence the outcome of the research. Having a positive rapport can enable the research study and provide additional support to the researcher; equally a negative rapport with other organisational

insiders can erect barriers (Saidin & Yaacob, 2016; Griffith, 1998). These barriers include the withdrawal of support from the research study, preventing access to or withholding access to data and creating and causing political and organisational obstruction to the researcher with the introduction of decision-making by committee or the creation of approval processes. In terms of rapport at the outset of the study the rapport was excellent with all YHN Officers being engaged and helpful towards the study. Once the PhD Sponsor left YHN there was little Rapport with the organisation until a new YHN Officer was nominated to act as a link between the organisation and the PhD Research taking place. However this new appointment did not have the same level of influence with other YHN Officers which limited the rapport with others in YHN.

Connecting and influenced (both positively and negatively) by the rapport issue above, *Openness*, where being an insider researcher is dependent upon the rapport the insider researcher has with the other organisational insiders. According to McClintock et al., (2003) and Saidin & Yaacob (2016) this factor should be able to affect the study positively. Yet without a positive rapport, it might be argued that openness could be a barrier to the research study if the organisational insiders are obstructive or manipulative in their approach to the insider researcher. YHN were generally open to the research but often rejected or ignored some requests that may have been considered reasonable at the outset.

Provocation is another issue where the insider researcher may encounter barriers to the research. This is where existing organisational insiders may face challenge from the researcher about a topic. In the example used by Saidin & Yaacob (2016) the researcher was of the same occupation as the participants and worked in the same organisation. The existing positive rapport saw participants respond positively to questions during interview assuming that the researcher had some awareness of what is was like to deliver responsibilities commensurate with their role. Again, this is dependent upon the existing organisational insider, their interaction with the researcher and their response to their participation in the research.

Insider research is open to criticism and scrutiny and one of the main issues with this study is establishing trust with the organisation whilst building trustworthiness into the research design (Flemming, 2018). In this situation, Lincoln and Guba (1985) suggest that credibility replaces internal validity. McNiff and Whitehead (2010) suggest that it is prudent additional measures to enhance study credibility. One of these measures that will be exhibited by the

researcher to enhance the credibility of the study is transparency. The desire to openly share ideas, plans and intentions with the YHN should have enhanced the result and outcomes of the study; however as detailed later in this section this was not always the case. Similarly, attempting to build a rapport with YHN and Newcastle City Council Employees and Volunteers allowed the researcher to have a deeper understanding of contextual factors and other influences that may impact the research (Flemming, 2019). This rapport was very good with those external to YHN and became more questionable as time passed with the YHN Officers for several reasons I will elaborate upon later in this section.

The literature on insider research also discusses the narrative around co-constructed relationships and their impact on the outcome of a study (Ellis, Adams & Arthur, 2010). These ambiguities, uncertainties and contradictions of being friends, family or colleagues with the researcher do not apply in this situation due to a set of unique circumstances. The generalizability of insider research is often queried but with the scope being clearly defined at the outset and agreed by both the organisation and the researcher this is not considered an issue for the purposes of this study (Cochran-Smith & Lytle, 2009).

Inside – Out

As discussed earlier in this section the issue of managing relationships emerged during the study. The research study began positively with the researcher being welcomed as part of a wider team. The YHN employees assembled at the outset of the research changed so frequently in the first two years of the research that there was no opportunity for any meaningful bonds or relationships to be formed. YHN restructured their organisation at least four times during the research study. These restructures were a major problem for the research study – particularly around continuity and following up on earlier agreed plans and actions. During the second restructure – around 9 months into the study the main sponsor of the research left YHN and was not replaced. This began a journey that saw the researcher go from being an insider researcher to an outsider researcher. The departure of the main sponsor from the organisation saw those that remained at YHN scramble for power and influence over that which remained. Rather than conflicts of interest with the original YHN employee group the researcher faced conflict relating to what they would agree or approve could go into the research study. McNiff and Whitehead (2010) identify power dynamics and conflict of interest as an ethical issue that the insider researcher is likely to have to navigate. Access to data was promised and agreed at the beginning of the study. Following the departure of the

main YHN sponsor of the research, a number of these promises and agreements were broken. The exercise and influence of power dynamics by YHN employees and managers saw these agreements not directly cancelled but were frustrated by YHN forcing time to pass by dealing with me as an external and unwelcome party. At this stage the researcher may be described as on the border of being an insider/outsider researcher. The majority - but not all the YHN Officers attempted to introduce additional bureaucracy to the research study with their own raft of approval processes and other miscellaneous administrative requests.

YHN Officers required activities such as:

- Receiving all items of documentation related to the study by email prior to any meeting taking place.

- Requiring a meeting take place to discuss and agree minor details of the study.

- Claiming that any proposed changes to the research study required permission to be requested in writing to different YHN Line Managers depending on the expected area of impact

- Stating that specified details of the study were subject to committee approval where I could not be present to present and argue why they were required.

- Claiming that some items had to go from one committee to another needing approval from both.

These exercises in power dynamics saw any established rapport with YHN Officers reduced to business-like email exchanges and combative meetings where the researcher was often accused of not knowing about YHN and their tenants and being told what the *best way* to do something was. As an example, *Data protection* was often cited alongside *GDPR* as to the reason that a question could not be asked on the survey instrument – this was in spite of explicit consent requests from participants stating the purpose that the data was being collected and seeking informed consent as to its explicit uses. In addition to this, YHN Officers attempted to influence the topics of the questions asked, and how the questions were asked and attempted to place prohibitions on some questions. The major attempts to influence the study were taken from the notes made and are recorded in table 3.1. Not noted

in the table is that at the point data collection commenced the researcher declined any further attempts at embroiling the research study in further beauracracy (for example by decliding meetings or approval style committee events).

YHN Officers attempted to refuse to promote the study to their tenants through official external YHN marketing channels after this had already been agreed upon by the project sponsor of YHN (who was a director of the organisation). Claiming these issues were related to ownership of the study as YHN Officers felt they did not own the study and could not promote it. Those YHN Officers who made representations in table 3.1 being responsible for creating an oxymoron in declining to participate in the semi-structured interview process following selection, citing insufficient knowledge of the RQ.

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Agreed at Start of Study	**Status at Data Collection**	**Influenced by**
No restrictions on data that can be collected by research study – agreed in line with organisational consent	Topic prohibition: Research not to collect any data related to asylum seekers.	YHN Officers
No restrictions on data that can be collected by research study – agreed in line with organisational consent	Topic prohibition: Research not to collect any data related to criminal convictions.	YHN Officers
No restrictions on data that can be collected by research study – agreed in line with organisational consent	Contentious Debate: YHN Officers did not want the research to examine those with health conditions. Outcome: The research did ask questions relating to this.	YHN Officers
No restrictions on research design.	Meeting Agenda Item: YHN Officers attempted to limit the number of questions asked in the Survey Outcome: The research did not limit the number of questions.	YHN Officers
Access to data from tablet pilot study.	Obstruction YHN Officers did not provide this data in a timely manner. Outcome: Data could not be used in this study	YHN Officers
Access to data from the Wi-Fi pilot study (Shieldfield).	Obstruction Some data was provided, but only once the sponsor had examined this thoroughly. Other data could not be shared for data protection reasons Outcome: Data could not be used in this study	YHN Officers

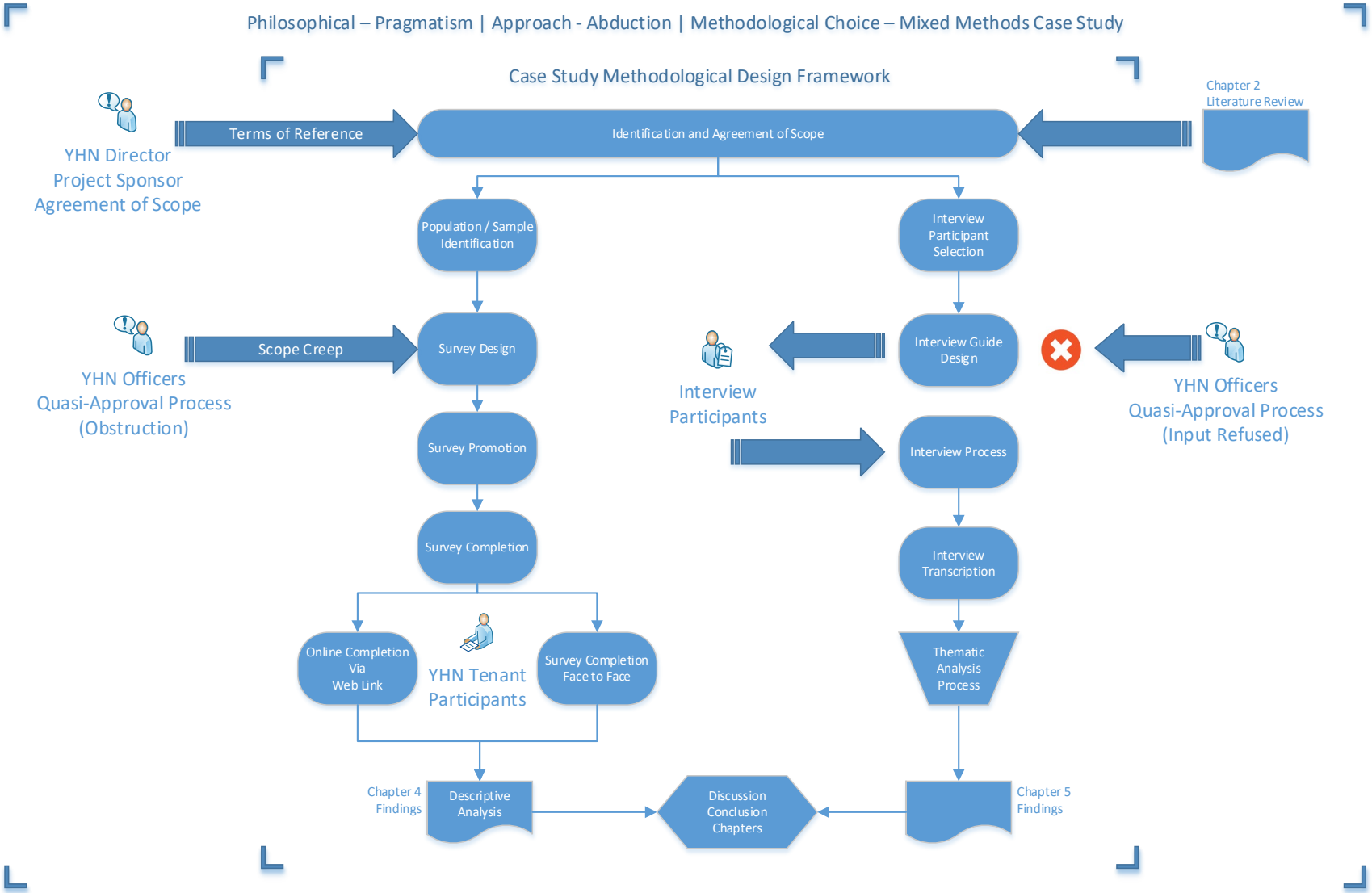
Table 3.1 Table showing YHN Officer attempts to influence the research study

Semi-structured interviews that eventually took place over a timescale that was more protracted than expected with YHN Officers, YHN Board Members and other relevant parties took place at a stage following a significant restructuring and featured mostly new appointments to YHN and Newcastle City Council that the researcher was unfamiliar with. This meant that the benefits of rapport, trust and openness were not realised by the study as the new individuals introduced could be viewed, at best as neutral to the research study were often unable to relate to the earlier work undertaken at the outset of the study. Those YHN Officers encountered at the outset of the research following the departure of the research study sponsor many may be viewed as hostile and obstructive. As outlined earlier - at the stage of data collection this negative influence was not a factor due to those individuals having moved into new roles elsewhere. At the start of the data analysis process I had no further contact from any of the YHN Officers interviewed or any of the YHN Officers that were engaged in the research study during the study planning phase. Those interviewed not connected to YHN continue to request a copy of the completed thesis. To link back to the philosophical position (described at the start of this section) taken during this study. This was essential in overcoming some of the barriers of being an insider researcher. At the outset the researcher may have been described as an insider researcher at the end of the study the researcher was very much an outsider and yet in the unusual situation of having faced many of the barriers and issues associated with being an insider researcher and realising almost none of the known benefits.

3.2.4 The Methodological Structure of the Research Study

To aid the reader with the structure of the proposed methodology, figure 3.1 provides an outline of the methodological design of the study. This illustrates how the researcher, the YHN Sponsor, and the literature review chapter helped agree on the scope of the study. The agreement of the scope of the study lead to the identification of the participants for the research implements. This was followed by survey design and interview guide design and then a data collection and analysis process. The ideas that followed agreement of the scope of the study are discussed in sections 3.3 and 3.4 of this chapter.

Figure 3.1 – Flowchart showing methodological structure of the research study



3.3 Methodology

The methodology section aims to introduce the practical elements of how the research will be undertaken. This section is followed by the research design that takes these functional elements into more detail. This section will form the basis of why specific methods and techniques have been chosen. The pragmatist theoretical perspective taken will be beneficial when the chaotic nature of the study and the topic under examination comes into focus. Crotty (1998) takes an appreciation of the different world views and acknowledges the different ways of researching the world. Due to its versatility, the case study is also a popular and widely used research design in business research (Bryman & Bell, 2011). With an emphasis on the subjective meaning of knowledge in the world and considering the narrative-driven development of understanding from the research question, the case study has been selected as an overall methodological design framework.

3.3.1 The Case Study: The Digital Divide, YHN and Social Housing Tenants in Newcastle upon Tyne

Silverman (2020) defines a case study from a business school perspective as qualitative research that examines the study of social processes. However, combining mixed methods research and case study research offer methodological advantages for researchers wanting to address the complexity of research problems (Plano Clark, Foote & Walton, 2018). Walton, Plano Clark and Johnson (2019) refer to the inherent messiness of mixed methods research and the increasing use of the term *case study mixed methods* design. Historically a researcher might have been expected to select either a case study methodology or mixed methods methodology. Increasingly the case study mixed methods design allows the researcher to find a permeable and fluid methodological solution to leading a research endeavour (Carolan, Forbat & Smith, 2016; Cook and Kamalodeen, 2021) . The complementary nature of a case study mixed methods design is helpful in utilising the two elements of mixed methods – a qualitative component and a quantitative componement in a nested mixed methods design (Guetterman & Fetters, 2018). This methodological design choice allows the research to collect qualitative and quantitative data to gain a greater understanding of the case (Stake, 1995; Yin, 2014). This is particularly helpful when considering the complexity of the RQ and the requirement to explore the emerging theoretical framework in figure 2.11. This methodological design choice should help provide rich relatable data about digital divide experiences from all participants by being able to integrate the data gathered to address the

research objectives (Guetterman & Fetters, 2018). If an organisation is the subject of a case study, then the organisation is simply a window through which the social processes can be observed. An organisation cannot be the sole object of a case study, and the research always requires a case of something (Silverman, 2020). Typically, the case study entails the detailed and intensive analysis of a single case, and its purpose is to bring an in-depth understanding of a particular environment or setting (Bryman & Bell, 2011). Stake (1995) links the case study with the complexity and nature of the case in question. This is particularly relevant in the case of the digital divide (from Bryman & Bell, 2011).

Most commonly, a case may be:

- A single organisation
- A single location
- A person, class, or cohort of like individuals
- A single event

(From Bryman & Bell, 2011).

Having identified the elements of the case, consideration of the structure of the case is required. There are two prominent forms of case study design: holistic or embedded (Yin, 2014). The embedded case study involves the analysis of multiple levels within a case. This might be where a number of departments in a business or sub-units are considered to give a more comprehensive picture of the phenomena being examined. Yin (2014) identifies one of the main issues with the embedded case study as a lack of common connection or holisitic element when representing the case subject. The embedded approach also allows a more detailed level of inquiry in a more flexible and adaptable manner by offering greater flexibility in the range of techniques being used. This would have been of particular benefit had all of the expected data been made available by YHN throughout the research study. A holistic case study examines several global units of analysis often more than once. In an organisational setting, the units of analysis selected should be linked and relevant to the research questions under examination. Flexibility and adaptability are important in this situation as additional units of analysis may be identified during the research as a result of knowledge gained during the research process (Yin, 2014; Simons, 2009). A further potential issue with the holistic type of case study identified is the risk that the researcher may lose focus on the different units being examined and this could result in focus being taken away

from the research question or research target in question in favour of a broader research question or topic. (Yin, 2014)

The selection decision being considered to use either the single or multiple case study structure and the case type options: holistic or embedded, the research needs to consider the units of analysis that will be used (Yin, 2014; Bryman & Bell, 2011). The Unit of Analysis is defined by Trochim (2021) as the major entity that you are analysing in the study. The units of analysis in this study are self-selecting YHN social housing tenants, YHN and Newcastle City Council and officers from both organisations that have influence or knowledge of the digital divide in Newcastle-upon-Tyne. The most appropriate way of considering the phenomenon associated with the research objectives is to take each of the sub-units of analysis and analyse them together in the context of the emerging theoretical framework (in figure 2.11). Each of these groups has its own data collection focus (that is described in more detail in the sections that follow) that allows rich data to be collected that promotes construct validity and credibility.

To consider these units of analysis and best address the research objectives, this study will utilise the embedded case study type, this will bring the perspectives of YHN social housing tenants and the key stakeholders from Newcastle City Council and YHN together to form an overall single case perspective. The selection of these participants helps to manage the scope of the case study to prevent it from being too wide-ranging to be fully considered by this research study (Yin, 2014). Expansion of the research scope could create opportunities for future research.

3.3.2 Data Collection

One final element of the case study methodology that was considered is how data will be collected. Yin (2014) identifies concerns with the strategy for collecting and documenting data. One of the methods for addressing this validity of data is the use of appropriate and robust data collection methods. The use of multiple data types and data collection methods improves this construct validity (Yin, 2014). Unfortunately, the use of various data types and data sources proved problematic in this study due to untimely and limited access to the cited data sources that were agreed upon as in-scope by the sponsor at the start of the research. This covert withdrawal of organisational consent (by way of obstruction) caused the study to be in a constant state of frustrated change.

The creation of a survey instrument was mandated by the research sponsor but was also considered in the research design as the most appropriate and efficient way of sampling the YHN tenant body (Silverman, 2020). Sampling using the survey instrument will take place face to face and online. Interviews, focus groups, and participant observation were considered for engaging with the social housing tenant group of participants. These methods were discounted due to the amount of time and manual effort required to gather a smaller sample of data. The semi-structured interview method was selected for engaging with YHN, Newcastle City Council staff, volunteers, and elected officials. The justification for this due to the richness of responses attained in the interview and the ability to probe further after a question has been answered (Flick, 2020). The ability to investigate further is vital as there may be a politically motivated answer to explore further during an interview.

3.4 Research Design

The earlier discourse in this chapter informs the choices made during the research design phase of the research. The methods selected and deployed have ramifications that impact the ability to deliver the research project in a manner that best answers the RQ.

3.4.1 Internet Use Survey of YHN Tenants: "*The Long Survey.*"

Before discussing the design and requirements of the questionnaire that the research operationalises, it is relevant to identify that the development and use of a survey tool was required by the project sponsor (identified earlier in the introduction chapter). In its conception, the study's initial driver was to explore further the digital divide data collected from the YHN Survey of Tenants and Residents (2014). Detail relating to the rationale for this is provided in chapter 1.

3.4.1.1 Sampling of Survey Participants

Bryman & Bell (2011) defines the sample as "the segment of the population that is selected for investigation" (p. 178). Several types of probability sample may be suitable for this element of the research. The sampling type selected is a simple random sample. This is considered the most basic form of probability sample, where each element of the population has an equal probability of inclusion (Bryman & Bell, 2011; Fowler, 2009). With a sample frame and population of 26700 YHN tenants, there are no practical means to engage meaningfully in any other type of sampling. It would be too costly and time-consuming to preselect and approach each potential tenant to request that they participate. Instead, each tenant received a written invitation to participate in the Survey. The Survey was also promoted to YHN tenants when they encountered YHN staff face to face. This self-selection

of participants allowed individuals to decide if they would take part in the Survey or not. The ability to provide information about the Survey to all YHN Tenants using the up-to-date organisational tenant data of Your Homes Newcastle achieves two of the most desirable characteristics when examining the sample frame: comprehensiveness and accuracy (Fowler, 2009; Lewis-Beck et al., 2004). However, this method of marketing to YHN tenants only ensured that only YHN tenants completed the Survey. Those tenants who did not have internet access or a device to complete the Survey on were able to ask for a physical survey to complete, resulting in 17 paper-based surveys being conducted. These paper-based surveys were processed and manually added to the online responses pending analysis. Those YHN Tenants that did not engage with the Survey were simply not selected from the sample frame.

Sample Bias

As explored earlier in the literature review, social housing tenants are of a diverse and disparate nature. This means that some tenants may face difficulties in engaging with communication around the survey instrument and the actual completion of the survey instrument. This could be for several factors such as poor numeracy and literacy skills, disabilities, and health issues. This sample bias might mean some individuals were unable to participate and complete the Survey. Due to the sample size, it may not be possible to assist all respondents who wish to participate.

Non-Response

Bryman & Bell (2011, p. 176) define non-response as a source of non-sampling error that is particularly likely to happen when individuals are being sampled. This occurs when some members of the sample frame refuse to co-operate, cannot be contacted, or for some reason are unable or unwilling to supply the required data (Bryman & Bell, 2011, p.176; Fowler, 2009). Examples of non-response that may affect this study may be related to disability or illness, tenants who do not speak English (the language the Survey was issued) and those whose reading and writing skills preclude them from filling out a self-administered survey.

Reducing Non-Response

In order to reduce non-response, the research needs to consider the motivations behind why respondents engage with surveys. Fricker (2012) considers two main theories that apply to non-response: the Leverage-Saliency and Social Exchange theories (Groves, 2000; Blau, 1964). The Survey is not particularly important to participants; therefore, the Leverage-

Saliency theory does not apply. In order to engage the Social Exchange theory, there was the incentive of being entered into a random draw for a £250 shopping voucher. This encouraged participation in the Survey and motivating participation by the potential return on taking part in the Survey.

The Tailored Design Method (Dillman, 2000) is a set of processes and procedures utilised in the online Survey's production. Dillman's (2000) keystones of creating trust, improved reward and reduction in time and cost to the respondent were all considered to generate the high-quality information and high response rates required from the study (Dillman, 2000, p. 29). The instructions for the Survey were clear and presented in colloquial language that would be easily understood by the participant (Fowler, 2009). Respondent trust was generated by using a YHN related internet domain name (yhn-survey.org.uk); this also used the HTTPS web browsing protocol, so the padlock was displayed next to the domain name to indicate this was a secure website. This named internet domain was then promoted by Your Homes Newcastle (YHN) to their social housing tenants by email and by mail. The Survey was promoted in the Your Homes Newcastle "Homes and People" magazine over two quarterly issues. Positive beliefs about the validity and reliability of website information are important for users and the success of a site, whatever its purpose may be (Wogalter & Mayhorn, 2008). When the surveys are conducted, there is a desire for an 80/20 split in online / face to face survey completion. The subject of the Survey is the digital divide, and for that reason, it was appropriate that a pre-determined number of surveys were completed face to face. With a varying demographic of YHN tenants available in locations where internet skills training sessions took place, it was possible to target offline participants (Dillman, 2015). This face to face completion of surveys was time-consuming but worthwhile in being able to provide a representative sample. The design of the Internet Use Survey continues in the next section.

3.4.1.2 Survey Design

Surveys are generally based on questionnaires and are answered in written form or orally in a face-to-face interrogation with the researcher (Flick, 2020). As described earlier (in section 3.4.1.1), this work requires that a large population provides responses to the Survey. Therefore, the Survey for this work will be primarily distributed as an online questionnaire. The information requested from participants was all connected to the digital divide in social housing tenants and informed by the literature review. In terms of question design, it was particularly important to consider that many social housing tenants faced challenges with literacy and standard of reading.

The fundamental tenants of questionnaire design in this situation that were incorporated were:

- The questions must not be too complex
- The questions must use colloquial language
- The questions must be clearly understandable

(Flick, 2020). The incorporation of academic language in the questionnaire has been avoided. The Survey asks 54 questions to gather data for later analysis. This may be seen as a barrier to the completion of the Survey (Flick, 2020; Yin, 2014). This was somewhat mitigated against after considering guiding points on completion:

- Are all questions necessary?
- Does the questionnaire include redundant questions?
- Which questions (if any) are superfluous?
- Are all questions formulated quickly and clearly?
- Are there negative questions with answers that could be ambiguous?
- Are the questions formulated too general?
- Will the respondent be able to answer the questions?
- Is there a risk that the questions will be embarrassing for the respondent?
- Might the response to the question be influenced by question placement?
- Are any questions formulated in a suggestive way?
- Is the opening and close of the questionnaire properly formulated?

(Bortz and Doring, 2006 p. 224-246 from Flick, 2020).

The above was completed as suggested in the original work of Bortz and Doring (2006) as a checklist. The data collected was also anonymised, so no identifiable data could reveal an individual identity. This ensured that the questions were put to participants in the most appropriate and relatable manner possible. Once initial draft questions had been assembled, they were tested in several pilot studies – these pilot studies are detailed in the next section.

A copy of the final survey instrument is available in Appendix A4.

3.4.1.3 The Pilot Study

The use of the Survey as a research tool is not unusual and allows the research to harness the rich potential of quantitative data (Braun, Clarke, Boulton, Davey & McEvoy, 2020). However, the use of a Survey does not make it any less prone to flaws, and a pilot study or

test run of the research design is beneficial in the validation of the survey instrument (Yin, 2014; Bryman & Bell, 2011; Braun & Clarke, 2013). The first incarnation of the survey design was tested face-to-face with a small cohort of YHN tenants. This identified weaknesses in the question order and clarity in the phrasing of the questions in the Survey. Once these were addressed, and the Survey was built into the online survey environment *Qualtrics*. The Survey was piloted again with a different small cohort of YHN tenants using the Qualtrics platform and a selection of other access devices (iPhone, iPad, Android Phone and Tablet, Laptop and PC) and on paper. This identified some formatting issues with the Survey on different devices that were resolved by more proficient use of hypertext markup language (HTML). The data gathered from the pilot study was recorded with the main data sample. The outcomes from the pilot did not change the questions, only the order of the questions and some of the phrasing to add clarity to the wording of questions. Typically, pilot studies are formative, but it is not unusual for data collection to be considered as part of the analysis (Yin, 2014; Kim, 2011). The pilot of the Survey added value to the study by improving completion rates achieved. These are later examined in the first findings chapter.

3.4.1.4 Data Analysis and Reporting

The data collected from the online and face-to-face questionnaires will be subject to descriptive quantitative analysis (Flick, 2020). With the analysis of the survey data needing to generate understanding that will allow the discovery of reasons for the digital divide in social housing tenants, descriptive statistics are the most relevant analysis method for bringing meaning to the data and answering the RQ. The pragmatist viewpoint is allowing the inferential creation of knowledge and combining this with social constructionism to connect the data to shared meanings and the realities of the sample (Saunders, Lewis & Thornhill, 2016; Morgan, 2014; Crotty, 1998; Guba & Lincoln, 1994).

The methods that will be used to report these descriptive statistics in the next chapter will describe categorical and sociodemographic data and use the measures of location (mode, median and mean) (Freeman, 2021). Charts, graphs, and tables will be used to present the data, where appropriate data will be compared to authoritative data sets (such as ONS, 2021). This is to enable the reader to take a comparative view of the data being examined.

3.4.2 Interviews of Key Stakeholders in the YHN Tenant Internet Adoption Journey

Semi-structured interviews were chosen to keep the participant on topic. Had the interviews been fully structured, then there would have been no licence to deviate from the set questions and fully unstructured would have seen participants wander off into the wilderness talking

about internet-related issues close to them (Bryman & Bell, 2011). The Semi-structured interview is considered a conversation with a purpose (Burgess, 2002). The use of the interview guide helps the researcher step through the interview and stay on topic (Braun & Clarke, 2012). Having already engaged with the YHN tenant body in the Internet Use Survey of YHN Tenants, the research seeks to engage the stakeholders, staff and those closer to the RQ.

3.4.2.1 Selection of Interview Participants

The selection of interview participants is crucial for the data collection process when a thematic analysis is proposed. Qualitative research requires a purposeful sample of participants. These participants can best inform the research questions and enhance understanding of the phenomenon under examination (Sargeant, 2012; Bryman and Bell, 2007). Those participants selected by the research were considered based on their proximity to the research question and their associated knowledge of the topic.

Given the research projects proximity to the sponsoring organisation (YHN) and its partner's acute awareness of the research questions, participants were informed of their requested selection for interview by email and allowed to respond with confirmation or rejection of the interview. The research refers to the proximity of the Research Question (RQ). This is defined as how close to the research topic an individual is, how much they know about the subject being examined and the closeness of their role to the engagement of social housing tenants. Interview participants (staff, former staff, volunteers and elected politicians) were selected from YHN, Newcastle City Council, National Government, agencies of the Civil Service and community groups in the same manner (by email invitation). There were 40 individuals selected for interview. The gender split of the originally selected 40 individuals was 50% male to 50% female in order to maintain a gender balance. Of the originally selected 40 individuals, 15 participants accepted the request and were interviewed. One participant requested that their interview be withdrawn from the study because they felt it might impact their chances of promotion in their workplace. Twenty-five individuals declined to be interviewed for a selection of reasons, or they simply did not respond. Of those who did not respond within 14 days of selection, this was followed up with a further email and a telephone call if other contact details were known for the individual that was selected.

Some of the reasons for not wanting to be part of the interview process are interesting given the individual's role and respective position in the study. As the organisation that is the

research sponsor, those affiliated with YHN are the closest to the research. Many of their staff have tacit knowledge of the digital inclusion agenda linked to YHN tenants and the local community. One individual declined to be interviewed because they stated that they had "*insufficient knowledge of the research*" indeed produced the digital inclusion section on the YHN Survey of Tenants and Residents (STaR Survey) in 2015. It was suggested by another member of YHN staff that agreed to participate that this officer's participation in the interview process was blocked by their then-line manager for organisational and political reasons. The line manager of this individual was also requested for an interview and declined for the same reason. Both individuals have now left the employ of YHN and have not been replaced. The Department of Work and Pensions staff declined to be interviewed as they had no organisational consent to take part. This is standard practice in the Civil Service of the United Kingdom. All three City of Newcastle upon Tyne members of the UK Parliament stated that they did not have time to participate in the interview process. This was a disappointment given that one of these individuals previously held the shadow Government portfolio for Culture, Media and Sport. This individual also currently holds the role of Shadow Digital Minister (Onwurah, 2021). The lack of engagement from the elected Councillors from Newcastle City Council is also notable. 10 Newcastle City Council Councillors were invited to participate. Some did respond and were interviewed, but these were in the minority. One of these Councillors responded by email stating that "*this is not something I am interested in, please do not contact me again about this"*. Senior employees from Newcastle City Council and Your Homes Newcastle also did not respond to requests for an interview. All requests for an interview were followed up with either an email or a telephone call. Where an individual had a Personal Assistant or Support Team messages were left with no follow-up response.

Missing from the desired roles of interviewee's is a current member of YHN's front line staff, someone that holds the role of Housing Officer (or similar). However, a former housing officer with 15 years' service at YHN agreed to take part in the research and was interviewed. This was desirable to allow the research to consider the point of view of the tenant when they move into a new property. The YHN Board were also reluctant to take part in the research. This gap was filled somewhat with an ex-YHN Board Member agreeing to provide the research project with an interview. A summary of those who declined to take part, with their estimated proximity to the Research Question (RQ) and the reasons they did not wish to take part in the semi-structured interview process in table 5.1 on the next page.

Table 3.3 Interview Respondents – declined to be interviewed with reason

	Organisation	Type	Role	Proximity to RQ	Reasons
1	YHN	Staff	Middle Manager	High - Main Sponsor	Did not reply
2	YHN	Staff	Team Manager	Very High	Insufficient Knowledge of RQ
3	YHN	Staff	Involvement Officer	Very High	Insufficient Knowledge of RQ
4	YHN	Board	Member	Low/Medium	Did not reply
5	YHN	Volunteer	Junior	Medium	Did not reply
6	YHN	Volunteer	Junior	Medium	Declined - Lack of Confidence
7	YHN	Volunteer	Junior	Low/Medium	Declined - Not Interested
8	DWP	Staff	Universal Credit Designer	High	Declined - No Organisational Approval
9	DWP	Staff	Director of DWP Digital	Very High	Declined - No Organisational Approval
10	DWP	Staff	Local Centre Manager	Medium	Did not reply
11	UK Govt	Elected	MP	Medium/High	Declined - No Time
12	UK Govt	Elected	MP	Medium	Declined - No Time
13	UK Govt	Elected	MP	Medium	Declined - No Time
14	NCC	Elected	Councillor - Portfolio	High	Insufficient Knowledge of RQ
15	NCC	Elected	Councillor	Medium	Declined - Not interested
16	NCC	Elected	Councillor	Medium	Did not reply
17	NCC	Elected	Councillor	Medium	Did not reply
18	NCC	Elected	Councillor	Medium	Did not reply
19	NCC	Elected	Councillor	Medium	Did not reply
20	NCC	Elected	Councillor	Medium	Did not reply
21	NCC	Staff	Library Officer	Medium	Declined - Superior will Interview
22	NCC	Staff	Director of IT	Medium	Did not reply
23	NCC	Volunteer	Digital Champion	Medium/High	Did not reply
24	NCC	Volunteer	Digital Champion	Medium/High	Declined - No Time
25	NCC	Volunteer	Digital Champion	Medium/High	Declined - Lack of Confidence

Those individuals who agreed to participate in a semi-structured interview were not all directly approached. The selection of some former YHN employee's and board members was made possible by one former YHN employee coming forward and this granted access to other former YHN employees that they were still in touch with. The method of access to former employees is supported by Pettigrew and McNulty (1995), who stated that access to elites is best achieved through others of the same status. As mentioned earlier originally, there were 15 participants in this element of the research study, but one participant withdrew their participation in the research citing potential problems in their workplace for any comments that may be attributed to them from the research. A summary of interview participants that agreed to be part of the research is shown in table 3.4.

Table 3.4 Interview Participants – Interview Details

Code	Organisation	Role	Gender	Proximity to RQ	Location	Setting	Date	Int. Length
1	YHN	Project Manager	F	High	YHN House Meeting Room	Formal	16-Mar-19	22m32s
2	YHN	Digital Officer	F	High	City Library Café	Informal	18-Mar-19	23m21s
3	YHN	Senior Manager	F	Medium	YHN House Mgt Suite	Formal	08-Apr-19	34m33s
4	YHN	Consultant	M	High	YHN House Meeting Room	Formal	09-Apr-19	30m48s
5	Ex-YHN	Senior Manager	M	High	Northumbria University	Formal	02-Apr-19	36m50s
6	Ex-YHN	Officer	M	Medium	Northumbria University	Informal	09-Apr-19	15m21s
7	Ex-YHN	Board Member	F	Medium	Northumbria University	Informal	10-Apr-19	19m28s
8	NCC	Library Manager	M	High	Newcastle City Library	Formal	02-Jul-19	32m43s
9	NCC	Digital Manager	M	High	Newcastle City Library	Formal	03-Jul-19	23m03s
10	NCC	Digital Development	F	High	Newcastle Civic Centre	Formal	03-Jul-19	33m29s
11	NCC	Ward Councillor	M	Medium	Walker Activity Dome	Informal	04-Apr-19	15m59s
12	NCC	Ward Councillor	M	Medium	Newcastle Civic Centre	Informal	03-Jun-19	19m00
13	NCC	Ward Councillor	F	Low	Written Reply	Written	06-Feb-20	Not Applic.
14	Independent	Digital Skills Trainer	F	Medium	Newcastle Business School	Informal	17-Apr-19	16m15s

3.4.2.1 The Interview Guide

The interview guide is viewed as an aide-memoire for the interviewer and seek to create a guide to the conversation with the participant (Braun & Clarke, 2012, p. 81). Braun & Clarke (2012) discussed the aim of the interview guide as being the disclosure of personal information. The aim of the interview guide for this research is for participants to disclose potentially sensitive information relating to internet adoption and digital inclusion that specifically impact social housing tenants. The interview guide was constructed by brainstorming a list of questions from the literature examined in the previous chapter, based on conversations with YHN Staff, and some of the early findings from the Survey Instrument were also used. This was to ensure that relevant questions formed part of the interview guide.

The interview questions were written to elicit the most informative response from participants. Nine questions were selected, and these questions were a combination of close and open-ended questions (Adams, 2015). During the interviews, if an interesting topic or issue came to light, this was explored further during the interview. Interview questions were selected to facilitate the receipt of answers and information that would help answer the RQ. The questions were also designed to engage the available literature discussed earlier and to cover the expectations of the study by the sponsor (YHN). It can sometimes be challenging in qualitative research to hear the actual voices of interview participants. Interview question design is fundamental in facilitating this interview voice both in presentation and text (Chandler, Anstey and Ross, 2015). Allowing the participant to articulate their own narrative when questions are asked was influential in establishing several themes. Being able to elicit thoughtful and authentic answers to questions may uncover some key areas that have not previously been considered by the literature. The last questions may be viewed as politically sensitive and were held until the end when trust had built up in the interview process (Braun & Clark, 2012). Departure from the interview guide for the study will not be viewed as an issue, and interview participants will be actively encouraged to speak their mind on a topic or issue (Silverman, 2020).

The ideal for the interviewer was to utilise the interview guide to elicit natural conversation and connect this to topics that answer the RQ. This natural conversation occurred on several occasions during interviews. In the course of the timeline that the interviews were undertaken, adaptation of the interview guide took place. Whilst keeping the areas under examination uniform, it allowed questions to be adapted to be more easily understood by participants. Given the nature of the research, this adaption was considered methodologically

proportionate. As part of the interview guide, participants were provided with a copy of the Northumbria University standard informed consent form [version controlled at date 18/06/2013] and a copy of the ethics statement connected to the study. Participant consent was recorded at the beginning of each interview and by email when arranging the date, time, and venue for the interview. The interview guide and associated documentation available is in appendix A3.

3.4.2.3 The Pilot of the Interview Guide

Similarly to the Survey, the interview guide was examined in a pilot study. The pilot study for the interview guide was purely formative in nature, with those being interviewed with the aid of the interview guide not being connected to the research study (Yin, 2014; Kim, 2011). There was limited development made with the interview guide with the formative pilot study, and in preference to the formative pilot, far more significant improvements to the interview guide were made by learning from each actual interview participant experience and making changes based on their reactions to the questions and prompts.

3.4.2.4 The Interview Process

After receiving the agreement to be interviewed, participants were each provided with a written copy of the interview guide (including a written copy of the ethical statement and consent statement that they could keep a copy of) that would be used with each participant. Once they had received the interview guide and returned their consent to be interviewed/ethical agreement, interview participants had an interview arranged at a location and venue of their choice that was the most comfortable for them. This handed some management of the interview power dynamic to the participant, which is important to set the participant at ease and elicit the best responses to the questions (Bolderson, 2012). In addition, allowing the interview participant to select a venue aided them in feeling more secure and comfortable. The setting chosen by the participant (Formal or Informal) is recorded in table 3.4. A formal interview setting may be an individual's usual work environment or office. It may also be a meeting room at their place of work or Newcastle Business School. An informal interview setting maybe a coffee shop, cafeteria and in one instance, the interview took place online using the Microsoft Teams software.

Once at the location and setting of the interview and before the interview commencing, the recording equipment is set up and tested. When the participant arrives, they are asked if they consent to the interview being recorded [they have already been asked in the invite email]. The recording begins, and the interviewer explains to the participant the content of the

consent and ethical statement. The interviewer then leads the participant through the questions in the interview guide allowing for deviation and expression of anything the participant may find of relevance or interest. Once the interview is closing, the participant is asked if they would like to add any comments about anything that may not have been covered, they feel could be relevant. Braun and Clarke (2012) referred to this closing question as a clean-up question as it may elicit unexpected but very useful unanticipated data. For ethical reasons, once this has been completed and recording is stopped, an informal conversation followed to ensure the participant was happy with the way the interview was conducted.

3.4.2.3 Subjectivity of the Researcher

The role of the researcher is critical in qualitative research as they are an instrument of the study. It is important to note that the researcher – much like those participating in the interview process has political, theoretical, and socio-cultural views, which may impact the collection and analysis of the data collected (Maxwell, 2012; Simons, 2009). This subjectivity may be considered bias because of the researchers view on the topic being examined. Maxwell (2012) suggests a method of controlling this bias is to write down thoughts, feelings, assumptions, experiences, and emotions. During the research study, the researcher kept contemporaneous notes of all meetings and events connected to the research. A short analysis of these notes revealed the following presuppositions:

- The digital divide is complex and messy, and many individuals connected to the study know their parts but not how they interconnect.

- Engaging with interview participants would be challenging because –

- The researcher is inexperienced and not confident, which may impact the answers provided by participants.

These presuppositions are observational and emotive in nature, making them difficult to mitigate against in the research. This is supported by Simons (2009), who states that emotive elements are harder to control, which means there may be an unforeseen impact on interview outcomes.

3.4.2.5 Transcription of Interviews

With the advent of low-cost digital voice recording devices (such as the smartphone and tablet) digital voice recording has almost entirely replaced the manual taking of the field note (Tessier, 2012). Voice recording is one of the best methods to capture data from interviews efficiently. In this study, all participants are requested to provide consent to their voice being recorded for the purpose of the interview. These voice recordings were then transcribed for later computer-aided qualitative data analysis. Of the 15 interview participants, only one declined to be voice recorded, and this interview participant opted to make a written response to the questions provided in the interview guide. The responses provided have been included in the thematic analysis. They give some insight from a group of the selected individuals who were reluctant to participate in the interview process. This transcription of interviews could be viewed as a small part of the six-phase process (becoming familiar with the data – Braun and Clarke, 2012) as outlined in the next section.

3.4.2.6 Data Analysis

The experiential thematic analysis variant was used to analyse the interview data collected. This was due to the requirement to focus on participants' standpoint. How participants experience the world is of particular importance to the study as the group of selected participants comes from various organisations, job roles, positions of seniority, and different levels of knowledge of the digital divide (Braun & Clarke, 2012).

When undertaking a thematic analysis, Braun & Clarke (2012) make a distinction between two levels of themes. These are the semantic themes and the latent themes. Semantic themes are *"... within the explicit or surface meanings of the data"*. Thus, the analyst is not looking for anything past what has been contributed by the interview participant. To contrast this, the latent theme level is *"starting to identify or examine the underlying ideas, assumptions or conceptualisations – and ideologies." (p.84)*. Using these levels of theme, the research seeks to interpret and make sense of the contributions of the interview participants to address the RQ (Maguire and Delahunt, 2017).

Themes and codes were established using the iterative six-phase process outlined by Braun & Clarke (2012).

1. Become familiar with the data.
2. Generate initial codes.
3. Search for themes.

4. Review themes.
5. Define themes.
6. Write-up.

The researcher deployed this process iteratively, moving back and forward over the data rather than using a linear, step-by-step approach (Harding and Whitehead, 2016). The six-phase iterative process was followed until the first draft of the thematic analysis chapter began to emerge from the process. Six main themes were identified in the data provided from the semi-structured surveys. These themes will be presented in the thematic analysis chapter as a description of the identified main theme, followed by a description of the subsequent lower-order codes. These follow the identified theme with some analysis of the meaning of the codes with some example narrative sampled from interview participants to include the voice of the interview participant. A more detailed discussion of the themes and codes will take place alongside the findings from the Survey in the thematic analysis chapter.

Computer-Aided Qualitative Data Analysis

The use of Computer-Aided Qualitative Data Analysis Software (CAQDAS) has several advantages to the research. The NVivo 12 software was used to undertake the thematic analysis of fourteen interviews that varied in length between 15 minutes and 36 minutes. The researcher was trained and confident in using NVivo 12, and it was the only available CAQDAS software. The main strengths brought to the study by using CAQDAS were:

- Improved efficiency of coding and analysis
- Improved organisation of data, coding and analysis
- Re-assurance of comprehensiveness of coding

(Braun & Clarke, 2012).

3.5 Ethical Considerations

The collection of primary data creates some ethical considerations that were addressed in the study's ethical approval. The study involved human participants, which resulted in the research study being classified as a medium level ethical risk. The study did not engage with children, vulnerable young persons, or adults. The ethical approval was reviewed by the Newcastle Business School ethical standards committee, and permission was subsequently

granted on the 26th of September 2016. The project sponsor from YHN provided organisational consent for the research on the 22nd of June 2016.

3.6 Limitations of Research

No research study is perfect, and every research study has limitations present. Many of these relate to resource, time, research design, theory and financial constraints. Each of these factors plays a role in forming the research design.

Every effort was made to minimise the effect of limitations on the study; however, some limitations were persistent. Table 3.5 lists these limitations with the mitigative action taken.

Limitation	**Mitigation**
Obstruction by YHN Officers	Contemporaneous notes of meetings, actions and decisions made with record of decision maker.
Significant time was taken managing the relationship with the YHN Officer Team	Limited contact with the YHN Officer Team at the point of empirical data collection to prevent unnecessary bureaucracy.
Some YHN Tenants are offline and unable to access an online questionnaire	Face to Face completion of paper-based questionnaires.
The smaller than desired interview sample size and lack of participation from some quarters of the desired population	Established relationships with individuals that were recently in those elements of the population.

Table 3.5 Table of limitations and mitigative actions faced in the study.

The inexperience of the researcher also plays a role in how quickly these limitations were identified and mitigated. Nevertheless, it is fair to assume that a valuable lesson in managing external influences over research has been learned.

3.7 Chapter Summary

This chapter has considered the theoretical perspective of the study and the method that the study would be conducted. The theoretical view taken was pragmatism, which allows the study to use varying methods of building knowledge and meaning when examining the data provided from the research instruments. This allows different views to be taken of the same phenomenon, and the view is the most relevant or valuable to the research adopted. A case study mixed methods design was taken as the RQ sought to inform an *understanding* of the digital divide in the YHN tenant body in Newcastle upon Tyne. The data for this case study was collected by way of 714 questionnaire responses and 14 semi-structured interviews. The first part of the research study was the collection, initial analysis and then complete analysis of the 714 questionnaire responses. The survey analysis was followed by conducting the 14 semi-structured interviews and the iterative process of interview, dictation and then entering the iterative six-stage process of thematic analysis (Braun and Clarke, 2012). The chapters that follow will outline the key findings from the data analysis and begin the discussion of the implications and of the outcomes from the study.

Chapter 4 – Findings (Survey)

4.1 Introduction to Findings

Following on from the previous methodology chapter, this chapter is the first of two findings' chapters, followed by a single discussion chapter where both findings' chapters will be discussed together. This chapter presents the interesting findings from the survey instrument. Eight hundred thirty-two respondents have begun the 46 research questions from the survey instrument (Appendix A). After non-response bias is considered, the findings presented come from between 590 and 714 active and answering respondents. There are other effects of non-response bias, and these have been narrated when the respective data is presented. The voices of individuals, respondents, Newcastle City Council and YHN Staff, will be shown in italics to highlight the voices of the individuals.

The primary reason for the use of descriptive statistics here is that it avoids some of the potential complexity that other statistical methods can introduce to the presentation of statistical data. The use of narrative with the use of descriptive statistics should aid YHN in being able to leverage the data presented in this thesis to make real world impact in an easily accessible manner. The chapter starts with an overview of the general demographic profile of the sample. This follows the structure of the proposed theoretical framework as the first construct considered with the respondent profile is the Sociodemographic Characteristics construct from figure 2.11. Other elements linking to the theoretical framework will be identified, and their relevance introduced as this chapter unfolds. Where concepts have been discussed earlier in the literature review – this critique will not be repeated in this section. This then links to educational attainment and considers the data from respondents that receive welfare benefits. Respondents with disabilities and mobility issues are then considered, along with those who may use adaptions and aids to access the Internet. This section is followed by data around households with children and the number of children in a household. Next, there is a postcode breakdown that shows which areas of the city respondents reside. This features an analysis of service providers in each postcode area of the city and a map of Newcastle upon Tyne to illustrate to the reader that may not be familiar with Newcastle-upon-Tyne which areas of the city respondents reside. An extensive reporting of the age demographic follows this that features several crosstabulations and a breakdown of activities, services and websites a respondent might visit when they do go online.

Social media platform usage and interaction are reported. This is followed by a section on keeping in touch with friends and family – this features data reporting the use of email by respondents. A section relating to smartphone use follows and links to the next section,

which is a report of the data relating to the bundling of online services, financing these services and those in receipt of welfare benefits. The chapter finishes with an account of the data connected to digital skills, training, learning and asking for help online. Finally, there is a summary of the free-text comments made by respondents when they were asked for the main reason that they use the Internet. These comments will link to the subsequent findings chapter, where a thematic analysis of 14 interviews will be examined. The chapter then concludes with a summary and identifies and suggests issues for further examination in the discussion chapter.

4.2 Response Rate and Non-Response Bias

A discussion about the response rate and how non-response was handled took place in chapter 3 (Methodology). In this chapter, there will be no further summary of this. Detailed in the previous chapter and based upon the total number of Your Homes Newcastle (YHN) tenants being 26400, and the total number of responses to the survey is 714 responses. This gives a total response rate of 2.74% from the established sample frame. One of the areas not considered that may have impacted the non-response rate was the nature of the demographic being sampled. Social housing tenants experience higher than average [vs the rest of the population] literacy problems. Specifically, Hickman (2019) found that social housing tenants experience information and numerical literacy issues. The literacy issues were supported by YHN (2018) following the survey affirmation meeting where a member of their customer engagement team remarked that:

"*Some tenants will not read Homes and People [YHN Quarterly Magazine] because they are unable to and anything past financial budgeting this may be too complex for them to understand*".

Hickman (2019) also supports this statement with his work on understanding rent payment behaviour. For example, in Hickman's understanding rent payment study, a participant remarked at interview:

"*.. we aren't good readers, so we may not have read the full letter."*

This may be interpreted that some tenants may not have responded to the survey because they were unable to read and understand the survey. The length of the survey is also posited to be a negative impact on response bias for similar reasons. This may result in minor non-response bias that was not considered during the design of the survey element of the research.

In total, there were 832 individuals that clicked the link to open the survey, but only 714 went on to make any attempt at responding to the questions. This figure is minimally reduced for some questions that allow the participant not to make any answer. This was to encourage respondents to answer questions where they feel comfortable rather than force them to make an answer that may not be true to progress to the end of the survey.

4.3 Respondents Profile

To gain a clear picture of the demographics of survey respondents and make a case for the generalizability of the data sample, the first part of this chapter will examine the respondent profile. Of the 616 responses received, 28% were members of the 46-55 years age group category. The 46-55 years age demographic was the most significant as this demographic was significantly more digitally excluded than that of similar studies (Ofcom, 2018; 2017). The least responsive age demographics were 66-75 and 75+ with 4.5% and 1.8% of the sample. Most respondents came from the 26-35 and 36-45 age demographic. Whilst the respondent profile is relatively young from an age demographic perspective, there is still a significant number of responses from the 56-65, 66-75 and 75+ demographic to make the views of these demographics' representative. From a gender perspective, 63.4% of respondents were female and therefore the most common gender to respond to the survey. This is compared to 36.3% of the male respondents, with 0.2% of respondents stating they felt they were not male or female. This may mean these individuals consider themselves gender-fluid or agender. Data relating to Age and Gender are detailed in Table 4.1a.

Table 4.1a Respondent Profile – Age and Gender

		Number of Respondents	Percentage of Sample	Numebr of Respondents with No internet	Percentage of Sample with no internet	Percentage of age category with no internet
Age	16-25	46	7	8	1.29	17.39
	26-35	112	18.1	8	1.29	7.14
	36-45	141	22.7	6	0.97	4.25
	46-55	171	28	18	2.92	10.52
	56-65	109	17.9	19	3.08	17.43
	66-75	27	4.5	2	0.32	7.4
	75+	10	1.8	3	0.48	30
	Total	**616**	**100**	**64**		
	Non Resp.	102				

Gender	Male	259	36.3
	Female	453	63.4
	Other	2	0.3
	Total	**714**	**100**

The further cross-tabulation of age and gender shows that younger females were much more inclined to respond to the survey instrument. Females in the 16-25 and the 26-35 age groups being the most prolific survey respondent. Further analysis of the 16-25 age group would be beneficial, given the general propensity for individuals from this demographic to own devices and use them to get online in many circumstances. Similarly, analysis from the 66-75 and 75+ age demographics to attempt to elicit why this demographic does not engage with the internet. Some of this further analysis is explored in section 4.8 later in this chapter.

This cross-tabulation of data is detailed in Table 4.1b

Table 4.1b Respondent Profile – Cross Tabulation of Age and Gender

Gender	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Male	24.00 %	25.60 %	29.00 %	41.50 %	45.30 %	53.10 %	69.20 %	36.30 %
Female	76.00 %	74.40 %	70.40 %	58.00 %	54.70 %	46.90 %	30.80 %	63.40 %
Other	0.00%	0.00%	0.60%	0.50%	0.00%	0.00%	0.00%	0.30%

Table 4.1c shows the breakdown of gender and has the Internet at home. This cross-tabulation is balanced equally with male and female respondents, representing around 5% of the sample of respondents who do not have the Internet at home. This finding does not reinforce the ideas found in the literature that considers females to be generally more digitally excluded (van Dijk, 2005, Moore, 2016; United Nations, 2015). Examination of why more females than males engaged with the survey instrument could be of interest to policy makers as this may lead to more elaboration on how low-income households are managed and by whom.

Table 4.1c – Crosstabulation of Gender & has No internet at home

		Total	No Internet	% Sample	% Group
Gender	Male	222	30	4.87%	13.51%
	Female	392	33	5.36%	8.42%
	Other	2	1	0.16%	50.00%
	Total (n)	616	64		

The majority of respondents self-identify as White British ethnicity, with 83.5% of respondents selecting this ethnicity. Other ethnicities are significantly represented with only minor variation from the data in the UK Government Census (2011). Data relating to ethnicity is detailed in Table 4.1d. The PhD Project Sponsor requested that no questions relating to respondent's UK citizenship or asylum status were asked in the survey. There is little available discourse pertaining to asylum seekers as users of the Internet in the United Kingdom or as Social Housing tenants. This may be a future research project as this could provide valuable insight into how this section of British society uses of the Internet to support their lives and contribute meaningfully to the economy.

Table 4.1d Respondent Profile – Ethnicity

	Category	Frequency	Percentage
Ethnicity	White British	595	83.5
	White Other	39	5.5
	Black British	9	1.3
	Black	19	2.7
	Middle Eastern	5	0.7
	Chinese	2	0.3
	Mixed	6	0.8
	Other	38	5.3
	Total	**713**	**100**

Table 4.1e shows the breakdown of ethnicity and does not have the Internet at home. With the majority of the sample being 83.5% White British, it becomes difficult to draw any meaningful observations from the data. This is due to the low number of respondents in each of the ethnic demographics. The ethnicity respondent profile is not typically representative of the population of Newcastle upon Tyne. Newcastle City Council (2021) stating that 12% of the population of Newcastle upon Tyne was considered Black, Minority Ethnic. The sample

may be representative of the YHN tenant group. To understand if the survey sample is representative of the YHN tenant group, data was required from YHN. YHN were unwilling to provide any statistics around the ethnicity of their tenants. It may be of interest if ethnicity could be examined and analysed against demographics such as asylum status and later influence how useful it may be for an individual of this demographic to be online from a social and governmental point of view.

Table 4.1e – Crosstabulation of Ethnicity & has No internet at home

		Total	No Internet	% Sample
Ethnicity	White British	518	56	9.09%
	White Other	32	2	0.32%
	Black British	9	2	0.32%
	Black	17	0	0.00%
	Middle Eastern	5	0	0.00%
	Chinese	2	0	0.00%
	Mixed	6	1	0.16%
	Other	27	3	0.49%
	Total (n)	**616**	**64**	

The data relating to education level is detailed in Table 4.1f and shows that just over a quarter of respondents (25.9%) had educational qualifications that were considered Level 4 or above, with most respondents having GCSE (21.9%) or NVQ Level 1 & 2 (14.4%) qualifications. In addition, 11.4% of respondents had completed a university education of at least a bachelor's level (Level 6) Degree.

Table 4.1f Respondent Profile – Education Level

	Category	Frequency	Percentage
	No qualifications	142	20.5
	Time Served Apprentice	14	2
	GCSE/O Level	152	21.9
	BTEC or NVQ Level 1 or Level 2	100	14.4
Education Level	A Level	59	8.5
	BTEC or NVQ Level 3	47	6.8
	BTEC or NVQ Level 4	19	2.7
	BTEC HNC or HND	25	3.6
	Foundation Degree	28	4
	Bachelor's Degree	79	11.4
	Master's Degree	25	3.6
	Doctorate	4	0.6
	Total (n)	**694**	**100**

This data links to the Mental Resources construct in the theoretical framework. The most educated respondents came from the 26-35 age group, with 23.5% of respondents from that age demographic having received a University education. The group has 129 or 18.1% of all survey respondents (as detailed in Table 4.1a). The most poorly educated respondent group were the 16-25 age group, with 64.5% of respondents in this age group having less than a Level 2 qualification. This group has 50 respondents equating to 7% of all survey respondents (as detailed in Table 4.1a). With such a high percentage of respondents being White British, it was impossible to report a statistically significant value when examining which ethnicity from the samples was the best and most poorly educated group. Table 4.1g shows that the less well-educated respondents stated they were, the less likely to have broadband internet in their homes. Therefore, the educational data in table 4.1f is generally not representative of the general population in Newcastle upon Tyne. This is where it is essential to highlight that the sample data is taken from social housing tenants, as explained earlier. Based on the ONS (2018) data for regional education demographics, those in Newcastle with No Qualifications is 14.58% - this is five percentage points less than the social housing tenant data. Educational attainment is cross tabulated against the age demographic in table 4.10 later in this chapter. A comparison of the ONS United Kingdom national data for this demographic would provide a comparison and benchmark of how typical the sample of the data is against the rest of the general population and could also be broken down by similar individuals that also reside in social housing.

Table 4.1g– Crosstabulation of Highest Educational Qualification & Internet Adoption Status

		Number of Respondents	No Internet	% Of Sample	% Respondent Qualifications Group
Respondent highest academic qualification	No qualifications	119.0	18.0	28.13%	15.1%
	Time Served Apprentice	14.0	4.0	6.25%	28.6%
	GCSE/O Level	127.0	16.0	25.00%	12.6%
	BTEC or NVQ Level 1 or Level 2	91.0	15.0	23.44%	16.5%
	A Level	52.0	2.0	3.13%	3.8%
	BTEC or NVQ Level 3	43.0	4.0	6.25%	9.3%
	BTEC or NVQ Level 4	19.0	0.0	0.00%	0.0%
	BTEC HNC or HND	25.0	1.0	1.56%	4.0%
	Foundation Degree	24.0	0.0	0.00%	0.0%
	Bachelor's Degree	75.0	2.0	3.13%	2.7%
	Master's Degree	23.0	1.0	1.56%	4.3%
	Doctorate	4.0	1.0	1.56%	25.0%
	Total Respondents (n)	**616.0**	**64.0**		

The number of respondents to the cross-tabulated data in table 4.1gwere 616 respondents. Those that did not have the Internet in their homes number 64 respondents. As a percentage of the sample, the group least likely to have the Internet in their homes was those with no formal qualifications. This represented 28.13% of the sample that did not have the Internet in their homes. This is representative of 15.1% of the "No qualifications" respondent academic qualification group. As a qualification group, "Time Served Apprentice" has a relatively low number of respondents; but those members of that group that did not have the Internet in their home was 28.6%. Those with "GCSE/O Level" qualifications also are less likely to have the Internet in their homes. This academic qualification group had 25% of the sample of respondents that did not have the Internet in their homes. This is representative of 12.6% of the "GCSE/O Level" respondent academic qualifications group. The statistics reported for those with "BTEC or NVQ Level 1 /2" qualifications are also similar to the "No qualifications" and "GCSE/O Level" respondent academic qualifications group. Those with "BTEC or NVQ Level 1 /2" qualifications represent 23.44% of the sample of respondents that did not have the Internet in their homes. This is representative of 12.6% of those academic qualifications group. At the Academic qualification group of "BTEC or NVQ

Level 3", the trend of non-adoption of the Internet falls significantly. Only 6.9% of the sample of respondents did not have Internet in their homes. At Level 4 qualifications and above, the percentage of respondents who did not have internet access in their homes significantly drops to an average of 2.4% of respondents. These findings broadly support those of Pew (2017) and the Ofcom (2014) reports that discuss educational attainment and its connection to an individual being online or not.

When considering employment status and socio-economic classification, 45% of respondents stated that they did not work. Whilst this is a high percentage, it is not unusual given that the sample was taken from social housing tenants and not the general population of the City of Newcastle upon Tyne. The subsequent most common response was that 22.6% of respondents stated that they worked between 32-40 hours per week. Based on an analysis of the occupation data provided by respondents using the UK Office for National Statistics socio-economic classification algorithm, 81.05% fell into the DE category (Semi-skilled & unskilled manual occupations, the unemployed and lowest grade occupations). This classification also includes those who are retired, full-time students and those who are unable to work because of illness or disability. It is notable that none of the social housing tenants from the sample who responded fitted into the AB classification of Higher & Intermediate managerial, administrative, or professional occupations. This might be expected as these individuals may choose to reside in privately owned properties instead of paying rent to the local authority.

The median household income in the UK is £29900 per year (ONS, 2021). The median household income in Newcastle upon Tyne is between £26100 per year and £28050 per year, depending upon the Newcastle upon Tyne postcode sampled (ONS, 2021). This makes the median household income in Newcastle upon Tyne lower than the rest of the UK.

The data shown in Table 4.1h relates to Employment Status and NRS Classification and is relevant to both the Material and Social and Cultural Resources constructs from the theoretical framework. This is due to these elements of the data impacting social status and financial ability. When considering employment status, women are more likely to work part-time than men, with 72% of women respondents working between 1-16 hours per week. Men are more likely to work full time and overtime, with 57.8% of men likely to work 40+ hours per week. The statistics around employment status are not typical of the general Newcastle upon Tyne population. The ONS (2019) states that 76.3% of individuals are economically

active in the Newcastle upon Tyne area (ONS, 2019). This is in comparison to 55% of those who are financially active from the survey sample. The high percentage of respondents in the NRS DE Classification may be due to the nature of the sample being taken from social housing tenants. Respondents that are members of NRS classification DE that also claim means-tested welfare benefits number 451 respondents. This makes respondents that are in receipt of welfare benefits a category of interest when considering the barriers to broadband adoption. Further reporting of findings around this category will be provided at points later in this chapter. The findings that poorer, less educated and less affluent individuals are less likely to go online are supported by those found in the literature with the idea presented by Rhinesmith, Reisdorf & Bishop (2019) that cost is viewed as a primary factor to internet adoption. These findings also support Rhinesmith et al., (2019) notion that this also acts as a suitable proxy to those in receipt of welfare benefits needing to prioritise their limited income to ensure they are able to feed and clothe themselves. Survey based reports also support this idea with the Ofcom, (2016) and Good Things Foundation (2017) reports supporting the ideas found here.

Table 4.1h Respondent Profile – Employment Status and NRS Category

	Category	Frequency	Percentage
Employment Status	0h – I do not Work	306	45
	1h-16h Part-Time Work	76	11.2
	17h-32h Part-Time Work	99	14.6
	32h-40h Full-Time Work	154	22.6
	40h + Overtime	45	6.6
	Total	**680**	**100**
NRS Classification	AB	0	0
	C1	20	2.95
	C2	109	16
	D		
	E	551	81.05
	Total	**680**	**100**

Given the high number of those who state they are unemployed and those who indicated they are in the NRS DE Category it is beneficial to provide data related to total spend on digital services in respondent homes. This data is shown in Table 4.1i. These digital services include Broadband Internet, TV and landline TV Services.

Table 4.1i Respondent Profile – Total Spend on Digital Services in the Home

Spend Range	Frequency	Percentage
Between £0 and £20	113	18.56
Between £20 and £30	135	22.17
Between £30 and £40	109	17.90
Between £40 and £50	90	14.78
Between £50 and £60	65	10.67
Between £60 and £70	36	5.91
More than £70	61	10.02
Total	**609**	**100**

4.4 In Receipt of Welfare Benefits

Linking to employment status and NRS Category and again linking to both the Material and Social and Cultural Resources constructs from the theoretical framework. Again this is due to these elements of the data impacting social status and financial ability, being in receipt of welfare benefits could be considered a barrier to broadband adoption. As previously discussed in the literature review, when measuring social housing tenants' income, it is more likely to be lower than a standard sample from that of the general population. This is confirmed in the survey results, with 56.25% of respondents being in receipt of some type of welfare benefit. Surveying for financial matters and income was also identified as a factor that might increase non-response rates and that may result in inaccurate responses due to financial literacy issues identified earlier (Osier, 2016).

Table 4.2 shows the different welfare benefits those respondents are claiming.

Table 4.2 Respondents in Receipt of Welfare Benefits

	Category	Frequency	Percentage
	Does not claim benefit	364	43.75
	Prefer not to say	46	5.5
Welfare Benefits	Housing Benefit	257	30.9
	Council Tax Benefit	216	26.0
	Child Benefit	212	25.5
	Employment Support Allowance	87	10.5
	Personal Independence Payment (DLA)	77	9.3
	Universal Credit	76	9.1
	Job Seekers Allowance	31	3.7
	Total Number of Responses	1366	
	*Respondents can claim more than one benefit		

When asked, "Which welfare benefits do you claim, if any?" 43.75% (364) of respondents stated that they do not claim any welfare benefits. This statistic is supported by those claiming to be in full or part-time work in Table 4.1j, where 55% of the sample claim to be in work. This is where 374 respondents asserted that they were in full or part-time employment. 5.5% of respondents stated that they preferred not to say which benefits they received. This response was included in this element of the survey to lower non-response bias. Often individuals and families may not want to disclose what benefits they receive for several different reasons. There are no statistics available that report the number of individual benefit claimants by which benefit they claim, but the latest statistics from the ONS (2021) indicates that 7.1% of the general population in Newcastle upon Tyne is claiming Universal Credit.

Overall, 59.1% (422) respondents said they received any welfare benefit. Of those respondents who opted to disclose which benefits they received, the most selected at 30.9% of the sample was Housing Benefit. Closely following this was Council Tax Benefit with 26% and Child Benefit at 25.5%. These statistics show that a minimum of 30.9% of respondents receives a low enough income to qualify for Housing Benefit or the Universal Credit element of Housing Benefit. In 2019-2020 this limit was earning £125 per week, and you must not work more than 16h per week (HM Government, 2021). These responses

illustrate that more than half of respondents had a low income and may find it challenging to stay in regular employment. This may impact their ability to pay for broadband technologies when prioritising their financial affairs. Due to the structure of how the question was asked it was not possible to breakdown non-use of the internet by Welfare Benefit type. However of the 422 respondents that identified as being in receipt of welfare benefits, 64 (15.2%) respondents identified that they did not use the Internet and did not have the Internet at home.

4.5 Disability

Following on from respondents that receive welfare benefits, disability is another factor that impacts both household income and the ability of individuals to get online (MacInnes & Tinson et al., 2014). Comparisons against secondary data would be interesting here, with further analysis of the data gathered here against the national census data gathered by the ONS and more specific postcode specific data gathered by the ONS, Department of Work and Pensions and other Government Agencies. This is due to how each of the specific secondary data sources categorize and define what they consider a disabled individual to be. The Equality Act 2010 definition typically applies across Government, but some agencies consider disability from a different view, such as DWP – where it is recorded differently if you are able to work or not – and based upon your entitlement to benefit or not.

The most common response was that 56.5% of respondents did not have any condition that impacted their day-to-day activities. This contrasts with the 20.8% of respondents who stated they had a lifetime condition, and 18.2% said they had a condition that may improve with treatment and the passage of time. Details are listed in table 4.3.

Table 4.3 Respondents with Disabilities

	Category	Frequency	Percentage
	No Condition	376	56.5%
Has Disability	Lifetime Condition	138	20.8%
	Currently	121	18.2%
	Previously	30	4.5%
	Total	**665**	**100**

Mobility

Linking to disabilities, mobility, where and how does a disability impact a respondent is a crucial construct to examine when considering internet adoption. For example, asking the question, "Are disabled respondents with mobility issues more likely or less likely to be online?" is interesting. This will be detailed later in this findings chapter. Table 4.4 illustrates respondents that answered that they have issues with their daily mobility.

Table 4.4 Respondents with mobility issues that are unable to leave the house without help

Disability		Frequency	Percentage
Affects	Yes	98	14.7%
Mobility	No	567	85.3%
	Total	**665**	**100**

Of the 269 respondents identified as having a disability, 30 (11.6%) respondents identified that they did not use the Internet and did not have the Internet at home.

Assistive Technology

When asked about assistive technology that might enable disabled respondents to go online, 34 free-text responses were made. Of these 34 responses, a number of these responses were not appropriate assistive technologies. The 11 valid responses that were made and are detailed in table 4.5.

Table 4.5 Assistive Technologies used by respondents

Assistive Technology:	Number of Respondents
Large Font / Print	4
Dragon Dictation	3
Large Button Keyboard	2
Zoom Screen Functionality	1
Screen Reader	1

4.6 Respondents with Children

Children play an essential part in broadband adoption and digital inclusion. The most frequent response to the survey instrument, showing in table 4.6, was that 59.4% of survey respondents said they did not have children. This is atypical of the family demographic in the United Kingdom, with 62.0% of families having one child or more (ONS, 2020a). This

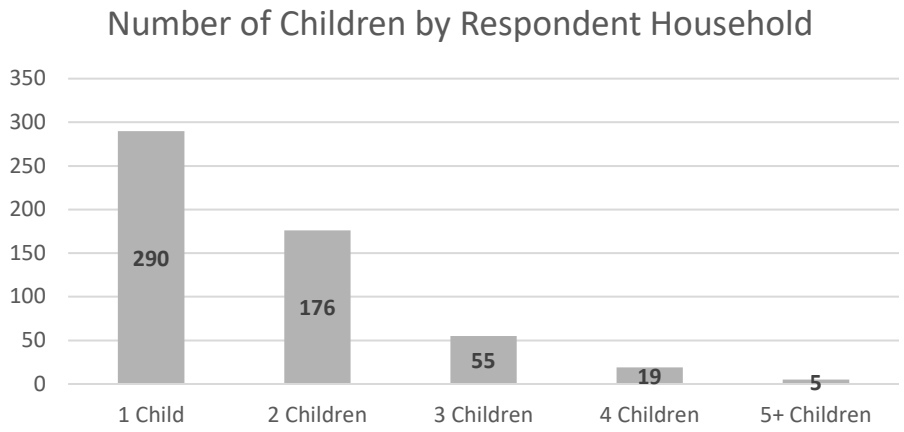
lower number of households with children in the survey sample removes one of the traditional drivers of internet adoption.

Table 4.6 – Breakdown of Respondents with/without Children

		Frequency	Percentage
Has Children	No Children	425	59.4
	Has Children	290	40.6
	Total	**715**	**100**

Figure 4.1 shows the number of children from the 290 households that responded. 425 Respondents had no children, and of the 290 respondents who did have children, the breakdown is as above. This makes the total number of respondents providing these details 715. This data is statistically significant and is upheld by the ONS (2017) Families and households in the UK survey, where the average family size in households with children is 2.4. A common theme in the ONS data is that when households are surveyed, they are asked about their marital status. An identified weakness in the survey sample data is that respondents were not asked about their marital status by the survey instrument. A particularly interesting demographic to examine would have been lone-parent families due to the unique challenges faced. This data links particularly to Socio-demographic characteristics and the Social and Cultural constructs from the theoretical framework. It may also link to the material construct, but this might be disputed around the socio-economic argument involving being able to *afford* to have children.

Figure 4.1 – Chart showing Number of Children by Respondent Household



The number of respondent households with children and broadband internet installed is 249 of the 290 households (86.55%). Data is available as to which service providers these respondents' contract with, but this is not useful in this context. This statistic is significantly lower than the ONS (2020b) Households with children with internet access survey, where 100% of respondents were online.

Table 4.7 Respondents with Children at home, by the number of children against if they do not have the Internet at home.

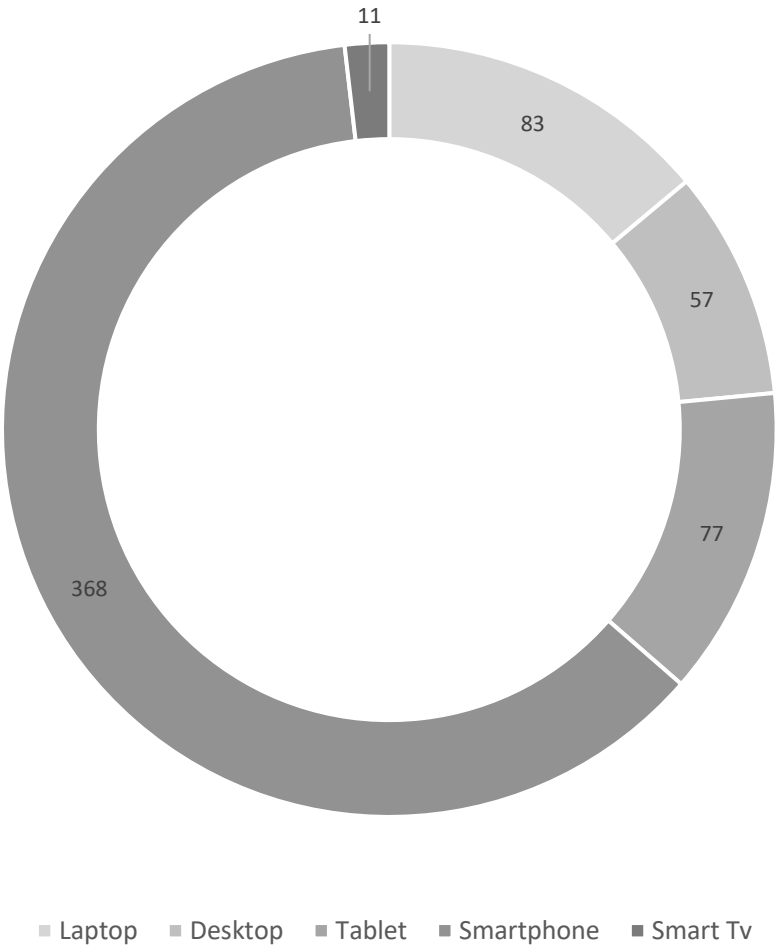
		Has No Internet
Has Children at home	No Children	25
	1 Child	12
	2 Children	16
	3 Children	9
	4 Children	4
	5 Children	0
	Total	64

Of the 39 respondents who do not have the Internet at home table, 4.7 shows that there is no apparent correlation between having more children and being more likely to have the Internet in the home. The data presented could perhaps be an indication that in this social housing demographic sample that having more children at home is a barrier to adoption because children cost money to feed, clothe and have additional financial needs. This is counter to

the view of Helsper (2020) where it might be expected that the presence of children helps to drive second-level digital divide outcomes with children being a motivator to home access.

Figure 4.2 shows the most used device in households with children under the age of 17 years. As expected, the smartphone features prominently with 368 responses that make it the most popular device used in homes with children. The laptop, desktop PC and tablet received 83, 57 and 77 responses accordingly – this is interesting, and it may have been expected that these devices would rate more highly in the minds of young people.

Figure 4.2 – Chart showing most commonly used device in households with children



4.7 Postcode Breakdown

Considering the data available with the respondent postcode allows the research to view some of the geographic phenomenon found in the available data. The NE2 area of Newcastle upon Tyne is locally referred to as Jesmond, is the least deprived of the postcode areas listed in Table 4.8. The Jesmond area also has significantly fewer social housing properties than the Walker area (YHN, 2018). The NE6 Walker, Byker and Heaton area provided the most respondents to the survey. The reasons for this may be that tenants in Walker are attempting to be more engaged in improving the area they live in and working with Newcastle City Council to do so.

Table 4.8 – Crosstabulation of Postcode Area and Internet Adoption Status (by Provider)

		British Telecom	Virgin Media	Sky	Talk Talk	The Post Office	Other	No Internet	Total
Postcode Area	NE1	4	2	5	1	0	4	2	18
	NE10	0	0	1	0	0	0	0	1
	NE13	0	0	1	0	0	0	0	1
	NE15	5	4	10	7	1	6	5	38
	NE2	4	4	5	4	0	5	7	29
	NE20	1	0	0	0	0	0	0	1
	NE3	8	11	13	4	1	2	5	44
	NE4	6	7	14	10	0	11	3	51
	NE5	2	20	18	5	0	5	5	55
	NE6	15	19	18	18	0	16	13	99
	NE7	1	3	2	0	0	1	0	7
	PNS	0	1	0	0	0	0	2	3
	Total Count (n)	71	136	163	88	3	91	64	**616**

Interestingly, Table 4.9 shows that respondents from the more affluent NE2 area may place a lower value on access to the Internet, with 24.13% of respondents not having internet access in their homes. This is in comparison to those living in the less affluent NE6 area, where 13.13% of respondents did not have internet access in their homes. Analysis of the NE6 area is comparable to the English average of 12% of respondents to the Ofcom (2021) Media Use and Attitudes report. Establishing what other secondary data in this area exists might allow for further analysis of this breakdown. In the NE2 area of Newcastle upon Tyne, the figure appears to be significantly higher. There may be a variety of reasons for their non-adoption.

However, lack of disposable income is unlikely to be a factor. Almost all YHN properties in the NE2 area of Newcastle upon Tyne are only available to rent if you are older than 55 years of age (YHN, 2015; 2016; 2020). This links the disclosed non-adoption of broadband internet use by respondents from the NE2 area more closely related to age. This is upheld in the survey data, with 25 of the 33 respondents that live in the NE2 area being over the age of 55 years. Data from the Ofcom (2020) Media Use and Attitudes report support this, with 17% of 55-64-year-olds, 30% of 65-74-year-olds and 51% of 75+-year-olds in England citing that they do not use the Internet.

Table 4.9 – Crosstabulation of Postcode Area and Respondents from NRS Category "E" with Broadband

		NRS Category "E"	Has Broadband
Postcode Area	NE1	5	4
	NE2	5	4
	NE3	25	21
	NE4	19	14
	NE5	37	31
	NE6	53	50
	NE7	8	5
	NE13	1	1
	NE15	17	16
Total		**170**	**146**

As detailed earlier in table 4.1j, 551 respondents identify as NRS Categories "DE". These respondents from table 4.1j are some of the financially impoverished respondents to the survey. This is broken down by postcode in table 4.9 to NRS Category "E". This category includes the poorest and most vulnerable members of society. NRS Category "E" respondents are all in receipt of means-tested welfare benefits and are likely to have the least amount of disposable income. Respondents from the NE6 postcode most frequently fall into this category. The NE6 area of Newcastle upon Tyne is locally referred to as Walker, Byker or Heaton and is in the top 20% of most deprived constituencies in the United Kingdom (UK Parliament, 2021). They are based upon the seven indices of deprivation: the Newcastle upon Tyne East parliamentary constituency scores very poorly for Health deprivation and disability, education and training and income (UK Parliament, 2021). The Indices of

Deprivation also indicate that children and older people are likely to suffer income deprivation, with a score of 43/533 for children and 71/533 for older people [where 1 is most deprived and 533 is least deprived] (UK Parliament, 2021). As identified earlier, the NE2 area of Newcastle upon Tyne is locally referred to as Jesmond, is the least deprived of the postcode areas listed in Table 4.8. The Jesmond area has significantly fewer social housing properties than the Walker area, and those located in Jesmond are mainly only available to those of 55+ years of age (YHN, 2019). Jesmond is in the Newcastle upon Tyne North Constituency, which is still in the top 28% of the most deprived constituencies in the United Kingdom. However, Jesmond does not suffer the same degree of deprivation across the seven Indices of Deprivation or deprivation that affects Children or older people (UK Parliament, 2021). Jesmond is essentially a wealthy area of a poor constituency.

All of the postcode areas in table 4.8 are in the Newcastle upon Tyne East, Newcastle upon Tyne West or Newcastle upon Tyne North Parliamentary constituencies. The Parliamentary Indices of Deprivation were used here as this is the data used to inform Government policy decisions. When considered in the context of the survey instrument, the demographic of the survey respondents and sample size, the data presented in table 4.8 is interesting in that a high percentage of NRS Category "E" respondents have broadband in their homes. This may mean that 85.88% of NRS Category E Respondents from some of the most impoverished areas in the city and the United Kingdom prioritise spending their limited available finances on broadband in their homes in comparison to some other household priorities. The 14.12% of non-internet users identified by the survey is slightly more than the estimated national average for this category, where 12% of all respondents were considered not to use the Internet (Ofcom, 2020). Interestingly, the survey data is much lower than the 27% of NRS Category E respondents (in England) who identified to Ofcom that they do not use the Internet (Ofcom, 2020). Ofcom (2020) also identify individuals from NRS Category "DE" as the socio-economic group least likely to go online. Ofcom (2020) states that this socio-economic group has remained the least likely to go online since 2014.

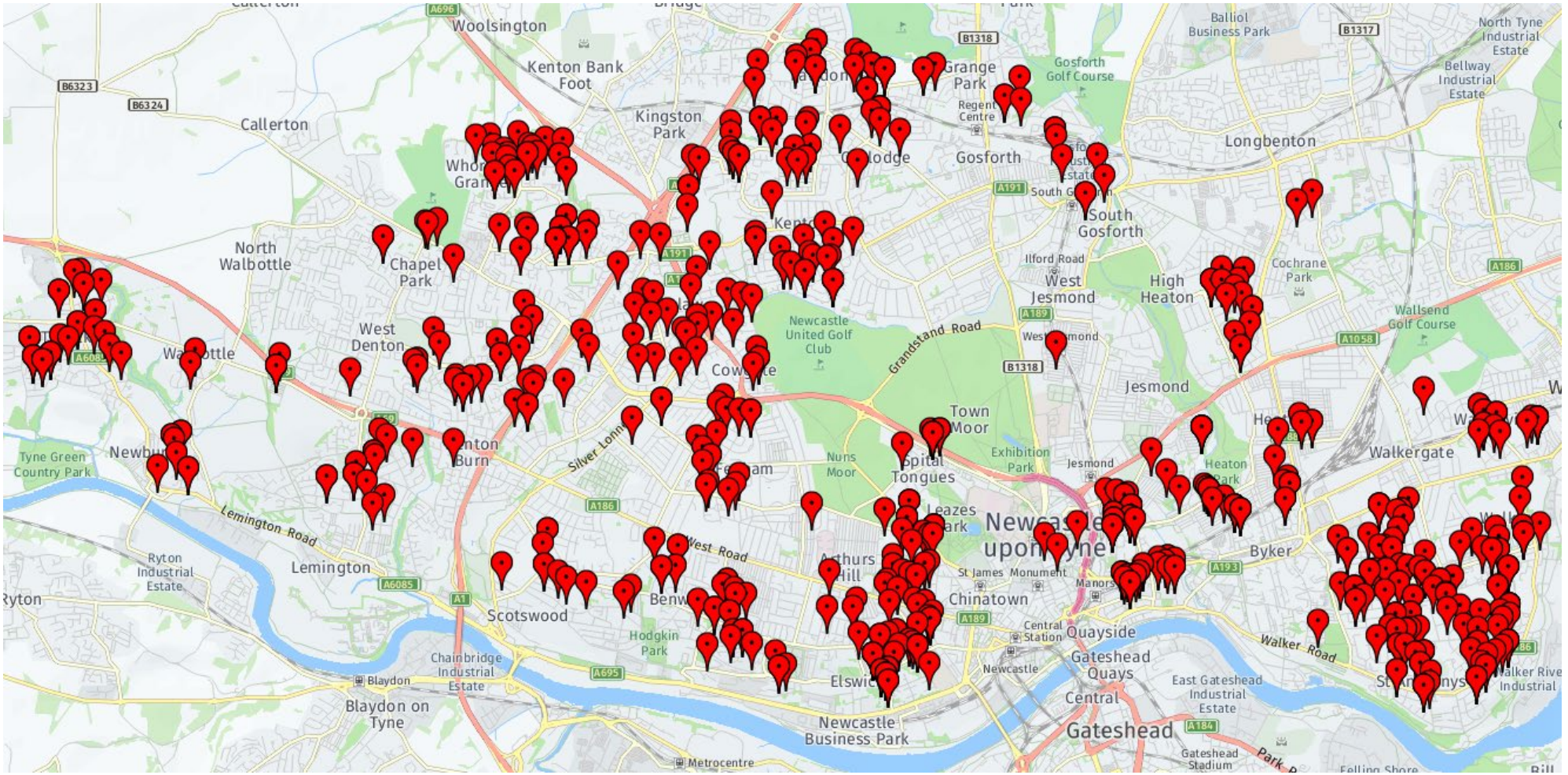


Figure 4.3 – Postcode Location of Respondents in the City of Newcastle upon Tyne, UK

Figure 4.3 visualises that respondents have been drawn from an even spread of YHN Properties from across the city, and this helps ensure a representative sample of social housing tenants from across the City of Newcastle upon Tyne.4.8 The Age Demographic

Following the breakdown of the survey demographic, the research will now look to break down the findings further and include factors that may aid in answering the research questions. Park's (2017) observations around the Silver Digital Divide discussed earlier in the literature review were helpful in preparing the survey instrument. The notoriety of the Silver Digital Divide leads us to introduce these findings early. Given all respondents from the sample are social housing tenants and some of the most disadvantaged individuals in society, it is interesting to consider the crosstabulation of age vs educational attainment in table 4.10.

Table 4.10 – Cross Tabulation of Age vs Educational Attainment

		Age Demographic							
		16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Educational Qualifications	No qualifications	5	15	29	34	41	12	6	142
	Time Served Apprentice	0	0	3	3	3	1	4	14
	GCSE/O Level	10	31	30	48	26	5	2	152
	BTEC or NVQ Level 1 or Level 2	16	24	15	24	21	0	0	100
	A Level	4	17	13	17	5	3	0	59
	BTEC or NVQ Level 3	5	10	14	14	4	0	0	47
	BTEC or NVQ Level 4	1	2	3	6	7	0	0	19
	BTEC HNC or HND	0	1	10	10	2	2	0	25
	Foundation Degree	4	11	3	3	4	3	0	28
	Bachelor's Degree	3	12	20	33	7	4	0	79
	Master's Degree	0	3	17	2	3	0	0	25
	Doctorate	0	0	0	4	0	0	0	4
	Total Count	48	126	157	198	123	30	12	**694**

Table 4.11 shows 100% of respondents from the age 75+ demographic are most likely to have Level 2 or below academic qualifications. With 60% of respondents from the 66-75 year old demographic also having qualifications Level 2 or below academic qualifications.

Table 4.11 – Summary of Lower Educational Attainment vs Age

		Age Demographic							
		16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Educational Qualifications	Level 2 or Below	31	70	77	109	91	18	12	408
	Level 2 or Below as a %	65%	56%	49%	55%	74%	60%	100%	59%

Table 4.11 summarises the data of those respondents by age demographic who have level 2 qualifications or lower. It is fascinating the potential link between the lower education levels of the 56-65 age demographic and their potential to be non-adopters of the Internet, as shown in table 4.12. During the survey design phase of the research, in order to lower non-response rates and to provide richer data during analysis, respondents were not asked if they have broadband in their home. They were asked, "who is your main provider?" [of broadband in the home]. This allows for more significant analysis and subsequent discussion. In terms of home broadband use by age demographic, table 4.12 shows that most respondents have home broadband. Interestingly the 46-55-year-old category being the most represented in the survey most likely to have the Internet at home but also having a significantly higher percentage of respondents who did not have Internet in the home against those that are in younger demographics. This may indicate that the 46-55 demographic is where the age-related silver digital divide begins to emerge in the current sample. This could be more widely applied to society generally.

Table 4.12 – Cross Tabulation of Age vs Home Broadband Provider

Broadband Provider	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
British Telecom	3	5	15	27	16	4	1	71
Virgin Media	9	29	32	31	27	6	2	136
Sky	17	35	44	43	18	6	0	163
Talk Talk	5	21	14	31	11	4	2	88
The Post Office	1	1	1	0	0	0	0	3
Other	3	13	29	21	18	5	2	91
No Internet at Home	8	8	6	18	19	2	3	64
Total (n)	46	112	141	171	109	27	10	616
Non-Respondents	4	17	21	29	19	5	3	98

It may be of statistical significance that Virgin Media and Sky are the most popular home broadband providers to survey respondents. Virgin Media services are not available to all households in Newcastle upon Tyne. This is due to the service technology not being available in every street in Newcastle upon Tyne. Where Virgin Media services are available, the internet speed is around seven times faster than the internet speeds available from other (BT Openreach reliant) providers (Virgin Media, 2020). This is due to Virgin Media having its own dedicated, mainly fibre optic infrastructure in parts of some cities in the United Kingdom. Sky does not have dedicated infrastructure and relies upon the British Telecom infrastructure to provide its services. BT Openreach (2021) based suppliers use the mainly copper-based infrastructure that goes to most properties in the United Kingdom. As discussed in the literature review, these copper-based technologies are significantly slower than the newer fibre optic technologies. Virgin Media and Sky are the main competitors in the consumer television services marketplace in the United Kingdom and offer internet services to consumers. These are often done in a bundle or package style that are attractively priced to attract new customers; these offers to new customers are commonly a 50% discount. These new customers may move from Virgin to Sky or from Sky to Virgin and, therefore, may not always be new adopters of their technologies (Virgin Media, 2020). The average monthly cost of a bundle [TV and Broadband] to a new customer is between £30 [Virgin Media] and £37.50 [Sky]. Table 4.13 shows what percentage of respondents procured extra digital products in addition to their broadband service.

Table 4.13 – Cross Tabulation of Age vs Use of Extra Digital Products

Product	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	Average
Sky TV Channels	34.00%	30.20%	29.60%	26.00%	13.30%	31.30%	0.00%	23.49%
Virgin TV Channels	14.00%	12.40%	14.20%	8.00%	15.60%	9.40%	15.40%	12.71%
Home Telephone	14.00%	33.30%	45.10%	45.50%	48.40%	59.40%	46.20%	41.70%
Mobile Telephone	34.00%	41.10%	54.90%	50.00%	58.60%	53.10%	46.20%	48.27%
BT TV Channels	4.00%	2.30%	4.90%	0.50%	5.50%	12.50%	7.70%	5.34%
Freeview TV Channels	50.00%	42.60%	38.90%	50.00%	55.50%	59.40%	69.20%	52.23%
Total (n)	50	129	162	200	128	32	13	**714**

When the data in table 4.13 is analysed, it shows 28.25% of respondents have both Broadband and TV Channels from the same supplier. Statistical significance of the 66-75 and 75+-year-old demographics could be improved by sampling more members of these

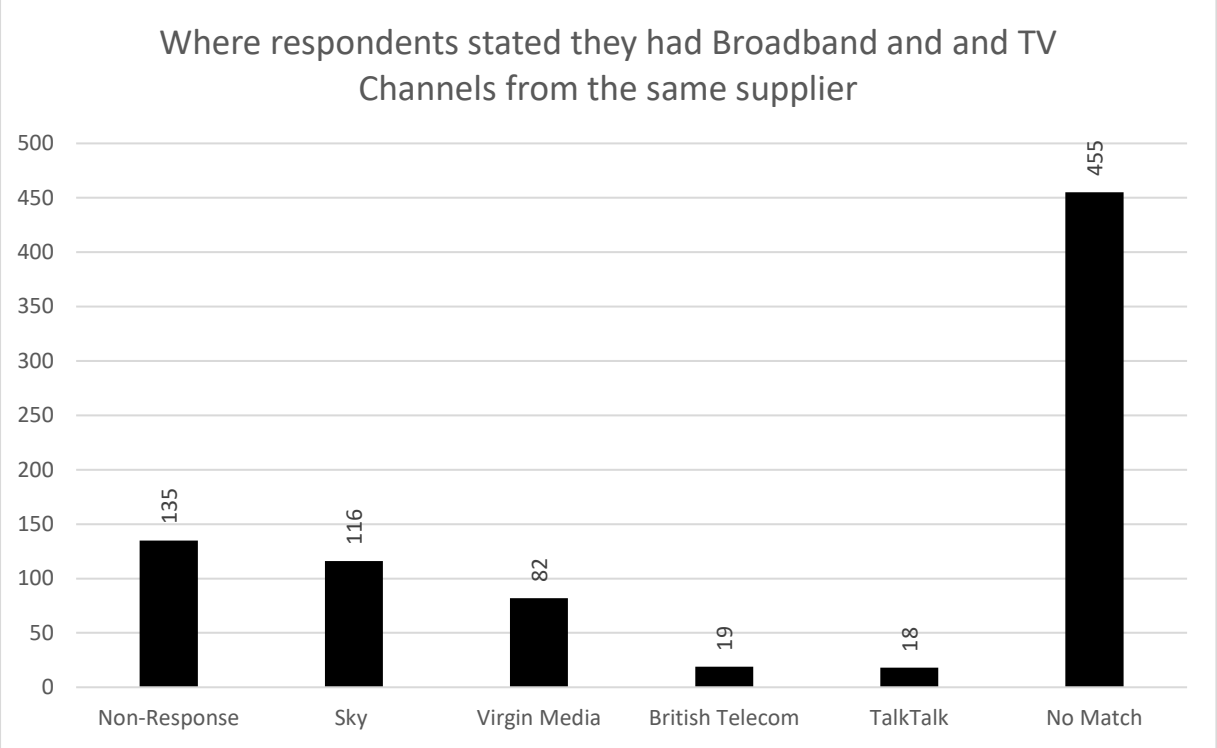
demographics. The phenomenon of TV and Internet bundles may drive broadband internet adoption, with Table 4.14 showing a significant number of respondents from all age categories having such a bundle. It may be that individuals with bundled services are better able to go online, evaluate options and combine these to save money.

Table 4.14 – Cross Tabulation of Age vs TV and Internet Bundles

Age Demographic	**Product**					
	Virgin Media	Sky	British Telecom	Talk Talk	**Total**	% of all respondents
16-25	6	14	1	1	22	44.00
26-35	16	29	3	4	52	40.31
36-45	23	34	6	1	64	39.51
46-55	16	25	1	10	52	26.00
56-65	16	11	6	1	34	26.56
66-75	3	3	1	1	8	25.00
75+	2	0	1	0	3	23.08
Total	82	116	19	18	235	

These statistics are visualised by the chart in figure 4.4, where 242 respondents identified this link with Broadband and TV Channels as a bundle and 455 respondents where this match was not found. There were 135 non-respondents in this section of the data set. Where there is no match, this indicates that respondents may shop around for their telephone, broadband and TV services. This may be respondents looking for the best deals, and these deals may not be in the bundle style discussed in more depth later in the chapter. The higher number of respondents who indicate that they have a bundle from Sky may be connected to the working class being actively targeted by the company and the ease of installation of a Sky dish on homes. The 82 respondents who have Virgin Media in their homes is also somewhat unusual. This is due to the relatively low income of the sample and the high number of respondents in the "DE" NRS Category. Virgin Media are reputationally known for charging higher prices for the same services that are provided by Sky but are supplied using cable technology. This claim is supported by a cursory examination of the relevant companies' sales websites.

Figure 4.4 Chart summarising respondents stating they had broadband and TV Channels from the same supplier.



The data presented here may not indicate age but could show a link that broadband adoption is driven by the provision of and bundling of television and streaming services. This may also be improved by the deals offered by the companies providing these services to potential customers and adopters. In extrapolation of this data further, examination of the hours worked by respondents was cross-tabulated against those respondents who had these TV and Internet bundles – this is discussed later in this chapter.

Across all age demographics, Laptop ownership averages at 47.13%. Interestingly, this is evenly spread within the survey sample. These averages are detailed in table 4.15. Desktop computer ownership is much lower than laptop ownership, with average ownership of 29.47%. Thus, the desktop computer could be considered a functionally similar device to the laptop. However, the desktop computer requires a dedicated space in the home. Social housing tenants (especially those in sheltered retirement accommodation) are in a unique situation in having less room in their home for a desk and chair setup due to the smaller size of social housing properties.

Table 4.15 – Cross Tabulation of Age vs Device Ownership (by Percentage)

Device Owned	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	Average
Laptop / Notebook	44.00%	51.20%	54.90%	59.00%	52.30%	53.10%	15.40%	47.13%
Desktop Computer	12.00%	24.00%	31.50%	31.50%	31.30%	37.50%	38.50%	29.47%
Tablet	48.00%	53.50%	49.40%	46.00%	56.30%	53.10%	46.20%	50.36%
Smart Phone	88.00%	84.50%	80.20%	76.00%	64.80%	37.50%	15.40%	63.77%
Smart TV	24.00%	30.20%	29.00%	24.00%	25.80%	25.00%	7.70%	23.67%
Total (n)	50	129	162	200	128	32	32	**714**

The relatively higher percentage (53.10%) of 66-75-year-olds that own a laptop against that of a smartphone (37.5%) might be indicative of the observation made earlier by Renstrom (2020) and Pew (2020) where Seniors may avoid the use of smartphones. Tablet ownership holds a similar average to laptop ownership but has a higher adoption rate in the 75+ category. This may be due to the tactile nature of the tabled as that they are easy to handle. Smart Phone adoption and ownership is high across all age demographics and has the highest adoption rate with an average of 63.77%. Smart TV's are an outlier at an average adoption and ownership percentage of 23.67%. With the retirement of older television equipment, the adoption and ownership of Smart TV's should increase over time.

Linking to age against device ownership in table 4.15, measurement of the average age of a respondent device by type is helpful to see how ownership and use of a specific device type is prioritised by respondents. This analysis of the average age of device ownership is shown in Table 4.16. It shows that the smartphone is typically replaced by respondents the most often.

Table 4.16 – The average age of respondent devices (in Years)

	Device Type				
	Laptop	Desktop	Tablet	Smartphone	Smart TV
Average Age of Device (Years)	4.51	7.29	5.19	2.23	3.21

With the smartphone being the most commonly owned device, this is not a surprise as respondents generally prioritise the use of their smartphone as a primary device. This asks some questions in the discussion chapter about how participants may afford to replace these smartphone devices. The device with the oldest age average is the desktop computer, with an average age of 7.29 years. This may be expected due to the physical space required and the

relatively high economic cost of purchasing and replacing the desktop PC. The space required for a desk, chair and the other furniture required to safely utilise the desktop PC and the link to council homes typically being smaller than other privately owned property. The outlier in table 4.16 is that of the Smart TV. This is because the average age of the Smart TV is 3.21 years, but this is from a significantly smaller sample group as fewer members of the general sample taken by all respondents own a Smart TV. As discussed earlier, the smartphone is a popular device in homes with children. This trend continues more generally, with the smartphone being the most used device to access the Internet; this makes the smartphone a logical stepping off point for the research (Ofcom, 2020). The cross-tabulation of the age demographic with the answer to the question "Do you access the Internet on a smartphone provided some interesting and surprising results. Table 4.17 below shows that accessing the Internet using smartphones is becoming more familiar with those of a higher age demographic. This may be an individual's only method of accessing the Internet, or it may be one of many – the data was unable to produce the required granularity to establish this.

Table 4.17 – Cross Tabulation of Age vs accesses the Internet using a smartphone

	Age Demographic							
Assesses the Internet using a smartphone	16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Yes	45	109	126	138	74	9	2	503
No	1	3	12	31	34	17	8	106
							Total (n)	609
							Non Respondents	105

The relatively high percentage of respondents in the 56-65 bracket (68.5%) use smartphones. However, the sample of respondents in the 66-75 and 75+ categories has a less impressive smartphone literacy rate. This may indicate that the older age demographic is able to complete forms and other online documentation online. This may be the subject of later discussion as there is little academic evidence around smaller devices causing issues with form completion. There are, however, anecdotal suggestions from some of the interview participants in the next chapter that indicate that this may be an issue. There is also an

indication that seniors in the 66-75 and 75+ age demographic, for a number of reasons, struggle with the completion of forms on smartphones (Pew, 2016; Renstrom, 2020). This is problematic because of the issues required in supporting these individuals with this common and possibly complex task. Renstrom (2020) identifies one of the issues with seniors as personal. Seniors don't want to become one of "those people" constantly with a smartphone in their hand. Connected to this, the sample for the 66-75 and 75+ age groups is smaller than the other age groups but may still be significantly representative. Collecting responses from these older age groups was difficult. This was because they did not want to stop talking with a relative stranger about their internet usage in the street or Newcastle City Library – especially when this age demographic may view internet use as a potentially socially awkward activity. Device ownership relates primarily to the material resources construct from the theoretical model however the data is also suggesting that the socio-demographic construct plays a part in if you own a device and if you are aware (knowledge/skill/confidence) how to use it – this is discussed later in chapter 6 (discussion).

4.9 Age, at Home and at Work

The connection between internet service providers supplying bundles of services to respondents and the age demographic of respondents begins to raise some interesting issues. The significance of this should not be understated, and table 4.18 shows that the majority of respondents use the Internet most often in their home. It is interesting that Newcastle City Council (2020) view their provision of public access to personal computers as an effective and cost-efficient way of providing internet access to citizens. Respondents who stated they used the facilities at a public library only numbered 30 respondents (or 4.86% of respondents). This may highlight a discrepancy in the policymaking and thinking within the City Council for publicly available internet access. The assumption made here is also supported later by the interviews conducted as part of the following findings chapter and discussed later in the discussion chapter.

Table 4.18 - Cross Tabulation of Age vs Where Respondents used the Internet most often

Location of Use	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
In my own home	41	95	126	140	84	23	6	515
At a friend or family member's home	2	4	2	2	1	0	2	13
At work	0	8	7	17	10	0	0	42
At College or University	0	1	0	0	0	0	0	1
At a public library	2	1	4	8	12	3	0	30
In a YHN Communal Lounge or Flat	0	0	0	1	0	0	0	1
At a Community Centre or Group	0	0	1	2	0	0	0	3
Public Go-Digital Wifi..(Street Wi-Fi)	1	0	0	2	0	0	0	3
At a retailer (Coffee Shop or McDonnalds)	0	3	0	0	0	0	0	3
I do not use the Internet	0	0	1	0	2	1	2	6
Total (n)	46	112	141	172	109	27	10	617
Non-Respondents	4	17	21	28	19	5	3	97

515 respondents answered across all age demographics that they most frequently used the Internet in their home. This is relevant when considering bundling of services as a possible priority driver to internet adoption. This data indicates that respondents (all social housing tenants) prioritise internet use in their homes over other locations. This is illustrated in figure 4.5. This could be for several reasons. However, table 4.1j shows that the number of respondents who do not work is 45% (or 306) of respondents. One of the main drivers for this could be that these respondents do not prioritise their limited finances on travelling to go online. Interestingly the same sample indicated there were very few respondents who also claimed that they did not use the Internet at all. This questions what respondents may view as use of the Internet. A point to note for future research would be to ask individuals what they consider internet use to be and this could later serve as a qualitative reference point to more quantitative answers from the survey instrument.

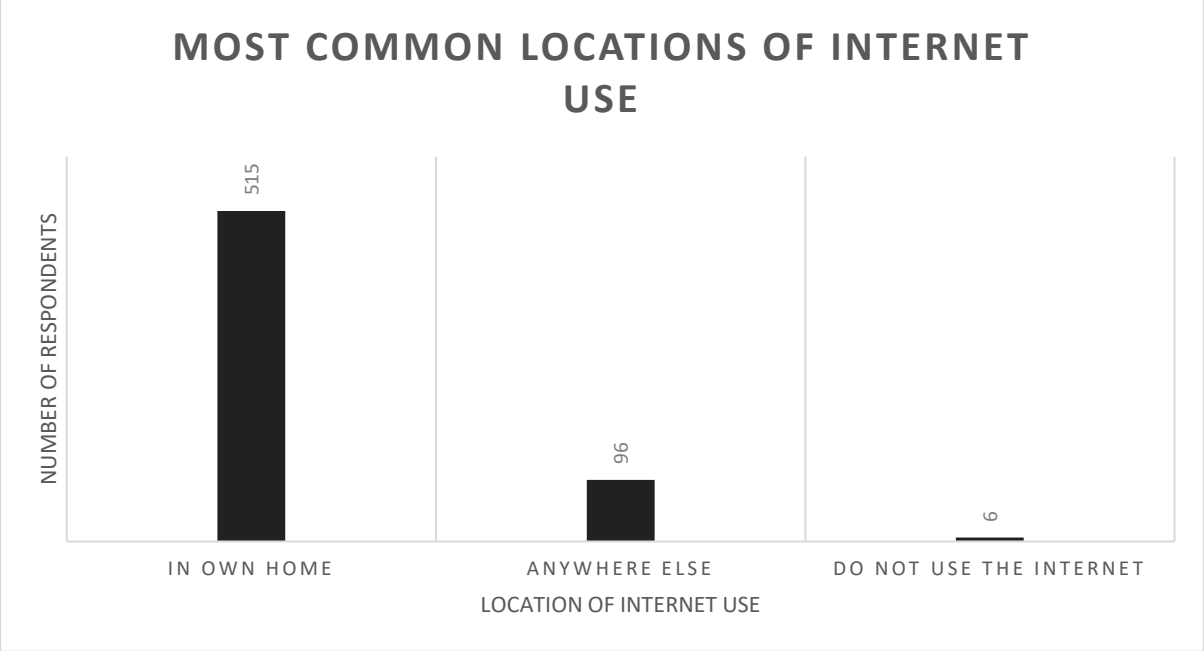


Figure 4.5 Chart showing comparison of internet use locations.

With table 4.1h showing that 45% of respondents were not in paid work. This indicates that 55% of respondents do engage in some form of paid work. However, as everyone will be aware, this work may not take place outside of the home. Table 4.19 indicates that 42 respondents most frequently used the Internet whilst working. The data in table 4.19 gives an indication of how regularly those respondents access the Internet at work. This relatively high use in the workplace could be a driver for the high statistics we see for internet use in the home.

Table 4.19 - Cross Tabulation of Age vs Use of Internet at Work

Use of Internet at Work	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Always	10	38	51	67	33	5	3	207
Sometimes	10	41	50	47	24	2	0	174
Never / Do not work	28	42	53	83	61	23	9	299
Total (n)	48	121	154	197	118	30	12	680
Non-Respondents	2	8	8	3	10	2	1	34

Given the relatively high rate (45% of respondents from table 4.1h) who do not work, it is not unexpected that the most popular response in table 4.19 is that respondents never [use the Internet at work] or that they do not work. In comparison, 318 respondents always or sometimes use the Internet at work. Some types of paid employment may require employees

to access the Internet; the requirements of a job role could cause the data in table 4.19. This could indicate a link to using the Internet at work and internet use in the home. The question that gathered this data was written in a manner to eliminate non-response bias due to the social stigma around being unemployed.

Respondents' own assessment of their ability to use the Internet is quite an interesting topic. The data range in table 4.20 is where 1 is the lowest ability to use the Internet and 10 is the highest ability to use the Internet. With 84.4% of respondents rating themselves at least 7 out of 10 for their ability to use the Internet, there may be some dispute about how reliably survey respondents rated their skills and skill to use the Internet. This may be an example of response bias where respondents do not want to face the possibility that they are not as equipped as they might like with the skills required to effectively engage online. When considering the data in table 4.20, it is important to note that this data was the respondents own assessment of their skills and ability to get online and use the Internet. It is interesting that the average of each age demographic lowers as the age demographic rises. This raises some doubt about the validity of the responses made to this question from the survey instrument. Individual use of the internet at work helps contribute to the constructs of digital training – as this is often provided in the workplace (either formally or informally – by asking colleagues for help), mental resources – aided by the digital training provided and the need to be competent in your role in the workplace.

Table 4.20 – Cross Tabulation of Age vs respondent assessed ability to use the Internet

Self-Assessed ability to use the Internet	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
1	0	0	1	2	2	2	2	9
2	0	1	0	0	0	0	1	2
3	0	0	1	2	5	0	0	8
4	1	0	2	6	3	0	0	12
5	0	3	4	13	11	0	1	32
6	0	8	9	6	2	4	1	30
7	5	6	9	11	15	2	0	48
8	6	16	16	37	19	6	1	101
9	4	14	22	22	16	4	3	85
10	29	61	70	69	30	6	1	266
Average	9.18	8.91	8.77	8.30	7.74	7.67	6.00	

Total (n)	45	109	134	168	103	24	10	593
Non-Respondents	5	20	28	32	25	8	3	121

There is also then the possibility that people are overestimating their skills and abilities, and the challenges they face using the Internet may be more significant than the data from the sample implies perhaps. This might be identified by analysing and considering the survey data against the OFCOM Internet Use and Attitudes survey data. Those with low confidence or ability to use the Internet may engage in proxy use of the Internet. This is where they may ask someone else to go online on their behalf to complete a task online. The data shown in table 4.21 shows that 96.6% of respondents used the Internet themselves and did not ask others to do this for them. Those that do not use the Internet themselves may be influenced by factors other than age. As the survey data around proxy usage shown in table 4.21 illustrates that the majority of survey respondents use the Internet themselves, it is logical to examine the responses made that link to the online activities of respondents. The low number of respondents who engage in proxy use is interesting and may be affected by non-response bias and reflects the potential reluctance of some to admit that they do not have the necessary skills, knowledge, or ability to use the Internet.

Table 4.21 – Cross Tabulation of Age vs Proxy Use of the Internet

Proxy use	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
I use the internet myself	46	109	138	172	104	24	7	600
I ask someone else to do this for me	0	2	2	3	3	2	0	12
I do not use the internet	0	1	2	0	2	1	3	9
Total (n)	46	112	142	175	109	27	10	621
Non-Respondents	4	17	20	25	19	5	3	93

Table 4.22 is split into alphabetically labelled sections (22a, 22b etc.) for ease of accessibility, leading with the most frequently undertaken activities as defined by the highest total of respondents who selected that they undertake an activity "more than once a day". It is unsurprising that Google or Search for something is the most frequently undertaken activity by respondents [use of social media is discussed separately later in this chapter]. Table 4.22a shows the most popular activities completed online against the age demographic.

Table 4.22a – Cross Tabulation of Age vs Activities / Websites / Services by Frequency

How often do you do the following activities or visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Total (n)	45	108	132	166	103	25	10	589
Non-Respondents	5	21	30	34	25	7	3	125
Total Count (All)	50	129	162	200	128	32	13	714
Google or Search for something								
Never	1	5	6	11	7	2	2	34
Monthly	2	9	7	17	10	4	4	53
Weekly	11	18	23	22	21	6	1	102
Once a Day	12	35	43	45	30	7	3	175
More than once a day	19	41	53	71	35	6	0	225
Research a topic								
Never	17	28	22	31	26	6	3	133
Monthly	3	25	16	30	22	3	3	102
Weekly	14	31	37	53	21	9	2	167
Once a Day	7	15	39	26	20	3	2	112
More than once a day	4	9	18	26	14	4	0	75

The Amazon-owned Alexa (2021) marketing stack lists Google as the most visited website on the Internet. Visitors average 16 minutes 15 seconds per day, with many individuals visiting the site an average of 17.5 times per day (Alexa, 2021). The Pew (2020) study cited earlier by Renstrom (2020) discusses seniors in the 66-75-year-old and the 75+-year-old demographics not wanting to become “one of those people” [that are constantly using a device to access the Internet]. As the results in table 4.22a, table 4.22b shows that even the 66-75-year-old and the 75+-year-old demographics are using their devices, often multiple times a day, in the pursuit of knowledge and finding out the answers to their day-to-day life questions.

Table 4.22b – Cross Tabulation of Age vs Activities / Websites / Services by Frequency

How often do you do the following activities or visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Read, Listen or Watch News								
Never	19	40	25	47	32	12	4	179
Monthly	6	7	19	15	7	1	1	56
Weekly	7	25	19	29	14	1	0	95
Once a Day	10	18	40	45	29	4	4	150
More than once a day	3	18	29	30	21	7	1	109

In a similar theme of seeking knowledge, the majority of respondents answered that they "read, listen or watch the news" most commonly once a day and often more than once a day. This again appears to be a significant engagement activity for the 66-75-year-old and 75+-year-old demographics. Again, this might connect this activity to those of searching in table 4.22a in the pursuit of knowledge and awareness of the World around respondents.

With the predicted rise in online content consumption predicted to rise year on year. Forbes (2020) reports that 47% of internet users have increased their consumption of online streaming content – that is, both music and television content. Forbes (2020) claim that this has taken place due to individuals spending more time online and less time face to face. The survey data collection took place pre-pandemic, but table 4.22c shows significant use of streaming media by respondents over every age group. The main outlier across these use categories are the 75+-year-old respondents who "Never" listen to music online, very rarely watch TV online, but who are more likely to play online games.

Table 4.22c – Cross Tabulation of Age vs Activities / Websites / Services by Frequency

How often do you do the following activities or visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Listen to Music								
Never	9	26	40	72	59	14	10	230
Monthly	1	15	17	20	8	5	0	66
Weekly	12	22	23	33	13	4	0	107
Once a Day	10	20	28	29	12	2	0	101
More than once a day	13	25	24	12	11	0	0	85
Watch TV Online								
Never	17	52	66	91	69	18	9	322
Monthly	5	20	18	20	10	0	0	73
Weekly	11	22	24	26	17	3	1	104
Once a Day	7	12	17	18	4	4	0	62
More than once a day	5	2	7	11	3	0	0	28
Play Online Games								
Never	22	56	66	98	63	16	6	327
Monthly	4	15	10	10	6	2	1	48
Weekly	7	17	16	11	12	0	0	63
Once a Day	6	12	19	30	9	3	1	80
More than once a day	6	8	21	17	13	4	2	71

The respondents who watch TV online are most likely to be from the 26–35-year-old and 36–45-year-old age demographics. This is supported by McDonald & Smith-Rowsey (2016), who discuss how the "the Netflix effect" promotes TV Streaming and refer to the pioneering role of Netflix in providing a recommendation of content and immediate delivery of content. This suits the lifestyle of the 26-35-year-old and 36–45-year-old demographic, who are often data-saturated by everyday media encounters (Pilipets, 2019). With the diffusion of the Smart TV (in table 4.15) and the advent of devices such as the Amazon (2021) Fire Stick and the Apple TV, watching TV online is more likely to grow as an online activity (Apple inc,, 2021).

While a respondent was completing the online survey, and the researcher was present, a commonly asked question was the difference between "Shopped Online" and "General Shopping"? Shopped Online refers to Amazon and eBay on the survey page and intended to establish if respondents were familiar with using more prominent, more well-known brands

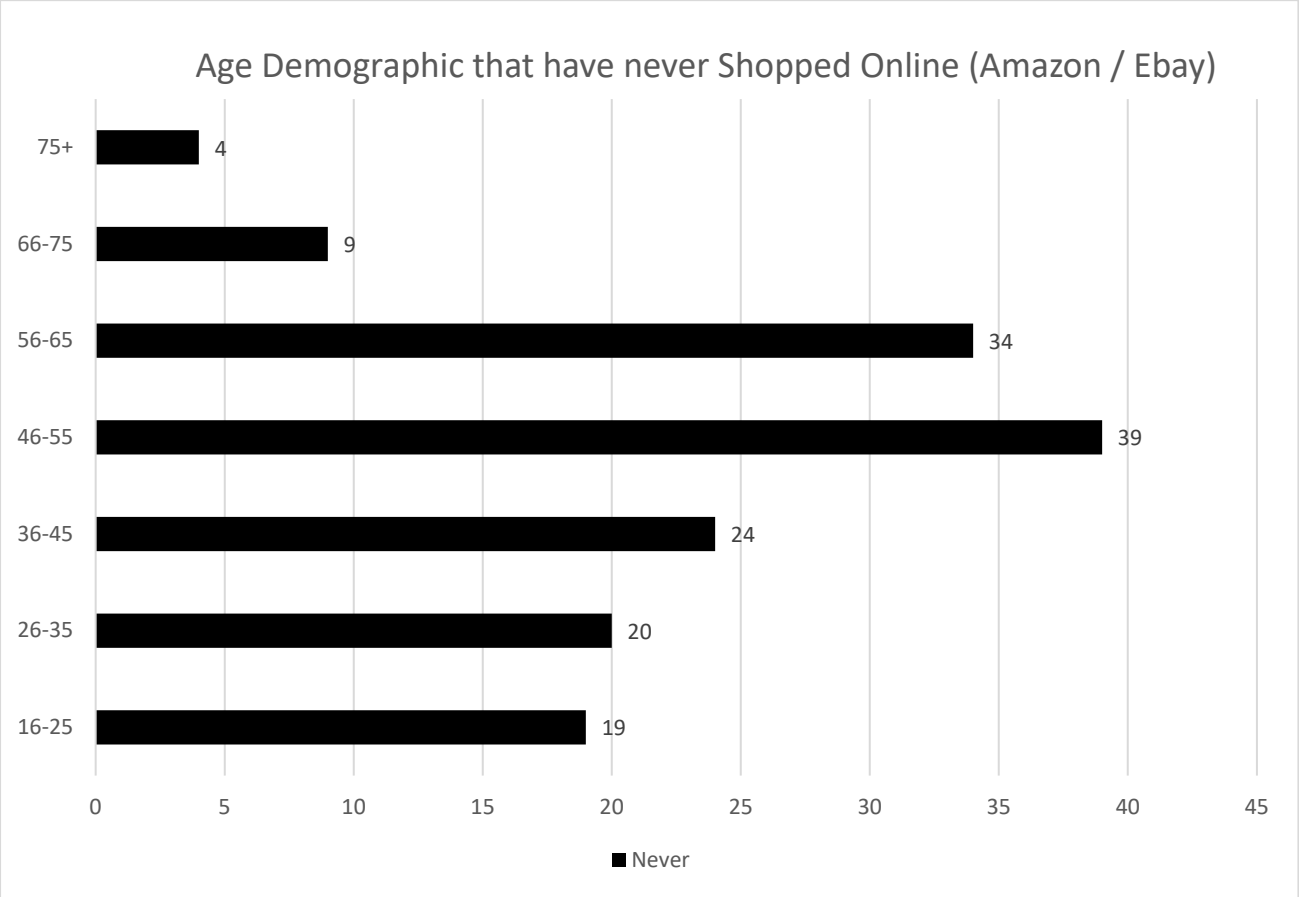
for shopping for non-food items. General Shopping did not make any reference to the brand and intended to establish if respondents were familiar with other online stores that may not be as user friendly and polished as the larger, more well-known brands. In reporting the statistical data for these two categories, respondents appear to be more comfortable using websites and services they are familiar with and have a reputation for good service. An opportunity to record the reason for this may have been missed. Data collection for the survey was already underway when this opportunity was identified. Table 4.22d shows some reluctance from the 56–65-year-old, 66-75-year-old and the 75+ year old demographic to shop online, who are more likely to engage with the more well-known brands when shopping online. Interestingly, 44% of 66-75-year-old respondents are likely to order an item online once per month. However, more of a surprise is how few of the other younger demographics have not Shopped Online.

Table 4.22d – Cross Tabulation of Age vs Activities / Websites / Services by Frequency

How often do you do the following activities or visit the following websites / online services?	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Shopped Online (e.g. Amazon/eBay)								
Never	19	20	24	39	34	9	4	149
Monthly	15	60	69	83	40	11	3	281
Weekly	10	24	33	36	22	2	2	129
Once a Day	1	2	5	6	4	3	1	22
More than once a day	0	2	1	2	3	0	0	8
General Shopping								
Never	16	35	42	73	54	13	5	238
Monthly	14	49	55	67	26	7	2	220
Weekly	13	21	29	22	18	3	3	109
Once a Day	1	3	4	3	3	2	0	16
More than once a day	1	0	2	1	2	0	0	6

The most significant percentage of respondents who have not ordered online are from the 16-25-year-old age demographic, with 42.22% of respondents in this group making this claim. This is shown in the chart in figure 4.6, where the figures displayed are the number of respondents, and the total sample size is 589 [significant non-response].

Figure 4.6 – Chart showing Age Demographic that has never shopped online



This may be because of the relatively high number of unemployed respondents (45% from Table 4.1j) and the high number of respondents from the NRS "DE" demographic (81.05% from Table 4.1j). This would relate to the low availability of disposable income to these two demographic groups – they simply can't afford to Shop Online. This concept may also link to the data relating to Supermarket Shopping Delivery in Table 4.22e. The online shopping engagement data collected by the survey instrument is lower than that of the ONS (2019) internet access: household and individuals survey. The ONS (2019) survey states that 82% of all adults have shopped online at least once in the period between 2018 – 2019. Much like the "Shopped Online" categories previously described, Supermarket Shopping Delivery, 59.1% of respondents had never ordered groceries from a supermarket website (such as ASDA, Tesco or Sainsburys). Again much like the "Shopped Online" category, this may be connected to the amount of disposable income available to respondents. Table 4.22e summarises the data for the supermarket shopping delivery age category.

Table 4.22e – Cross Tabulation of Age vs Activities / Websites / Services by Frequency

How often do you do the following activities or visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Supermarket Shopping Delivery								
Never	22	70	63	113	60	14	6	348
Monthly	15	22	46	31	29	6	1	150
Weekly	8	15	20	19	11	5	3	81
Once a Day	0	1	2	1	1	0	0	5
More than once a day	0	0	1	2	2	0	0	5

When shopping for groceries, respondents may prefer to physically shop in locations where prices are lower than what might be available online for delivery. Many local supermarkets such as Aldi and Lidl offer lower prices for groceries than what is usually available online. However, 25.5% of respondents stated that they have their shopping delivered to their home after ordering online. The most common age demographic to suggest this was the 36-45 year old demographic. Respondents to the Ofcom (2019) online nation report indicated that 59% of respondents felt that the benefits of going online outweighed the risks. Just over half (53%) of the online nation report respondents strongly agreed that they have concerns about going online. These are adults who, when responding to the question, expressed an unprompted concern with the act of using the Internet. This lack of trust in the act of using the Internet might be a contributing factor to those respondents in table 4.22f, where 187 of 589 (31%) respondents stated that they never pay bills online.

Table 4.22f – Cross Tabulation of Age vs Activities / Websites / Services by Frequency

How often do you do the following activities or visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Pay Bills Online								
Never	16	26	36	60	33	11	5	187
Monthly	22	65	72	86	45	6	4	300
Weekly	7	16	22	18	18	7	1	89
Once a Day	0	0	1	0	5	0	0	6
More than once a day	0	1	1	2	2	1	0	7

Of the 187 survey respondents that never pay bills online, 102 of those respondents do not work. This suggests a link between work and having to manage money. Interestingly, 69% of survey respondents do pay bills or use internet banking at least once per month this is significantly more than the 51% of respondents to the Ofcom (2019) online nation report for the same category. The ONS (2019) people, population and community survey, attributed some of the rises in popularity of people paying bills online to the closure of bank and post office branches in the United Kingdom. The prevalence of internet banking is high, with a combined 79.87% of sample respondents making use of it at least once per month. Table 4.22g shows this data broken down with 15.14% of respondents using internet banking once per day.

Table 4.22g – Summary of Internet Banking use

		Number of Respondents	%
How often do you use Internet Banking	More than once a day	91.0	15.14%
	Once a day	109.0	18.14%
	2-3 times a week	164.0	27.29%
	Weekly	86.0	14.31%
	Monthly	30.0	4.99%
	I do not use internet banking	121.0	20.13%
	Total (n)	601.0	

This may be an indication of the fear of processing financial transactions online, with 20.13% of respondents still reluctant to bank online. There is still, however, evidence of widespread diffusion of internet banking in this social housing sample. What is more interesting, however, when the sample age demographics breaks this down.

This breakdown is shown in table 4.22h.

Table 4.22h - Cross Tabulation of Age vs Activities / Websites / Services by Frequency

		Age Demographic							
		16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
How often do you use Internet Banking	More than once a day	12	23	27	23	4	2	0	91
		26.67%	21.10%	19.85%	13.61%	3.77%	7.69%	0.00%	
	Once a day	11	29	28	24	14	3	0	109
		24.44%	26.61%	20.59%	14.20%	13.21%	11.54%	0.00%	
	2-3 times in a week	12	31	38	43	33	5	2	164
		26.67%	28.44%	27.94%	25.44%	31.13%	19.23%	20.00%	
	Weekly	5	12	18	29	16	5	1	86
		11.11%	11.01%	13.24%	17.16%	15.09%	19.23%	10.00%	
	Monthly	2	3	4	14	5	2	0	30
		4.44%	2.75%	2.94%	8.28%	4.72%	7.69%	0.00%	
	I do not use internet banking	3	11	21	36	34	9	7	121
		6.67%	10.09%	15.44%	21.30%	32.08%	34.62%	70.00%	
	Total Count (n)	45	109	136	169	106	26	10	601
	Non-Response	5	20	26	31	22	6	3	113

Table 4.22h shows a clear link between the age demographic and those members of the 20.13% of the sample who do not use internet banking. Table 4.22h indicates that there is an increasing percentage of respondents who do not use internet banking as respondents get older. This ranges from 6.67% of the 16-25-year-old demographic to 34.62% of the 65-74-year-old demographic; this peaks at the 75+ year old demographic with 70% of respondents in this age demographic not using internet banking. This data might have been improved by asking respondents why they do not use internet banking when they have made this response at the point of the survey.

Respondents using the Internet for health-related activities and engaging with the NHS appears to be generally less common than some of the other activity categories listed earlier. Similar to the finding of the ONS (2019) people population and community survey where 65% of respondents used the Internet to search for health advice, this research found that 64.3% of respondents used the Internet at least monthly to search for health advice. The breakdown of these respondents is shown in Table 4.22i.

Table 4.22i – Cross Tabulation of Age vs Activities / Websites / Services by Frequency

How often do you do the following activities or visit the following websites / online services?	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Search for Health Advice								
Never	15	38	43	52	41	15	5	209
Monthly	11	41	44	68	31	2	3	200
Weekly	14	22	28	29	17	4	0	114
Once a Day	2	6	14	11	7	3	2	45
More than once a day	3	1	3	6	7	1	0	21

The desire to collect data about making GP Appointments online and the use of NHS Choose and Book was expressed by YHN, the PhD Project's sponsor. There is little reliable data or information available about the number of GP Appointments made online by individuals in the United Kingdom (Citizens Advice, 2015). However, the data in table 4.22j shows that the majority of respondents do not book GP Appointments online. When respondents were asked if they had ever made an appointment using the NHS Choose and Book service, this may have caused some confusion. This is because the online NHS Appointment Booking Service has been known by multiple names over the past ten years. Names such as NHS Web-Based Referral, NHS Indirect Bookable Services, NHS Choose and Book and its current

name is NHS e-Referral Service (NHS, 2021). Therefore, the data collected from respondents relating to NHS Choose and Book may not be reliable as it may be unclear to respondents what is being asked.

Table 4.22j – Cross Tabulation of Age vs Activities / Websites / Services by Frequency

How often do you do the following activities or visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Make a GP Appointment Online								
Never	37	89	100	121	66	19	6	438
Monthly	7	17	25	37	30	5	4	125
Weekly	1	2	6	8	4	1	0	22
Once a Day	0	0	1	0	2	0	0	3
More than once a day	0	0	0	0	1	0	0	1
Make an NHS Choose and Book Appointment								
Never	40	97	119	138	94	22	10	520
Monthly	4	10	12	21	5	2	0	54
Weekly	1	1	0	6	2	1	0	11
Once a Day	0	0	1	1	1	0	0	3
More than once a day	0	0	0	0	1	0	0	1

Following on from questions that YHN requested be included in the research instrument, responses in Table 4.23 were also requested by YHN during the design of the research instrument. YHN had a particular interest in the key processes of their business, in particular, respondents searching for a home and paying rent online.

Table 4.23a – Cross Tabulation of Age vs Interaction Online

How often do you do the following activities or visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Search for a Home (to buy or rent)								
Never	29	88	97	122	87	19	9	451
Monthly	4	9	15	21	5	1	0	55
Weekly	11	9	15	21	10	4	1	71
Once a Day	0	1	4	2	0	1	0	8
More than once a day	1	1	1	0	1	0	0	4

During the design of the survey instrument, it was discussed with YHN that the question of had anyone searched for a home (to buy or rent) might not yield valuable data. Existing tenants that were already secured with YHN are unlikely to be looking to move to a new house. This is for various reasons but mainly due to the demographic of social housing tenants being some of the poorest and most vulnerable in society. YHN offers the lowest rental prices in Newcastle, which is likely to incentivise this demographic to remain with YHN. It was the aim to discuss the results of this question in the next chapter's data collection, but this was not possible due to staff leaving YHN. Similar barriers are an influence here as to that where respondents pay bills online. The data for pay bills online in Table 4.22f is significantly different, with many more respondents never paying their rent online. Table 4.23b shows most respondents (65.8%) do not pay their rent online. With all respondents to the survey instrument being YHN tenants, it may be that some pay by direct debit. All new tenants with YHN are encouraged to pay by direct debit when signing their tenancy agreement (YHN, 2021). Those paying weekly might be doing so because they are in arrears with their rent payments to YHN. This is features in the discussion chapter later in the research.

Table 4.23b – Cross Tabulation of Age vs Interaction Online

How often do you do the following activities or visit the following websites / online services?	**Age Demographic**							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Pay Rent Online								
Never	33	72	82	112	63	18	8	388
Monthly	9	21	35	37	18	2	0	122
Weekly	3	15	14	17	21	5	2	77
Once a Day	0	0	1	0	1	0	0	2
More than once a day	0	0	0	0	0	0	0	0

Table 4.23c shows that 71% of respondents never report a repair to YHN online; these leave 28.01% who do this activity online monthly. These statistics may no longer be relevant because, in 2019, YHN restructured their customer service offering to allow repairs to be reported by an online portal, web app and by telephone. Respondents are now no longer able to report a repair in person at a housing office (YHN, 2020r).

Table 4.23c – Cross Tabulation of Age vs Interaction Online

How often do you do the following activities or visit the following websites / online services?	Age Demographic 16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Report a Repair to my Home								
Never	34	74	93	115	75	19	8	418
Monthly	11	33	38	49	26	6	2	165
Weekly	0	0	0	2	0	0	0	2
Once a Day	0	1	1	0	2	0	0	4
More than once a day	0	0	0	0	0	0	0	0

The value of responses from this question is relatively low to YHN and to the PhD research. It would be expected that YHN would gather this actual data themselves and provide analysis professionally and as required. However, the measurement of digital take-up for new online council services is required by the Government Digital Service (GDS, 2021). This makes attempting to answer questions in this area have an impact on Newcastle City Council. If citizens are not using your service after investigation of issues, it needs to be established why this is following the GDS guidelines. Table 4.23d shows that 37.7% of respondents never use the Newcastle City Council website to access their online services. This is against the 49.7% of those who opt to use these available online services.

Table 4.23d – Cross Tabulation of Age vs Interaction Online

How often do you do the following activities or visit the following websites / online services?	Age Demographic 16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Look for Information about Council Services								
Never	22	48	40	53	42	11	6	222
Monthly	20	50	73	89	48	10	3	293
Weekly	2	9	18	24	10	3	1	67
Once a Day	0	1	1	0	2	1	0	5
More than once a day	1	0	0	0	1	0	0	2

The next question reported here from the survey instrument is similar to that asked for the data gathered in Table 4.23d, where individuals look for information about council services. The difference in the responses to this question is do respondents make online requests for services to the Newcastle City Council website.

When considering the success of driving respondents to Newcastle City Council web pages. In table 4.24a, 49.7% of respondents indicated that they look for information on the Newcastle City Council website at least monthly. However, online engagement with council services is much lower, with table 4.24a showing that 72.8% of respondents never make any online requests to the city council by online means.

Table 4.24a – Cross Tabulation of Age vs Interaction Online

How often do you do the following activities or visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Make an online request for Council Services								
Never	38	75	95	118	74	20	9	429
Monthly	6	31	32	43	28	3	1	144
Weekly	1	2	3	5	0	2	0	13
Once a Day	0	0	2	0	1	0	0	3
More than once a day	0	0	0	0	0	0	0	0

Linking to the questions relating to YHN and Council services; Local and Combined Authorities are required to publish the statistics of how these services are used (GDS, 2021). In reality, these statistics appear challenging to obtain.

Respondents paying council tax online face the barriers mentioned earlier where the research reported the statistics for the payment of bills online in table 4.22f. Newcastle City Council (2021) attempts to drive individuals towards their online payment portal for paying council tax. However, Newcastle City Council's preference for payment of council tax is that respondents pay by direct debit and yet they do not provide such a system for citizens. Interestingly, direct debit cannot be set up or created online instead;, respondents are required to print out a direct debit form, handwrite it and return it to Newcastle City Council by standard post. The results in table 4.24b reflect Newcastle City Council's strategic approach to council tax payment and very similar to the results found by YHN in table 4.22b that consider respondents who pay rent online.

Table 4.24b – Cross Tabulation of Age vs Interaction Online

How often do you do the following activities or visit the following websites / online services?	Age Demographic 16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Pay Council Tax Online								
Never	33	74	79	112	66	21	8	393
Monthly	11	31	44	43	27	4	2	162
Weekly	1	3	6	10	9	0	0	29
Once a Day	0	0	1	1	1	0	0	3
More than once a day	0	0	2	0	0	0	0	2

This is where most respondents have most likely been driven by the promoted manual method of setting up a direct debit to pay their council tax. The reason for the promotion of payment by direct debit is that taking a direct debit payment costs the receiver around 1% of the payment made, where payment by card costs the receiver around 3% of the payment being made (London-Zurich, 2020).

With 45% of respondents from table 4.1j indicating they do not work and 59.1% of respondents from table 4.2 indicating they received welfare benefits [an unknown number of which will be mandated by their Universal Credit agreement to seek work]. Surprisingly, the data in table 4.24d does not indicate that more respondents look for work more regularly. In addition, given that around 40% of all jobs are advertised online, you would expect people to use the internet to apply for these (I'Anson, 2012; Adler, 2016).

Table 4.24d – Cross Tabulation of Age vs Interaction Online

How often do you do the following activities or visit the following websites / online services?	Age Demographic 16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Search for Employment								
Never	14	44	67	89	78	25	10	327
Monthly	11	27	28	30	10	0	0	106
Weekly	9	20	21	20	9	0	0	79
Once a Day	8	10	12	15	1	0	0	46
More than once a day	3	7	4	12	5	0	0	31

There is little data available around online reporting of crime in England. There are no online crime reporting services that can be used to report emergencies and only limited options about reporting non-emergency crimes. Individuals likely continue to use the well-

established method of using the telephone to report a crime. The statistical breakdown for those respondents who have reported a crime online is in table 4.24e.

Table 4.24e – Cross Tabulation of Age vs Interaction Online

How often do you do the following activities or visit the following websites / online services?	Age Demographic 16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Report a Crime Online								
Never	45	102	127	159	97	24	10	564
Monthly	0	4	4	6	5	1	0	20
Weekly	0	2	0	1	0	0	0	3
Once a Day	0	0	1	0	0	0	0	1
More than once a day	0	0	0	0	1	0	0	1

Table 4.24f – Summary of Cross-tabulation Column Data

Total (n)	45	108	132	166	103	25	10	589
Non-Respondents	5	21	30	34	25	7	3	125
Total Count (All)	50	129	162	200	128	32	13	**714**

Social media is an important platform where people find news and information, share experiences and connect with their friends and family. This was reflected when some of the survey responses were collected face to face. An anecdotal observation noted during the data collection period was that respondents were far more comfortable as a sample discussing Facebook than discussing anything connected to their financial affairs or work situation. This is also reflected in the non-response bias data, with more respondents answering this question [relating to social media use] than the previous questions relating to financial and day to day activities online. Table 4.25 shows respondent data relating to the use of the two most popular social media platforms: Facebook and YouTube. The respondent data shows that 79.1% of all respondents have a Facebook account and use the platform at least monthly. Similarly, 73.9% of all respondents interacted with the YouTube platform. When this is broken down by age demographic, 93% of the 16-25 age demographic interacted with Facebook and 86% of the 16-25 age demographic interacted with YouTube.

Table 4.25 – Cross Tabulation of Age vs Interaction with Social Media by Frequency

How often do you visit the following websites / online services?	Age Demographic 16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Interact with Facebook								
Never	3	17	24	34	28	12	7	125
Monthly	0	4	4	5	2	0	1	16
Weekly	2	5	8	20	13	1	0	49
Once a Day	6	14	17	28	13	7	1	86
More than once a day	34	69	83	81	49	6	1	323
Interact with YouTube								
Never	6	22	22	48	38	13	7	156
Monthly	4	23	25	26	17	3	2	100
Weekly	14	36	41	54	30	8	1	184
Once a Day	10	13	22	21	12	2	0	80
More than once a day	11	15	26	19	8	0	0	79
Total (n)	45	109	136	168	105	26	10	599
Non-Respondents	5	20	26	32	23	6	3	115
Total Count (All)	50	129	162	200	128	32	13	**714**

This is comparable to the Ofcom (2020) Media Use and Attitudes report, where 95% of 16–24-year-olds have a social media profile. For convenience, this comparison is summarised in greater detail in table 4.26. It is interesting that the different social media platforms vary in their adoption and use by survey respondents.

Table 4.26 – Comparison of Ofcom MUA Report vs Survey Respondent Social Media Use as a percentage

		% Engages with Social Media[1]	% Survey Respondents that use: Facebook	YouTube	Twitter	Snapchat
Age Demographic	16-25	95%	93.33%	86.67%	28.89%	82.22%
	26-35	93%	84.40%	79.82%	30.28%	44.95%
	36-45	88%	82.35%	83.82%	39.71%	24.26%
	46-55	82%	79.76%	71.43%	27.98%	11.31%
	56-65	58%	73.33%	63.81%	12.38%	8.57%
	65-75	39%	93.33%	50.00%	7.69%	3.85%
	75+	21%	93.33%	30.00%	30.00%	0.00%

[1] % Engages with Social Media Percentage taken from Ofcom (2020).

As mentioned earlier, the Pew (2020) study cited by Renstrom (2020) discussed the older demographic and their observance of a situation when they might use a device. The relatively low percentage of 56-65-year-olds, 65-75-year-olds and 75+-year-olds that use the Twitter and Snapchat platforms may relate to this. Interaction with Instagram is significantly less widespread (shown in table 4.27) than the populist Facebook and YouTube platforms. This lower interaction and use may be due to it being a primarily visual and photograph-based social media platform. Also, Instagram is now an organ of the vastly popular Facebook platform.

Table 4.27 – Cross Tabulation of Age vs Interaction with Social Media by Frequency

How often do you visit the following websites / online services?	Age Demographic							
	16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
Interact with Instagram								
Never	16	60	83	133	89	25	9	415
Monthly	3	7	13	7	4	0	0	34
Weekly	3	12	17	11	7	1	0	51
Once a Day	6	11	8	9	3	0	0	37
More than once a day	17	19	15	8	2	0	1	62

It may be that Facebook and YouTube fulfil a need in an accessible manner for this age group, where Twitter and Snapchat may be deemed excessive in terms of this research. Respondents in the 16-25 age demographic were the highest users of the visual and photography social media platform: Snapchat. This suggests that this platform provides something to this age demographic that is essentially not desired in the older age demographics. Table 4.28 breaks down respondents use of the Twitter and Snapchat platforms in more detail. This highlights the higher percentage use of Snapchat in younger respondents, largely ignored by the older age demographic. Facebook's popularity may have driven its adoption in the older demographic, with Twitter generally being viewed as less user-friendly and more specialist in its audience. Linked to the topic of social media, respondents were asked if they use the internet to stay in touch with friends and family. A topic that has become significantly more relevant is the benefits of being online and social media and an individual's mental health.

Table 4.28 – Cross Tabulation of Age vs Interaction with Social Media by Frequency

How often do you visit the following websites / online services?	Age Demographic 16-25	26-35	36-45	46-55	56-65	66-75	75+	Total
Interact with Twitter								
Never (Twitter)	32	76	82	121	92	24	7	434
Monthly (Twitter)	3	7	16	9	3	0	3	41
Weekly (Twitter)	2	8	12	14	3	1	0	40
Once a Day (Twitter)	2	8	10	8	6	0	0	34
More than once a day (Twitter)	6	10	16	16	1	1	0	50
Interact with Snapchat								
Never	8	60	103	149	96	25	10	451
Monthly	3	5	3	6	3	0	0	20
Weekly	5	16	13	5	4	1	0	44
Once a Day	7	8	5	0	1	0	0	21
More than once a day	22	20	12	8	1	0	0	63
Total (n)	45	109	136	168	105	26	10	599
Non-Respondents	5	20	26	32	23	6	3	115
Total Count (All)	50	129	162	200	128	32	13	**714**

This is a priority to this particular sample of respondents, with 81.43% (shown in table 4.29) stating that they do use the internet to stay in touch with family and friends. It would have been helpful to ask why they selected the answer to this question that was given, as it would have added value to the response they chose and helped generate further understanding of each response.

Table 4.29 – Sample Detail: Uses Internet to stay in touch with family and friends

		Number of Respondents	%
Do you use the internet to keep in touch with friends and family	Yes	500	81.43%
	No	101	16.45%
	Non-Response	13	
	Total (n)	**614**	

Further linking to the staying in touch theme, many respondents will use email for personal communication – email is not just a tool used in the workplace. Table 4.30 breaks down the frequency of email use by age demographic. It shows very few respondents do not use email, which defies the sample claim that 64 respondents do not use the internet at all. The

majority of respondents check their email more than once a day, with 64.89% of respondents undertaking this activity. The likely explanation for the high number of checking emails more than once a day is the advent of the smartphone and email available to everyone with a smartphone everywhere there is internet connectivity (either by mobile data or wifi).

Table 4.30 – Cross Tabulation of frequency of email use by age demographic

		Age Demographic							
		16-25	26-35	36-45	46-55	56-65	66-75	75+	**Total**
email Frequency of Use	More than once a day	27	77	91	111	62	16	6	390
	Once a day	8	24	35	38	28	7	1	141
	2-3 times in a week	6	4	6	11	8	1	0	36
	Weekly	4	3	3	6	4	0	0	20
	Monthly	0	1	0	3	1	0	0	5
	I do not use e-mail	0	0	1	0	3	2	3	9
	Total (n)	45	109	136	169	106	26	10	**601**

4.10 Smartphone Ownership

The Pew (2018) Global Attitudes Survey shows that in the United Kingdom, 76% of respondents own a smartphone, with a further 19% owning a mobile phone that is not a smartphone. At the time of the Pew (2018) survey, this was the median percentage for smartphone ownership. South Korea was the most advanced in this regard, with an estimated 95% of the South Korean population owning a smartphone. International smartphone ownership in emerging economies varies, with India's population least likely to own a smartphone at an estimated 24% of the population (Pew, 2018). When respondents were asked if they owned a smartphone, 82.6% of respondents stated they did own a smartphone. Interestingly, this is higher than the United Kingdom average [and Pew Survey Median] of 76% smartphone ownership (Pew, 2018).

Table 4.31 – Sample Detail of Smartphone Ownership

		Number of Respondents	%
Owns Smartphone	**Owns Smartphone**	503	82.60%
	Does not own Smartphone	106	17.40%
	Total (n)	609	

As discussed at the start of this chapter, the survey sample has more female respondents than male respondents. This influences the responses to this question and will bias the answer to this question in favour of female respondents being more likely to own a smartphone than male respondents. Table 4.32 shows 53% of respondents were female smartphone owners. Pew (2018, p. 3) found that in most countries, "men and women are equally likely to own smartphones" and considers gender plays only a limited role in technology use and adoption with males from the general Pew sample more likely to own a smartphone than females with an average 70/30 percent split. Including this data is helpful when examining the research questions and applying the data to the YHN tenant body.

Table 4.32 – Sample Detail: Gender of Smartphone Ownership

		Number of Respondents	%
Owns Smartphone by Gender	**Female**	325	53.30%
	Male	177	29.06%
	Non-respondents	107	17.56%
	Total (n)	609	

Table 4.33 shows the ethnicity of respondents who indicated that they did own a smartphone. Again, the ethnicity that was statistically least likely to own a smartphone based on the responses to the survey instrument were those respondents who were white, with 97 respondents out of 117.

Table 4.33 – Sample Detail: Ethnicity of Smartphone Ownership

		Number of Respondents own smartphone	%
Ethnicity	White	436	88.61%
	White Other	26	5.28%
	Black	25	5.08%
	Middle Eastern	5	1.01%
	Total (n)	492	

Indeed, it may be that educational attainment affects smartphone ownership. Table 4.33 shows those with lower educational attainment are least likely to own a smartphone. 36.79% of those who do not own a smartphone are from the education level category with no qualifications. This is supported by the Pew (2018) Global Attitudes Survey, where internationally the younger individuals who were better educated were much more likely to own a smartphone.

Table 4.34 – Crosstabulation of Education against Smartphone Ownership

		Number of Respondents without a smartphone	%
Education Level	No Qualifications	39	36.79%
	Apprenticeship	5	4.72%
	GCSE / O Level	20	18.87%
	Level 1	10	9.43%
	Level 2	6	5.66%
	Level 3	5	4.72%
	Level 4	2	1.89%
	BTEC HND/HNC	4	3.77%
	Foundation Degree	2	1.89%
	Bachelors Degree	9	8.49%
	Masters Degree +	4	3.77%
	Total (n)	106	

As described earlier in the section relating to age on table 4.15 the younger generations are leading the way in smartphone ownership and this is supported by the Pew (2018, p. 3) survey where they stated that in emerging economies that "*smartphone adoption has grown more quickly among younger generations*". This is supported by the sample data in table

4.35, where the younger age demographics are more likely to own a smartphone against the older demographics. The jump in the statistic where there is the absence of a smartphone between the 36-45 age demographic and the 46-55 age demographic is 17.93 percentage points

Table 4.35 – Crosstabulation of Age against Smartphone Ownership

		Number of Respondents without a smartphone	%
Age	16-25	1	0.94%
	26-35	3	2.83%
	36-45	12	11.32%
	46-55	31	29.25%
	56-65	34	32.08%
	66-75	17	16.04%
	75+	8	7.55%
	Total (n)	106	

In order to check technology awareness of 4G mobile internet with respondents, they were asked if they had a 4G internet service on their smartphone. Table 4.36 shows that the majority of respondents did have the 4G technology on their smartphone, with 60.5% of respondents stating that they do have 4G service available.

Table 4.36 – Summary of Respondents 4G Status

		Number of Respondents	%
Has 4G Service	Yes - Has 4G	369	60.50%
	No 4G	101	16.50%
	Don't know	33	5.50%
	Non-respondents	106	17.40%
	Total (n)	609	

It was interesting to note that 5.5% of respondents state that they did not know if they had the 4G service on their smartphone. It would not be unreasonable to posit that many of these respondents were unlikely to own a smartphone or be internet users themselves and quite possibly fall into the 10% of survey respondents who stated that they do not use the internet.

As shown in table 4.37, 38.97% of respondents with a smartphone stated that they felt their smartphone internet speed was fast (4 out of 5). The answer to this question is relative (based on the task you wish to complete) and does not directly contribute to this research. However, it could be helpful to identify if this is a barrier to use later if internet speeds were too slow for respondents to make use of a device efficiently.

Table 4.37 – Crosstabulation of Speed against Smartphone Ownership

		Number of Respondents	%
Smartphone Internet Speed	**Very Fast**	102	20.28%
	Fast	196	38.97%
	Acceptable	179	35.59%
	Slow	20	3.98%
	Very Slow	6	1.19%
	Total (n)	503	

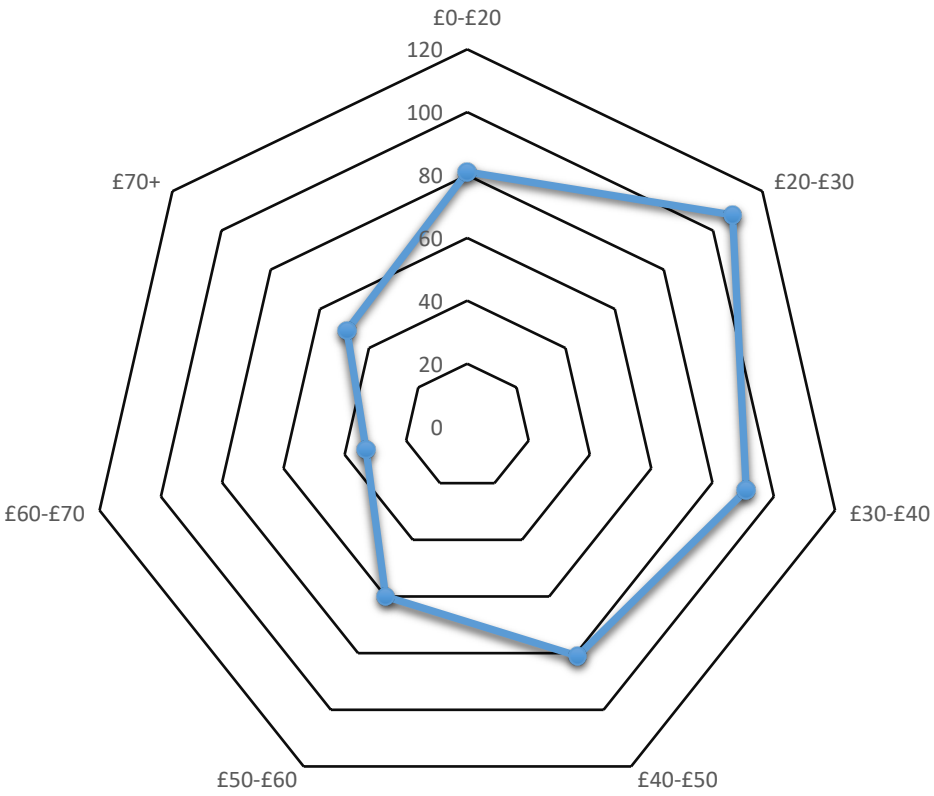
More interestingly is the spending on smartphone ownership by respondents. Given that 57.25% of respondents indicated in table 4.2 earlier in this chapter that they received welfare benefits and therefore had a relatively low income. The mean of the grouped data in Table 4.38 is £37.18 per month, which for the study is the average spend for their smartphone and associated service. Table 4.38 shows that most respondents (21.47%) spend between £20-£30 on their smartphone.

Table 4.38 – Crosstabulation of Spend against Smartphone Ownership

		Number of Respondents	%
Smartphone Spend (Per Month)	**£0-£20**	81	16.10%
	£20-£30	108	21.47%
	£30-£40	91	18.09%
	£40-£50	81	16.10%
	£50-£60	60	11.93%
	£60-£70	33	6.56%
	£70+	49	9.74%
	Total (n)	503	

This is better illustrated in figure 4.7, where the distribution of respondents against spend can be visualised more clearly. There is a high non-response rate problem with table 4.38 with around 113 respondents not making an answer to the question of smartphone spend.

Figure 4.7 – Chart showing the most amount spent on smartphone use by a number of respondents



The illustration in figure 4.7 leads the research to question which age demographic was likely to spend the most on their smartphone. The age demographic most likely to spend highly was the 36-45 age demographic, with 19 respondents from that demographic spending £70+ on a smartphone and data service each month. Respondents from the 36-45 age demographic also have the highest average spend with £41.66 per month. This is very close to the average spend of the 66-75 age demographic who spend an average of £41.53 per month. The average spend of each age demographic is summarized in table 4.39. Given the survey, the sample was taken from social housing tenants and based on the data in table 4.2, around 56.25% of respondents are in receipt of welfare benefits; the data shown in figure 4.7 is interesting in relation to how respondents might pay for or prioritise their spend on technology.

Table 4.39 – Summary of Average Spend by Age Demographic

		Average Spend
Age	16-25	£34.78
	26-35	£40.93
	36-45	£41.66
	46-55	£36.59
	56-65	£33.93
	66-75	£41.53
	75+	£30.00

When examining smartphone use with disabled respondents, the survey instrument found that those with disabilities on average spent £38.67, with those respondents without disabilities paying £37.63 per month. This data is summarised in table 4.40.

Table 4.40 – Summary of Average Spend by Disability Status

		Average Spend
Disability Status	No Condition	£37.63
	Previously Currently Lifetime Condition	£38.67

This is further broken down in table 4.41, where the data shows in more detail that those with a lifetime condition are much more likely to spend higher amounts on smartphone ownership, and inversely, those with no condition are likely to spend less.

Table 4.41 – Breakdown of disability status by spending on smartphone

		No Condition	Previously	Currently	Lifetime	
Smartphone Spend (Per Month)	£0-£20	62	7	26	18	
	£20-£30	75	10	28	22	
	£30-£40	59	6	21	23	
	£40-£50	53	3	12	22	
	£50-£60	39	2	9	15	
	£60-£70	23	0	6	7	
	£70+	32	1	9	19	
	Total (n)	343	29	111	126	**609**

4.11 Digital Skills, Training, Learning and Asking for help

As explained earlier and described in table 4.1g, there may be a connection to having lower educational attainment and adoption of broadband internet technologies. This section considers the impact of respondents having had any formal digital skills training courses. This section links to the digital skills training construct from the proposed theoretical framework. These courses are provided to respondents and members of the public in a number of locations across the city. Given that the sample is all YHN Tenants, it should not be unexpected that YHN digital skills offerings score highly. As shown in table 4.44, 77 respondents stated that they had no digital skills training. These respondents entirely represent those from the sample without broadband internet access in their homes. Of the respondents who stated that they had received some digital skills training, 83 respondents stated that they had received this from the Learn my Way course that is provided by YHN. The subsequent most popular response was that they had learned their digital skills whilst at college or university. Unsurprisingly, those attending college or university for a formal education will learn digital skills like using the internet is a requirement in the modern era to be a successful student.

Table 4.44 – Digital Training Received against has Internet Access at Home

		Number of Respondents	Respondents with No Internet
	No Training	77	64
	Training		
	Learn my Way	83	0
Digital Training	**College / Uni**	58	0
	At Work	30	0
	Formal Qualification	25	0
	ECDL	7	0
	Other	39	0
	No Response	297	
	Total (n)	**616**	**64**

. The majority of respondents who stated that they did undertake some digital training in Table 4.44 did not receive a formal qualification. Table 4.45 shows that 222 respondents did not receive any formal qualification for doing so. The 97 respondents who did receive a formal qualification stated that they received a range of awards that included the European Computer Driving License (ECDL) qualification and a range of Entry 3 to Level 2 NVQ qualifications for the completion of their training. This might suggest that respondents will complete digital training in order to learn rather than for the qualification that might be associated with each qualification. It is worthwhile considering an analysis of age against digital training received as it may support the idea that younger individuals receive training and knowhow at School at an early age, and which age demographic seeks out additional digital training to build confidence and skills.

Table 4.45 – Digital Training Received a Qualification

		Number of Respondents
Digital Training	Obtained Qualification	97
	No Qualification	222
	Total (n)	319

Proxy use of the internet was reported in table 4.22 earlier in this chapter. None of the respondents in table 4.44 stated that they engaged in proxy use of the internet. Whilst the number of respondents that identified they engaged in proxy use of the internet is relatively low (12 respondents), it may still be statistically significant as all respondents had to attempt to answer this question. This possible relationship between the lack of digital skills training and proxy use of the internet may highlight these respondents need further examination as to their motivation and reasons for non-engagement online. Asking for help, however, appears to be a much more common trend than proxy use of the internet. When answering the question "*If you need help with the internet what do you do or who do you ask for this help*" a number of choices were offered, but the question also provided the opportunity to enter free text in order to answer this question, and many respondents opted to do this. Many of the responses that were entered in the free-text field matched some of the pre-selected categories. In addition to the pre-selected categories, "*Ask the City Library Staff*" and "*Contact Internet Service Provider*" was added to table 4.46. A number of malicious free-text responses were

also made in answer to this question, and these answers were invalidated when reporting the data in the table.

Table 4.46 – Nature of help required to use the internet

		Number of Respondents	%
Nature of Help	No Help Required	247	41.44%
	Ask a Family Member	137	22.99%
	Google or Search Online	93	15.60%
	Ask a Friend	41	6.88%
	Ask a Young Person	30	5.03%
	Ask the City Library Staff	25	4.19%
	Ask someone at work	12	2.01%
	Contact Internet Provider	11	1.85%
	Total (n)	**596**	
	Invalid Responses	16	

The most frequent response to this question was made by 41.44% of respondents who stated that they did not need help in using the internet. This may indicate some non-response bias and that individuals may be less competent and are just unwilling to admit that they may need assistance online. Of those respondents who stated that they needed help, the most frequent response was from 22.99% of respondents who said they would ask a family member. Use of internet search engines also scored highly, with 15.6% of respondents stating that they would use this method to get support. Interestingly the link to children at home may be posited as 5.03% of respondents said they would ask a young person, and many of these selected respondents stated in the free text field that they would ask their children or grandchildren.

4.12 Qualitative Summary of "What is the main reason you use the internet"

The next chapter consists of a thematic analysis of a number of interviews with individuals that are within Newcastle City Council, members of YHN Staff and other external individuals who have an interest in digital inclusion in the city. This next chapter also includes individuals that have the welfare of and employment prospects of social housing tenants within the City of Newcastle upon Tyne as part of their job roles. In order to provide a link between this chapter and the next chapter, it feels appropriate to make some qualitative examples from the final question in the survey instrument. The examples that follow offer

comments and remarks from survey respondents that qualitatively support the data reported in this chapter. In the survey's final question, respondents were given a free text field to provide the "*main reason that they use the internet? If not, why do you not use the internet?".*

None of the 612 qualitative reasons provided link to why a respondent does not use the internet – instead, respondents appear to. There are, however, many observations that link well and support the data reported in this chapter. One of the primary reasons for use links to finance and employment with respondents making remarks such as:

"internet banking to pay bills as this saves me having to write cheques and travel to places to pay"

"booking tickets as they are cheaper online."

"to look for jobs as they are almost all online"

Linking the data provided in table 4.22, several respondents commented how they use the internet as a social glue and to stay in touch with friends and family:

"Social media"

"Mainly for social reasons."

"… keeping in contact with friends and family."

Supporting the data in table 4.2 – those in receipt of welfare benefits respondents make mixed responses – some positive about how they are able to manage their welfare benefit and others how they are forced to use the internet to search for work:

"to look up information and to job search, as I am forced to look online."

"I struggle with computers, yet I am mandated to use them to search for work."

"I search for work using the internet as it lets me claim universal credit."

"Just getting the hang of it. Benefits and employment."

This suggests that respondents who claim benefits may struggle with the use of devices and access suitable training to support them with their welfare benefits claim. This is especially problematic with the increased requirement to use online systems to claim welfare benefits.

Those who have made comments and remarks relating to disability (linking to table 4.3) discuss how invaluable they find the internet:

"I am housebound and use the internet for everything, not sure I would be able to live without it"

"Reason I use the internet is that I buy things with it, I banking on it, Facebook on it, research on it, in fact, can't manage without it – I do not really leave the house often."

"To access a variety of special services, it is the window to my world; without it, I would be alone."

This indicates those who are disabled and who may have mobility issues are generally more skilled and able at using the internet. This is based on how respondents here describe their internet use and how different these comments are to those of the individuals who are in receipt of welfare benefits. Linking to these knowledge and skills responses made by those respondents who are disabled to general comments connected to knowledge, digital skills and training are interesting. It appears by the answers made that some respondents use the internet to keep their online skills up to date, so they do not feel left behind:

"it's part and parcel of keeping oneself up to date with ongoing living trends and practices."

"that it is the only and easiest way in life nowadays to get things sorted and right."

"so I can help my grandchildren."

"I need to learn new things to stay up to date with my children."

The final most notable responses to the question posed relate to personal entertainment, indicating that they use the internet for streaming television programmes and online streamed content from platforms such as Netflix. But also searching for information, directions or photographs/images of items they are searching for. The typical language used to indicate an online search was to "google" something, but this may not mean that respondents used the Google site to do this. A selection of the comments relating to this are:

"entertainment"

"information"

"instant information that is usually free"

"read the news."

"to procrastinate, I dislike the internet but find myself drawn to it when I should be doing another task."

A single word dominated the responses made to the question of "*what is the main reason that they use the internet? If not, why do you not use the internet?".* This word was:

"Convenience".

Convenience or words that are closely synonymous in meaning were mentioned by 12.6% of 612 respondents. It was not appropriate to the group and measured the percentage of the other responses here. Many of these responses are significantly different to one another but contain an item that links them to the topic in question.

4.13 Findings (Survey) Conclusion

This element of the research seeks to cultivate an understanding of the drivers and barriers to internet adoption and digital inclusion that form part of the reality that Your Homes Newcastle tenants face in getting online. To facilitate this, this element of the research has seen 832 individuals engage with the survey instrument with between 590 and 714 respondents making meaningful survey submissions that could be used here. This chapter presents the key findings from the completion of survey instrument in a descriptive and more qualitative manner to make an attempt to explore what the data presented means in context of the RQ rather than a traditional presentation of the numerical statistics contained in the data. The next chapter aims to discuss the findings from 14 semi-structured interviews and identify themes and associated lower order codes that will be used together in the later discussion chapter with the data presented here.

The survey instrument makes a case for the generalizability of the data generated by the survey instrument. The ethnicity profile of respondents is atypical of the Newcastle upon Tyne area and it was not possible to establish if the ethnicity profile of respondents was typical of the YHN tenant group due to the unavailability of this data. The employment status profile of respondents is also atypical of the Newcastle upon Tyne area with a lower percentage of YHN Tenants stating that they do not work. This was not surprising as social housing tenants are typically the more vulnerable members of society. The survey sample featured less respondents with children that would be typically expected from the Newcastle upon Tyne area. The survey sample is also drawn from a varied selection of the Newcastle

upon Tyne area with all postcodes from across the City of Newcastle upon Tyne that have social housing belonging to YHN represented.

The survey instrument identifies a number of potential barriers and drivers to internet adoption and digital inclusion. The first of these is that individuals with lower educational attainment, those individuals with no education or only a secondary education being less likely to have the internet in their home. Those respondents with no children are also likely to be less likely to have the internet in their home. The data shows those respondents who live less affluent areas of the City of Newcastle upon Tyne are less likely to have the internet in their home, with more affluent areas appearing to see internet adoption more widespread in the survey sample.

There is a significant discussion in this chapter about the age demographic, its complexity and how it links to the barriers and drivers of internet adoption. The data from the survey instrument showing that those with lower educational attainment come from the older age demographic. When considering associated digital products the older age demographic are more likely to have a landline telephone in their home but less likely to have premium television channels. This may link to the lower rate of smartphone adoption and use in the older age demographics. Indeed the traditional style of internet service provision by providers typically involves the bundling of services (TV, Home Telephone, Broadband Internet). Those of the older age demographics are less likely to engage with companies that offer this bundling of services and many do not have the other services offered as a bundle at all with landline telephone, TV package and broadband internet (if present) being supplied by different service providers. In terms of device ownership the older age demographic were least likely to prioritise any device ownership, with the tablet being the most popular device in the older age demographic and the smartphone being the least popular device. The younger age demographic were much more likely to own a smartphone and also to use it to access the internet. There is significant discourse in this research relating to the location where the internet is used. Those of the younger age demographic are likely to use the internet at work but a higher percentage of respondents stated that they do not work, this may link to why the majority of respondents claim they most frequently use the internet in their homes. It is interesting that only 4.86% of respondents used the internet at a public library; this will be the subject of further discussion later as it highlights a possible discrepancy in policy making and thinking within Newcastle City Council.

Self assessment of the ability to use the internet is complex, with the research indicating that respondents may overestimate their online skills and abilities whilst underestimating the online skills and abilities of others. Most individuals rated their online skills and abilities as a 10 (on 10 point scale). Only a very small percentage of respondents stated that they engaged in proxy use of the internet but this may be effected by response bias. Linking to the data connected to respondents online skills and abilities and how there is a trend to state that the majority of respondents feel they are well equipped online. Respondents may not want to admit they do not have as good skills and abilities when online.

There is an extensive breakdown of the different activities that respondents may engage with when they go online. These are typically broken down by age demographic to provide additional granularity in the data. The most popular activities undertaken by respondents are to *Google or Search for something* and *use of Facebook.* A surprisingly high percentage of the sample do not engage in a number of other activities. Respondents typically do not use the internet for entertainment with the majority of respondents rarely *Listening to Music Online, watching TV Online* or *Playing Online Games.* The data related to *Shopping Online* is also interesting with some of the younger demographic not shopping online at all and more of the older age demographic than anticipated using the internet to order an item monthly from a supplier like Amazon or Ebay. With the sample having high numbers of the unemployed and those in receipt of welfare benefits it is expected that the sample will have a lower amount of disposable income for such shopping online services. The majority of respondents never engaged in an *Online Supermarket Shopping* delivery with the majority of the sample preferring to shop in person. Internet banking was popular with 79.87% of respondents stating that they used this service from their bank.

The data shows that respondents did go online to search for health advice with only 209 respondents stating they have never done this. However making a GP Appointment online or making an NHS Choose and Book hospital appointment was much more rare for participants. This is likely to be linked to the established behavior around how health services interact with individuals – by letter and telephone. In terms of online services provided by YHN and Newcastle City Council the general uptake of these services in those from the sample was low. The majority of respondents stating that they had never engaged with the following: Search for a home to rent, paying rent online, report a repair to their home, making an online request for a council service, pay council tax online. Individuals were marginally more likely to search online for information connected to Newcastle City Council. Interestingly given the

high number of welfare benefit (and typically Universal Credit) claimants in the sample; the high number of respondents that stated that they do not search for employment online is somewhat concerning. There were more respondents who stated that they searched for information from Newcastle City Council.

The majority of social media plaforms appear to be unimportant to respondents with most platforms being ignored by the sample and only Facebook attracting any significant response. This was unexpected given the typical current popularity of these platforms in the general population. The majority of respondents indicated that they used email more than once a day, with only 9 respondents stating that they do not use email at all.

Smartphone ownership is a topic of interest, with the majority of respondents owning a smartphone but with 106 respondents stating that they do not. The majority of those who do not own a smartphone come from those respondents with lower levels of educational attainment and those from the older age demographic. Most respondents with smartphones have 4G available on their smartphone with 101 respondents stating that they do not. The average spend on smartphones is £37.18 per month, but most respondents state that they spend between £20-£30 per month, this is interesting based on the earlier discussed issues around the low-income group. As mentioned earlier, the bundling of services in a case of interest. There are 92 respondents who stated they do not work, the same respondents have a TV, Telephone and Broadband Internet bundle with one of the identified suppliers. The same group of respondents are also likely to be in receipt of welfare benefits meaning they typically have a low income. This entertains speculation as to how and why these individuals afford and prioritise these bundles of services.

There have been several interesting findings identified here, it is important that these are related and taken in context with the current literature, before a more substantial conclusion on this can be reached. This will be the focus of the discussion chapter where these findings will be examined in combination with the findings of the interview participants from the next chapter.

Chapter 5 –Thematic Analysis

5.1 Introduction

The previous chapter contained the findings from the survey instrument and how they apply to the RQ. This chapter is the second of two findings chapters that will be followed by a single discussion chapter. This is where both sets of findings are discussed and related in an interconnected manner. The following section informs the reader of the structure of this chapter and the design of the themes and codes from the transcriptions of the 14 interview participants (listed in table 3.4 in chapter 2).

The structure of this chapter is as follows:

Section 5.2 provides a short narrative of the method of analysis used in this chapter. Each of the sections that follow contain themes that are broken up into subsections that describe the identified themes with their relative lower order codes, and at the end of each theme section, there is a section for minor codes. Each of these themes is These minor codes include interview participant comments where they aid in answering the RQ but due to having too few items coded to them do not warrant having their own section in the chapter. Each theme is followed by a short summary to aid the reader in being able to follow the chapter to its conclusion and relate back to the work during the discussion chapter that follows.

Section 5.3, which contains the analysis of the first theme which is *the demographic barriers to adoption*. Section 5.4 presents the analysis of the second theme: *the financial elements impacting on internet adoption*. The third theme is *the barriers that impact individual adoption* which is followed by the fourth theme which is *the factors that impact skills, training and education*. The fifth theme examines *the macro political impacts on internet adoption* which begins to place focus on the political motivation involved in the digital divide. The final theme relates to *the regional political impacts on internet adoption* which considers the local issues that relate to YHN and Newcastle City Council.

5.2 Presentation of Findings

The thematic analysis of the interviews followed the Braun and Clarke (2006) six-phase guide used in conducting a thematic analysis. This was also outlined in chapter 3 (methodology).

1. Become familiar with the data
2. Generate initial codes
3. Search for themes
4. Review themes
5. Define themes
6. Write up

As the research works with complex data, the research moved back and forward between these six phases, many times to complete the analysis in this chapter.

The thematic analysis of the 14 completed semi-structured interviews found six higher-order themes and 30 lower-order codes. These themes were established using the iterative six-phase process and are considered *a priori*. They were developed whilst consulting from the available contemporary literature, which aided the creation of the interview guide. The creation of the interview guide is discussed in chapter 3. The themes that were found were by no means set in stone and were open to change during the analysis process. This is supported by Brooks and King (2017), who talk about redefining and removing themes that do not readily fit the data. The definition of the themes and codes under analysis is disclosed in each relevant section of this chapter. The experiential thematic analysis variant discussed by Braun and Clarke (2017) is most appropriate for this data set as it allows the focus to be on the interview participants' standpoint and how they experience and make sense of the world.

These themes and codes are outlined in table 5.1 below.

Table 5.1 – Summary of Themes with associated Lower Order Codes (LOC) and Minor Codes

The Demographic Barriers to Internet Adoption Theme	The Financial Elements Impacting on Internet Adoption Theme	The Barriers that Impact Individual Internet Adoption Theme	The Factors that Impact Skills, Training and Education that relate to Internet Adoption Theme	The Macro Political Impacts on Internet Adoption Theme	The Regional Political Impacts on Internet Adoption Theme
Age demographic barriers to internet adoption	Barriers to internet adoption when receiving welfare benefits	Fear of the internet as a barrier to internet adoption	The issues and importance of digital skills	The UK Government austerity policy as a barrier to internet adoption	Impact of technology provision on internet adoption
Barriers to internet adoption faced by those with low literacy	Barriers to internet adoption when you have a low income	Impact of online systems and processes that facilitate internet adoption	The importance of and issues with the provision of digital training	Absence of UK Government Policy as a barrier to internet adoption	Regional issues with process and digital development
The influence of children on internet adoption	The cost of devices as a barrier to internet adoption		Confidence is key to internet adoption		The challenges of multi-agency working
	Cost of internet access as a barrier to internet adoption				
Learning difficulties as a barrier to internet adoption [m]	Use of the internet to save money [m]	Individuals who are left behind as a barrier to internet adoption [m]	Fear of the classroom as a barrier to internet adoption [m]	The necessity for online services [m]	Fiscal issues that are a barrier to internet adoption [m]
Early school leavers as a detriment to internet adoption [m]	The bundling of digital services [m]	The internet is not important to everyone [m]	The impact of device specific skills [m]	The issues with digital development [m]	Regional digital strategy issues [m]
Being unemployed as a barrier to internet adoption [m]					

[m] = Minor Code

5.3 The Demographic Barriers to adoption

The demographic barriers to adoption theme refer to the characterization of the human population and the different groups that exist within the human population (Salkind, 2010). These independent variables are considered reliable because they cannot be manipulated in the research (Salkind, 2010). Whilst specific demographic data was collected by the survey, interview participants were given no details about the findings from the survey summarised in the previous chapter. The codes selected (shown in table 5.1) that become part of the demographic theme (in order of how commonly they appeared) from the thematic analysis are: age, education status/literacy level, has children and disability. Lesser occurrence of the following demographic codes was also noted: disability and unemployment status.

5.3.1 The age demographic barriers to internet adoption code

The age demographic relates to digital skills in unexpected ways (Helsper, 2021, p.84). Traditionally, older people have the lower skill and confidence levels, educational background, general health and experience with ICT (Helsper, 2021, p.84). The discussion around this digital identity comes through from the interview participants, with participant 8 remarking:

"I think that's particularly an issue for people of a certain age, I can't remember the research who talked about digital natives and digital immigrants." **(P8)**

Participant 8, being more familiar with some of the discourse, refers to the work of Prensky (2001), where a Digital Native is someone born into the world of the internet and digital devices and a Digital Immigrant being someone less familiar with the internet and these digital devices. This technology is arriving at a later point in their lives. This is supported by Participant 4, who stated:

"…there is a generation of younger people who've grown up with smart phones and just know how to do it." **(P4)**

and:

"The ones we are trying to digitally include in the older group, they just wouldn't know where to start as they are not technically aware of these things and would just say no." **(P4)**

There is also a view by interview participants **(P1, P12, P13, P14)** that those in the older age demographic may lack formal and informal education around the use of the internet and digital devices. This links to the expected social norm and established standard that all young people in the United Kingdom receive training and education in the use of a computer and the internet whilst at School. Participant 1 commenting that:

"I think this is an age-related issues, education and device. I think if you go back even thirty years when I was at school [we didn't have a computer or the internet]" **(P1)**

and:

"We didn't have education around technology, we didn't have education around computers it only began a few years after I left school" **(P1)**

Participant 10 also supports this view and links it to Government policy and lack of funding for digital skills training:

"I think genuinely a lot of councils need money for computer education and broadband for people over 40 who possibly didn't get this at school" **(P10)**

The lack of funding for internet-related education was implied tacitly by Participant 1 during their interview, and it may be that they felt they were unable to state this outright because of their closeness to the issue because of their organisational role. An interpretation here could be that if an individual uses or adopts the technology of the internet, it does not mean they trust or do not trust it. They may just lack the education and skills to be able to interact with the technology without concern of doing something terrible that could impact them financially. This view is supported to an unusually high age range by Participant 1 that mentions how:

"… anybody who is 55 and older I think they will have had less exposure to things online anyway, and I think this links to fear of the unknown" **(P1)**

"the big issue for the older folks is fear" **(P10)**

This takes the potential trust argument into the domain of individual non-adopters being afraid rather than mistrustful of the internet. This most likely links back to the earlier discussion around education as individuals cannot mistrust something that they do not know. It is more likely they are fearful of the unknown. Participant 1 again:

"… the older generation just don't understand technology" **(P1)**

This lack of understanding of the relative unknown of the internet leads to a number of interview participants discuss the interest and capability of older people when going online. These discussions are nicely summed up by Participant 13, who made the following observations:

"There is a lack of interest in it from a lot of older people. They will not be interested in it because they do not see what they can get from it" **(P13)**

"There's also the capability of users. So, some older people may not be confident enough to open a computer and go onto a website or whatever" **(P13)**

This ties into the work of Helsper (2021), which ties confidence to use the internet into the actual use of the internet. This is explored in more detail later in this chapter within the factors impacting skills and training that affect the internet adoption theme. Participant 2, whose business role connects with individuals who are looking for work or who might have been made redundant, discusses the issues that individuals who do not understand technology may face:

"lots of the people we see are over 40 years of age most of them have worked all their lives and have been made redundant or had to leave work due to an injury or sickness" **(P2)**

"I am 52 years old and [at school] I was never taught on a computer, and I went to a private school. Looking at the monitor is really alien to this group, and they face a huge barrier to coming back to learning. The interest might just not be there" **(P2)**

Participant 2 posits that when older people are looking for work, they find it much more difficult with many job advertisements now being online. Around the age of 50 years old appears to be a commonly held view of where the silver digital divide begins **(P1, P2)**

"… jobcentre and job search is now online, and there's just not the support [to help people get online]*"* **(P2)**

This may be due to how older individuals may find technology more alien but also how they may not be interested in it – supporting the earlier comments from Participant 13, who mentioned that older individuals may not understand what they can get from being online. The financial issues relating to age also featured with applying for the state pension moving towards an online-only

model and high street banks closing physical branches it makes access to money and finances more digitally linked.

"… remember we've got a lot of people in their 60s were due to be able to access their pension they didn't have any computer access or educational history with them" **(P2)**

"the financial issues are important, it's a lack of knowledge, and it's a certain age group" **(P11)**

Participant 14 also mentions how difficult it is for those already retired to deal with anything but cash payments. Individuals who are retired were mainly focused:

"… folk who hadn't grown up with the technology either and were retired and had no work or anything like that and they then had to get a bank account, get a pin and work with cards instead of cash" **(P14)**

These findings relate to financial issues for the age demographic differ from those anticipated. The interview participants appear to suggest that access to money and money management are more important for the older age demographic than, the older demographic, potentially having access to less disposable income in order to be able to get online. This was unexpected as the standard state pension in the United Kingdom is £137.60 per week and may be supported for those without other forms of income by the pension credit benefit and housing benefit (HM Government, 2021d). Welfare benefits are discussed under the financial elements impacting on internet adoption theme however the state pension is not considered a welfare benefit which is why it is mentioned here. There appears to be a theme around lack of skills, confidence and knowledge emerging for those in the higher age demographics. There appears to be more importance attached to the earlier comment by Participant 10 as the discourse is examined:

"I think genuinely a lot of councils need money for computer education and broadband for people over 40 who possibly didn't get this at school" **(P10)**

This discussion linked to the English colloquialism of the *pensioner* peer group. This group is widely viewed as a group of individuals who are typically in receipt of the British state pension and are of pensionable age (LITRG, 2021; HM Government, 2021d). Interview participants (P1, P5) feel that being part of a digitally included peer group was important from an age perspective, and those who are older and part of such a group are more likely to go online.

"…its more to do with peer group and the learning bit that people get from being part of a peer group cohort who are all digitally included" …. "if all of your friends are using social media and so on and so forth, it is natural" **(P5)**

This being part of a peer group increasing internet use and adoption is supported by Helsper & Reindorf (2015) and discussed in the discussion chapter. The general view of Interview Participants in this section is that those individuals that are older face different barriers in getting online. However, many Interview Participants **(P1, P2, P6, P10)** have stated that it is not all older individuals who face problems going online, and many individuals are very capable when using the internet. This is summarised well by Participants 1 and 6:

"I am generalising because this does not apply to all of the older generation" **(P1)**

and

"There is a large proportion of older people, not all" **(P6)**

A phenomenon worthy of mention here is that many Interview Participants **(P1, P2, P3, P6, P10)** had their different view on what constituted an age group that might be impacted by the age demographic. This age range was anywhere between 30 and 70 years of age, which is interesting based on the earlier remarks from Interview Participants who may have had access to the internet at school.

5.3.2 The barriers to internet adoption faced by those with low literacy code

This code examines the views held by Interview Participants around those with low literacy. This code relates to those that may face barriers around reading and writing but also access to primary and secondary education where these skills are most likely to be learned by individuals. Participant 10 describes having the required literacy to go online as:

"The big player for the older folk and those in and out of jobs. Literacy is essential" **(P10)**

Participant 14, who regularly has contact with individuals looking to upgrade their digital skills, talks about literacy:

"People might not be literate enough to understand how to use the internet, or they might not have had the internet at school." **(P14)**

Learning difficulties are also referenced by Participant 2, who cites these as huge barriers for individuals looking to get online:

"… some people have lower levels of literacy and learning difficulties, and these are huge barriers that people face" **(P2)**

Participant 4, in discussion with a YHN Tenant, state that:

"When the guy I spoke to was asked do you want free Wi-Fi, he replied – "I can't read and write, mate, so what use is this to me?" **(P4)**

Following instructions (and this is not viewed by Interview Participants the same as receiving training and education) is also a barrier where individuals have poor literacy skills. This is articulated best by Participant 5 where they stated:

"I think there is the groups we tend to look at tend to have higher level of education problems and they have not actually done well in things like literacy [at school], and things and they're not able to follow the instructions to do this, that and the other" **(P5)**

Being unable to follow basic instruction (written - from a how to do something type document or verbal) becomes a barrier when individuals need support to do the most very basic things such as switch on an item of technology and simply login. Being unable to do the more basic tasks by flow of logic makes the more complex task of getting online and meaningfully using the internet impossible. Even if an individual is assisted to log in at a piece of technology (such as a PC or Laptop), if you are unable to understand what you want to type in, it becomes immensely frustrating **(P5, P6)**. With one of the primary functions of the internet being communication, it is extremely problematic if individuals cannot read and write. Participant 8, who regularly deals with members of the public who may have literacy skills, concludes:

"… there will always be a challenge around their literacy skills full stop whether that is with their basic literacy or digital literacy" **(P8)**

Literacy issues in the United Kingdom are an established issue. The National Literacy Trust (2021) states that around 16.4% of adults in England (or 7.1 million people) are described as having very poor literacy skills. The apparent link here between literacy and the digital divide

may never be broken down whilst there are individuals who may have different motivations than to join the information society – there are those who do not seek to be able to read and write.

5.3.3 The influence of having children on internet adoption code

Away from the discussion in the last chapter around the influence of children in a household driving internet adoption, Interview Participants followed a different line of discourse. Interview participants **(P4, P5, P7, P14)** hold the view that those on a low income and children would opt to feed their children rather than risk getting into debt to pay for devices or internet service. Due to most Interview Participants being connected to the local authority, they should be aware of the United Nations Special Rapporteur's findings into extreme poverty and human rights in Newcastle. Although it is reasonable to assume that some interview participants may not be aware of the UN report as there was little mention of it. This is where levels of child poverty in Newcastle are above the national average, where 29.1% of children live in low-income families compared to 19.9% in the other areas of England (Newcastle City Council & United Nations, 2019). Participant 7 stated:

"Being able to afford to go online. Not everyone can afford the monthly connection bill its like it someone works part-time, has children and might get benefits" **(P7)**

This is supported further by Participant 4, who states:

"[they] *prioritise the money that they have coming in from Universal Credit or whatever and they spend it on their children, they spend it on the entertainment, they spend it on food and rent, and they see no money left to actually pay for any of this* [the internet], *and they see it as a barrier"* **(P4)**

Interview participants (P7, P8) take the view of affordability and balance it against the assistance individuals get from children and young people in being able to use the internet:

"… the route of you'll have a nephew or niece that can help you…" **(P8)**

"…There'll be someone in your life that can help you…" **(P8)**

The exploration of later themes and codes will discuss what interview participants view around education support and training for those that may be excluded.

5.3.4 Minor codes from the *demographic barriers to adoption* theme

Codes from the demographic barriers theme that feature less than five occurrences and add some value to the discussion later are: has a learning difficulties as a barrier to internet adoption, early school leavers as a detriment to internet adoption and being unemployed *a barrier to internet adoption*. Interview participants discussed how those that did not have a computer at school or who left school early face barriers in getting online. Participant 6 stated:

"I think there could be a link where if you had a computer in your classroom as you grow up, you are more likely to have one now and be online. I think access to having a computer at school is hugely beneficial" **(P6)**

Linking back to the earlier code of barriers faced by those with low literacy,

"I do think there is a barrier in terms of education if you haven't had a basic education or decent education" **(P4)**

This comment considers that those who went to school before 1972 would have left school as young as age 13-14 years prior to the age limit for school leaves being raised to 16. Participant 4's comments link to the lower literacy levels caused by this but also the lack of computers in classrooms before the advent of the BBC Micro in 1981. Those with disabilities were also mentioned three times by internet participants **(P2, P3)**. These comments are summarised well by Participant 2:

"… who have levels of learning difficulties do have problems getting online, and there's not enough specialist courses to help those types of people also, and people don't actually know where to signpost people do when they're wanting to get help because there isn't enough support mechanisms in place…" **(P2)**.

The final minor code from the demographic barriers theme is those who are unemployed. This minor code specified that the word unemployed or made reference to unemployment rather than receipt of any kind of welfare benefits. When discussing the issues/barriers to internet adoption, Participant 12 stated:

"I think in our part of the world – Money and employment. In some cases, education that they haven't received yet for the want of a phrase" **(P12)**.

Participant 12 reveals a potential root cause of some of the issues for the digital divide in social housing tenants. The lack of fiscal support for local government and the social housing tenant potentially impacting in a number of ways.

5.3.5 Summary - The Demographic Barriers to adoption Theme

Interview participants discussed the age demographic in ways that were generally consummate with the general academic discourse, which was expected in some dimensions. There was mention of the traditional digital immigrant posit by Prensky (2001). If someone is a digital immigrant, they may be less familiar with the technology that is relevant to the internet. This presents a novel barrier that may have a number of dimensions. Discussion of the older age demographic follows, and individuals that are older may just say no and *"this is not for people like me"* instead of attempting to use the internet. A short narrative is also discussed later in the chapter around the older age demographic not getting education around the use of technology when they were in early years and secondary education – certainly in comparison to what takes place today. There is a short discussion of fear of the unknown and fear of what the media portray to those who are digitally excluded. The risks to those who do not understand the internet are viewed as high. This links to a discussion around financial issues, pension, and banking where those in the older age demographic are not as trusting and competent in using these online services. The Claim My State Pension online service provided by DWP is set to become the only method an individual can claim their old-age pension from the UK Government. There is a discussion around how the use of peer-to-peer learning is helpful in promoting internet adoption and how peer groups may help facilitate this learning.

For those individuals that face issues with low literacy, interview participants highlight how important literacy is to be able to successfully get online and use the internet. There is also mention of learning difficulties and how these make internet access more complex and uncertain for a digitally excluded individual. Being able to follow written instruction is also problematic for those that have lower reading and writing skills. 16.4% of individuals in the UK are described as having very poor literacy skills (National Literacy Trust). Whilst not all of these may be digitally excluded, this is a rather high number of individuals when examined in the context of the population of the United Kingdom. The influence of children is viewed as a generally positive influence over internet adoption with them being able to assist adults that require further guidance in getting online. Children are viewed by participants as having higher skills than some of their parents when using the internet. There was a lesser view taken that some individuals on a low income may prioritise feeding their children against buying devices or paying a monthly bill for internet service at home.

5.4 The financial elements impacting on internet adoption

The financial elements impacting on internet adoption theme links to the fiscal, financial, budgetary, income and debt ideals of individuals. This theme is particularly relevant to informing the RQ, with the highest number of code entries being made against this theme than any other. The codes selected that become part of the financial elements impacting on internet adoption theme are now discussed.

5.4.1 The barriers to internet adoption when receiving welfare benefits code.

This code considers the views of interview participants that relate to those individuals in receipt of welfare benefits. Welfare benefits and specifically the Welfare Reform Act 2012, were discussed earlier in the literature review chapter. A suitable place to begin and with a helpful statistic cited by Participant 1 is that:

"We have a lot of social housing in the city, and I think from the YHN point of view I think we have about 40% of tenants who have partial or full benefits" **(P1)**

Participant 2 discusses how much organisational research went into the welfare reform act by YHN and the reason why this is:

"… a lot of research on the part of YHN obviously because they were interested in their recovering that the rents want everything went online for YHN tenants [that are on benefits]*"* **(P2)**

This would indicate that YHN, from an early starting position were seeking to understand the welfare reform act and Universal Credit potentially with a view to supporting their tenants. However, this support may not have been tactically delivered to those on benefits for a multitude of different reasons. Indeed, at the peak of the Universal Credit introduction, YHN tenants owed YHN (their landlord) an estimated £1.1m in 2017 (Walker, 2017). YHN gave evidence about this failure to the Universal Credit select committee in September 2017 and the National Audit Office in February 2018 (Newcastle City Council, 2019). Participant 7 does not think that the British Government understands their responsibility to local authorities:
"The Government haven't got a clue what's needed, nor do they care." **(P7)**

This view is supported by Participant 2, who stated:

"no support for people who were going onto Universal Credit" **(P2)**

The wider view by interview participants **(P2, P7, P8)** is that the British Government is purposefully ignoring its responsibilities in providing support with Universal Credit. Even the British Government's own helpline had a per minute charge to talk to someone to get support – that is, if you could prove your identity and pass security on the phone. The quote from Participant 8 is particularly strong and relevant here:

"Particularly with Universal Credit and sort of in my view central government is abdicating its responsibility to local government in saying we have a system that works and that requirement for support falls onto the local government to support with Universal Credit in particular" **(P8)**

It was clearly fed back to the Universal Credit trial team by YHN that Universal Credit claimants needed more support in order to make their claim for benefit online:

"When we were part of the pilot for Universal Credit, we had people who were coming for help that were saying we don't know how to use a computer and we need to use it for this [Universal Credit]*"* **(P8)**

There was an assumption made by the UK Government Universal Credit team that because Newcastle City Library and other local authority buildings were able to provide support with some of the required support that there was some form of support in place that worked **(P8)**. The need for support might indicate that individuals needing this support lack the skills required to be able to claim and administrate their welfare benefit claims. Participant 2 touches on this, indicating that:

"..the introduction of Universal Credit online applications goes without saying people who don't have any digital skills I find it very difficult to undertake an online application." **(P2)**

Digital skills are considered in greater depth as part of their own theme later in this chapter. In order to afford to get online, to claim the welfare benefits you need to live, and possibly to be able to afford to get online – you need some way of getting online in the first instance. This is a complex barrier in itself. Participant 7 outlines this vicious circle best:

"Being able to afford to get online. Not everyone can afford a monthly connection bill" **(P7)**

"It could lead to debt spirals yet the government don't make it easy for people to get online yet want them to sign for their Universal Credit, apply for work and fill in their job logs all online" **(P7)**

This difficulty in being able to get online, apply for work, apply for welfare benefits may be done by design or proxy-governmental policy decisions. This however is not a good enough reason for Newcastle City Council to not challenge the UK Government policy and behaviour on this. Participant 2 indicating that those on welfare benefits may not be the British Government's priority:

"I think the people who are on welfare and benefits – that is not going to be the priority and even though they need to have the internet so they can claim benefits" **(P2)**

The Senior Management of YHN also grasp the seriousness of the roll-out of Universal Credit, with Participant 3 acknowledging that any mismanagement of an individual welfare benefit claimant can result in poverty and financial hardship:

"applying online for the Universal Credit and so they don't lose out or suffer any further financial hardship" **(P3)**

Participant 8 summarises the issues that Newcastle City Council and YHN face in supporting individuals that claim (or wish to claim) welfare benefits:

"[Claimants do] *a lot of applying for jobs online, a lot of the interventions that we do care about getting people into work and making sure they don't have to enter council service provision, and a lot of that is making sure people can transact online, and they can apply for Universal Credit online."* **(P8)**

5.4.2 The barriers to internet adoption when you have a low-income code

This code examines the views of interview participants around the barriers of having a low income. The measurement of low-income means is relative as there are so many variables around this. Individuals may be part of the earlier defined United Nations poverty group. They may have debt or may just spend what little they do receive – possibly in welfare benefits to living within their means (Newcastle City Council & United Nations, 2019). Participant 5 articulates this issue of relatively low income:

"I suspect its hard to draw really clear correlations between levels of family finance and digital inclusion. But in practice, there will be loads of families on very low levels of income who are fully [digitally] *included and there'll be families who are on slightly higher levels of income who will be* [digitally] *excluded."* **(P5)**

Participant 12 – an elected official at Newcastle City Council, refers to how individuals may have less money and disposable income than they may have had previously.

".. challenges are around [finance] is around the fact people don't have the shillings they used to have" **(P12)**

There could be a signal here that Government do not fully appreciate what low income truly is. This also exposes some of the economic pressures that individuals might face and how they have less money available to them and more competing priorities for the same money. Other interview participants **(P4, P5, P7)** also provided supporting comments around these economic pressures. These economic pressures allude to budgeting and affordability being an issue – how does one prioritise their limited income? Participant 7 directly links to this:

"Being able to afford to go online. Not everyone can afford the monthly connection bill it's like if someone works part-time, has children and gets benefits too" **(P7)**

Also, participant 6 linking affordability to internet products and bundling:

"Affordability is an issue, so I dunno what the cheapest is on the market is at the moment but if it is between £15 to £20 pounds a month and the difference is feeding your family or not" **(P6)**

Participant 5 also frames this clearly:

"At this point, digital is just not the thing you need, digital comes after rent, food, housing and clothing etc.… it just falls too far down the list for people to make that choice" **(P5)**

This again highlights the economic pressures faced by those individuals and families that have a low income. The choice for many is simple when it comes to being able to feed your family or to be able to get online. This may be a choice faced by many that are implicated in the United Nations poverty report cited earlier. These economic pressures are also not just around choices

for internet access in the home. If you do not have internet access in your home and you need to use the internet (such as claiming or administrating your welfare benefits claim described earlier in this chapter), then you may have to travel to a location such as a public library this was highlighted by Participant 2:

"They can't afford the bus fare in some respects when they are having to fill out the online [Universal Credit] *journal or look for jobs, so connectivity is a huge issue for some people"* **(P2)**

"to give our customers access to the internet financial challenges I mentioned before bus fares to libraries where they can access computers, and that's not readily available we are able to offer bus fares to people to come to our basic skills courses, but not a lot of places can offer that and the financial challenges that people face at this time of austerity" **(P2)**

This cost of travel is described as a significant barrier when you consider how much Universal Credit claimants receive per month to live on. Also, take into consideration the difference in price between a return bus ticket in London (where policy is made) and the price of a similar ticket in Newcastle-upon-Tyne. If the only way a claimant can administrate their Universal Credit claim is to travel on public transport to a location where public internet access is available, then this could cost up to £5.10 return in Newcastle upon Tyne or £0.75 in Central London. Whilst London receives significantly higher funding from the UK Government for public transport – they have a special rate for welfare benefit claimants to enable them to afford to engage in job searching more easily. This issue highlights other barriers than the cost of travel to those on a low income. These other issues picked out here are Government policymaking and the impact of Government austerity on local authorities. If local authorities had more funding, they might have been able to reduce the cost of travel for those claiming welfare benefits. Indeed this reduction of cost for public transport takes place in London but not the rest of the country (TFL, 2021). Whilst this is useful in identifying a barrier to public internet access, this research is not an examination of public transport policy and strategy. Participant 4 discusses how social housing tenants manage their money and how they find managing such a limited amount very challenging:

"it is probably a truism to say many of our tenants aren't very good at managing their money" **(P4)**

Individuals who are benefit claimants and social housing tenants that have a low-income live day to day and week to week. Participant 4 made some interesting observations about the lifestyle of those with a low income:

"Its unbelievable how a percentage of tenants who just basically live from day to day they wait for their benefits to arrive and they go out and spend them and there's nothing left, in fact, there is minus nothing left" **(P4)**

The previous remark from Participant 4 suggests that not only low income is an issue but that it may link to individuals getting into debt. Three Interview Participants **(P3, P10, P14)** felt that the financial barriers were the biggest barrier to digital inclusion:

"I think [Financial] is the biggest one out of the three by far." **(P10)**

5.4.3 The cost of devices as a barrier to internet access code

This code examines the views of interview participants around the costs of devices as a barrier to internet access. The price of the costly Apple devices and Samsung devices may be as relevant as affordable access to the less financially expensive Amazon and Google devices (West, 2015). Linking to the low-income code, Participant 1 their view on one of the primary thoughts of individuals:

"We know people have limited funds available to them, and I think if given the choice, they'd rather pay their rent and feed their family than pay for a device that helps them get online" **(P1)**

This view is widely supported by the Interview Participants **(P1, P2, P9, P5, P12)**. Participant 9 examined the cost of device challenges around device ownership through the lens of pure capitalism, taking focus at cost and expense:

"I think the main financial challenges would be getting a device to get you online. I think it could be something like a google Chromebook could be a coup of hundred pounds. To someone on benefits or even minimum wage, that is quite a lot of money. Erm that is a basic computer device, obviously people have smartphones which can be quite a bit more expensive. They can be quite a lot more money than a Chromebook" **(P9)**

The above view of the cost of devices and how expensive they are is widely supported by Interview Participants **(P1, P2, P4, P5, P8, P9, P13)**. The participants listed were all participants who made remarks or comments about the fiscal cost of devices as a barrier.

Participant 1 outlines the lack of resource to put into a device as a barrier:

"cost is always a factor, and I think it can be prohibitive in the fact that we have some tenants who are on benefits and obviously they have a lack of resource to put into that device or to get online in the first place" **(P1)**

Linking to this lack of resource, Participant 11 discussed how tenants and other individuals might get into debt to buy a device. There was no discussion as to why this is a barrier or issue but clearly, if you have limited income to manage, having debt is not a positive:

"The initial outlay of buying kit – of buying computers in general and keeping up the payments for it if you like and making sure that it is worth it" **(P11)**

In this "*cost of devices as a barrier to internet access"* code there were also several comments that linked the cost of devices to the parallel cost of having internet service in your home. Participant 8 discusses this in the context of the free internet service (not devices) provided by the City Council across the city:

"the costs associated with having a broadband provider are real. YHN and other housing associations have done a lot of work to ensure there is access for people, and I think having spoken to YHN in the past, they were saying its less of an issue for people having access to wifi" **(P8)**

This view is held by some of the other senior manager grades at YHN and Newcastle City Council **(P3, P5, P8, P9)** as they believe that free wifi is more widespread in YHN properties than it actually is.

5.4.4 The cost of internet access as a barrier to internet access code

This code examines the views of interview participants around the costs of internet access as a barrier to internet access. Generally, the fiscal cost of internet access varies between geographical area, service provider, the speed provided and a number of other variables.

Affordability of this fiscal cost, however, is a different element to consider. Participant 1 introduces the cost of internet service as a factor with this statement:

"cost is always a factor, and I think it can be prohibitive in the fact that we have some tenants who are on benefits and obviously, they have a lack of resource to put into that device or to get online in the first place." **(P1)**

This links the cost of devices (from the previous section) to this code – the cost of internet services as a barrier to internet access. This combines these two codes and demonstrates an analogy of the two with many similarities – such as the expense, the lack of resource and the fact there has to be a desire for a product to be delivered to the individual – whether this is a tangible device or a less physical internet service. Taking a view on the fiscal cost of internet, Participant 6 states:

"Then you have a monthly outlay for an internet-capable line for your home, and it can be as much as £30-£40 a month" **(P6)**

This shows that there is a general understanding of the cost of internet access to the interview participants, but this needs to be considered from the point of view of someone who may not be able to afford the associated costs. Participant 7 outlines the issue of affordability and those who may be most likely affected by it:

"Being able to afford to go online. Not everyone can afford the monthly connection bill if its like someone works part-time, has children and might get some [welfare] *benefits too"* **(P7)**

Interview Participants 1, 2, 3 and 11 all made similar supporting statements around the monthly connection bill and the affordability and cost of broadband to those with lower income and how it represents a barrier. A barrier that resulted from further development of an answer from participant 4 highlighted the struggles that tenants and other individuals might face getting into debt if they have to run a monthly budget:

"they can see that they have to pay £35 to £40 per month for a broadband package including a telephone package – all combined" … "They could start missing payments, and before they know it they will be racking up two or three hundred pounds of debt" **(P4)**

There may also be a lack of understanding about what is considered affordable broadband. There appears to be some duality from Interview Participants in regards to this. Interview Participants 1, 2, 3 and 11 made statements supporting how costly and unaffordable broadband may be for some individuals. Participant 4 (a current YHN employee) took an interesting view that broadband was inexpensive, accessible to all tenants and well distributed:

"I think we've now got to a point where its now possible to access the digital world for free." **(P4)**

and

"Data packages on smartphones are relatively inexpensive" **(P4)**

These comments from participant 4 should most probably be taken in the context of the earlier low-income code discussion – relatively inexpensive to one may be prohibitively expensive to another less affluent individual. This is where low income should be considered from a relative perspective and where someone that only receives welfare benefits would be considered on a lower income than someone who for example receives a minimum wage. The comments originate from someone that will be fairly affluent in comparison to someone who is in receipt of welfare benefits – this may skew the individuals perspective on this topic. Participant 8 nicely summarises the basic points in this code section:

"The basic challenges are affording the basic cost of having to have all those things that come with it, the device itself; it's the broadband service or the software needed" **(P8)**

Again, linking to the previous code, Participant 8 links back to the cost of the device being a barrier as one of the basic requirements to be able to access the internet but also includes the cost of the broadband service and the software required to get online safely.

5.4.5 Minor codes from the financial elements impacting on internet adoption theme

Codes from the financial elements impacting on internet adoption theme that feature less than five occurrences and that add some value to the research are: *Using the internet to save money* as a driver and *the bundling of digital services* as a driver. Linking to the *Using the internet to save money* code, participant 1 stated a commonly cited driver around saving individual's money by going online:

"… we know that if people go online, they get the best prices for things and can actually save money" **(P1)**

The statement from Participant 1 is supported by other Interview Participants **(P1, P2, P4, P12)**. These interview participants all have contact with social housing tenants regularly and also understand the benefits to tenants by being online – one of these is by being able to get cheaper prices for goods and services by being online. The statements from interview participants around bundling of services were limited in number but relevant to the research. Participant 10 stating:

"We find that a lot of people will get it as part of their TV Deal. I think a lot of people make misconceptions around the financials." **(P10)**

The other comment relating to the bundling of services as a driver is from Participant 4 in discussing the costs associated with a broadband package and how they might get into debt having to manage monthly payments.

5.4.6 Summary - The financial elements impacting on internet adoption Theme

The barriers that interview participants posit that welfare benefit claimants face appear to be threefold.

Being able to access support from Government when attempting to claim Universal Credit online, specifically the cost associated with contacting helplines and the lack of support available from Newcastle City Council and YHN. Being in receipt of welfare benefits in the general view of the interview participants is a barrier to getting online. The barriers that are identified reach to areas that might be addressed by Government policy. Policy could also address the affordability of internet technologies and give national parity to those individuals on a low income with public transport to allow them to travel more easily to public internet access sites. The lack of meaningful Government policy is a significant problem for getting individuals support who need help in applying for and administrating their welfare benefit claims so they do not face sanctions (suspension of benefit) for failing to complete basic administration tasks (such as completion of logs). Participants indicated this problem occurs because there is no funding to provide the staff required to provide this service.

Finally, having the money to get online may require that an individual can claim for their welfare benefit, and they need to be able to get online to complete their claim. Under some circumstances, this could be a vicious circle. The policy could also offer some help around affordability of internet technologies and give parity to those individuals on a low income with public transport to allow them to travel more easily to public internet access sites. Truly understanding what low income means to Governmental organisations is challenging, The focus in these organisations is the delivery of their service by the applied rules and context is often lost. The narrative of the UN Poverty report also suggests that individuals with a low income face unique economic pressures and frequently have to choose between being able to eat or being able to get online (or some other relative luxury).

There is also discourse around how difficult individuals find it to manage their money when they have a very low income. The high fiscal cost of devices against the relatively low income of social housing tenants and other excluded individuals causes issues as the cost of devices is a barrier to internet access. Interview participants link the cost of devices to the cost of internet access as a barrier – the similarities are outlined in these codes. The risk of getting into unmanageable debt to go online is also mentioned but not widely supported or mentioned by participants.

5.5 The barriers that impact individual adoption

The *barriers that impact individual adoption* theme are factors that consider the individual as a whole. This theme is not interested in individual demography – this relates to more subjective factors such as those considered here: fear of the internet, internet trust concerns and ease of use. The codes selected that become part of this theme follows.

5.5.1 The fear of the internet as a barrier to internet adoption code

This code reports interview participants views and remarks that connect to individuals and social housing tenants being afraid to go online. This is best outlined by Participant 12, who is a locally elected councillor makes several comments that were selected to fit into this theme. The first and most poignant is:

"Some people are afraid of it [the internet]. *Some people are frightened to be around it. We need to get that balance of how it does work and does not work."* **(P12)**

"There's a big trust issue still with some people and getting online." **(P10)**

The Oxford (2021) dictionary definition of fear is "the emotion of pain or uneasiness caused by the sense of impending danger, or by the prospect of some possible evil.". This fear and stated balance is something that needs to be addressed by a group or agency in order to break this barrier down.

"Sometimes fear? Older folk are worried that they get online, and they can be robbed, they can have their bank accounts taken off them." **(P12)**

Interview Participant 10, who has a role with Newcastle City Council relating to the education of citizens around trusting materials and media online, feels that:

"… I'm not convinced that connectivity is the key issue, but certainly, there must be something else around, whether it's skills, confidence or trust. The media put a lot of people off going online with their horror stories" **(P10)**

What individuals see on television and read in the newspaper about trusting the internet is a cause for concern, with several interview participants **(P10, P12, P14)** making remarks in agreement. For example, participant 12, when discussing how to address this fear, stated:

"a bit of fear, and we probably need a bit more education to address that." **(P12)**

This lack of education may offer a link to those individuals discussed earlier that may have low literacy. This low literacy is separate to low digital literacy – struggling to read and write is the understanding being articulated here. The absence of a computer in an individual's classroom also appears as a possible instance as to why some individuals may be afraid to go online. Participant 10 speculates that gaining the digital skills, experience, and confidence may be a remedy to this fear:

"There's a definite trust [thing?] *there, and unfortunately, you know, fraudsters and the like are more and more prevalent in terms of trying to take advantage of those who might not have the digital skills, experience and confidence to know where they are looking and where to navigate."* **(P10)**

This links to the skills and training theme examined later in this chapter. It is helpful to note that a proposal to resolve the emotion of fear in social housing tenants and individuals was

considered in parallel with the problem when the question of the drivers and barriers was asked. Participant 10 holds a digital development role within Newcastle City Council. It is interesting to note that this is their view whilst simultaneously being unable to drive this view meaningfully due to the UK Government austerity programme and lack of funding available to Newcastle City Council (Seddon, 2019). Participant 10 implied after the interview that this might result in Newcastle City Council staff being unhappy in their roles and leaving the employ of the local authority and going into private businesses. This results in those staff taking the knowledge and experience of those local individuals and social housing tenants being digitally excluded and, most importantly, the solutions required with them into the new private business.

To take the narrative back to the fear of the internet as a barrier to going online – Interview participants **(P6, P10, P12, P14)** discuss how this fear of the internet is more prevalent in those of the older age demographic:

"The big issue for this for the older folk is fear!" **(P12)**

"… Some older people are scared if they go online that their details or money might be taken" **(P14)**

This narrative of fear from the older demographic may link back to the absence of a computer in an individual's classroom. Those from the older demographic will have left school at 14-16 years old and will never have had a computer in their classroom. They will have to have gained their confidence and digital skills elsewhere. Skills and training are discussed as to their theme later in this chapter. However, a possible solution suggested by participant 12 is:

"Don't let people be frightening of it" **(P12)**

This suggests that training, education, and confidence-building is key to breaking down this barrier. The big issue around fear in the older demographic is the viewpoint:

"I'm not using that." **(P12)**

When discussing the internet, many excuses mask what appears to be fear of the unknown and the concern about how the internet might negatively impact their lives in some way. For this to be overcome, individuals may need an education (or training) that builds confidence in what they want to do.

5.5.2 The impact of online systems and processes that facilitate internet adoption code

Online systems and processes made available by Governmental Organisations, Businesses, Banks and other institutions all impact those individuals that may be forced to use these systems. The most prominent online system mentioned by all interview participants was the Universal Credit online system. The many systems and processes aimed towards members of the public have several different dimensions referenced by the interview participants. Participant 2 discussed how organisations build a system to support the organisations own business process rather than create something that is readily usable by a potentially digitally excluded individual:

"I think the things I find the hardest is that most accounts in most portals that organisations set up for people to access and get online aren't customer friendly at all. They are designed in a way that supports the process behind them" **(P2)**

The main system that is most likely being examined here is the Universal Credit system. This online system can be changed weekly by the Department of Work and Pensions. This may make it difficult for individuals who struggle to get online to use the system in a useful manner, not just supporting the back-end business processes of the Department of Work and Pensions. Participant 2 also cites the issues in creating accounts:

"The actual issues of signing up to accounts that we find the hardest for our learners" **(P2)**

Participant 1 disclosed how YHN is trying to build a better online system with one set of login details—also changing the repairs process to make it easier for tenants to get access. The present customer-facing process is complex and is designed to make the task of dealing with a repair easier for YHN and Newcastle City Council. Participant 1 feels that the new website will look and feel like the Newcastle City Council Website, which will help consistency for those unfamiliar with the internet. Participant 10, who is responsible for the development of some of these services, states:

"So I think we could make our services easier to access online. There's a definite issue that I think people could try to go online [to use council services] *have a poor user experience, and not go back online again"* **(P10)**

Interview Participants **(P1, P2, P10)** think that one of the most important points is the simplicity of the process. However, Participant 10 (Newcastle City Council – Digital Developer) feels strongly about use of the Government Digital Service (2019) principles:

"I think we need to make sure what we are putting out there is good from a user research perspective and is developed in a user-centric way and adheres to the GDS principles." **(P10)**

The points to take away here are that there are many online systems – especially from Your Homes Newcastle and the Department of Work and Pensions that may not be designed in such a way that they are as friendly as possible for those who are the most digitally excluded.

5.5.3 Minor codes from the barriers that impact individual adoption theme

Codes from the *barriers that impact individual adoption* theme that feature less than five occurrences and that add some value to the research are: *individuals who are left behind as a barrier to internet adoption* and *the internet not being important to everyone* codes. Participant 5 outlines the left behind code in the best way with their observation of the parallel economy required to support those who are left behind:

"I think for a whole range of reasons, at one extreme the ability for the country as a whole to progress and compete requires an ability with engagement with everybody so whether that is commerce or education or whatever you have a proportion of the population who is not digitally included then you have to run a parallel economy" **(P5)**

This described need for a parallel economy to support those who are digitally excluded neatly explains a current issue that many first world countries face where those who are digitally excluded suffer the consequences of not being able to access the digital economy. One of the major consequences of the parallel economy is the additional expense to business. To consider the code *the internet not being important to everyone,* there are fewer coded remarks, and fewer interview participants **(P11, P13)** held the view that the internet may not be for everyone or suit everyone:

"I do think there are a group of people who say that it's just not for me" **(P9)**

and

"There is also a lack of interest in it so a lot of older people will not be interested in it because they do not see what they can get from it" **(P6)**

Alluding to remarks from interview participants earlier in this chapter, those who do not see what they might be able to get from using the internet could have their view on this changed with education, training, and confidence. Education, skills, training, and confidence are starting to emerge as key themes to challenge many of the concerns and issues faced by the digitally excluded.

5.5.4 Summary - The barriers that impact individual adoption theme

The irrational fear of the unknown from those who are digitally excluded is highlighted in this theme, with some suggestions that education, training and confidence can help challenge this fear. This fear is promoted through stories that might appear in the media. The media are playing a key role in generating fear in the digitally excluded and pushing them further away from going online. Lack of funding is tentatively linked to the challenge of providing this training (and is discussed later in this chapter). Interview participants feel that the older age demographic is more likely to be susceptible to this fear of going online, and there are some reasons why this might posit. The impact of governmental and organisational systems design is also referred to as a barrier that impacts individual adoption. Following the GDS principles is something proposed by participants that might help to remedy this situation. There is a discussion around how those that are forgotten or left behind might need support from a parallel offline economy and how this could cause other issues. There is also note that those from the older age demographic may feel that the internet *is not for them*. Earlier remarks that will be examined in more depth later in this chapter feel that provision of skills, training, and confidence could help remedy this issue.

5.6 The factors that impact skills, training and education that relate to internet adoption

The *factors that impact skills, training and education that relate to the internet adoption* theme is a set of codes that link to the provision or lack of provision of skills, training and education in relation to internet adoption or use. The previous themes have made reference to the content of this theme.

5.6.1 The issues and importance of digital skills code

The earlier literature review chapter discusses the multiple issues that link to digital skills and the lack of digital skills in individuals and social housing tenants. The findings from the interview participants examine some of these issues and highlight the importance of digital skills. Participant 8 takes a wider view around digital skills that links back to some of the other codes and themes discussed earlier in this chapter:

"I think some of it is down to digital skills, some of it is down to literacy issues. I think confidence is still an issue, we have people who are happy to use computers we still have people who are nervous about using it for banking because of scams and things, and they know it works, but they are scared that they may do something wrong or get it wrong" **(P8)**

These remarks from Participant 8 links many of the points made earlier in other themes and codes that connect to digital skills. Other Interview Participants **(P1, P2, P6**) also take the view that digital skills are important to get individuals going online. Interview Participants **(P1, P2, P4, P8, P12, P14)** all make supporting comments and remarks about how digital skills are key in successfully using the internet. Participant 5 states:

"… it's now more about skills and familiarity rather than the technology" **(P5)**

and Participant 10 stating:

"It might also be about literacy and digital skill." **(P10)**

Without these digital skills, individuals will not have the knowledge, confidence, or know-how in order to get online. Interview Participants **(P1, P2)** take the view that there are specific groups that are more likely to lack these digital skills to get online. The older demographic was the

most cited group that are likely to lack these digital skills **(P1, P13)**. The importance of providing training to those that lack digital skills is also mentioned in terms of gaining proficiency and confidence:

"I did a course got the basics and sat for a few hours each day and taught myself. I think I am 75% - 85% good with it and yet there are still things that I cannot do" **(P12)**

Being able to gain proficiency is important, but Participant 2 indicates this may not be an option for everyone due to some being too afraid to seek help. Even so, the issues described here are considered by Participant 10 as issues that are wider than the individual and will eventually affect the wider community in the City of Newcastle upon Tyne:

"When it goes past the barriers of just people who interact with the council, and it becomes about the digital literacy and inclusion of the city and that has to be a much wider and much more coherent thing and like we all play our certain roles in it." **(P10)**

This highlights the importance of digitally including everyone in the city and not just those that seek out the extra help. It also implies there should be a deliverable citywide strategy to do so.

5.6.2 The importance of and issues with the provision of training code

This code that highlights *the importance of and issues with the provision of training* around use of the internet. As mentioned earlier in this chapter a number of other codes and themes connect to this theme and particularly this code. One of the main issues highlighted by Interview Participants **(P1, P2, P4, P12)** is around the timely provision of training from the point of conception that digital skills may be required by all to interact with confidence online:

"Support and infrastructure should have been put in place from the beginning, and luckily now we do have wrap-around support for all residents of Newcastle from a digital computer training [point of view]*"* **(P2)**

Participant 2 leads on to point out:

"... there is not enough support for these people to get online, specialist support to help people from the very basics this helps to build confidence" **(P2)**

This insufficient support is linked by Participant 1 to the lack of resource available to do education:

"…lack of resource available to do that education, obviously the city council has a digital inclusion officer" **(P1)**

These comments from Participant 1, when put in the context of the previous comments of Participant 2 that outline the lack of support. May lead to the viewpoint that the single role of Digital Inclusion Officer (held by Participant 2) may have insufficient capacity to support the delivery of digital skills training for Newcastle City Council. One individual may not be enough to deal with all those who live in the city that may need digital skills training to address their issues or inadequacies around digital skills. This lack of support may be caused by the macro-political and regional political factors themes narrated later in this chapter. An item that compounds the lack of support issue is an item mentioned by Participant 1 is that the Department of Work and Pensions – JobCentre Plus locations also send individuals to these poorly supported and resourced training activities that Newcastle City Council runs. This makes a bad situation worse given the already limited resource available. The variety in how digital skills training is delivered is also noted with Interview Participants (P1, P2, P10). The training is usually one-off sessions where the standard classroom approach is utilised, in addition to the *techie tea party* format. The *techie tea party* is like the classroom format but is operated in a different room with softer furnishings and is targeted at the older age demographic where at the midpoint of the session and at the end they get a cup of tea. Participant 2 describes how:

"We teach them how to use a mouse, how to use a computer and how to access the internet" **(P2)**

Participant 14 describes how important it is that:

"[we] *create more of a community around it and peers helping peers"* **(P14)**

This instruction of basic digital skill with the combination of community building and peers helping each other. A final observation from the available coded interview data in this lower order code is that Interview Participants **(P2, P11, P13)** feel that:

"Improve the advertising for the beginners' level courses on offer and make them very accessible" **(P13)**

"again, there is no signposting of specialist courses not enough signposting of special courses available for individuals…" **(P2)**

This gives an indication that awareness of the availability of this digital skills training may be an issue. That is attracting those who are digitally excluded to attend a classroom where they would be exposed to online and digital learning from the most basic level. One of the issues with this is if the training is targeted at digitally excluded individuals, it means these individuals cannot be the target of online advertising. This leaves the only proposition to target these individuals is word of mouth, and traditional advertising means such as the newspaper.

5.6.3 The Confidence is key to drive internet adoption code

Confidence is cited by interview participants as a key driver in internet adoption. This is confidence in being able to use devices, internet services and the businesses that are found online. This code links to the earlier *fear of the internet as a barrier* code as its antithesis – indeed, confidence given by the earlier narrated digital skills may aid in driving adoption and eliminating this fear. Participant 14 states how important confidence is in driving internet adoption:

"Confidence is a massive thing. Convincing people that they can do it and I've watched technology intimidate people for all sorts of reasons" **(P14)**

Participant 14 who is employed as a digital skills trainer, goes on to explain that the benefit of digital training is the promotion of this confidence:

"If they [individuals] *had a bit of digital knowledge, you would be giving people power and knowledge back to them. It really is a knowledge is power situation, and it is a confidence thing, so I want* [people? *inaudible*] *to ask that question and not think I'm going to look like an idiot"* **(P14)**

Participant 2, 11 and 14 all agree when explaining that when providing this digital knowledge, you do not teach by the task to promote confidence:

"… not just teaching by task but by giving people the general confidence they need. Organisations need to do this too" **(P14)**

Participant 14 goes on to explain about getting people in the community involved and helping to spread that confidence to others. Peer group learning is again highlighted by Interview Participants **(P2, P8, P14)** as a critical way of spreading confidence in individuals. Participant 5 expands on this further, explaining:

"its more to do with peer group and the learning bit that people get from being part of a peer group cohort who are all digitally included and if you are at school and all of your friends are using social media and so on and so forth, its natural for people to do the same thing as their friends" (P5).

Participant 14 explains that this peer group cohort of digitally included individuals may not be a club that everyone can join:

"Finance and confidence are big things" **(P14)**

This links the financial elements impacting on internet adoption theme to this lower order code of the importance of confidence. This link is relevant when cited by Participant 4 as those with higher levels of education are likely to have fewer problems following instructions online:

"I think there is the groups we tend to look at tend to have a higher level of educational problems and they tend have not actually done well in things like literacy and things they're not able to follow instructions to do this that and the other" **(P4)**

Participant 11 nicely sums up the issues revealed for this lower order code:

"Its just about building confidence, what services are available, how to access them and overcoming that fear that they are going to do something wrong." **(P11)**

Building confidence by providing the digital skills available for individuals to safely and confidently access online services that will result in overcoming the fear that individuals will make an error, mistake or have their information or money stolen from them. An indicator that someone is confident may be how proficiently they can complete a task online. Confidence is key as having this confidence allows individuals to attempt to meaningfully engage with online services and adopt the internet as a tool.

5.6.4 Minor codes from the factors that impact skills, training and education that relate to internet adoption theme

Codes from *the factors that impact skills, training and education that relate to internet adoption* theme that feature less than five occurrences and that add some value to the research are:

The fear of the classroom as a barrier to internet adoption and *the impact of device specific skills* codes. Interview Participants **(P2, P4, P14)** felt that that the classroom can be quite an intimidating experience for an individual who is perhaps not used to learning or has not been in a learning environment for some years. Participant 2 cites how her learners feel intimidated going to Newcastle City Library:

"Even coming into the library to do a course is very threatening to them" **(P2)**

In relation to *the impact of device-specific skills* code, the interview participants discuss device-specific skills such as completion of a claim form to claim welfare benefits and applying for a job. Participant 2 expresses her frustration at the difficulties faced by Universal Credit Claimants:

"most people who have a smartphone know how to use them as a phone but they don't actually know how to use the phone to get onto the internet to send emails in order to set up the Universal Credit account" **(P2)**

Linking to this use of email to administrate a Universal Credit claim Interview Participants **(P2, P9)** felt that the use of a smartphone to complete a form might be problematic for a number of individuals as the screen may be too small to enter detailed information. The device does not suit the task it is needed for, and this may digitally exclude individuals due to the unsuitability of their device for the task at hand.

5.6.5 Summary - the factors that impact skills, training and education that relate to internet adoption theme

The importance of digital skills is highlighted in this code, along with how essential these skills are to make successful use of devices and the respective internet technologies. Literacy is also cited by interview participants as a driver that aids successful internet adoption. The provision of these digital skills in terms of classroom-based or community-based training and peer group support training is outlined as some individuals may not seek training outright for reasons such as fear of the classroom and taking the view that the internet is not something they are interested in. The skills training sessions are a one-off activity which prompts the question of what happens in the future? Skills require constant attention and practice, without this those that are borderline adopters may lapse and return to being offline.

Resourcing of training activities is viewed as a problem – specifically by interview participants who work for Newcastle City Council. This is examined further in this macro and regional political impacts sections. The training that is provided is viewed as a key driver to promote confidence in digitally excluded individuals. This confidence appears to be key in getting those who are excluded from engaging with online services and the internet. Two minor codes were reported which related to device-specific skills and the problems individuals might face using a smartphone to complete forms, and the fear of the classroom where individuals who have been out of mainstream education for a long time may not wish to re-enter that environment.

5.7 The Macro political impacts on internet adoption

The *Macro political impacts on internet adoption* theme are factors that consider how power is utilised and how decision-making impacts from the national level (Blasé, 2002). In the application of macro-political to this theme, the research will examine the Government austerity policy, Government policy-making and Government online services.

5.7.1 The UK Government Austerity Policy as a barrier to internet adoption code

The UK Government Austerity policy was one of the most frequently coded responses made by Interview Participants. For example, participant 1 discloses that Newcastle City Council has had its funding significantly reduced by the UK Government:

"Newcastle City Council has had a lot of money take off them from Central Government" **(P1)**

These funding cuts are causing all local authorities in the United Kingdom to reduce their staffing headcount. These cuts also result in some of the services that these local authorities provide closing; other services are driven online to reduce the cost per citizen interaction:

"… Governmental cuts causing reductions in city council staff. Which is forcing us to go down a digital offer" **(P11)**

Participant 3 feels that the UK Government have a responsibility to provide funding for local authorities and to help individuals get online:

"I feel they [the government] *have a fundamental role to play in making funding available for local authorities and the public sector to get better at nudging people towards online services"* **(P3)**

This is supported by a frustrated Participant 7:

"The Government do not fund plans or laws that help people get online, and that just makes it harder for everyone else. The Government are slowly stripping away at the council." **(P7)**

Participant 7 takes issue with the intent behind the austerity policy. The UK Government is cutting the funding to local authorities with a view that local authorities have to change and adapt to make themselves leaner to attempt to continue to provide the same levels of service.

Participant 9 refers to the lack of any plan from the UK Government on how local authorities are expected to react:

"There isn't a plan. The government are saying we are going to cut Newcastle City Council's budget by X amount per year and you are going to have to do things with digital instead, but there is no additional funding to provide digital services instead." **(P9)**

This lack of a plan is not just a fault of the UK Government – indeed, they know and plan to cut the budget from all UK local authorities as this is their long-term plan. The lack of planning may also be an issue on the part of Newcastle City Council. Newcastle City Council has received less funding year on year since 2008 (Breadline, 2019). It may be unfair to entirely blame the UK Government for the lack of digital inclusion in Newcastle upon Tyne. One of the themes of the 2010 UK Government was the Big Society. This was where local communities and volunteers play an active role in service provision (HM Government, 2010). Participant 7 notes that Newcastle City Council struggles to work with other agencies:

"They [Newcastle City Council] *could work better with the other charities and agencies in the city. The Council have a reputation to be hard to access and hard to work with. I can only imagine that this is because of the lack of government funding they receive…"* **(P7)**

To balance this argument Participant 8 mentions the political climate and how there is a feeling within Newcastle City Council that central government are abdicating their responsibilities towards citizens:

"… I suppose from the council point of view is the same as most it ties into the political climate as well is that the challenges are the more and more as library services are seeing central government are abdicating their responsibility for things and pushing it towards local government or at the very least you get central government saying that's a local issue and local government saying that central government have cut our funding and the citizen gets stuck in the middle" **(P8)**

This could mean that Newcastle City Council is unable to or reluctant to provide services that may be demanded by the citizen when they are not funded appropriately by the UK Government. Newcastle City Council are forced to focus on delivery of their statutory duties and digital skills training does not fit into the category. This leaves the citizen that may need support *in the*

middle or without the support and unable to challenge as no public body takes responsibility. This abdication of responsibility is particularly interesting in the case of the Department of Work and Pensions - Universal Credit welfare benefit. As discussed earlier in this chapter and this research, individual claimants are responsible for their own online administration of the claim process to continue to receive welfare benefit payments. Participant 8 cites the issues they face in being unable to provide support to Universal Credit claimants when working in an environment where the device and internet connectivity is provided to members of the public who frequently use Newcastle City Library to curate their claim. Interview Participants **(P1, P8, P10, P11)** recognise that the UK Government Austerity Policy will create organisational challenges for local authorities and that going down the digital route is an appropriate decision to take in response:

"I think the organisational challenges for local authorities come down to finance and budgets. I think we make a lot of decisions in the past to go down a digital route, and this has been a response to austerity and budget cuts because digital transactions cost us less than a face-to-face transaction" **(P8)**

This suggests that a potential solution to the UK Government Austerity Policy would be to respond to the organisational challenges by moving to a digital route where possible. If the issues linked to working well with other agencies were addressed, this might be a suitable longer-term strategy for Newcastle City Council and YHN in response to this agenda.

5.7.2 The absence of UK Government Policy as a barrier to internet adoption code

The *absence of the UK Government Policy* code links to the previous code of the *UK Government Austerity Policy*. The *UK Government Austerity Policy* enforces budgetary cuts against local authorities in the United Kingdom. This code is more specific in examining the UK Government Policy that might specifically be a barrier or drive internet adoption. Participant 6 alludes to how poor the UK Government policy writing is:

"I don't know what the council or government are doing at the moment. Historically I can imagine that government have been poor at introducing and writing policy that's aimed at getting people online and the council have been only marginally better at bringing initiatives forward" **(P6)**

Participant 7 outlines the clear lack of UK Government policy in the digital inclusion portfolio:

"The government need a clear policy to address the have nots in terms of skills, knowledge and technology. Its no good just paying a technology company to install high-speed internet if people can't use the stuff because they don't have the devices or the knowledge/skills or how to get them going" **(P7)**

These two remarks from Participant 6 and 7 indicate there appears to be no coherent, transparent and fiscally supported UK Government policy for dealing with those who are digitally excluded. There seems to be a belief that Newcastle City Council has more of an idea about how to engage with digitally included those included than the UK Government have a strategy to do so. Interview Participant 9 (a senior manager with Newcastle City Council) is unclear as to what policy exists and how it is applied:

"I mean, there are some national groups and policies but I'm not quite sure" **(P9)**

This lack of clarity is a note of concern for someone whose role involves the development of digital services at Newcastle City Council and the engagement of those who are digitally excluded. It does highlight that this may not be the fault of the individual concerned. Participant 7 places this responsibility with the UK Government:

"The government haven't a clue what's needed, nor do they care." **(P7)**

Participant 4 speculates that:

"Government policymakers live in the 1950s before the internet was invented" **(P4)**

From the point of view of Newcastle City Council and YHN officers, this signals that the policy around digital inclusion is mainly absent, unclear, or, as mentioned in the previously narrated *UK Government Austerity Policy* code – improperly funded. Linking these issues to other identified problems outlined by Interview Participants **(P5, P6)** discuss what they call the de facto policy:

"It feels to me that a big part of the de facto policy – it's never been anyone's policy but the status quo as it were – the policy as it were has been wait and let the technology catch up, the technology will get cheaper, the technology will get better, the people who are older will die, the people who are currently in school will be come the consumers of tomorrow. If we just wait, it will sort itself out." **(P5)**

This view by Interview Participants **(P5, P6)** indicates a lack of leadership, understanding and willingness to address the issue on the part of the UK Government. It may also suggest that the UK Government has made a conscious choice to take this route of allowing everything to catch up rather than invest fiscally in digital inclusion, or addressing it with the policy may also involve budgetary spending. Several other issues stand out where Interview Participants remark how they may be an issue, with Participant 14 referring to the problems of technology access in rural areas:

"When it comes to putting broadband in and reliable broadband in where its needed, so rural locations and places like that. I feel the government have a long way to go" **(P14)**

This remark connects to the UK Government's failure to provide reliable and fast broadband to those typically outside of traditional population centres. The UK Government abdicate this responsibility to business and the market forces that drive such provision. Participant 14 also makes remarks linked to digital education:

"Digital education I think the whole thing needs an overhaul I think the government need to look at it from a different viewpoint" **(P14)**

This may relate to the failure of the UK Government to make any provision that connects to digital education and training for those who are digitally excluded. Participant 8 posits that areas that are politically at odds with the UK Government are also likely to suffer further funding cuts:

"I think the political climate is difficult as well when you work in a local authority or regions of the country where there are at odds with central government – so the residents of Newcastle could be up in arms with the central government and the [current] *conservative government could not care."* **(P8)**

These comments may relate to a conservative ruled UK Government using its political power to make operational, strategic, and tactical services more difficult in the labour party-controlled Newcastle City Council local authority area.

5.7.3 Minor codes from The Macro political impacts on internet adoption theme

Codes from the *Macro political impacts on internet adoption* theme that feature less than five occurrences and add some value to the research are: The necessity for *Online Services and the issues with digital development.*

In terms of *online services* provided by the UK Government Interview Participants **(P1, P3, P12)** there is widespread agreement that these are generally good and improving year on year:

"I've actually done as a citizen myself applied for a passport online, I already had a passport so it was a renewal, and I could use my driving licence as part of that process to prove who I was and everything was done online and use a photograph taken on my own home and actually that was recognised as good enough as an online process, and I didn't have anything outside of the online process, and it was great, but there isn't enough of those examples. I moved house a couple of years ago and changed my address and council tax, and there was a range of ways that I had to do it, and I had to prove to the council that I was the same person that I was the day before I moved, and it was all a nonsense" **(P1)**

The reasons for this may be linked to services such as passport and driving licence being funded by the UK Government. Council Tax is a locally provided service by Newcastle City Council, which is identified as having funding issues because of the UK Government Austerity policy. Given that all local authorities collect council Tax in the United Kingdom, it is somewhat of an anomaly that there is not one set online platform for citizens to do this. The *digital development* code links to the *online services* code as the output from digital development as an activity are online services that provide services to citizens. Participant 1 (who works as a digital project manager at YHN) states:

"moving things online is an expensive exercise for organisations" **(P1)**

This alludes to the financial struggle that Newcastle City Council and YHN face in order to get their existing services fully online in order to save money on their already limited budgets. There is some frustration noted from Participant 8, who notes:

"I think the government one is a trickier one, and I have an element of sympathy in terms of different parts of government and council are trying to put things in place, and they claim to do a lot of work around and do a lot of user testing and UX [User Experience]*"* **(P8)**

It may be that there is a mismatch between the funding received by UK Government agencies to get individuals to use online services and the funding received by Newcastle City Council and other local authorities to drive individuals online. These comments illustrate the two tracks of Government and how one appears to build robust systems that are likely to have a high financial cost and that Local Government receive much less funding yet are expected to do the same.

5.7.4 Summary - The macro-political impacts on internet adoption theme

The UK Government Austerity policy is one of the most significant barriers to internet adoption that impacts multiple groups and individuals. These funding cuts have resulted in the headcount of Newcastle City Council and YHN being lower and driving the need to become a more digital organisation. This is somewhat of a vicious circle; the limited funding means that these organisations have less money to employ staff but also to transform their business models to a more online footprint. There is a feeling that Interview Participants find the UK Government responsible for not enabling this digital transformation to the online footprint. There is a view held that there is no plan from the UK Government, but this also implies that Newcastle City Council and YHN also have no plan and just react to the budget they are allocated in the best way they know-how. All parties – UK Government, Newcastle City Council, YHN and the Citizen complain that there is not enough resource for training yet none of these take any responsibility in addressing this issue in any way.

This links to the absence of any meaningful policymaking by the UK Government, which makes it harder for organisations like Newcastle City Council and YHN to transform their ideas into the written word that can then be disseminated for action. There is confusion and a stalemate in place of the absence of ideas, with some individuals having their own ideas of what Newcastle City Council and YHN should be doing. This is not helpful as not all Interview Participants are on the same page with this. There is a clear lack of leadership from the UK Government, and this causes problems at the regional level (discussed in the next section). Two minor codes examined that helped to add to the research are online services and digital development. These two minor codes link together and illustrate what may be possible when organisations are appropriately funded. The outcomes and what may be achieved could make a big difference to the UK Government, Newcastle City Council, YHN and citizens themselves.

5.8 The Regional political impacts on internet adoption

The *Regional political impacts on internet adoption* theme are factors that consider how power is utilised and how decision-making impacts at the regional level. In the application of regional political impacts to this theme, the research will consider the impact of technology provision on internet adoption.

5.8.1 The impact of technology provision on internet adoption code

The *impact of technology provision on internet adoption* code largely centres around interview participants discussion of the technology provision made by Newcastle City Council at the recently built City Library public building in the centre of the city. Participant 8 outlines the issues in technology access in Newcastle upon Tyne:

"I think access is still potentially an issue for some people, and when you look at the city, there are no internet café's or anything, so we are the only free source of computer access, and this is a key part of what we do. I think there is definitely more and more where we are providing services on behalf of someone or its central government, and it's the help and support that goes with that" **(P8)**

Unlike other, some other countries businesses such as internet cafés are uncommon in the United Kingdom. This leaves provision of public internet access to organisations such as local councils and library services. There is no proposed commercial alternative to the internet café. Participant 8 outlines that the City Library is the main source of free internet access in the City of Newcastle upon Tyne. In addition to providing PC devices and internet access, other services are also offered by City Library that provides additional help and support to citizens. Participant 9 questions the commitment of the Newcastle City Council library service in its aim to provide free internet access to citizens in the wider city area:

"As part of that, I'm sure it was basically an ambition at most around half a mile from somewhere that had free internet access and say a mile from somewhere that had a computer you could use through the library service. This is difficult" **(P9)**

This appears to outline the lack of clear-cut policy decisions from Newcastle City Council. A senior official of Newcastle City Council appears to be unsure if the above comments are or are not the desired strategic goals of Newcastle City Council. The questions could be asked: is it

difficult because it isn't the policy or strategy to do this? How might this be financed in the current UK Government Austerity environment? In terms of the actual provision of PC access and internet access that the City Library facilitates, Participant 1 holds several interesting views:

"… there is a difficulty trying to encourage people to get access online we know we have areas in the city people can come into the library for example and go onto the PC's in the library get access online like that but again you need to think – if people live out in the sticks how do they get into the library in the first place as it costs money in the first place [to travel]*"* **(P1)**

This outlines some of the challenges of the City Library PC provision, issues with the cost of travel into Newcastle City Centre. A return bus ticket from the furthest out areas of the city is £5.10 (at 2020 prices); those on a low income may struggle to afford this travel. There are also issues encouraging the initial engagement that might push individuals to travel to get access. In the vein of a gateway to beginning to adopt the internet as part of an individual's life. Participant 1 narrates some of the issues in booking the PC provision in the City Library:

"… National government assume the Councils will take responsibility for these initiatives for the lives of Universal Credit is was assumed there would be access locally to PC's and devices – libraries are struggling and do not have the capacity and the PC's are booked out constantly" **(P1)**

This examines how the UK Government may have abdicated their responsibility for access to the internet for Universal Credit claimants. As discussed earlier in this chapter, Universal Credit claimants are required to administrate their claim by logging what work seeking activities they have undertaken. It would be fair to assume that the PC's being booked out constantly is being used to administrate Universal Credit claims. As shown in Table 3.4 (from chapter 3), the researcher met and interviewed Participant 8 in Newcastle City Library and prior to the interview, they escorted the researcher to the public PC area of Newcastle City Library. The public PC area of Newcastle City Library had citizens sat at every available computer with around 12-15 individuals sitting waiting for their pre-booked slot. This supports the comments of Participant 1 stating that the PC's were booked out constantly. Participant 1 continues:

"Although we have the devices, we have around 50 PC's available to book and they are booked constantly. It is really difficult to keep ahead of that booking. Its really difficult because we

know these are the people that are the most vulnerable and don't have the skills or the funds to get the devices in the first place." **(P1)**

Highlighting here the issues the individuals face with some very deep and challenging circumstances around finance and social exclusion are making use of the already limited resources available at Newcastle City Library. Participant 9 stated:

"People may not be aware that they can use free computers [and tablets] *in the library and getting that* [message out there is a challenge]*"* **(P9)**

The problem at the City Library may not be that people are not aware of the service offered but how inadequate the service is that is offered. Many more people wish to use the service than there are PC's available for them to do so. This issue was linked earlier in this chapter to the UK Government Austerity policy, but these comments from Participant 1 and 9 bring the issue sharply into focus. Participant 1 adds to their earlier discourse mentioning the driver of the Newcastle City Council / YHN Digital Inclusion Officer:

"I think locally the actual initiatives that we have in regard to using a digital inclusion officer do help to drive people online" **(P1)**

Dependant on the efficacy of these initiatives and the deployment of the digital inclusion officer, what effect would be seen by multiplying the availability and funding to the city library? Would Newcastle City Council still face the issue with the demand on their community PC resource? They may need to add to the number of available PC's in Newcastle City Library to support demand. This, however may be unlikely given the UK Government Austerity policy.

The *impact of technology provision on internet adoption* code now turns to infrastructure and access to connectivity. Participant 1 states:

"I think some issues might be infrastructure, so I know, especially at the moment where I live, I suffer from poor bandwidth issues" **(P1)**

While this is interesting, it may not necessarily apply to those in the former category of using the PC's and internet service at Newcastle City Library. This view on infrastructure is particularly relevant when the discourse around the previous YHN policy about digital inclusion. The

previous Chief Executive of YHN took the view that installing free broadband in all YHN homes that did not already have it was a route to getting those individuals online:

"one of the things that YHN did under the previous chief executive John Lee he set up a task and finish group that I was on and was very keen on pursuing broadband access to within Walker. One of the things that John looked at was providing every tenant with access to broadband with the walled garden approach - a little but kind of walled garden that was free within there the kind of YHN and City Council things that you need to access." **(P11)**

The walled garden approach, as described by Participant 11, was flawed and an ambitious strategy to attempt to deliver for a number of reasons. Financially it would not be sustainable under the UK Government Austerity policy due to the significant fiscal cuts presented to Newcastle City Council and beyond the scope of YHN's resources. The costs to deliver such an approach, even in only one ward area in Newcastle upon Tyne, would have been high. Had it been delivered at its inception, there would have been a lack of mature online services available from Newcastle City Council and YHN for citizens to use. A service that is required by all citizens in the Newcastle City Council area is that of Council Tax. This online service in its present form still lacks a number of simple features and relies heavily upon Newcastle City Council staff to make changes to Council Tax accounts. However, the existence of this idea indicates that there previously was a meaningful strategy around digital inclusion from Newcastle City Council historically. A later approach to the subject of infrastructure saw Newcastle City Council install a free Wi-Fi service across the main Newcastle upon Tyne city centre area that anyone can use:

"I think the fact that YHN and Newcastle City Council have put free Wi-Fi into the city from the Haymarket all the way down to Quayside…" **(P2)**

This installation of free Wi-Fi across the Newcastle upon Tyne city centre is helpful for those that already own devices but may not address issues of digital exclusion for those without devices. This free Wi-Fi is also likely to be of a slow speed, so it cannot be misused. With survey respondents primarily using the internet in their homes they question needs to be asked who actually uses the free Wi-Fi provision in the city.

The *impact of technology provision on internet adoption* code makes a clear case for better PC and internet provision at Newcastle City Library to aid those that clearly cannot afford devices or connectivity in their own homes. Support for citizens in the City Library is viewed as acceptable but could be scaled up and better supported by the UK Government and Newcastle City Council. There were also some indications that provision of infrastructure and connectivity only may resolve some digital inclusion and internet adoption issues; however the evidence to support this is tenuous and may be speculative on the part of the interview participants concerned.

5.8.2 The regional issues with process and digital development code

The *regional issues with process and digital development* code consider the problems, issues and good practice that comes from Newcastle City Council and YHN trying to digitally transform their processes so there is at least an online option available for citizens (it may even be online only in some cases). As cited earlier in the *digital development* minor code from the m*acro-political impacts on internet adoption theme,* Participant 1 states:

"moving things to online is an expensive exercise for organisations" **(P1)**

This may be a truism depending upon the size and scale of the digital transformation involved and the number of processes that require an online variant to be produced. However, Local Government as an industry are known to approach digital development from a large project point of view:

"Where they want to change the way, they want to do things they have large transformational projects that last several years. What they need is agile, innovative experiments that say look we can quickly create a service that sends text messages [or whatever] *to this group of people to give them this information and see what happens and despite some pockets of good practice we are just not seeing that on a large scale"* **(P5)**

These small agile experiments posit by Participant 5 have merit as it would allow Local Authorities to innovate and incrementally digitally transform processes and systems in a relatively inexpensive manner that does not take large teams of digital development staff. This agile method also lends itself to the parameters of the UK Government Austerity policy as large budgets are not required for small scale step-by-step innovation of services. It would also allow

Local Authorities to test out changes at a small scale to see if they are practical and workable by testing these on citizens in the local community. Participant 5 expands on this:

"Create better services that are the number 1 thing. The Council has just launched its new beta website. Whilst its okay. Its four years after starting a programme [of work] *to improve the council digital offer"* **(P5)**

Participant 5 alludes here to four years as taking too long to produce beneficial digital change. There is also the suggestion that this change may not even be what is now required to be able to provide a meaningful service to the citizen. One of the reasons for this is that technology changes so quickly. Participant 5 sets the expectation of these new online services:

"These make assumptions about how things should be and then in a digital world three years later what is needed in fact if you wait 12 months it is no longer needed" **(P5)**

The reasons for these changes are clear to Participant 2 as they suggest that citizens understand that the reasons for driving online processes are the response to the UK Government Austerity:

"… people do understand the austerity reasons for driving forward online processes" **(P2)**

This suggests that citizens do understand and appreciate why more and more services are being driven into online-only formats. Participant 10 brings the UK Government Austerity policy into focus with their reasoning of these changes:

"We can barely afford to answer phone calls from them [citizens], *and there is an expectation that we need people to interact with us in a different way, and if people aren't able to do that because of digital inclusion barriers, this has major repercussions in how and if we are able to deliver services in that different way"* **(P10)**

This outlines the problems that Newcastle City Council have in changing their delivery of services. Should citizens need to go to an online-only format for a service, it highlights the question of what if some individuals can't access these new services because they are digitally excluded for a number of different reasons.

Some of the specific challenges faced by YHN and Newcastle City Council are around avoiding the duplication of effort when designing a new online service and ensuring two separate teams are not fielding requests for one task:

"… the link into the council to make sure there is no duplication of effort or putting a different process online to what the council uses. [ensure that YHN and Newcastle City Council use the same online process for a given task]*"* **(P1)**

Another issue faced by YHN Staff, YHN Tenants and Newcastle City Council is the need for individuals to identify themselves time and again when making requests constantly:

"[we face the] *ask that we have across all government departments and local departments to prove who you are and what you are entitled to time and time again"* **(P1)**

This highlights the issue faced when YHN Staff and Tenants and Newcastle City Council Staff and other citizens attempt to engage with Newcastle City Council or YHN and the matter connects to a UK Government operated service (such as the Department of Work and Pensions). There is no one picture of the YHN Tenant or the Citizen that these organisations can all see, and this causes issues for all concerned in service delivery.

Participant 9 sums up the reason why process development and digital development is important in digital inclusion:

"It helps us in other areas, it reduces the amount of our work, it increases the amount of [internet] *take up, and it has a* [positive] *knock-on effect in other areas"* **(P9)**

5.8.3 The challenges of multi-agency working code

The *challenges of multi-agency working* code aim to focus on discourse where different national and regional agencies face challenges in working together to drive digital inclusion. Participant 7 reveals that:

"The Council don't work well with others, and this creates barriers for people that live here because they can't work in a joined-up way that means the people we want online just can't even get the help they need" **(P7)**

and:

"they could work better with the other charities and agencies in the city" **(P7)**

Interview Participants **(P1, P2)** that YHN employs feel that Newcastle City Council does work well with YHN:

"I would say that one of the key things for me over the past three or four years is that we have worked really well together with the City Council and to me if you can't get that joint working not just with the council but with other agencies" **(P1)**

YHN are a supplicant to Newcastle City Council, owned by Newcastle City Council and taking direction from the elected councillors of the city and the Newcastle City Council Management Team. Therefore, it should not be unexpected that YHN works well with Newcastle City Council for these reasons. However, it should be noted that two other Interview Participants refer to YHN working well with two named organisations that are external to Newcastle City Council:

"[work] *is being undertaken now by Citizens Advice and the confidence level and positive level of working that's come out of what we have done"* **(P2)**

and:

"…training with Lloyds Bank to try and develop some of those people as champions." **(P10)**

Participant 10 takes several views in the area of multi-agency working, and they go on to admit how difficult it is to build these multi-agency relationships:

"I think that one of the challenges we've had how we get – and this is something the council is tackling and try and build a partnership model in the city. Essentially build partnerships in the city. How can we pool our resources essentially to try and do things differently that's how [digital inclusion officer, library services] *is trying to do where she's trying to upskill people from jobcentre plus to try and get more people through the door* [and digitally included]*"* **(P10)**

There is recognition from Participant 10 that multi-agency working is essential in challenging those who are digitally excluded:

"… I mentioned before if we can have a more higher profile better resourced digital inclusion offer even if that isn't just the council – in fact that can't just be the council" **(P10)**

So the importance of this multi-agency working requires that Newcastle City Council are able to work with other charities, organisations and agencies regionally. But also that the UK Government expand their horizons and look to work outside of its traditional top-down approach of service delivery to citizens. The importance of one individual at Newcastle City Council is again highlighted by Participant 10:

"If [digital inclusion officer, library services] *left tomorrow, we'd have this massive gaping hole in what would be a citywide challenges"* **(P10)**

Interestingly Participant 10, when challenged on who should take responsibility for this multi-agency working, responded:

"Even if its some sort of partnership, that would be good and a lot of that comes down to government funding. I think it should be GDS [Government Digital Service] *responsibility to make interagency working come together"* **(P10)**

When considering how individuals act in the mix with the multi-agency environment, Participant 10 suggested:

"When does it go past the barriers of just people who interact with the council, and it becomes about the digital literacy and inclusion of the City? That has to be a much wider and much more coherent thing and like we all play out certain roles in it, and it shouldn't matter what your touchpoint is in it." **(P10)**

This suggests that Participant 10 feels that individuals need to play their part in being digitally included. It should be organisation neutral when it comes to individuals seeking help to get online. Everyone playing their roles would see an individual be signposted to the most appropriate help and support they require to get online, rather than some organisations possibly playing politics with the digital inclusion offer and not providing support to the individual. An example made of this politics is that Participant 10 claims it is proving more difficult getting individuals to find out about the Newcastle City Council and City Library digital inclusion offer:

"One of the big challenges is finding out about the digital inclusion offer – you need to find out online as it is rare to be signposted to us from another" **(P10)**

5.8.4 Minor codes from Regional political impacts on internet adoption theme

Codes from the P*olitical impacts on internet adoption* theme that feature less than five occurrences and add some value to the research are *Fiscal issues that are a barrier to internet adoption and Regional digital strategy issues.* Participant 8 takes focus on one of the main barriers:

"I think the organisational challenges for local authorities come down to finance and budgets I think we make a lot of decisions in the part to go down a digital route and this has been a direct response to austerity and budget cuts because digital transactions cost us less than face to face transactions" (P8).

Participant 9 adds to this discourse:

"The reality is that we cannot afford to see everybody on a face-to-face basis" **(P9)**

This outlines the real fiscal difficulties that Newcastle City Council face and the challenge they face in being pushed in the direction of a digital transformation where this may not be appropriate for all the citizens who live in the Newcastle upon Tyne area. The digitally excluded citizen need to be seen face to face or require some form of intervention that watches them become digitally included over time.

The *regional digital strategy issues* code considers some of the unenviable decision making the council has to make in difficult circumstances:

"The council is having to choose between literacy and social care when it comes down to funding – should they look after old and vulnerable people or help the younger read and write in the form of libraries? Its really criminal at times" **(P7)**

Typically, with older citizens being more likely to vote, this generally falls against the youth (BBC, 2017). Participant 10 discusses how the government could ring-fence money for local authorities:

"The government council ring-fence money for authorities to say this is how we help people get online and the benefits that would bring" **(P12)**

This idea has merit but in the time of the UK Government Austerity policy unlikely to come to fruition. Participant 9 likens this to performance management, as digital inclusion outcomes are difficult to measure it becomes more difficult to make a business case for funding. They go on to explain:

"I think more generally from the priorities of the council as a whole: supporting health, supporting people's environment, supporting those other priorities about the way people live

their lives and the opportunities that those people have" … "Essentially digital inclusion is one of those enablers that will cut across all of those priorities" **(P9).**

5.8.5 Summary - Regional political impacts on internet adoption theme

The multitude of factors that impact the regional political impacts on internet adoption are intertwined, varied and complex. Technology provision being insufficient in the City of Newcastle upon Tyne was a key barrier to those who cannot afford internet connectivity in their homes or devices – those that are on a low income. The PC provision in the City Library is inadequate and requires overhaul and expansion. Different interview participants were unsure of the level of provision outside of the city centre. The technology provision at Newcastle City Library is also widely utilised by Universal Credit claimants to administrate their benefit claims. The costs of travel into the city to access the City Library, which appears to be the centre point of Newcastle City Council's internet service provision, are also barriers.

The policy that surrounds technology provision and the interventions surrounding digital inclusion appears to be confused. The importance of the Newcastle City Council digital inclusion officer in driving digital inclusion and internet adoption is mentioned in multiple codes throughout the theme, and enhancement of this team would see benefits to digital inclusion and internet adoption. The barriers around digital development are less valuable to the research project, but help add context around the other issues. The high fiscal cost of digital transformation is a problem for Newcastle City Council. In combination with the big bang approach of digital development used by the City Council prevents useful digital products from being delivered to the Newcastle upon Tyne citizen. Interview participants posit that this digital transformation is required because of the cost of delivering face-to-face services and the fiscal cuts made as the result of austerity.

The challenges of multi-agency working are highlighted with interview participants stating that Newcastle City Council does not work well with others. The caveat here is that they do work well with YHN; this is not unexpected given that Newcastle City Council own YHN and the relationship here is that YHN takes instruction from Newcastle City Council. Digital inclusion as a whole is viewed to cut across the priorities of Newcastle City Council and YHN as organisations. It is viewed that digital inclusion touches these priorities in different ways and to

different extents – and it is questionable if some of the priorities make any difference or feel any impact by the digital inclusion issues.

5.9 Findings Chapter Conclusion

This section of the study contained the output of the thematic analysis process. The discourse of the semi-structured interviews undertaken by the fourteen interview participants were presented with some limited narrative that might help explain the context or issue that they relate to. This chapter has presented some interesting and key findings that were cultivated by the thematic analysis process. These findings are discussed in the next chapter, linking the literature surrounding the issues with the data presented in chapter 4 and chapter 5. This will allow the holistic discussion of the data and link each of the relevant findings with each other and given the nature of the digital divide in a more organised and rational manner.

The ability to understand the topic and the questions being asked was present in all participants that were interviewed. Participants examined the sociodemographic barriers of the digital divide with discourse around the most commonly encountered in their day to day experiences. A discussion around the age demographic barriers to internet use. The barriers of those with low literacy, where there was narrative connected to how some tenants have very poor literacy and numeracy skills. Which impact them when they go online as reading is a key skill in using the internet. Children also featured as a discussion topic with mixed views over if they drive adoption or are just an expense.

The financial elements impacting the digital divide followed, with participants taking similar views on welfare benefit claimants and those on a low income – all being in agreement that these areas are significant barriers to internet adoption and are compounded by the Welfare Reform Act. Participants faced some confusion when faced with the issues of cost of devices and the cost of internet access as there was not a common understanding of what it is to have a low income.

The importance of digital skills was highlighted by all participants with some of the narrative linking to the macro and regional political impacts on the digital divide in YHN tenants over the cost and subsequent funding of appropriate training provision. There is a view that generating confidence in YHN tenants is key to them becoming more comfortable online and therefore

becoming regular internet users. Some pedagogical arguments also crept into this discussion with a view being taken that some YHN tenants might be afraid of the classroom environment.

The regional and political impacts on internet adoption flag some very similar issues. This may be due to a lack of any government representation in the interview participant sample. An absence of meaningful local and national policy pushes Newcastle City Council and YHN into providing a piecemeal approach to the digital services and training that they provide in the city. The lack of Government policy, in combination with the UK Government austerity policy means that local authorities such as Newcastle City Council are poorly funded. This lack of local funding requires Newcastle City Council to work with other agencies, charities and businesses and interview participants found that Newcastle City Council does not work well with others. The reasons for this are unclear and could be connected to the staffing restructures that have taken place over the past ten years as a result of the UK government austerity policy. Participants found that the lack of local funding is compounded by the Welfare Reform Act where the payment rates for benefit were frozen for around ten years which limits the amount of income already vulnerable social housing tenants have available to them.

While there have been a number of interesting findings presented these need to be discussed in relation to the current literature and made sense of in order to answer the RQ and satisfy the research objectives. This will allow more concrete conclusions to be reached that if translated into meaningful action could have an impact on the digital divide in YHN tenants in Newcastle upon Tyne.

Chapter 6 – Discussion

6.1 Introduction

The previous two chapters presented an overview of the survey findings and the semi-structured interview findings derived from the collected data. Many insights were highlighted in the finding's chapters, which explore the research questions posed by this research. At this stage of the study, it is not possible to reach any meaningful conclusions. To articulate the initial findings more clearly, this chapter will align them with the emerging framework and put them into context with the relevant contemporary literature. This will allow the research to draw broader conclusions from the research findings. The research will be looking to this chapter to contrast the findings in this case study with the views expressed in previous studies and highlight gaps discovered in the literature by this study.

Review of Research Objectives

Prior to the discussion of the findings, it is appropriate to restate the focus, the research question, and the research objectives of the study again. These will be used when forming clear ideas and conclusions that contribute to the final chapter of this study.

The digital divide is a vast, multi-faceted phenomenon that has been the topic of many thousands of studies over many different international, regional, and local geographic contexts. For example, studies such as Lorenz, Banister & Kikkas (2015) and Reisdorf et al. (2018) consider the intercontinental digital divide in the classroom and the first-level digital divides, and broadband access in several Detroit neighbourhoods, respectively. These studies and vast geographic settings help to contextualise the work done in this study. For example, the City of Newcastle upon Tyne is the 8th largest city in the United Kingdom and the sub-unit of the YHN tenant body and its 27600 tenants, a small percentage of the city's population. This small study population is tiny in comparison to the studies of Reisdorf et al. (2018) and Lorenz et al. (2015), but in no way is it any less important. It is apparent that the digital divide does not behave in the same manner for every group of digitally excluded individuals. For this reason, every small study that successfully identifies how to close the digital divide is vital in eliminating this exclusionary phenomenon.

In terms of the social housing tenant in the City of Newcastle upon Tyne, the metaphor proposed by van Dijk (2020) for the digital divide has significance:

"the digital divide indicates a social split between people in a divided society" (p. 3).

This metaphor is expressed strongly throughout the thematic analysis chapter by almost every participant – albeit at the sociodemographic level. The historical and typically layperson's view that the digital divide is the simple division between those who have and those who have not - do not consider the phenomenon's complexity. Social housing tenants are some of the poorest and most vulnerable individuals in society, with 45% of social housing tenants in the UK living in Poverty after they have made their rent payments (Matejic, 2020). The findings show many of these individuals are also disabled, are carers, elderly and single-parent families, and these factors compound this vulnerability. It is clear that there is little contemporary research related to this cohort of digitally excluded individuals.

The digital divide discourse has advanced and evolved over the past three decades (van Dijk, 2020; Helsper, 2020; Park, 2017). The advance of the digital divide discourse, the unique sociodemographic of the YHN tenant body, and the geographic location of the study all contribute to the uniqueness of the study. The following critical research question was formulated followed by three aligned research objectives:

RQ1 – What are the most significant digital divide barriers for YHN social housing tenants that live in Newcastle upon Tyne?

To address the research question, the following research objectives were developed:

RO1 – Evaluate the digital divide gap in YHN social housing tenants and critically compare this to a typical sample of the general population in England.

Section 6.2 addresses **RO1**

RO2 – Identify, develop and understand the reasons (drivers and barriers) for this digital divide in YHN social housing tenants that live in Newcastle upon Tyne.

RO3 – Identify and critically evaluate the impact of political and policy influences on the digital divide that impacts YHN social housing tenants that live in Newcastle upon Tyne.

Section 6.3 addresses **RO2 and RO3**

The remainder of this chapter aims to provide a discussion that explores how the findings outlined in the previous two chapters meet these objectives, which will result in the production of a contribution to current knowledge that relates to the digital divide and its impact on the YHN tenant body.

6.2 Proposed Emerging Framework

The framework that emerged as an output of the concepts from the literature review in section 2.9 is discussed in two parts. The first section (6.2) addresses **RO1.** With the second section (6.3) addressing **RO2 and RO3:**

Digital Exclusion Statistics

This research found that 10.38% of all respondents (all social housing tenants) did not go online. Compared to the latest ONS (2021i) data available, this is higher than expected, with 6.3% of all adults in the United Kingdom who said they had never used the internet in 2020. The Statista (2021) independent survey on internet use also has the percentage of those digitally excluded in the UK is lower, with 4.0% saying they have never been online. The ONS (2021i) survey found that 1.5% of all those that did not use the internet had, in fact, used the internet in the past. This means some factors had changed for this 1.5% of the national sample to prompt them to stop using the internet. The digital exclusion data is broken down by age demographic and compared against the ONS (2021i) national digital exclusion data in the next section. This comparison tells us that the sample from this research are more digitally excluded than the national average. The sample has similarity in its digital exclusion levels compared to other samples of the wider population taken from the north-east of England, which raises the quality of the generalisation of the survey data (Rouge, 2021; ONS, 2021i).

From the perspective of the research sponsor this section addresses one of the fundamental reasons that the study was commissioned – to get a credible, reliable, and single *understanding of the depth of the digital divide* in the YHN tenant base. This section seeks to demonstrate that YHN have a significant problem with the digital divide in their tenant base.

6.2.1 Sociodemographic Characteristics

The sociodemographic attributes that impact the digital divide that were considered by the research instruments are as follows:

- Age/Generational Demographic
- Levels of Educational Attainment / Literacy
- Gender
- Disability
- Race and Ethnicity
- Low Income
- The Influence of Children

6.2.1.1 The Age / Generational Digital Divide

Other studies of the digital divide find that age is a significant barrier to digital inclusion with more recent studies finding this gap is closing in the general population (Lindsay et al., 2008; Tu and Ginnis, 2012; Yoon et al., 2020). It is highly probable that the age sociodemographic in the population for this research is significantly more digitally excluded than those from the national sample (comparison shown in table 6.1). Some of the findings for this sociodemographic from this research were particularly unexpected. The 16-25 age demographic being of particular interest – this research found that 17.39% of this demographic did not use the internet at home. This is significantly higher than the 0.25% of non-users from the same age demographic from the national sample (ONS, 2021i). There are few empirical digital divide studies to compare the statistics around the 16-25 age group in the social housing tenant context, thus identifying a gap in the literature. This research proposes some reasons for these unexpected findings. The first is that the 16–25-year-old age demographic are likely to have low educational attainment, with 65% of respondents having level 2 qualifications or below (Table 4.11). The 16–25-year-old age demographic also lack paid work, with 58.33% of respondents stating that they are unemployed. This leads to many of the 58.33% being likely to be in receipt of welfare benefits (Table 4.19). By proxy, these factors indicate that these individuals may have a low income which may impact on their decision to adopt broadband at home. Another reason for this lower-income may be linked to the lesser amount of Universal Credit this age demographic receives in benefit payments. This research indicates that the 16 – 25 age demographics have no choice but to manage their money very efficiently and that those who do go online use the online tools

available to do this. An anomaly was identified here however - the average spend on smartphone use was £34.78 per month for the 16-25 age demographic, which is significant given their apparent low income. This decision to adopt broadband in their homes links to van Dijk (2020) and de Haan (2003) narrative of requiring material resources to go online, claiming this is a cause for unequal access to ICT. This research shows that the 16–25-year-old age demographic rate their own ability at using the internet at 9.18 out of 10. This potentially rules out mental resources such as lack of digital skills as a barrier for this group in adopting the internet (van Dijk, 2020). The 16-25 age demographic also have the highest percentage of smartphone ownership from the research, with only 0.94% of this age demographic not owning a smartphone (Table 4.35). These young adults that appear to be digitally excluded, have high levels of digital literacy but lower levels of education and income; this suggests educational attainment and income are factors for this demographic age group. That is, they may lack the financial materials required to get online in a conventional manner in their home.

Age Demographic	Survey Findings (from Table 4.1a) % Of Age Demographic that is Digitally Excluded	ONS Internet Users 2021 (ONS, 2021i) % Of Age Demographic that is Digitally Excluded
Whole Sample	10.38%	6.3%
16 – 25	17.39%	0.25%
26 – 35	7.14%	0.3%
36 – 45	4.25%	0.5%
46 – 55	10.52%	1.45%
56 – 65	17.43%	3.7%
66 - 75	7.4%	11.4%
75+	30%	38.2%

Table 6.1 Research findings compared with ONS (2020i) findings.

The next most significant group is the 56-65 age demographic. Whist the research findings for the 16-25 age demographic could be considered unexpected, the higher digital exclusion in this age group may be considered less surprising. This age group is where Prensky (2001) and the "Digital Immigrant" concept is introduced. The lack of exposure in the classroom to ICTs that the 56-65 age demographic faced in their adolescence is likely to contribute to their apparent lack of understanding around the value of being online (Passey, 2014). These research findings support this, with the 56-65 age demographic having the lowest smartphone ownership and spending the second least amount of money on smartphone ownership per month (Table 4.38; Table 4.39). The digital exclusion of the 56-65 age demographic is made worse by the low levels of educational attainment and high levels of unemployment found by this research (Table 4.11; Table 4.19). The link to the digital exclusion by way of low literacy and low educational attainment is widely acknowledged (Dwivedi & Lal, 2007; Helsper 2008; 2021; Eynon, 2009). More specifically, van Dijk and van Deursen (2018) found that those that were employed and well-educated benefitted more in terms of material and physical access to the Internet. This research also supports these ideas through the lens of the third-level digital divide. This research showing that many of the 56-65 age demographic do not engage with many online platforms and services. Using a search engine such as Google does not appear to be problematic, but streaming music, watching video media and playing online games may be low priority to this age demographic (Table 4.22a-j; Table 4.23a-d). Equally, shopping online is also low priority, and use of internet banking has a relatively high non-adoption rate, with nearly a third of 56–65-year-olds not using this service (Table 4.22a-j).

The two age demographic cohorts discussed here are also a blind spot for interview participants (and by proxy, YHN). One participant recognised the digital native discourse from Prensky (2001), but more widely, the thematic analysis did not expect such high levels of digital exclusion in the 16-25 or 56-65 age demographic's. This research indicates significant digital exclusion in the 16–25-year-old age demographic, and this discourse is absent from the later thematic analysis.

This research shows that the 26-55 age demographic's (26-35 / 36-45 / 46-55) have slightly higher levels of educational attainment, and higher percentages of the 26-55 age demographic category are likely to have paid work (Table 4.11; Table 4.19). Which when considered in the

context of the findings of the van Dijk and van Deursen (2018) study cited earlier, may provide support as to why these demographic age groups are not as acutely impacted by the digital divide as the 16-25 age demographic or the 56-65 age demographic. Clayton & Macdonald (2013) also finding that those with higher educational attainment and paid work stand to benefit more from being online. Interestingly the 26-55 age demographics are more likely to engage in the range of online activities examined than the 16-25 and 56-65 age demographics (Table 4.22a-j). This engages the third-level digital divide and allows these individuals to realise more real-world benefits of their Internet use.

The final age demographics examined here are the young-old (65-75) and the older-old (75+). Again, it was unexpected that this research found that the young-old and the older-old were less digitally excluded than the national sample (ONS, 2021i). In the light of the findings here, it is interesting that many other authors state that the digital divide is worse for this age demographic. This research challenges the claim of Friemel (2016) that:

"seniors older than 70 years, the relation between age and Internet use seems not to be linear but rather exponential" and proposing that *"with every additional year of age, the likelihood of Internet usage decreases by 8% in five-year differences when considering a range of 65–90 years or more"* (p.12, p.16).

On this basis, it would be easy to assume that the young-old and older-old age demographics are very digitally excluded and are unable or unwilling to attempt to bridge the digital divide. Indeed, many academic studies have found that digital exclusion levels in the 65-75 and 75+ age demographic to be as high as 58 – 75% (Tu and Ginnis, 2012; Lindsay et al., 2008; Wagner et al., 2010; Charness & Boot, 2010). With the ONS (2021i) data finding an average digital exclusion value of 25.8% in the over 65 age demographic, there are a few questions to be asked. There could be an inference drawn from this research that the silver digital divide is closing, and more of the young-old and older-old are going online (Park, 2017). Van Dijk (2020) claims this decrease in the silver digital divide is due to a generational shift - where society progressively gets older, and, as a result, equality of access and use to digital media becomes more normalised. When considering the reasons that the 65+ age demographic may be less digitally excluded than the national sample (ONS, 2021i). This research found that 100% of respondents in the 75+ category had low educational attainment and less than level 2 qualifications: those in the 65-74

age demographic, 60% of respondents having less than level 2 qualifications. Low educational attainment is typically a barrier to Internet adoption; the findings from this research might indicate that low educational attainment is not modifying the internet adoption process in this age demographic (Dwivedi & Lal, 2007; van Dijk, 2020; Helsper, 2021). The thematic analysis from this research suggested that the 65+ age demographic are going online, so they are not left behind and are able to interact with their wider families using social media. Being able to interact on social media exerts a positive influence on social and cultural resource identified as part of the emerging framework in figure 6.1. This also supports the idea that the older generation might get support when online from younger family members.

It is relevant as part of this study to correct the misnomer that in contemporary society, everyone over 65 years of age is retired. With the UK Government raising the retirement age for men and women, this requires some individuals to continue working. This research finds relevance in this factor because 19.1% of respondents over the age of 65 years stated that they always use the internet whilst at work. This statistic is supported by Wu, Damnee, Kerherve, Ware & Rigaud (2015), who found that seniors adopt the internet and use technology to fit in or in the course of their employment.

6.2.1.2 Levels of Educational Attainment & Literacy

This research was unable to find a reliable way to measure the literacy of social housing tenants. In discussion with the sponsor, it was felt that asking survey participants directly about this was likely to generate non-response. Similarly, the thematic analysis did not report any themes connected to reading, writing and numeracy. Literacy should be taken into account in the study as it is likely to play a role in the digital exclusion of social housing tenants – it proved challenging to address this in a manner that would be acceptable to the sponsor, the researcher and the respondent/participant. The generalised views of the sponsor support the idea that in order to make effective use of the Internet, there need to be appropriate levels of literacy-based critical thinking skills to enable third-level digital divide outcomes (van Dijk, 2020; DiMaggio et al., 2004; Hargittai, 2002; Mossberger, Tolbert & Stansbury, 2003; Van Dijk, 2009; Warschauer, 2003).

Higher levels of educational attainment, however, are an accepted driver of internet adoption (Dwivedi & Lal, 2007; Helsper, 2008; 2021; Eynon, 2009). Educational attainment links to the

earlier concept of literacy as without reading, writing and numeracy skills, it is difficult to achieve any significant qualifications or vocational understanding. This research finds that 59% of respondents had less than a level 2 qualification, and overall, 142 survey respondents stated that they had no qualifications (Table 4.10; 4.11). This research successfully links low educational attainment to those age demographics that are most digitally excluded (Table 4.11). The thematic analysis from this research also considers having lower levels of education an issue when faced with the challenge of internet access and use:

"I think there is the groups we tend to look at tend to have a higher level of educational problems and they tend have not actually done well in things like literacy and things they're not able to follow instructions to do this that and the other" **(P4)**

These findings also support the ideas of Dwivedi & Lal (2007), Helsper (2008;2021) and Eynon (2009) and leverages low educational attainment as a possible reason for the high levels of digital exclusion in table 6.1 earlier in this chapter.

There is an idea originating from the thematic analysis that those with higher levels of educational attainment may have more confidence in the second and third-level digital divides of internet use and real-world outcomes. In terms of the academic discourse, the idea of confidence is articulated as self-efficacy (Kim & Hwang, 2020). Self-efficacy is viewed as a mental resource and a factor required to be able to go online – it is interesting that the thematic analysis identifies this as a factor, but the thematic analysis did not suggest any tactics around improving this in the YHN social housing tenant body (Brosnan, 1998; Chua et al. 1999; Van Dijk, 2005; Van Dijk 2020). In place of confidence and self-efficacy, the narrative from the thematic analysis surrounds digital training – suggesting skills are more important in the eyes of those interview participants.

6.2.1.3 Gender Inequalities

The male/female imbalance of this sample of the population from this research makes it more challenging to provide any meaningful findings for this sociodemographic group. Whilst more females from this research were digitally excluded than males, this was marginal. Older females are less likely to use the internet in their homes, with older males being more likely to use the internet in their homes (Table 4.1b). Younger females were more likely to use the internet in their homes than younger males (Table 4.1b). Females from the research were also more likely to own a smartphone than males (Table 4.32). These findings are interesting because the

discourse typically finds that most of the gender digital divide impacts females (van Dijk, 2005; United Nations, 2015; Moore, 2016; Ofcom, 2012; 2017b). The relevance of higher smartphone ownership may indicate the typical drivers of the gender digital divide (economic dependence, isolation, lack of equality, lack of relevant content and social isolation) are less prevalent in this research (Kiran, 2018; Mariscal et al., 2019). The thematic analysis from this research also makes no reference to gender being a cause of the digital divide in social housing tenants. The lack of gender being identified as a theme could indicate that interview participants found this to be a blind spot or did not feel the gender digital divide was an issue for social housing tenants in Newcastle upon Tyne.

6.2.1.4 Disability

The survey instrument from this research found that 11.6% of the 269 participants that stated they had a disability were not online. This equates to 4.9% (30) of the sample of survey participants (Table 4.3; 4.4). The thematic analysis from this research made no reference to disability being identified as a theme. Johansson, Gulliksen & Gustavsson (2020) found that there are differences in digital inclusion between different groups and subgroups of diagnoses and impairments. Lack of specialist knowledge relating to these differences in disability it was challenging for this research to be able to identify the spectrum of conditions and diagnoses that individual social housing tenants face. There was also significant response and non-response bias impacting the data from this research – it was identified that 65 respondents did not answer questions relating to disability, and a number of others selected the option allowing them to make a free text comment where some respondents remarked how they felt uncomfortable about providing an answer to this question as they did not feel the question was relevant.

Many studies relating to the disability digital divide that have more significant samples of disabled participants (MacDonald & Clayton, 2012; Jaeger, 2011; Lussier-Desrochers et al., 2017). For example, MacDonald & Clayton (2012) sampled only disabled participants in their study. They allowed those individuals to self-identify as disabled and describe their disability in a more detailed manner than this research.

It is apparent that being disabled is a barrier to internet adoption more widely and that it is not possible to make reliable inferential judgements or assumptions about the data related to

disability from this study. For the reasons given earlier, the disabled digital divide in social housing tenants will be considered as a topic for further study at a later point.

6.2.1.5 Low Income

There are many elements that impact social housing tenants use of the internet in terms of low income. These elements are discussed individually in this section– some of these elements may impact and relate to other sociodemographic factors and elements of the theoretical framework. This research finds that the apparent simplicity of having a low income is not a single issue with the thematic analysis finding:

"I suspect it's hard to draw really clear correlations between levels of family finance and digital inclusion. But in practice, there will be loads of families on very low levels of income who are fully [digitally] *included, and there'll be families who are on slightly higher levels of income who will be* [digitally] *excluded."* **(P5)**

The two identified levels of low income here may identify with the earlier definitions considered from the literature review. The difference between individuals being considered as being poor and being in Poverty (Arifuzzaman, Rafee and Islam. 2021; Martin and Robinson, 2014). With 81.05% of the respondents in this research from the NRS DE Classification and 45% of respondents without paid work, it may be a fair assumption that many of the survey respondents from this research could be considered poor, with some of those considered living in Poverty.

The data from this research also showing that the most common levels of spend on digital services are between £0-£20 and the £20-£30 range indicating that survey respondents look for the most cost-efficient services (Table 4.1i). This may indicate managing limited financial resources is important to this population of social housing tenants. These findings support Rhinesmith, Reisdorf & Bishop (2019) ideas that cost is viewed as a primary factor that negatively influences non-adoption of Internet technologies. This research supports these ideas of limited financial resources being a barrier with three relevant remarks being identified by the thematic analysis:

"Being able to afford to go online. Not everyone can afford the monthly connection bill it's like if someone works part-time, has children and gets benefits too" **(P7)**

"Affordability is an issue, so I dunno what the cheapest is on the market is at the moment but if it is between £15 to £20 pounds a month and the difference is feeding your family or not" **(P6)**

"At this point, digital is just not the thing you need, digital comes after rent, food, housing and clothing etc.… it just falls too far down the list for people to make that choice" **(P5)**

These remarks evidence the truths that individuals on a low income may have to face when considering internet adoption for their household unit. The factors identified by these comments, however, are compounded by the vicious circle of not being online. The thematic analysis finding that:

"It's unbelievable how a percentage of tenants who just basically live from day to day they wait for their benefits to arrive and they go out and spend them and there's nothing left, in fact, there is minus nothing left" **(P4)**

Studies show that being online saves money in many of these areas – specifically online shopping, paying bills and improving health and economic prospects (Lloyds, 2017; Maude, 2014; Rhinesmith, 2012; Bates et al., 2012; Ragnedda, 2015). Indeed, the data from this research indicates that many respondents do participate in these online activities (Table 4.22a-j). However, some types of activity are ignored by survey respondents. These typically relate to NHS and local government online activities (Table 4.23a-d; 4.24a-f).

An interesting topic identified from the thematic analysis of this research is the impact of the cost of travel—the cost of travel links to some of the discussion around welfare benefits later in this section. The thematic analysis from this research identifies the costs of travel for those that must travel to a location to be able to access the internet.

"They can't afford the bus fare in some respects when they are having to fill out the online [Universal Credit] *journal or look for jobs, so connectivity is a huge issue for some people"* **(P2)**

The first point is that this cost of travel varies depending upon the region of England that welfare benefits reside (TFL, 2021). This cost of travel makes it more challenging for the digitally excluded to claim and administrate welfare benefits such as Universal Credit. Individuals may fail to administrate their claim correctly and face punitive sanctions, thus making their financial

circumstances worse and making these individuals more subject to the digital divide. As already identified – many social housing tenants are welfare benefit claimants.

"I think [Financial] is the biggest one out of the three by far." **(P10)**

The thematic analysis finds that having a low income is one of the greatest barriers faced by social housing tenants. Low income is just one descriptor for this group of social housing tenants, with some discussion other related factors that compound the impacts faced by this group.

The Financial Costs of Internet Use

This research finds that the cost of devices may impact on an individual or household decision to go online. The thematic analysis identifying those individuals from the population of this research have some difficult choices to make:

"We know people have limited funds available to them, and I think if given the choice, they'd rather pay their rent and feed their family than pay for a device that helps them get online" **(P1)**

Indeed, this view is widely supported, with five other interview participants supporting this sentiment. Glass & Stefanova (2010) and West (2015) frame this challenge as an undercurrent to the digital divide discourse in those with a low income. This research finds that the costs of internet use have a more significant impact on the wider issue of having a low income.

"I think the main financial challenges would be getting a device to get you online. I think it could be something like a google Chromebook could be a coup of hundred pounds. To someone on benefits or even minimum wage, that is quite a lot of money. Erm, that is a basic computer device, obviously, people have smartphones which can be quite a bit more expensive. They can be quite a lot more money than a Chromebook" **(P9)**

When the comments of participant 9 are considered together with the levels of benefit paid to individuals and households that we in receipt of Universal Credit, it may be easier to understand why this is more of a problem for these social housing tenants (HM Government, 2021). This is more of a problem for those under 25 years of age because these individuals receive considerably less in welfare benefits.

Interestingly, in the thematic analysis a senior manager of Newcastle City Council claims that:

"the costs associated with having a broadband provider are real. YHN and other housing associations have done a lot of work to ensure there is access for people, and I think having spoken to YHN in the past, they were saying its less of an issue for people having access to wifi" **(P8)**

So, whilst acknowledging the cost of broadband subscription, they claim that free wi-fi is widespread in YHN Properties and the City of Newcastle upon Tyne. This belief is also held by significant others, including a senior YHN Executive. YHN only provide Wi-Fi access to their tenants in their older person sheltered accommodation newly built blocks. It is only a tiny percentage of the 26800 YHN tenants that receive this free Wi-Fi. To use the free Wi-Fi in the city centre YHN tenants would have to travel into the city centre (at the cost of up to £5.10 return) and have their own device to be able to get online when they arrive. The problems with this around cost have already been identified in this section. The thematic analysis from this research concisely frames the argument made in this section.

"cost is always a factor, and I think it can be prohibitive in the fact that we have some tenants who are on benefits and obviously they have a lack of resource to put into that device or to get online in the first place" **(P1)**

It is a consideration that the cost factor being prohibitive may see social housing tenants look to aftermarket shops and online stores for 2nd hand devices. Using older technology that is less expensive than brand new items.

6.2.1.6 Welfare Benefits

Being in receipt of welfare benefits is linked to having a low income, but these individuals are a distinct user group that face unique challenges. If an individual does not have paid work, there is a finding from the thematic analysis in this research that as a social housing tenant they will most likely be in receipt of some type of welfare benefit.

"We have a lot of social housing in the city, and I think from the YHN point of view I think we have about 40% of tenants who have partial or full benefits" **(P1)**

The research indicates that 56.25% of survey respondents were in receipt of a means-tested welfare benefit (Table 4.2). This indicates that the interview participants from this research (which are mainly YHN and Newcastle City Council staff) may not understand the scope of

those claiming welfare benefits and the impact this may have on internet use in their homes. Of those in receipt of welfare benefits, this research shows that there are 15.2% of respondents were digitally excluded and offline. This is higher than expected, with Tu and Ginnis (2012) finding that 12% of welfare benefits in their study of claimants were digitally excluded. Given that the Tu and Ginnis (2012) survey was published almost a decade ago and the digital divide is viewed as closing, the 15.2% of respondents from this research could be considered as high (ONS, 2012; 2017; 2021).

This research identifies a number of potential reasons for this digital exclusion. The thematic analysis identifies Universal Credit and the Welfare Reform Act as two of the main barriers to Internet adoption. Universal Credit is particularly problematic. This research shows that in addition to being a negative impact on internet adoption, Universal Credit compounds the issues that social housing tenants face with living in Poverty. The thematic analysis identified that there is:

"no support for people who were going onto Universal Credit" **(P2)**

The process of even applying for Universal Credit is viewed as complex if you are digitally excluded. Universal Credit is a digital by default UK Government product. This means that in order to apply for the welfare benefit and administrate your claim you have to be digitally included and able to go online. The vicious circle of not being online to be able to claim the benefit, means individuals find it difficult to claim the money they need to live – and to be able to pay Internet service-related bills. This is if indeed they have sufficient disposable income to be able to afford to do this. The thematic analysis from this research recorded the following comments that support this.

"It could lead to debt spirals yet the government don't make it easy for people to get online yet want them to sign for their Universal Credit, apply for work and fill in their job logs all online" **(P7)**

"Being able to afford to get online. Not everyone can afford a monthly connection bill" **(P7)**

This sociodemographic attribute is eclipsed with the governmental influence factor as the thematic analysis identifies that welfare benefit claimants are abandoned by the UK Government.

"The Government haven't got a clue what's needed, nor do they care." **(P7)**

"Particularly with Universal Credit and sort of in my view central government is abdicating its responsibility to local government in saying we have a system that works and that requirement for support falls onto the local government to support with Universal Credit in particular" **(P8)**

This abdication of responsibility could be what leads to the higher levels of digital exclusion in welfare benefit claimants. There is a view taken that this abdication is part of the design of the Welfare Reform Act that seeks to drive welfare conditionality and sentence those who do not meet these conditions to punitive benefit sanctions (Wright, Fletcher & Steward, 2020). Wright, Fletcher and Steward (2020) indicates that the thematic analysis from this research makes some valid points around how welfare benefit claimants (and by proxy social housing tenants) are supported by the UK government. Equally these punitive sanctions may force the issue of internet use within those social housing tenants that receive welfare benefits.

6.2.1.7 Race and Ethnicity

Given the limitations placed on this sociodemographic by the sponsor and the apparent sensitivity in survey respondents to providing data related to their ethnicity there are few useful observations this research can be draw from the survey data. This sensitivity is not considered uncommon when examining the digital divide phenomenon (van Dijk, 2020). The prohibition on being able to consider responses from asylum seekers limited the ability of the research to provide a truer picture of social housing tenants in Newcastle upon Tyne. With 83.5% of respondents from this research stating they were White British it is challenging to make any meaningful observations from this element of the data set (Table 4.1d-e). There is no mention of race and ethnicity in the thematic analysis, and it is not presented as an issue in the thematic analysis. This may be due to the ethnicity digital divide in the UK getting smaller year on year (ONS, 2021a).

6.2.1.8 The Influence of Children

Children are viewed in the literature as a positive influence over the closure of the digital divide (Helsper, 2020). This research identified that 40% of respondents had children in their household. Table 6.2 examines the number of children per household against the number of respondents that are not online from each "number of children" category. The data shows that the more children present in a household, the greater the likelihood is of digital exclusion. The

exception to these findings is where households have 5 children – this research 0% of these households are digitally excluded. Based on the other categories this is element could be considered anomalous as only a small element of the sample indicated they had 5 or more children in their household.

Number of Children in Household (Category)	Number of Respondents by Category	Number of Respondents by Category that are not online	Number of Respondents by Category that are not online as %
No Children	425	25	5.9%
1 Child	290	12	4.0%
2 Children	176	16	9.1%
3 Children	55	9	16.5%
4 Children	19	4	21.1%
5 Children	5	0	0*

Table 6.2 Breakdown of Digital Exclusion found by Number of Children in a household

It is important to recognise the complexity of internet adoption when considering the presence of children (Howick & Whalley, 2007; Robertson et al., 2004). Confidence, digital skills and children's desire for technology are viewed to play an important part in the adoption process (Barrie, Bartowski & Haverda, 2019; Helsper, 2020; Livingstone et al., 2014). Before these elements are able to play their role in internet adoption, social housing tenants have to satisfy the material resource requirements to get online – that is, they need money and/or a device and a connection method. The thematic analysis finds that the social housing tenants in this study are more likely to be negatively impacted in their decision to go online by lack of financial means.

Interview participants from the thematic analysis in this research stated:

"[they] *prioritise the money that they have coming in from Universal Credit or whatever and they spend it on their children, they spend it on the entertainment, they spend it on food and rent, and they see no money left to actually pay for any of this* [the internet], *and they see it as a barrier"* **(P4)**

Once again, Universal Credit and lack of disposable income is being viewed as a barrier to internet adoption in social housing tenants from the thematic analysis. This research links these issues to the forces at work from the UK Government policy in these areas.

The thematic analysis from this research further supports this with the comment:

"Being able to afford to go online. Not everyone can afford the monthly connection bill it's like it someone works part-time, has children and might get benefits" **(P7)**

Later in this chapter, the relationship between these issues and the decision to adopt the internet or not will be outlined and extrapolated further from the narrative in this discussion. However, it is important to state that a child's influence and demands can only go so far – if the adult or parent is unable to financially support the desires of the child, then the desire to purchase ICT's or internet service in the home is stifled by lack of disposable income. An issue explained earlier – most social housing tenants are either poor or are living in Poverty and debt.

6.2.2 Digital Skills Training

Digital skills training is an area of this research that is very well documented by way of the thematic analysis, and the views articulated are often supported by the academic discourse. The thematic analysis finding that YHN and Newcastle City Council did not always get it right in terms of digital training:

"Support and infrastructure should have been put in place from the beginning, and luckily now we do have wrap-around support for all residents of Newcastle from a digital computer training [point of view]*"* **(P2)**

But the digital skills training that YHN and Newcastle City Council now provide has aims that go past the traditional computer class:

"… there is not enough support for these people to get online, specialist support to help people from the very basics this helps to build confidence" **(P2)**

The reinforcement of confidence and promotion of self-efficacy is viewed as critical when digital skills training is provided (Fox & Connolly, 2018; Rockmann, Gewald & Haus, 2018; Krueger & Stone, 2018; Partridge, 2007).

This research also found support for digital skills training from the survey, with 242 of 319 respondents stating that they had engaged in digital skills training. Of the 242 respondents with digital training, 100% of these stated that they now had internet in their homes (Table 4.44). With 30.4% of respondents stating that they received a qualification from their training infers that the digital skills and subsequent confidence gained were the main objectives of respondents that completed digital skills training (Table 4.45). The thematic analysis finds that:

"We teach them how to use a mouse, how to use a computer and how to access the internet" **(P2)**

The situation that participant 2 refers to takes place in a public library. A location for experiential learning that is viewed as significant in stimulating digital inclusion (Manzuch & Maceviclute, 2019; Settle, 2016).

The the thematic analysis from this research agreeing with the words of Cohron (2015):

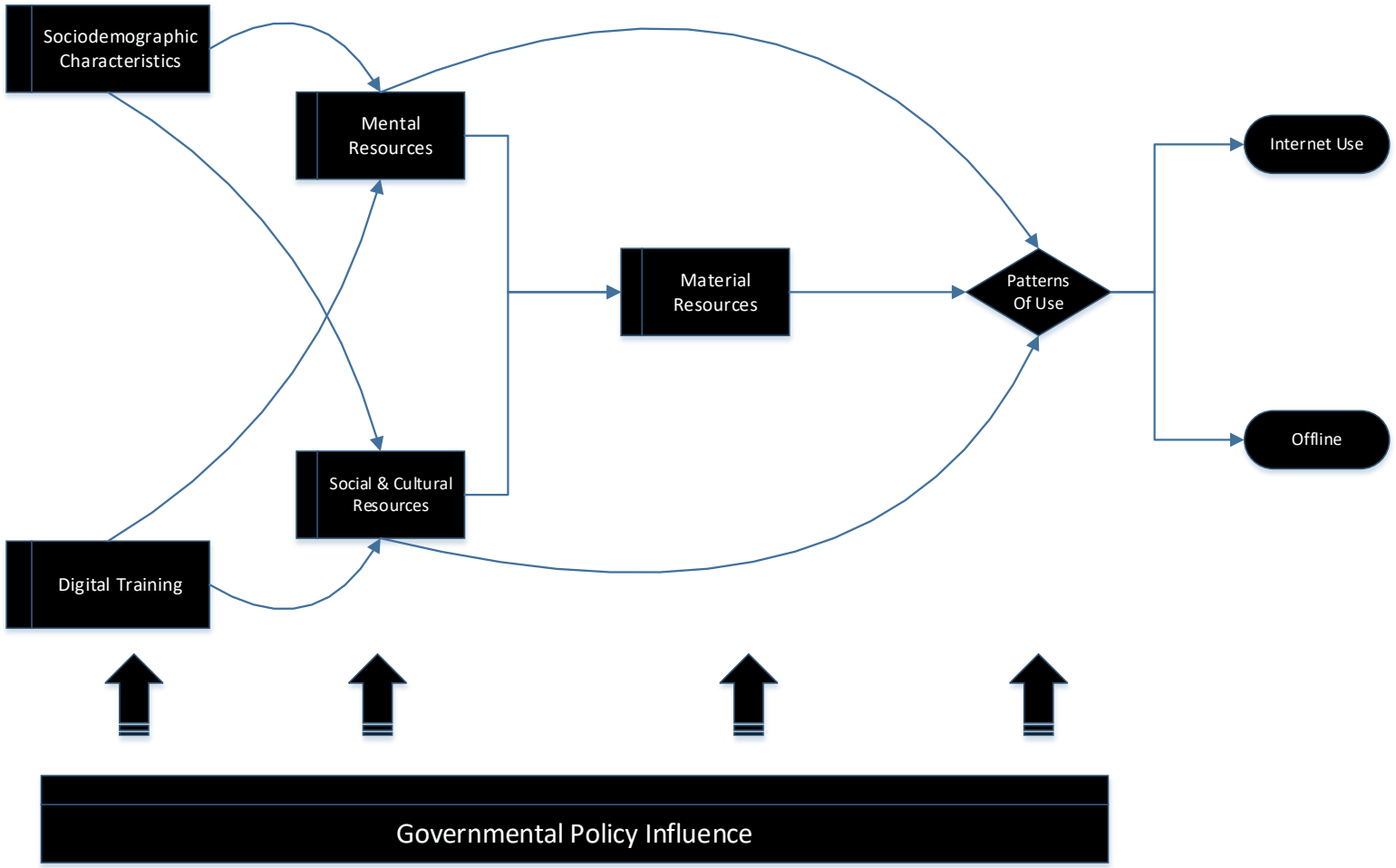
"It is so important for libraries and training centres to take charge in narrowing these digital divides."

The importance of these digital skills allows individuals to begin to realise the third-level digital divide real-world benefits of being online. Without these skills, this research finds that individuals will find it difficult to undertake tasks that others that are more digitally included may feel are elementary:

"..the introduction of Universal Credit online applications goes without saying people who don't have any digital skills I find it very difficult to undertake an online application." **(P2)**

When considering skills and knowledge, not everyone has the same level of skills and knowledge (van Dijk, 2006; Scheerder et al., 2017 from Ferreira, Vale, Carmo, Encalada-Abarca & Marcolin, 2021). This becomes problematic if there is only one level of digital skills training being offered by YHN and Newcastle City Council.

Figure 6.1 – Refined Theoretical Framework



6.3 Emerging Theoretical Framework Relationships

The nature of the relationships between the entities on the refined theoretical framework in figure 6.1 (repeated on the previous page) addresses **RO2:**

RO2 – Identify, develop and understand the reasons (drivers and barriers) for this digital divide in YHN social housing tenants that live in Newcastle upon Tyne.

In terms of this research and the population of YHN Social Housing Tenants, there are some interesting and unique relationships developing. In figure 6.1, the relationships between Sociodemographic Characteristics, Digital Training and Mental Resources is particularly interesting. In defining this relationship, it places the notion of discrete types of users/non-users in an uncertain position as digital training appears to have a much higher impact on driving adoption in social housing tenants than any of the other factors presented.

The Relationship Between Sociodemographic Characteristics and Mental Resources

As discussed in section 6.2.1, the sociodemographic characteristics in this research impact on the social housing tenants examined in this research in several different ways. Mental resources, as outlined by van Dijk (2020), include self-efficacy, intelligence, technical ability, and literacy. Whilst, not every sociodemographic characteristic will impact the Mental Resources of social housing tenants, the most influential found in this research are described in table 6.3.

Sociodemographic	**Impact on Mental Resources**
Educational Attainment	Lower educational attainment results in lower levels of technical ability in older social housing tenants. Lower educational attainment negatively impacts literacy/numeracy and confidence.
Age / Generational	Older social housing tenants have lower levels of educational attainment literacy/numeracy this negatively impacts levels of confidence

Table 6.3 Sociodemographic characteristics with their associated impact on mental resources

The Relationship Between Sociodemographic Characteristics and Social and Cultural Resources

Individuals that are socially isolated are less likely to have a positive view of the internet and therefore are less likely to adopt the technology. Whilst, not every sociodemographic characteristic will impact the Social and Cultural Resources of social housing tenants, the most influential found in this research are described in table 6.4.

Sociodemographic	**Impact on Social and Cultural Resources**
The Influence of Children	Having more children in a household of social housing tenants is likely to negatively impact internet adoption. This may be due to the impact of having a low income and having to budget and prioritise limited financial income.
Age / Generational	Older social housing tenants may be more socially isolated and not have support from peers. This is likely to negatively impact internet adoption

Table 6.4 Sociodemographic Category against Impact on Social and Cultural Resources

The Relationship Between Digital Training and Mental Resources

The discussion in section 6.2.2 around digital training makes a very strong link between successful digital training and subsequent internet use. The positive impact of delivering face to face digital training in a friendly civic setting such as a public library are supported by Manzuch & Maceviclute (2019) and Settle (2016). This is reinforced by the 100% of survey respondents from this research who had received digital training and graduated to become regular internet users. The positive impact of digital training drives improved levels of the mental resources of self-efficacy and confidence in social housing tenants.

The Relationship Between Digital Training and Social and Cultural Resources

Section 5.6.2 of the thematic analysis identifies that digital skills training in the classroom environment helps to build up peer groups. Park (2017) finds that peer group support is a positive influence in terms of closing the digital divide – with like-minded individuals able to help each other across the digital divide. The promotion of peer group support that is facilitated by the classroom learning environment results in a positive impact on social and cultural resources.

Material, Mental, Social & Cultural Resources

Rogers (2005) and van Dijk (2020) outline these resources as essential prerequisites to go online. In the emerging theoretical framework, Mental and Social & Cultural Resources appear before Material resources. The reasoning for this is that social housing tenants may complete digital skills training. Have obtained the social & cultural resources required to go online, but without the material financial resources to be able to go online social housing, tenants are impacted by de Haan's (2003) resource theory where if a consumer is constrained in possession of resources, they will decide against the adoption of said technology. De Haan (2003) is also supported by van Dijk (2020), citing this being a major barrier in poorer countries. This research suggests in the case of social housing tenants in Newcastle upon Tyne, an analogy of van Dijk (2020) may apply with many social housing tenants facing some of the toughest economic conditions in the United Kingdom. This argument is supported with the discussion of the younger welfare benefit claimants receiving less in benefit payment than older adults. The discussion of low income and welfare benefits make substantive claims to support these issues. In terms of the emerging theoretical framework, the decision at the "patterns of use" decision diamond becomes much less about the mental and social & cultural resources and more about if social housing tenants are able to afford the technology and monthly subscription required to go online.

Patterns of Use

The patterns of use outcomes on the emerging theoretical framework are somewhat simplified. The framework implies a binary choice of Internet Use or Offline when there may be an in-between stage where a social housing tenant may exhibit some online behaviours without fully adopting the internet as a full standalone innovation. An example from this research would be where a social housing tenant attends a public library to update their Universal Credit claim out of necessity (without some compulsory updates, claimants face punitive sanctions or claim closure).

6.3.1 Governmental Influence

National and Local Government negatively influence the refined theoretical framework in several ways. This resulted in the addition of a *Governmental Policy Influence* construct to the theoretical framework. This is evidenced by the breakdown of the negative influences found by the study and is presented in figure 6.2. This section identifies and critiques these impacts to address **RO3:**

RO3 – Identify and critically evaluate the impact of political and policy influences on the digital divide that impacts YHN social housing tenants that live in Newcastle upon Tyne.

Lack of effective Digital Inclusion Policy

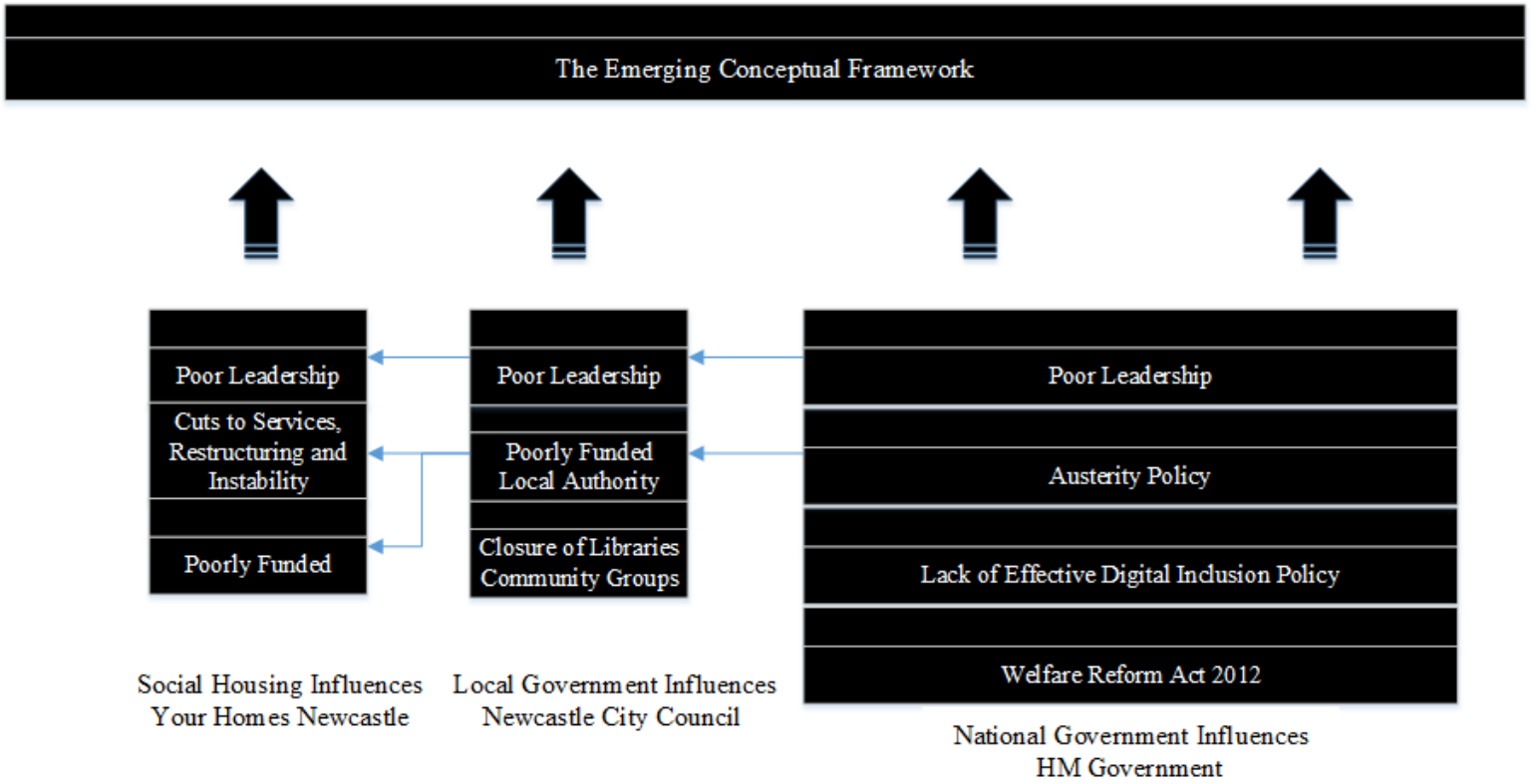
Helsper (2011) finds that the UK Government has changed its stance on the digital divide and narrowed down its focus to the roll-out of high-speed broadband technology to homes – much like many other nations (ITU, 2021; United Nations, 2023). This observance of the first-level digital divide discourse appears to make the assumption that the provision of this technology will see excluded individuals graduate from digitally excluded to fully digitally included internet users (van Dijk, 2020).

Lack of meaningful and clearly articulated UK Government Policy that relates to the digital divide is a theme that is a clear frustration that is articulated by the thematic analysis from this research:

"The government need a clear policy to address the have nots in terms of skills, knowledge and technology. Its no good just paying a technology company to install high-speed internet if people can't use the stuff because they don't have the devices or the knowledge/skills or how to get them going" **(P7)**

The change in UK Government policy direction for the digital divide is unusual, with the change not mirroring the efforts of the European Union and other countries (European Union, 2021). The European Union (2021) has individual policy documents that deal with digital exclusion, digital skills and web accessibility for those who are disabled. The UK Government (2017b) digital strategy cites the use of libraries to provide digital skills; however, the 884 public libraries that have closed due to lack of public funding indicates that this is not effective (Reading Agency, 2020).

Figure 6.2 – Breakdown of Government Policy Influence Concept from Figure 6.1



This lack of meaningful UK Government policy outside of the promotion of infrastructure is clear with the thematic analysis from this research finding:

"I mean, there are some national groups and policies, but I'm not quite sure" **(P9)**

This comment is attributable to an individual from Newcastle City Council who is influential in the creation of digital policy. This outlines a problem with the UK Government approach to the digital divide. If the UK Government policy is insufficient, then this becomes problematic locally for Newcastle City Council when different situations are apparent locally.

UK Government Austerity Policy

This research found the UK Government Austerity policy to be playing a negative role in digital inclusion and internet use. This is evidenced by several comments from the thematic analysis:

"Newcastle City Council has had a lot of money take off them from Central Government" **(P1)**

This is typical of most local authorities who have been forced to perform their statutory duties with less funding. Clarke and Newman (2012) frame this as a discursive resettlement that relates to public services and social policy. Jupp (2016) includes the relevance of the Welfare Reform Act (2012) within this narrative and articulates how this item of legislation is adding further economic pressures to socio-diverse families. The discursive resettlement described by Clarke and Newman (2012) is viewed as an intrusion and change but with no plan and no specified outcomes by the thematic analysis:

"There isn't a plan. The government are saying we are going to cut Newcastle City Council's budget by X amount per year, and you are going to have to do things with digital instead, but there is no additional funding to provide digital services instead." **(P9)**

The lack of plan has forced Newcastle City Council into following the UK Government Digital by Default template for delivery of services whilst simultaneously restructuring and reorganisation the structure of Newcastle City Council.

"I think the organisational challenges for local authorities come down to finance and budgets. I think we make a lot of decisions in the past to go down a digital route, and this

has been a response to austerity and budget cuts because digital transactions cost us less than a face-to-face transaction" **(P8)**

This drive to digital has left Newcastle City Council and the digitally excluded citizen in a problematic situation. The City Council has limited funding to provide digital skills training, and the digitally excluded citizen needs to access council services in a way that does not involve the internet. This results in a stalemate for both parties. Grey & Barford (2018) completed an investigative study into the UK Government Austerity policy and how the cut by the UK Government in public spending was felt locally. Grey & Barford (2018) found the local authority service areas that suffered most were those that were discretionary. Grey & Barford (2018) support the earlier narrative that library services were some of the first of these services cut with Housing (YHN) and planning and development services heavily impacted. Given the UK Government digital strategy aims to deliver digital skills training in libraries the negative impact of austerity is felt in the emerging theoretical framework by the digital training concept the most.

Poor Leadership

Poor leadership is a strand that runs through the Governmental Influence narrative. This is primarily supported in this research from the thematic analysis:

"It feels to me that a big part of the de facto policy – it's never been anyone's policy but the status quo as it were – the policy as it were, has been wait and let the technology catch up, the technology will get cheaper, the technology will get better, the people who are older will die, the people who are currently in school will become the consumers of tomorrow. If we just wait, it will sort itself out." **(P5)**

The bigger de facto policy is the (lack of) UK Government digital inclusion policy discussed earlier. The claim from the thematic analysis is that the UK Government are to blame for the lack of local and regional policy and subsequent action to tackle the digital divide. This manifests itself as political apathy with both the UK Government and Newcastle City Council failing to take any responsibility for the situation with social housing tenants in Newcastle upon Tyne. This becomes a 'blame game' with YHN blaming Newcastle City Council for lack of funding (caused by the UK Government Austerity Policy), Newcastle City Council blaming the UK Government for lack of policy and funding (caused by the UK Government Digital Inclusion policy and Austerity Policy). The UK Government is abdicating its

responsibility to the digitally excluded and compounding the issue with the Welfare Reform Act 2012, the aforementioned responsibility falling to Newcastle City Council. Which due to the current economic conditions caused by the austerity policy, is reluctant to do anything about the digital divide issues at hand. The root cause of this reluctance appears to be poor leadership by all three organisations. Clear policy direction at all levels with appropriate funding (either externally by private business or from the UK Government) is one possible resolution to this issue.

6.4 Discussion Summary

Section 6.2 conducts a discussion of the sociodemographic characteristics that are identified in chapters 4 and 5, which are viewed to impact the digital divide in YHN social housing tenants. In doing this, it was possible to address the first research objective, which was to:

RO1 – Evaluate the digital divide gap in YHN social housing tenants and critically compare this to a typical sample of the general population in England.

The narrative contained in section 6.2 identified and evaluated the key sociodemographic trends relevant to answering the research question. The population sampled for the purpose of the survey instrument was found to be more digitally excluded than the general population (ONS, 2020i). When the population sampled was broken down by age demographic, it was found certain sections were much more digitally excluded than the general population sample (ONS, 2020i). Some of the reasons for the higher levels of exclusion were explored with some of the other sociodemographic categories playing a significant role in compounding the levels of digital exclusion being faced by social housing tenants.

This research found that those social housing tenants with low educational attainment were less likely to be online. This research finds that the work of Dwivedi & Lal (2007), Helsper (2008; 2021) and Eynon (2009) was particularly relevant to the population sampled and that educational attainment was a compounding influence with the sociodemographic – particularly the age demographic.

The sociodemographic categories that linked to material resources, such as low income and being in receipt of welfare benefits found that those social housing tenants with a low income or in Poverty are much more likely to prioritise providing for and feeding their families than internet adoption. Being in Poverty, being in receipt of a welfare benefit and the relative high cost of devices and internet service are the main barriers identified.

Having children in a household is generally viewed in the literature as a positive driver to internet adoption (Helsper, 2020). This research identified a novel trend in social housing tenants that the more children that were present in a household the higher levels of digital exclusion were likely to be. The data did not reveal useful or interesting trends from the race, gender, and disability constructs in the case of disability this due to the nature of the population sample and how disability was represented in this study.

The discussion around digital skills training in section 6.2.2 revealed that digital skills training is a key influence in how social housing tenants develop the self-efficacy required to go online and adopt the internet. The digital skills acquired by those that are trained may be viewed as a secondary outcome to social housing tenants who typically want to know if they are performing the correct activities to achieve a desired outcome when online.

"Am I doing it right?" – Face to Face Survey Van

Given that 100% of those respondents who had received some digital skills training consider themselves to be online and active internet users, the importance of digital skills training should be highlighted as a critical activity in driving internet adoption.

Section 6.3 uses the refined theoretical framework to articulate the relationships and positive and negative influences between the identified concepts. This made it possible to address the second research objective.

RO2 – Identify, develop, and understand the reasons (drivers and barriers) for this digital divide in YHN social housing tenants that live in Newcastle upon Tyne.

Sociodemographic influences applied through the lens of the emerging theoretical framework are viewed to have a negative influence on the decision to go online. However, the positive influence of digital skills training positively impacts the mental resources concept. Where individual social housing tenants have the correct mental and social & cultural *resources to go online,* much of the decision is falling on the material resources concept (van Dijk, 2020). This is where de Haan (2003) resource theory is influencing individual social housing tenant's decision to go online or not, based on their available resources. As many social housing tenants have a low income or live-in poverty, internet use proves problematic for them, and they decide against the adoption of said technology when the decision reaches the patterns of use concept.

Section 6.3.1 breaks down the refined theoretical framework further to articulate the negative impacts on internet adoption caused by political and policy influences. This made it possible to address the third research objective:

RO3 – Identify and critically evaluate the impact of political and policy influences on the digital divide that impacts YHN social housing tenants that live in Newcastle upon Tyne.

The primary negative influences identified in terms of legislation passed by the UK Parliament were the Welfare Reform Act (2012) and the various items of legislation and policy that form the UK Government Austerity Policy. It is discussed how this impact both the social housing tenant and Newcastle City Council. Lack of effective digital inclusion strategy and policy is posited as the reason for the poor leadership across all spheres and levels of political influence. The main cause of the issues identified in section 6.3.1 is that no organisation or individual wants to or is fiscally able to (due to the UK Government Austerity Policy) take responsibility for this area.

Having addressed the research objectives, this places this research in a position where it can answer the research question.

Chapter 7 – Conclusion

7.0 Introduction

Chapter 6 presented a discussion of the key findings from this study. The purpose of this discussion was to inform the research aims and objectives identified in chapter 3. This chapter will reappraise these aims and objectives. Narrative will be provided showing how the data collection and subsequent analysis achieve the identified research objectives and ultimately answer the research question. Finally, the limitations of this research will be discussed and contributions to the current body of knowledge identified, along with how this study has provided inspiration for potential areas for future research.

7.1 Research Aims and Objectives

The digital divide is a multi-faceted complex, and messy phenomenon that impacts a multitude of individuals world-wide (van Dijk, 2020; Bach & Wolfson, 2011). A multitude of academics has written about this phenomenon both generally, in specific contexts and focusing on specific sociodemographic groups. International organisations such as the United Nations (2020), the European Union (2021), the European Commission (2018b) and national governments worldwide have also expressed their views and policy for tackling the phenomenon that is the digital divide. The multitude of academic and political perspectives taken are vast and often related to a particular group of individuals – groups can reflect nations, cities, and individual cohorts of specifically selected individuals. In this respect, the value for this study is the examination of how the digital divide relates to social housing tenants – one of the poorest and most vulnerable cohorts of individuals in the United Kingdom. The population of these social housing tenants is also drawn from some of the most socially deprived areas of the United Kingdom (UK Parliament, 2021). This distinct group of society is seldom examined by academia in the breadth and depth undertaken by this research. Social housing tenants are also the subject of reports by local councils and housing authorities – these reports can be problematic as they often do not have the academic underpinning required to provide a solid basis for decision making (Lambeth Council, 2021; Inside Housing, 2013). The UK Government Department for Education (2018) have also commissioned reviews in the area, but this has not resulted in any meaningful output or change of direction in policymaking.

Considering the specific gap in the knowledge around how the digital divide impacts social housing tenants, the aim of this research was to investigate the specific barriers faced by social housing tenants in the City of Newcastle upon Tyne. In the creation of an refined

theoretical framework, elements were inspired by the ideas of Reisdorf et al. (2018) and their study of deprived neighbourhoods in Detroit. Three constructs were created based on the idea of needing prerequisite resources in order to get online (van Dijk, 2020). A digital training construct was used to understand the perceived impact this has on the adoption of internet access in social housing tenants (Hargittai, 2002; van Dijk, 2020; Manzuch & Maceviclute, 2019; Cohron, 2015). The digital training construct was also relevant to the project sponsor at YHN as they presently fund a digital inclusion officer role and want to understand the impact this has on social housing tenants. More widely, there are a number of other organisation who would benefit from understanding this construct more clearly (ET Foundation, 2021; Good Things Foundation, 2021; Pearson, 2021; HM Government, 2021a).

To address the aims of this research, the following research question was proposed:
RQ1 – What are the most significant digital divide barriers for YHN social housing tenants that live in Newcastle upon Tyne?

To address the question, the findings chapters presented a holistic multiple case study of the Digital Divide in Your Homes Newcastle tenants in the City of Newcastle upon Tyne. Data was collected from 714 social housing tenant survey respondents and 14 semi-structured interviews from relevant local stakeholders in the City of Newcastle upon Tyne.

RO1 – Evaluate the digital divide gap in YHN social housing tenants and critically compare this to a typical sample of the general population in England.

This objective was met, this led to the following insights:

The population of YHN social housing tenants are found to be more digitally excluded (10.38%) than those from the national population sample (6.3% from ONS, 2021i). When this was broken down into age demographic categories, each of these categories was much more digitally excluded than the national sample – with unexpected findings from the 16-25 age demographic and the 56-65 age demographic. Linking to **RO2:** the reasons found for this digital exclusion in 16–25-year-olds was this element of the sample has low educational attainment, high levels of unemployment and high levels of benefit claims. This inferred that they had a low income that was compounded by their receiving less money in welfare benefits payments. In the 56-65-year-old category, the concept of Prensky's (2001) digital immigrant comes to the fore, with this age demographic also suffering from low educational attainment and low levels of unemployment. Van Dijk & van Deursen (2018) finding that

those with higher levels of educational attainment and paid work explains why those in the age groups between 25-55-year-old cohort were not so severely impacted by the digital divide. Lower levels of income and unemployment were found as two of the big barriers to adoption faced by the 16-25 and 56-65 age group of YHN social housing tenants. Low levels of prosperity in the social housing population

Whilst low levels of educational attainment were found to compound digital exclusion in the previously identified age cohorts; this research supported the ideas from the literature around low levels of educational attainment impacting internet adoption (Dwivedi & Lal, 2007; Helsper 2008; 2021; Eynon, 2009). This research found that higher levels of educational attainment also promoted self-efficacy of internet use in social housing tenants. It was interesting to note that the interview participants from this research struggled to differentiate the terms literacy and digital literacy and may have been unaware that some individuals struggle to read, write and be numerate.

Having a low income and the associated compounding factors found by the research are also significant barriers to internet adoption. The survey instrument found that 81.05% of respondents were from the NRS "DE" Classification and that 45% of respondents were without paid work is an indicator that this sample of social housing tenants is particularly poor. This research supports the idea that having a low income and being subject to poverty is a barrier to internet use. Having a low income directly links to the material resources construct as part of the refined theoretical framework and feeds into the narrative of de Haan's (2003) resource theory.

Whilst the insights discussed to this point are helpful in illustrating the sociodemographic issues that form barriers for YHN's social housing tenants in getting online, some of the identified demographics discussed in the previous chapter did not find anything significant. This identifies a possible gap in the knowledge where the traditional determinants of the digital divide may be falling away from the discourse as more individuals go online leaving those individuals that are the poorest trapped in the digital divide and unable to go online due to their financial limitations. These financial limitations are further compounded by the governmental influencing factors identified in addressing **RO3**.

RO2 – Identify, develop and understand the reasons (drivers and barriers) for this digital divide in YHN social housing tenants that live in Newcastle upon Tyne.

This objective was met, this led to the following insights:

Digital skills training is viewed to take a critical role in driving internet adoption. Of the 242 survey respondents that stated they had completed digital training, 100% of these considered themselves active internet users. Technical skills are important in this process; however, the reinforcement of confidence and promotion of self-efficacy have equal value to YHN social housing tenants. The question being asked by social housing tenants in these sessions is:

"Am I doing it right?"

Linking to **RO3**, the lack of financial support from Newcastle City Council for these digital training initiatives is problematic in using this avenue to promote digital inclusion in YHN tenants.

The support that the digital training construct provides to the mental resources construct and the social & cultural construct in the emerging theoretical framework (figure 6.1 is a key positive influence in driving social housing tenants desire to get online. Sociodemographic characteristics influence the decision to go online in social housing tenants much less than the digital skills construct. Social housing tenants may have the required mental resources and social & cultural resources but given their poor economic status are unlikely to satisfy the test of de Haan's (2003) resource theory – they have constrained resources so decide against adoption of the internet.

The lack of money and appropriate prosperity is a significant barrier for YHN social housing tenants.

RO3 – Identify and critically evaluate the impact of political and policy influences on the digital divide that impacts YHN social housing tenants that live in Newcastle upon Tyne.

This objective was met, this led to the following insights:

The UK Government digital strategy is inadequate at addressing the issues faced by social housing tenants. Section 6.3.1 identifies how there is a policy shift towards the introduction of high-speed broadband technologies and infrastructure and apathy towards those who are digitally excluded through lack of skills. This research finds that digital skills training is a key positive influence on if social housing tenants decide to move towards internet use. This makes it hugely problematic that the UK Government do not consider this a priority policy area. The promised delivery of digital skills training in public libraries by the UK

Government could be viewed as disingenuous, with public libraries facing closure due to lack of Government funding (Reading Agency, 2020). The UK Government austerity policy appears to take greater priority in the delivery of the UK Government objectives, which is one possible reason for the closure of libraries and the poor funding received by local council's to deliver this training in public libraries.

The obfuscation of the UK Government digital strategy and the existence of the UK Government austerity policy is the root cause for the poor leadership being exhibited by the UK Government, Newcastle City Council and YHN. Whilst it may be the case that the UK Government do not wish to fund digital skills training, Newcastle City Council and YHN are using this as a reason to not take responsibility for this area. With YHN blaming Newcastle City Council for the lack of activity in this area and Newcastle City Council blaming the UK Government for the lack of funding. Given the benefits to business for individuals to be online, Newcastle City Council could have taken more responsibility and perhaps worked with business to develop collaborative training ventures that may see the digital divide in YHN social housing tenants close more quickly. Instead, this 'blame game' is stifling the progress that could be made in closing the digital divide.

The fulfilment of these research objectives provides an answer to the Research Question.

7.2 Contributions to the Current Body of Knowledge

The research from this case study of the Digital Divide and YHN's social housing tenants has built upon key areas of knowledge relating to the digital divide. This section aims to outline these key contributions and situate them within the wider discourse.

The first contribution to knowledge as a result of this PhD thesis is the identification of the importance of the need for digital skills training to promote the development of technical skill, confidence and self-efficacy in YHN social housing tenants. In chapter 2, digital skills are identified as part of the mental resources required to go online. Van Dijk (2020) identifies the importance of the collective mental resources of intelligence, technical ability, and literacy. Akintolu & Uleanya (2021) outline how individuals without digital skills end up being marginalised. This research found that social housing tenants are already marginalised and some of the most socio-economically excluded, most poorly educated individuals that typically face compounded digital exclusion (where they also face additional digital divide barriers such as disability). This research found 81.05% of the sample were from the NRS "DE" category, and 45% of individuals were without paid work. Social housing tenants that are older than 50-55 years of age received no digital skills training as a child whilst at school. Social housing tenants may not have paid work; this excludes them from receiving this digital skills training in the workplace. This research shows that digital skills training provides those YHN social housing tenants that lack digital skills a path to gaining the digital skills, self-efficacy and confidence required for digital inclusion and internet use. Targeting this training at the poorest members of society that have the lowest educational attainment and that lack in paid work is likely to see the most progress in closing the digital divide.

The second contribution to knowledge as a result of this research relates to the concept of the traditional determinants of the digital divide (the sociodemographic categories). This research was centred around some of the most socio-economically deprived individuals in the United Kingdom. This appeared to be a factor that influences how the traditional determinants of the digital divide behave when under examination in this research. The contemporary literature finds that having children in a household is a driver of internet

adoption (Helsper, 2020; Ames, 2019, Cristia, Ibarraran, Cueto, Santiago & Severin, 2017; Meza-Cordero, 2017). This research found that in the social housing tenant population, the more children present in a household, the more likely it was said children were viewed as a financial cost. The key comment in support of this claim from the thematic analysis in this research concisely summarises the issue faced by social housing tenants:

"[they] *prioritise the money that they have coming in from Universal Credit or whatever and they spend it on their children, they spend it on the entertainment, they spend it on food and rent, and they see no money left to actually pay for any of this* [the internet], *and they see it as a barrier"* **(P4)**

Similarly, in terms of the gender digital divide, there were no significant findings from this research. Many more females than males completed the online survey instrument, and the when the survey data was analysed, there were no patterns present to indicate the presence of the gender digital divide in the YHN social housing population (Helsper, 2021; Park, 2017). Again, disability is considered to have high levels of digital exclusion and a five threat barrier to internet use that is originates from: lack of employment and associated financial reward, poverty, low income, receipt of disability benefits and the high cost of technologies (Guo, Bricout, and Huang, 2005; Vincente and Lopez, 2010 ; Scope, 2021). When the survey data was analysed, this research found that 11.6% of disabled respondents were not online, this statistic is much lower than the levels of digital exclusion expected when compared against the national sample (ONS, 2015; 2017b). When the disability factors identified earlier are compounded with the nature of being a social housing tenant, it may have been considered pragmatic to expect a higher percentage of disabled people are digitally excluded. This research contributes to the current gap in understanding of this potentially emerging phenomenon where the traditional determinants of the digital divide do not behave as expected, which raises the question as to how appropriate they may now be within the discourse – especially when linked to the poorest in society.

A key issue linked to the resources required to go online is the assumption made in this research that a digitally excluded social housing tenant can have very high levels of mental resources and very high levels of social & cultural resources and yet due to their financial position in society they are skill likely to be digitally excluded (van Dijk, 2020; Rogers, 2005). This identified the importance of the role of de Hann's (2003) resource theory that is

later established as a resource construct by van Dijk (2020). In the poorest social housing tenants, resource theory, when viewed through the materialistic lens, is much more prominent in the decision to go online (de Haan, 2003; van Dijk, 2020). This research found that this compounded in the United Kingdom by the absence of meaningful government policy, the UK Government austerity policy and the punitive measures introduced by the Welfare Reform Act 2012 that impact the Universal Credit welfare benefit. The extent of this Governmental Policy influence on this research can be seen in figure 6.2.

In addition to these key contributions to the gaps in the body of knowledge that relate to the digital divide, this research has identified several areas that contribute to practice and policy making. The absence of a meaningful UK Government digital inclusion policy is problematic and this saw the proposed theoretical model adapted to include this as a construct in Figure 6.1 and Figure 6.2. Section 6.3.1 outlines the issues that surround this area. A recommendation to come out of the discussion in section 6.3.1 would see a review of both funding and policy connected to the digital divide in the United Kingdom. Focus on the closure of the digital divide must be brought to the poorest and most digitally excluded in our society in the name of social justice. Indeed, this research supports the narrative from Helsper (2011), where due to the swing in UK Government digital strategy, they claim that a digital underclass is forming in Britain, and those that have lower education levels, and no employment will be left behind. This research evidence the creation and entrenchment of this digital underclass in the UK – revealing how ineffective the UK Government digital strategy has been in the past ten years (Helsper, 2011; Akintolu & Uleanya, 2021).

The refined theoretical model (in Figure 6.1) draws together the diverse and complex multitude of digital divide theories and attempts to organise them in a manner that is more simply understood by both the academic and lay person. Whilst imperfect and with some limitations (found in the next section), the theoretical model cuts across the concept of the *Levels of the Digital* Divide and helps to incorporate them in a more structured manner. This enhances the impact of any digital divide research undertaken using the framework as it may be possible to explain the findings more widely to the different audiences required. The emergence of a new theoretical viewpoint and framework to examine the digital divide is a result of the case study and later evidenced the introduction of Government Policy as a positive or negative influence depending on the value of the policy. Government Policy is

discussed in section 6.3.1 and supplemented by Figure 6.2. This newly developed lens of the refined theoretical model in figure 6.1 could be used and tested in future studies as to its validity and breadth of scope. Further impact contributions of the refined theoretical model would be the publication of the model and sharing the refined theoretical model with other social housing providers internationally. If these other organisations were to utilise the model this could contribute to testing its further validity and usefulness in examining the digital divide and promoting digital transformation using ICT's in the public domain – a commonly found aim and objective of National Governments world-wide. Proposed future research enabled by the model would allow testing and further validation of the model that may result in enhancements to the model or the possible proposal that it requires further study and amendment. The individual constructs to the model are the most likely to face further scrutiny.

Finally, the uniqueness of the population examined by this study creates a contribution to the gap in the knowledge. Social housing tenants are a unique subgroup of society, but in many studies, they are often ignored and merged in a conglomerate manner with sociodemographic attributes used by proxy to represent this unique social group in society. Whilst it is a fair observation that they include some of the poorest individuals from the UK society, they often experience multiple negative influences over their decision to adopt the internet. However, not all social housing tenants are benefit claimants, not all social housing tenants lack paid employment – the nuance is that the social housing tenant in question may still have a low income due to factors such as irregular work, having multiple children or having health problems. Social housing tenants are a very disparate group, and it is not always beneficial to make comparisons to other cohorts of the digitally excluded due to the wide variations in the individuals that make up this group. In addition, this study recognises that it is not enough to just say that social housing tenants are digitally excluded; it looks for the reasons behind this exclusion and brought them together with the literature.

7.3 Limitations and Future Research

All research projects face inherent limitations that may relate to all areas of the study. This study was no exception to this statement, but with the identification of these limitations' cases may be identified for future study.

It is important to note that it was not the purpose of this study to produce a fully inclusive study of all areas of the digital divide. In terms of scope this research, it is limited to the environment that surrounds and impacts YHN Social Housing Tenants. In terms of research design, the use of the case study as the research design limits the ability to generalize results to the wider population – this could be addressed with future research that examines other demographic groups similar to YHN social housing tenants. The case study method was also impacted by the vast quantity of data collected and examined by this research – these placed constraints on the depth of the analysis that was possible within the available temporal resources. There could have been considerably more analysis and subsequent reporting of the data from the survey instrument given the vast quantity gathered, but temporal constraints and the inevitable word count imposed on the PhD thesis made this challenging. This could be addressed by future research by undertaking further analysis of the existing data.

A limitation faced by the research was the interference by some YHN Officers in the methodological, research design and data collection phases of the research. Some of the challenges faced were overcome with the researcher engaging in some pragmatic practice, as detailed in Section 3.2.3. The major attempts to influence the study are detailed in table 3.1. As an early career PhD Student, the researcher was inexperienced in the management of a research project. With the benefit of hindsight, I would have dealt with this interference differently, placing agreed plans in place and being more assertive in rejecting the political gamesmanship that was attempting to destabilise the research study. It was particularly interesting that some of these YHN Officers felt suitably qualified to recommend changes to the survey instrument, and yet when they were asked to go on the record and participate in a semi-structured interview, they refused, stating that they did not have adequate knowledge of the topic. YHN Officers also caused the methodological principles of the study to be redrafted with their failure to provide timely access to data that was promised by the YHN Project Sponsor at the outset of the research. The first half of the project saw the researcher engage in significant bureaucracy in the name of defending their academic freedom from official interference by YHN and Newcastle City Council.

In addition to the RQ and RO being addressed in this study further detailed analysis of the data using a selection of different methods might reveal further issues in the YHN Tenants body that relate to the Digital Divide, Digital Inclusion, and other relevant social factors or policy. This could lead to future research projects being undertaken with YHN or YHN generating impact from the research by exploring some of the data presented on their own terms. For example: different types of statistical analysis may be used to test this data and potential hypotheses. Inferential statistics, for example, could be used to test if there is an association, a difference, or a relationship between the provision of digital training in older individuals and their ability and confidence to use the internet. Where a relationship might be established this could be inferred beyond the sample data to the wider population – and possibly tested again (Radcliffe, 2020). There also could be a use for exploratory data analysis where multiple variables could be refined and examined to see if any patterns could be formed within the data (Radcliffe, 2020). This is outside of the planned methodology of the study but would certainly contribute to a future - wider, much more sophisticated study and this lays the foundations of this future study whilst equipping the researcher with valuable lessons as to how to better complete and execute such a study.

Having the benefit of the results of this survey, any expansion on this research would be more prescriptive and precise. More quickly ruling on feedback from interested parties and either ignoring requests or incorporating them into the study. This would yield a much sharper and stronger selection of findings that could be incorporated into future research more effectively.

Research that would enhance the knowledge created by this PhD Thesis could also include a more detailed and potentially ethnographic examination of how digital skills training impacts internet adoption – this could be linked to the third-level digital divide outcomes to measure what benefits individuals achieved as a result of the training and subsequent adoption of the internet. Identification of the customs, habits and interactions of individuals before, during and after training could generate some useful insights into the "*why*" of digital skills training is so beneficial to social housing tenants and their decision to go online.

Given the findings from this study in relation to the traditional determinants of the digital divide, a more detailed research study examining how these concepts and constructs behave when examined in the context of other socio-economically poor cohorts. The impact of Governmental Policy on these determinants also needs further consideration. A change of Government may also see the introduction of a new philosophy in digital strategy, how would

this impact these traditional determinants? This potential study of the traditional determinants of the digital divide links to the notion of discrete types of digitally excluded users. If the traditional determinants behave differently when examined in the context of the poorest in society, this leaves open the possibility that the digital divide narrative is moving away from the idea of a certain type of individual being digitally excluded towards a more contextual based approach.

7.4 In a different world

The digital divide discourse has already established that the COVID-19 pandemic has accelerated the transition to a digital economy (UNCTAD, 2021). This acceleration to a digital economy has exposed the digital divide gap between countries, societies, and individuals. It has become more important than ever for international bodies (such as the United Nations, the European Commission and the various continental trade blocs), national governments and regional/local authorities to take action, or those who are digitally excluded will only be left further behind.

The COVID-19 pandemic's ability to show fractures in society needs to be turned into an opportunity. In the post-pandemic world, the lessons from lockdown need to be applied to make the world work for everyone whilst addressing areas such as the UN Sustainable Development Goals.

The digital divide discourse has been around since the early 1990's with a vast array of publications written. Government has provided training courses and device trials during this time, and more recently, businesses have started to become involved as they realise they need their future customers online.

Linking back to COVID-19, it took scientists around 18 months to produce an effective COVID-19 vaccine when their ideas were fiscally and politically supported worldwide. The digital divide has been around for thirty years. There is thirty years of critical academic discourse to support the idea that the digital divide phenomenon is a negative influence on individual lives.

Could it be that the worldwide Government's and the world business elite are just starting to feel the pain of the digital divide?

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Appendix A – Survey Instrument

Broadband and Internet Use Survey – Paper Version

Introduction by the Researcher

Thank you for taking the time to complete this survey. By taking part you are making possible the research that will drive my Ph.D. project and you are helping policy makers make it easier for people to get online and use the internet. Every year the British Government makes policy and creates strategies to get people online and this survey should help guide how they make this policy.

The Research Project

The research project is a collaborative venture between Your Homes Newcastle and Newcastle Business School, Northumbria University. The research is taking place to examine how YHN tenants use the internet. The research project has been vetted and ethically approved by Northumbria University in consultation with Your Homes Newcastle.

What is involved if I participate?

Your participation will involve the completion of a questionnaire in which you will be asked questions about your social circumstances, how you use the internet, what things you do on the internet and about the things you use to get on the internet. The survey should take no longer than ten minutes to complete.

How will you identify me?

When the survey is analysed and the report prepared no identifying information will be used. Following the survey. We will keep your contact details, these will be stored separately from your answers to this survey and you may be contacted for further research.

Further Information

This study has been approved by Northumbria University Research Ethics Committee.

Contact Details

Researcher: David Spoors
e-mail: david.spoors@northumbria.ac.uk

Contact Address:
Newcastle Business School,
Northumbria University,
City Campus East,

Newcastle upon Tyne
NE1 8ST

Consent

Name of Survey: Broadband and Internet Use Survey
Name of Researcher: David Spoors
E-Mail Address: David.Spoors@northumbria.ac.uk

I consent to take part in this research project

I have read the information sheet and understand the purpose of the study

I understand that my participation in this study is through completion of this survey

I understand I can withdraw my consent at any time, for any reason and without prejudice

I understand my name and other details will remain entirely confidential and will not appear in any reports or other printed documents

Your responses and personal information will be kept secure and confidential; they will be stored on Northumbria University secure servers and they will be kept by the researcher until the end of the project. During the project they may be used to produce academic publications, research papers and will form part of the researchers Ph.D thesis. After the end of the project they may be retained for use in further academic research or publication. If they are to be disposed of, they will be then safely and securely disposed of in line with the Northumbria University research data retention policy.

By completing this survey I understand that I have consented to my taking part.

Please keep this page in a safe place!

Q1. What type of property do you live in? :

House……..... ☐
Bungalow……..... ☐
Flat……..... ☐
Supported Housing……..... ☐
Bedsit……..... ☐

Other ……

Q2a. How many bedrooms does your house have? :
……..

Q2b. Do you pay the Bedroom Tax? :

Yes……..... ☐
No……..... ☐
Don't Know……..... ☐

Q3. How old are you? :

16-25……..... ☐
26-35……..... ☐
36-45……..... ☐
46-55……..... ☐
56-65……..... ☐
66-75……..... ☐
75+……..... ☐

Q4. What is your gender: M ☐ F ☐ Other……..

Q5. Do you have any children under 18? If so, how old are they?

How many children do you have ……

How old are they? ……

Q6. Ethnic origin – To which of these groups do you consider you belong?

White British…..……..... ☐
White other…..……..... ☐
Mixed……..……..... ☐
Asian or Asian British…..... ☐
Black or Black British…….…..... ☐
Middle Eastern / Middle Eastern British.. ☐
Chinese or Chinese British..... ☐
Other..……..…..……..... ..☐

Q7. What is your religion, if any?

Christian…….…..... ☐
Muslim…….…..... ☐
Jewish…….…..... ☐
Hindu…….…..... ☐
Sikh…….…..... ☐
Buddhist…….…..... ☐
No Religion…….…..... ☐
Do not wish to say…….…..... ☐

Any other religion (Specify) ……..……

Q8. What is your sexual orientation?

Heterosexual…….…..... ☐
Gay…….…..... ☐
Lesbian…….…..... ☐
Bi-sexual…….…..... ☐
Queer……..…….…..... ☐
Pansexual…….…..... ☐
Do not wish to say…….…..... ☐

Any other sexual orientation (Specify) ……..……

Q9. At what age did you leave full time education?:……..

Q10. What is your highest qualification?:

No qualifications…….…..... ☐
Time Served Apprentice…….…..... ☐
GCSE/O Level…….…..... ☐
BTEC or NVQ Level 1 or Level 2..... ☐
A Level…….…..... ☐

BTEC or NVQ Level 3……..... ☐
BTEC or NVQ Level 4……..... ☐
BTEC HNC or HND……..... ☐
Foundation Degree……..... ☐
Bachelor's Degree……..... ☐
Master's Degree……..... ☐
Doctorate……..... ☐

Q11. What is your occupation?
:……

Q12. How many hours do you work per week? :

0h – I do not Work……..... ☐
1h-16h Part Time Work……..... ☐
17h-32h Part Time Work……..... ☐
32h-40h Full Time Work..... ☐
40h + Overtime……..... ☐

Q13. Do you use the internet each day as part of your job?

Always.....☐ Sometimes.....☐ Never..... ☐

Q14. Do you consider your day to day activities to be limited because of a health condition which has is expected to or has lasted longer than 12 months?

Previously .....☐ Currently .....☐ Lifetime Condition.....☐

Q15. If you feel comfortable doing so, please state the nature of this problem:

……

Q16. Do you consider yourself to have any mobility issue that makes it difficult for you to leave your home without help?

Yes ..... ☐ No..... ☐

Q17. Which of the following welfare benefits do you claim, if any?
If so which one(s) – tick all that apply:

Universal Credit replaced Job Seekers Allowance, Employment and Support Allowance, Income Support, Child Tax Credit and Working Tax Credit.

Universal Credit……..... ☐
Housing Benefit…….....☐
Personal Independence Payment…..... ☐
Employment and Support Allowance..... ☐

Technology

A laptop or notebook may be a smaller more portable computer that might run Microsoft Windows or Apple OS X.

A desktop computer would be a larger computer that you might sit at in an office.

A tablet could be an Apple iPad or Microsoft Surface.

A smart phone is a mobile phone that has a graphical display that can be used to access the internet – an example might be the Apple iPhone or a Samsung S7.

A smart TV is a Television that has a connection to the internet that can be used to access online content or services.

Q18. Do you have access to any of the following that you use to go on the internet?

	How old is it?	**What brand or make is it?**
Laptop or Notebook	**…….**	**…….…. ….**
Desktop Computer	**…….**	**…….…. ….**
Tablet	**…….**	**…….…. ….**
Smart Phone	**…….**	**…….…. ….**
Smart TV	**…….**	**…….…. ….**

Q19. What device do you use most often to go on the internet? : ……..……

Q20. How often do you use each of these to go on the internet?

	Never	Monthly	Weekly	Once a Day	More than Once a Day
Laptop or Notebook	☐	☐	☐	☐	☐
Desktop Computer	☐	☐	☐	☐	☐
Tablet	☐	☐	☐	☐	☐
Smart Phone	☐	☐	☐	☐	☐
Smart TV	☐	☐	☐	☐	☐

Q21. Do you use the internet yourself or do you have someone else do this for you?

Myself…….. ☐ I ask someone to do this for me…….☐

If you ask someone use the internet for you, who is this and why do you do this?

……

An accessibility aid or adaption is something that helps you to be able to use a computer the access the internet. This might be a piece of software or a physical device like a large button keyboard. This could be a screen reader or a large keyboard.

Q22. Do you use any accessibility aids or adaptions to use a computer, laptop or to access the internet? If you don't go to question Q27.

If so please name or describe it here:

……

Q23. What is the reason that you use these aids of adaptions to use a computer, laptop or to access the internet?

……

Q24. Do you mainly use the internet in your home or another place? (Please choose one only)

In my own home……..... ☐
At a friend or family member's home..... ☐
At work……..... ☐
At College or University ……..... ☐
At a public library……..... ☐
In a YHN Communal Lounge or Flat..... ☐
At a Community Centre or Group..... ☐
Public Go-Digital Wifi..(Street Wi-Fi)..... ☐
At a retailer (Coffee Shop or McDonnalds)..... ☐

Other Place…(Specify)…..... ….

Q25. Do you have internet access at home? If the answer is No go to question Q32.

Who is your main provider?

British Telecom..……..... ☐
Virgin Media……..... ☐
Sky…..……..... ☐
Talk Talk…….. ……..... ☐
The Post Office..……..... ☐

Other provider…(Specify)…..

Do you use it or does someone else who lives with you? …….

Q26. Do you think your internet connection is:

Very Fast……..……..... ☐

Fast……..…….....☐
Acceptable…….....☐
Slow…….. …….....☐
Very Slow……...…….....☐

Q27. Have you tested your internet speed? :…….……

Q28. Do you feel this speed is adequate for your needs?:

Yes ..... ☐ No..... ☐

Q29. Do you have any other services? If the answer is No go to question Q33.

Sky TV Channels..…….....☐
Virgin TV Channels…….....☐
Home Telephone…..…….....☐
Mobile Telephone…..... …….....☐
BT TV Channels..…….....☐
Freeview TV Channels..…….....☐

Q30. Including broadband, TV and landline telephone services, how much do you spend per month?

Between £0 and £20..…….....☐
Between £20 and £30..…….....☐
Between £30 and £40…….....☐
Between £40 and £50... …….....☐
Between £50 and £60…….....☐
Between £60 and £70..…….....☐
More than £70……...…….....☐

Q31. Do you use a smart phone to go on the internet?
If the answer is No go to question Q38.

Who is your service provider?

Everything Everywhere (EE)……..... ☐
Giff-Gaff..……..... ☐
O2..…..……..... ☐
Three (3)..…….. ……..... ☐
Vodaphone……..……..... ☐

Other provider…(Specify)….....

Q32. Do you have 4G internet service on your smart phone?:

Yes ..... ☐ No..... ☐

Q33. Do you think your smart phone internet connection is:

Very Fast……...……..... ☐
Fast……..……..... ☐
Acceptable…..……..... ☐
Slow…….. ……..... ☐
Very Slow……...……..... ☐

Q34. Do you feel this speed is adequate for your needs?:

Yes ..... ☐ No..... ☐

Q35. How much do you spend per month on your mobile phone service?

Between £0 and £20..……..... ☐
Between £20 and £30..……..... ☐
Between £30 and £40……..... ☐
Between £40 and £50... ……..... ☐
Between £50 and £60……..... ☐
Between £60 and £70..……..... ☐
More than £70……...……..... ☐

<u>Digital Skills</u>

Q36. On a scale of 0 to 10 (where 0 is least able and 10 is most able) how would you rate your ability to use the internet? :

0	1	2	3	4	5	6	7	8	9	10

Q37. If you need help with the internet what do you do or who do you ask for this help? :

……..……

……

Q38. Have you attended any dedicated internet training courses, if so where did you go to do this:

……..……

……

Q39. Did you get a qualification from these courses?:

Yes ..... ☐ No..... ☐

Q40. Do you use the internet for keeping in contact with friends or family? :

Yes ..... ☐ No..... ☐

<u>Key Activities</u>

Q41. How often do use the internet?:

More than once a day..... ☐
Once a day……..... ☐
2-3 times in a week.……..……..... ☐
Weekly..... ☐
Monthly..... ☐

I do not use the internet..... ☐

Q41b. How often do you check for new email?:

More than once a day..... ☐
Once a day……..... ☐
2-3 times in a week.……..……..... ☐
Weekly..... ☐
Monthly..... ☐

I do not use email..... ☐

Q42. How often do you use internet banking?:

More than once a day..... ☐
Once a day……..... ☐
2-3 times in a week.……..……..... ☐
Weekly..... ☐
Monthly..... ☐

I do not use Internet Banking..... ☐

Q43. How often do you use the following social media websites or services?:

	Never	Monthly	Weekly	Once a day	More than once a day

Facebook	☐	☐	☐	☐	☐
Twitter	☐	☐	☐	☐	☐
YouTube	☐	☐	☐	☐	☐
Instagram	☐	☐	☐	☐	☐
Snapchat	☐	☐	☐	☐	☐

Q44. How often do you do the following activities or visit the following internet web sites or use the following online services?:

	Never	Monthly	Weekly	Once a Day	More than Once a Day
Pay Rent Online	☐	☐	☐	☐	☐
Pay Council Tax Online	☐	☐	☐	☐	☐
Report a Repair to my Home	☐	☐	☐	☐	☐
Pay Other Bills Online	☐	☐	☐	☐	☐
Look for Information about Council Services	☐	☐	☐	☐	☐
Make an online request for Council Services	☐	☐	☐	☐	☐
Search for a Home	☐	☐	☐	☐	☐
Supermarket Shopping Online for Delivery (Tesco, ASDA etc)	☐	☐	☐	☐	☐
General Shopping (eg. Amazon or Ebay)	☐	☐	☐	☐	☐
Search for employment	☐	☐	☐	☐	☐
Read, Listen or Watch News or Current Affairs	☐	☐	☐	☐	☐
Play Online Games	☐	☐	☐	☐	☐
Watch TV Online	☐	☐	☐	☐	☐
Listen to Music	☐	☐	☐	☐	☐
Sign a Petition	☐	☐	☐	☐	☐
Research a topic	☐	☐	☐	☐	☐
Search for health advice	☐	☐	☐	☐	☐
Make an appointment with your GP	☐	☐	☐	☐	☐
Make a hospital appointment (NHS)	☐	☐	☐	☐	☐
Report a Crime	☐	☐	☐	☐	☐
Search for Travel Timetable Information	☐	☐	☐	☐	☐

Google or Search for something	☐	☐	☐	☐	☐
Use a Health or Fitness Service or Application	☐	☐	☐	☐	☐

Q45. Have you ever done any of the following activities online?:

	Yes	No
Apply for a Loan or Credit Card	☐	☐
Apply for a Pay Day Loan (Wonga)	☐	☐
Insured a Car or Van	☐	☐
Applied for Road Tax	☐	☐
Applied for a Driving Licence	☐	☐
Applied for a Passport	☐	☐
Made a Tax Return	☐	☐
Apply for Council Housing	☐	☐
Apply for Welfare Benefits	☐	☐
Book a Rail or Travel Ticket	☐	☐

Q46. What is the main reason that you use the internet?:

……

Consent

Thank you for taking part in this research. Research helps the academic community make discoveries and craft theory that makes improvements to human lives in a number of ways. Informed consent is an important part of all academic research and without consent it would be unethical to conduct research with human participants.

I agree to and provide my consent to participate in this research study and understand the information on page 2 of this survey. I further understand I can withdraw my consent at any time, for any reason and without prejudice by contacting the researcher.

Please **sign here** if you agree with this statement so we can use your answers in our research.

_____

……

Appendix A

YHN Survey – Online Template

D64 **Internet Use Survey** The research project is a collaborative venture between Your Homes Newcastle and Newcastle Business School, Northumbria University. The research project has been vetted and ethically approved by Northumbria University in consultation with Your Homes Newcastle. The purpose of the Survey is to see how Your Homes Newcastle tenants use the internet. The survey should take less than 10 minutes to complete, if you are not very familiar with a computer or laptop you can ask a friend or family member to help you. When completing the survey you may need to scroll down the page to answer each question and then use the blue arrow button to move on. How will you identify me? When the survey is analysed and the research prepared, no identifying information will be used and your answers to this survey will remain anonymous and used only for the purposes of research. Following the survey. We will keep your contact details, these will be stored separately from your answers to this survey and you may be contacted for further research. This study has been approved by Northumbria University Research Ethics Committee. If you have any queries about this Survey the researcher can be contacted here: david.spoors@northumbria.ac.uk

Newcastle Business School,
Northumbria University,
City Campus East,
Newcastle upon Tyne
NE1 8ST

QPC What is your post code?

_____

Appendix A

Q1 What type of property do you live in?

- ○ House (1)
- ○ Bungalow (2)
- ○ Flat (3)
- ○ Supported Housing (4)
- ○ Bedsit (5)
- ○ Other (6)

Q2a How many bedrooms does your house have?

_____

Q2b Do you pay the Bedroom Tax?

- ○ Yes (1)
- ○ No (2)
- ○ Don't Know (3)

End of Block: Main Question Block

Start of Block: Block 1

Appendix A

Q3 How old are you?

- ○ 16-25 (1)
- ○ 26-35 (2)
- ○ 36-45 (3)
- ○ 46-55 (4)
- ○ 56-65 (5)
- ○ 66-75 (6)
- ○ 75+ (7)

Q4 What is your gender?

- ○ Male (1)
- ○ Female (2)
- ○ Other (3)

Q5 Do you have any children under 18 years old? If so how old are they?

0 1 2 3 4 5 6 7 9 10 11 12 13 14 15 16 17

Child 1 ()	
Child 2 ()	
Child 3 ()	
Child 4 ()	
Child 5 ()	

End of Block: Block 1

Start of Block: Block 2

Q6 What is your ethnic origin?

- White British (1)
- White Other (2)
- Black British (3)
- Black (4)
- Middle Eastern (5)
- Middle Eastern British (6)
- Chinese (7)
- Mixed (8)
- Other (9)

End of Block: Block 2

Start of Block: Block 3

Q7 What is your religion, if any?

- ○ Christian (1)
- ○ Muslim (2)
- ○ Jewish (3)
- ○ Hindu (4)
- ○ Sikh (5)
- ○ Buddhist (6)
- ○ No Religion (7)
- ○ Do not wish to say (8)

End of Block: Block 3

Start of Block: Block 4

Q8 What is your sexual orientation?

- ○ Straight / Heterosexual (1)
- ○ Gay (2)
- ○ Lesbian (3)
- ○ Bi-sexual (4)
- ○ Queer (5)
- ○ Pansexual (6)
- ○ Do not wish to say (7)

End of Block: Block 4

Start of Block: Block 5

Q9 How old were you when you left full time education?

_____

Q10 What is your highest academic qualification?

- ○ No qualifications (1)
- ○ Time Served Apprentice (2)
- ○ GCSE/O Level (3)
- ○ BTEC or NVQ Level 1 or Level 2 (4)
- ○ A Level (5)
- ○ BTEC or NVQ Level 3 (6)
- ○ BTEC or NVQ Level 4 (7)
- ○ BTEC HNC or HND (8)
- ○ Foundation Degree (9)
- ○ Bachelor's Degree (10)
- ○ Master's Degree (11)
- ○ Doctorate (12)

End of Block: Block 5

Start of Block: Block 6

Q11 What is your occupation?

_____

Q12 How many hours do you work per week?

- 0h – I do not Work (1)
- 1h-16h Part Time Work (2)
- 17h-32h Part Time Work (3)
- 32h-40h Full Time Work (4)
- 40h + Overtime (5)

Q13 Do you use the internet each day as part of your job?

- Always (1)
- Somtimes (2)
- Never (3)

End of Block: Block 6

Start of Block: Block 7

Q14 **Do you consider your day to day activities to be limited because of a health condition which has is expected to or has lasted longer than 12 months?**

- ○ Previously (1)
- ○ Currently (2)
- ○ Lifetime Condition (3)
- ○ No Condition (4)

Q15 If you feel comfortable doing so, please state the nature of this problem

_____

Q16 **Do you consider yourself to have any mobility issue that makes it difficult for you to leave your home without help?**

- ○ Yes (1)
- ○ No (2)

End of Block: Block 7

Start of Block: Block 8

Q17 Which of the following state / welfare benefits do you claim, if any? Select all that apply.

- ☐ Universal Credit (1)
- ☐ Job Seekers Allowance (2)
- ☐ Employment Support Allowance (3)
- ☐ Personal Independence Payment (DLA) (4)
- ☐ Housing Benefit (5)
- ☐ Council Tax Benefit (6)
- ☐ Child Benefit (7)
- ☐ Prefer not to say (8)

End of Block: Block 8

Start of Block: Technology

AI Tech **Technology and Devices**
The next set of questions are going to ask you about your devices and how often you use these devices to go on the internet. These are some of the devices you might have access to or in your home.
A laptop or notebook may be a smaller more portable computer that might run Microsoft Windows or Apple OS X.

A desktop computer would be a larger computer that you might sit at in an office.
A tablet could be an Apple iPad or Microsoft Surface.

A smart phone is a mobile phone that has a graphical display that can be used to access the internet – an example might be the Apple iPhone or a Samsung S7.

A smart TV is a Television that has a connection to the internet that can be used to access online content or services like Netflix, YouTube and Amazon Prime.

End of Block: Technology

Start of Block: Block 10

Q18 Do you have access to any of the following that you use to go on the internet? Please select all that apply.

- ☐ Laptop / Notebook (1)
- ☐ Desktop Computer (2)
- ☐ Tablet (3)
- ☐ Smart Phone (4)
- ☐ Smart TV (5)
- ☐ None of the above (6)

Skip To: End of Block If Do you have access to any of the following that you use to go on the internet? Please select all... = None of the above

Carry Forward Selected Choices from "Do you have access to any of the following that you use to go on the internet? Please select all that apply."

Q19 How old are these devices?

- ○ Laptop / Notebook (1) _____
- ○ Desktop Computer (2) _____
- ○ Tablet (3) _____
- ○ Smart Phone (4) _____
- ○ Smart TV (5) _____
- ○ None of the above (6) _____

Carry Forward Selected Choices from "Do you have access to any of the following that you use to go on the internet? Please select all that apply."

Q20 What brand or make are these devices?

- ○ Laptop / Notebook (1) _____
- ○ Desktop Computer (2) _____
- ○ Tablet (3) _____
- ○ Smart Phone (4) _____
- ○ Smart TV (5) _____
- ○ None of the above (6) _____

Carry Forward Selected Choices from "Do you have access to any of the following that you use to go on the internet? Please select all that apply."

Q21 Which device to you use the most regularly?

- ○ Laptop / Notebook (1)
- ○ Desktop Computer (2)
- ○ Tablet (3)
- ○ Smart Phone (4)
- ○ Smart TV (5)
- ○ None of the above (6)

Carry Forward Selected Choices from "Do you have access to any of the following that you use to go on the internet? Please select all that apply."

Q22 How often do you use each of these to go on the internet?

	Never (1)	Monthly (2)	Weekly (3)	Once a Day (4)	More than Once a Day (5)
Laptop / Notebook (x1)	○	○	○	○	○
Desktop Computer (x2)	○	○	○	○	○
Tablet (x3)	○	○	○	○	○
Smart Phone (x4)	○	○	○	○	○
Smart TV (x5)	○	○	○	○	○
None of the above (x6)	○	○	○	○	○

End of Block: Block 10

Start of Block: Block 12

Q23 Do you use the internet yourself or do you have someone else do this for you?

- ○ I use the internet myself (1)
- ○ I ask someone else to do this for me (2)
- ○ I do not use the internet (3)

Display This Question:

If Do you use the internet yourself or do you have someone else do this for you? = I ask someone else to do this for me

Q24 If you ask someone to use the internet for you, who is this and why do you do this?

_____

_____

_____

_____

_____

End of Block: Block 12

Start of Block: Block 13

Q25 An accessibility aid or adaption is something that helps you to be able to use a computer the access the internet. This might be a piece of software or a physical device like a large button keyboard. This could be a screen reader or a large keyboard.

Q26 Do you use any accessibility aids or adaptions to use a computer, laptop or to access the internet?

If so please describe it below:

_____

_____

_____

_____

_____

Q27 What is the reason that you use these aids or adaptions to use a computer, laptop or other device to access the internet?

_____

_____

_____

_____

_____

End of Block: Block 13

Start of Block: Block 14

Q28 Do you mainly use the internet in your home or another place?

- ○ In my own home (1)
- ○ At a friend or family member's home (2)
- ○ At work (3)
- ○ At College or University (4)
- ○ At a public library (5)
- ○ In a YHN Communal Lounge or Flat (6)
- ○ At a Community Centre or Group (7)
- ○ Public Go-Digital Wifi..(Street Wi-Fi) (8)
- ○ At a retailer (Coffee Shop or McDonnalds) (9)
- ○ I do not use the internet (10)

End of Block: Block 14

Start of Block: Block 15

Q29 Do you have internet access at home?

Who is your main service provider?

- ○ British Telecom (1)
- ○ Virgin Media (2)
- ○ Sky (3)
- ○ Talk Talk (4)
- ○ The Post Office (5)
- ○ Other (6)
- ○ No Internet at Home (7)

Skip To: End of Block If Do you have internet access at home? Who is your main service provider? = No Internet at Home

Q30 Do you use it or does someone else who lives with you?

- ○ I use it myself (1)
- ○ Someone else uses it (2)
- ○ No Internet at Home (3)

Q31 Do you think your internet connection is:

- ○ Very Fast (1)
- ○ Fast (2)
- ○ Acceptable (3)
- ○ Slow (4)
- ○ Very Slow (5)

Q32 Have you tested your internet speed? Do you know how fast it is - please enter the speed in the box below

_____

Q33 Is this speed adequate for your needs?

- ○ Yes (1)
- ○ No (2)

End of Block: Block 15

Start of Block: Block 17

Q34 Do you have any of the following other services? You may select more than one.

- [ ] Sky TV Channels (1)
- [ ] Virgin TV Channels (2)
- [ ] Home Telephone (3)
- [ ] Mobile Telephone (4)
- [ ] BT TV Channels (5)
- [ ] Freeview TV Channels (6)

End of Block: Block 17

Start of Block: Block 18

Q35 Including Broadband, TV and landline telephone services how much do you spend per month?

- ○ Between £0 and £20 (1)
- ○ Between £20 and £30 (2)
- ○ Between £30 and £40 (3)
- ○ Between £40 and £50 (4)
- ○ Between £50 and £60 (5)
- ○ Between £60 and £70 (6)
- ○ More than £70 (7)

End of Block: Block 18

Start of Block: Block 19

Q36 Do you use a smart phone to go on the internet?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Do you use a smart phone to go on the internet? = No

Q37 Who is your service provider?

- ○ Everything Everywhere (EE) (1)
- ○ Giff-Gaff (2)
- ○ O2 (3)
- ○ Three (3) (4)
- ○ Vodafone (5)
- ○ Other (6)

Q38 Do you have 4G Internet Service on your Smart Phone

- ○ Yes (1)
- ○ No (2)
- ○ Don't Know (3)

Q39 Do you think your smart phone internet connection is:

- ○ Very Fast (1)
- ○ Fast (2)
- ○ Acceptable (3)
- ○ Slow (4)
- ○ Very Slow (5)

Q40 Is this speed adequate for your needs?

- ○ Yes (1)
- ○ No (2)

End of Block: Block 19

Start of Block: Block 20

Q41 How much do you spend per month on your mobile phone service?

- ○ Between £0 and £20 (1)
- ○ Between £20 and £30 (2)
- ○ Between £30 and £40 (3)
- ○ Between £40 and £50 (4)
- ○ Between £50 and £60 (5)
- ○ Between £60 and £70 (6)
- ○ More than £70 (7)

End of Block: Block 20

Start of Block: Block 21

Q42 **On a scale of 1 to 10 (where 1 is least able and 10 is most able) how would you rate your ability to use the internet?**

	1 2 3 4 5 6 7 8 9 10
Ability to Use the Internet 0-10 ()	

Q43 If you need help with the internet what do you do or who do you ask for this help? :

_____

Q44 Have you attended any dedicated internet training courses, if so where did you go to do this?

_____

Q45 Did you get a qualification for these courses?

- Yes (1)
- No (2)

End of Block: Block 21

Start of Block: Block 22

Q46 Do you use the internet for keeping in contact with friends or family?

- Yes (1)
- No (2)

Q47 How often do you use the internet?

- More than once a day (1)
- Once a day (2)
- 2-3 times in a week (3)
- Weekly (4)
- Monthly (5)
- I do not use the internet (6)

Q48 How often do you check for new email?

- More than once a day (1)
- Once a day (2)
- 2-3 times in a week (3)
- Weekly (4)
- Monthly (5)
- I do not use e-mail (6)

Q49 How often do you use internet banking?

- More than once a day (1)
- Once a day (2)
- 2-3 times in a week (3)
- Weekly (4)
- Monthly (5)
- I do not use internet banking (6)

End of Block: Block 22

Start of Block: Block 23

Q50 How often do you use the following social media websites / services?

	Never (1)	Monthly (2)	Weekly (3)	Once a Day (4)	More than once a day (5)
Facebook (1)	○	○	○	○	○
Twitter (2)	○	○	○	○	○
Youtube (3)	○	○	○	○	○
Instgram (4)	○	○	○	○	○
Snapchat (5)	○	○	○	○	○

End of Block: Block 23

Start of Block: Block 24

Q51 How often do you do the following activities or visit the following websites / online services?

You will need to scroll down to reach the end of this list.

Appendix A

	Never (1)	Monthly (2)	Weekly (3)	Once a Day (4)	More than once a day (5)
Pay Rent Online (1)	○	○	○	○	○
Pay Council Tax Online (2)	○	○	○	○	○
Report a Repair to my Home (3)	○	○	○	○	○
Pay Other Bills Online (4)	○	○	○	○	○
Look for Information about Council Services (5)	○	○	○	○	○
Make an online request for Council Services (6)	○	○	○	○	○
Search for a Home (7)	○	○	○	○	○
Supermarket Shopping Online for Delivery (Tesco, ASDA etc) (8)	○	○	○	○	○
General Shopping (9)	○	○	○	○	○
Amazon or Ebay (10)	○	○	○	○	○
Search for employment (11)	○	○	○	○	○

Read, Listen or Watch News or Current Affairs (12)	○	○	○	○	○
Play Online Games (13)	○	○	○	○	○
Watch TV Online (14)	○	○	○	○	○
Listen to Music (15)	○	○	○	○	○
Sign a Petition (16)	○	○	○	○	○
Research a topic (17)	○	○	○	○	○
Search for health advice (18)	○	○	○	○	○
Make an appointment with your GP (19)	○	○	○	○	○
Make a hospital appointment (NHS) (20)	○	○	○	○	○
Report a Crime (21)	○	○	○	○	○
Search for Travel Timetable Information (22)	○	○	○	○	○
Google or Search for something (23)	○	○	○	○	○

Use a Health or Fitness Service or Application (24)	○	○	○	○	○

End of Block: Block 24

Start of Block: Block 25

Q52 Have you used the internet to do any of the following:

	Yes (1)	No (2)
Apply for a Loan or Credit Card (1)	○	○
Apply for a Pay Day Loan (Wonga) (2)	○	○
Insured a Car or Van (3)	○	○
Applied for Road Tax (4)	○	○
Applied for a Driving Licence (5)	○	○
Applied for a Passport (6)	○	○
Made a Tax Return (7)	○	○
Apply for Council Housing (8)	○	○
Apply for Welfare Benefits (9)	○	○
Book a Rail or Travel Ticket (10)	○	○

End of Block: Block 25

Start of Block: Block 26

Q53 Finally, What is the main reason you use the internet? If you do not use the internet why not?

_____

_____

_____

_____

_____

End of Block: Block 26

Start of Block: Block 27

Q54 Thank you for taking part in this research. Research helps the academic community make discoveries and craft theory that makes improvements to human lives in a number of ways. Informed consent is an important part of all academic research and without consent it would be unethical to conduct research with human participants.

I agree to and provide my consent to participate in this research study and understand the information on page 2 of this survey. I further understand I can withdraw my consent at any time, for any reason and without prejudice by contacting the researcher.

If you would like to be entered into the prize draw for £250 of Eldon Square Vouchers please provide your name, postcode and door number in the box below. Thank you again for your valuable feedback.

_____

_____

_____

_____

_____

Appendix B – Interview Guide

Faculty of Business and Law

Informed Consent Form for research participants

Title of Study:	
Person(s) conducting the research:	
Programme of study:	
Address of the researcher for correspondence:	
Telephone:	
E-mail:	
Description of the broad nature of the research:	
Description of the involvement expected of participants including the broad nature of questions to be answered or events to be observed or	

activities to be undertaken, and the expected time commitment:	
Description of how the data you provide will be securely stored and/or destroyed upon completion of the project.	

Information obtained in this study, including this consent form, will be kept strictly confidential (i.e. will not be passed to others) and anonymous (i.e. individuals and organisations will not be identified *unless this is expressly excluded in the details given above*).

Data obtained through this research may be reproduced and published in a variety of forms and for a variety of audiences related to the broad nature of the research detailed above. It will not be used for purposes other than those outlined above without your permission.

Participation is entirely voluntary, and participants may withdraw at any time.

By signing this consent form, you are indicating that you fully understand the above information and agree to participate in this study on the basis of the above information.

Participant's signature: Date:

Student's signature: ***Date:***

Please keep one copy of this form for your own records

Appendix B

Introduction

Recording of Interview

Ethical Statement

Record of Consent

Interview Guidance Questions

1. Why do you think Digital Inclusion is important and What are the reasons for this?
2. What do you think the issues / barriers are for people / tenants in getting online and Why?
3. What do you think the technical challenges are for individuals trying to get online?
4. What do you think the financial challenges are for individuals trying to get online?
5. What do you think the educational challenges are for individuals trying to get online?
6. What issues do you face going online?
7. What do you feel are the organisational challenges to Broadband Adoption and Digital Inclusion?

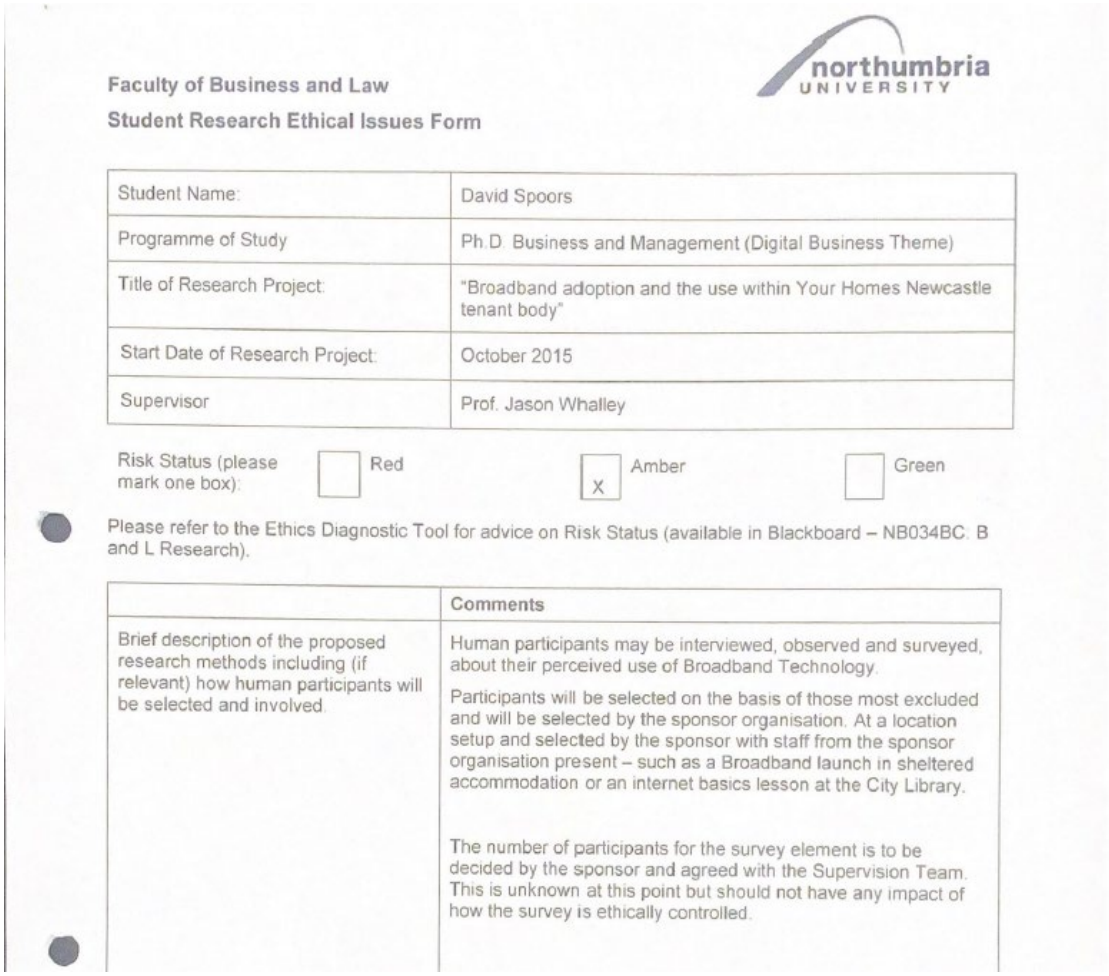
   Government | Council | YHN | UC | Political Climate etc
8. What could Government / the Council do more to help people online?
9. Do you think Government / the Council / YHN Policy initiatives help drive people to go online?

You will have the opportunity to add any comments or address any issues at the end of the interview.

Appendix C – Ethical Clearance

Appendix C

Lower quality scans due to lack of office facilities.



Faculty of Business and Law

Student Research Ethical Issues Form

Student Name:	David Spoors
Programme of Study	Ph.D. Business and Management (Digital Business Theme)
Title of Research Project:	"Broadband adoption and the use within Your Homes Newcastle tenant body"
Start Date of Research Project:	October 2015
Supervisor	Prof. Jason Whalley

Risk Status (please mark one box): ☐ Red ☒ Amber ☐ Green

Please refer to the Ethics Diagnostic Tool for advice on Risk Status (available in Blackboard – NB034BC. B and L Research).

	Comments
Brief description of the proposed research methods including (if relevant) how human participants will be selected and involved.	Human participants may be interviewed, observed and surveyed, about their perceived use of Broadband Technology. Participants will be selected on the basis of those most excluded and will be selected by the sponsor organisation. At a location setup and selected by the sponsor with staff from the sponsor organisation present – such as a Broadband launch in sheltered accommodation or an internet basics lesson at the City Library. The number of participants for the survey element is to be decided by the sponsor and agreed with the Supervision Team. This is unknown at this point but should not have any impact of how the survey is ethically controlled.

Appendix C

How will informed consent of research participants be acquired? (If appropriate attach draft informed consent form)	Participant to be observed or interviewed will be provided with information about the research prior to the day of the interview/observation by YHN Staff. This will be discussed with each individual (by the researcher) on the day of the interview/observation and consent recorded on the appropriate consent form(s). Survey participants will be provided with written information which they are able to keep prior to providing their informed consent at the end of the survey. The standard Northumbria University consent will not be used as the sponsor feels its appearance is too official and will reduce the potential response rate. Instead essential elements of the consent form have been included within the survey information and at the end of the survey where the participant signs to show their consent.
Will the research involve an organization(s)? (If appropriate attach draft organisational consent form)	Yes - Your Homes Newcastle Consent was obtained by the University Legal Team in the Studentship Agreement. (Organisational Consent Form also completed and sent by email)
How will research data be collected, securely stored and anonymity protected (where this is required)	Data will be securely stored on the University "U" Drive and on encrypted and secured USB Flash Drive. Physical complete survey responses will be kept at the University and stored in a locked cabinet. Anonymity of survey participants will be preserved with analysis taking place of aggregate and collective data collections, individuals will not be referred to or identified at any point during the research without their express permission (separate from the participation informed consent). Any quotes used during the research will be anonymous.
How will data be destroyed after the end of the project? (Where data is not to be destroyed please give reasons)	The collected and anonymised data will be kept by the researcher at the end of the project and may be utilised for the purposes of future research publications, journal articles and other research. Participants are informed about this during the research informed consent process.
Any other ethical issues anticipated?	No. Other: Number of participants will be negotiated between the Researcher, the Supervisor and the Sponsor. Surveys are likely to be the primary method of research, these may be conducted online with SurveyMonkey or similar and others may be postal surveys. Number of locations will likely be dictated by the Sponsor when arranging contact between the Researcher and participants.

Appendix C

Student Signature (indicating that the research will be conducted in conformity with the above and agreeing that any significant change in the research project will be notified and a further 'Project Amendment' Form submitted).

Date: 2 Aug 2016 **Student Signature:** D Spoor

Supervisor:

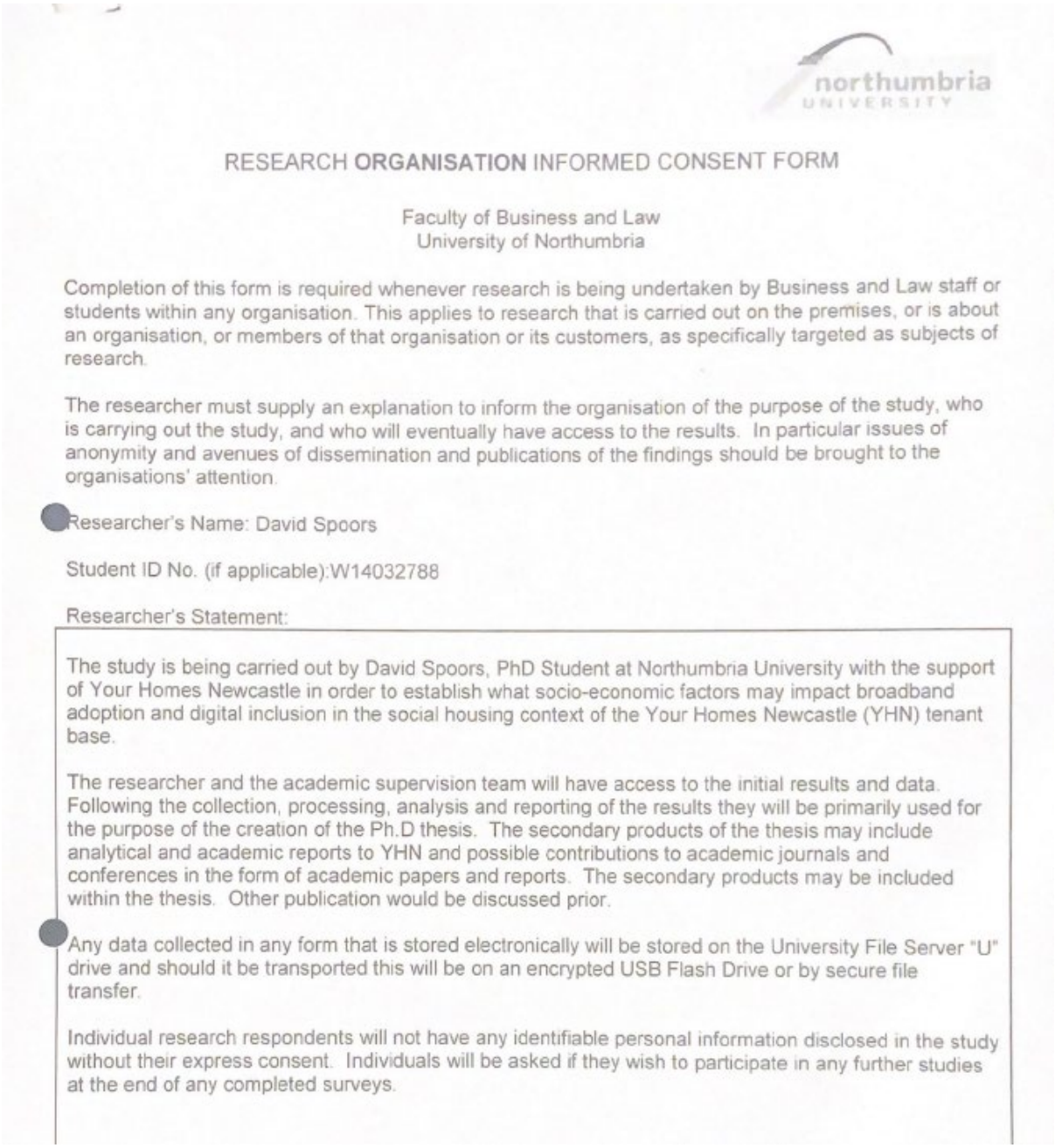
I confirm that I have read this form and I believe the proposed research will not breach University policies.

Date: 26 Sept 2016 **Signature:**

Please Note:

The appropriate completion of this form is a critical component of the University Policy on Ethical Issues in Research and Consultancy. If further advice is required, please contact the Faculty Research Ethics Committee through rn.ethicssupport@northumbria.ac.uk in the first instance.

Appendix C



RESEARCH **ORGANISATION** INFORMED CONSENT FORM

Faculty of Business and Law
University of Northumbria

Completion of this form is required whenever research is being undertaken by Business and Law staff or students within any organisation. This applies to research that is carried out on the premises, or is about an organisation, or members of that organisation or its customers, as specifically targeted as subjects of research.

The researcher must supply an explanation to inform the organisation of the purpose of the study, who is carrying out the study, and who will eventually have access to the results. In particular issues of anonymity and avenues of dissemination and publications of the findings should be brought to the organisations' attention.

Researcher's Name: David Spoors

Student ID No. (if applicable):W14032788

Researcher's Statement:

The study is being carried out by David Spoors, PhD Student at Northumbria University with the support of Your Homes Newcastle in order to establish what socio-economic factors may impact broadband adoption and digital inclusion in the social housing context of the Your Homes Newcastle (YHN) tenant base.

The researcher and the academic supervision team will have access to the initial results and data. Following the collection, processing, analysis and reporting of the results they will be primarily used for the purpose of the creation of the Ph.D thesis. The secondary products of the thesis may include analytical and academic reports to YHN and possible contributions to academic journals and conferences in the form of academic papers and reports. The secondary products may be included within the thesis. Other publication would be discussed prior.

Any data collected in any form that is stored electronically will be stored on the University File Server "U" drive and should it be transported this will be on an encrypted USB Flash Drive or by secure file transfer.

Individual research respondents will not have any identifiable personal information disclosed in the study without their express consent. Individuals will be asked if they wish to participate in any further studies at the end of any completed surveys.

Any organisation manager or representative who is empowered to give consent may do so here:

Name: Geof Ellingham

Position/Title: Head of Information Technology

Organisation Name: Your Homes Newcastle

Location: YHN House, Benton Park Road, Newcastle upon Tyne NE7 7LX

If the organisation is the Faculty of Business and Law please completed the following:

Start/End Date of Research / Consultancy project:	Start: October 2015 End: October 2018
Programme Year Sample to be used: seminar group, entire year etc.	PhD Business & Management Digital Business Signature Area
Has Programme Director/Leader, Module Tutor being consulted, informed.	Yes: PhD Supervisor: Prof. Jason Whalley

Anonymity must be offered to the organisation if it does not wish to be identified in the research report. Confidentiality is more complex and cannot extend to the markers of student work or the reviewers of staff work, but can apply to the published outcomes. If confidentiality is required, what form applies?

[✓] No confidentiality required
[ ] Masking of organisation name in research report
[ ] No publication of the research results without specific organisational consent
[ ] Other by agreement as specified by addendum

Signature: _____ Date: 22-6-2016

This form can be signed via email if the accompanying email is attached with the signer's personal email address included. The form cannot be completed by phone, rather should be handled via post.

Common Abbreviations

DWP – Department of Work and Pensions

EU – European Union

EEC – European Economic Community

NCC – Newcastle City Council

NHS – National Health Service

UN – United Nations

SDG – Sustainable Development Goals

YHN – Your Homes Newcastle

HM Government – Her/His Majesties Government

also: Parliament and the UK Government